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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549**

**FORM 10-Q**

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Quarterly Period Ended September 30, 2018

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Transition Period from \_\_\_\_\_ to \_\_\_\_\_

Commission File Number: 001-37428

**RITTER PHARMACEUTICALS, INC.**

(Exact name of Registrant as specified in its Charter)

**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**26-3474527**  
(I.R.S. Employer  
Identification Number)

**1880 Century Park East, Suite 1000**  
**Los Angeles, CA 90067**  
(Address and zip code of principal executive offices)

Registrant's Telephone Number, Including Area Code: **(310) 203-1000**

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes  No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large Accelerated Filer	<input type="checkbox"/>	Accelerated Filer	<input type="checkbox"/>
Non-accelerated Filer	<input type="checkbox"/>	Smaller Reporting Company	<input checked="" type="checkbox"/>
Emerging growth company	<input checked="" type="checkbox"/>		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes  No

As of November 7, 2018, there were 5,734,639 shares of the registrant's common stock, par value \$0.001 per share, outstanding.

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## PART I - FINANCIAL INFORMATION

## ITEM 1. CONDENSED FINANCIAL STATEMENTS

RITTER PHARMACEUTICALS, INC.  
CONDENSED BALANCE SHEETS

	<u>September 30, 2018</u> (unaudited)	<u>December 31, 2017</u>
<b>ASSETS</b>		
Current assets		
Cash and cash equivalents	\$ 12,496,576	\$ 22,631,971
Prepaid expenses	465,784	167,400
Total current assets	<u>12,962,360</u>	<u>22,799,371</u>
Other assets	10,326	10,326
Property and equipment, net	21,624	23,873
<b>Total Assets</b>	<b><u>\$ 12,994,310</u></b>	<b><u>\$ 22,833,570</u></b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities		
Accounts payable	\$ 2,130,479	\$ 2,237,579
Accrued expenses	408,560	454,252
Other liabilities	14,396	15,757
Total current liabilities	<u>2,553,435</u>	<u>2,707,588</u>
<b>Stockholders' equity</b>		
Preferred stock, \$0.001 par value; 15,000,000 shares authorized, 5,960 and 9,140 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	3,344,209	5,128,536
Common stock, \$0.001 par value; 225,000,000 shares authorized, 5,734,639 and 4,940,652 shares issued and outstanding as of as of September 30, 2018 and December 31, 2017, respectively	5,735	4,941
Additional paid-in capital	70,665,970	68,323,939
Accumulated deficit	(63,575,039)	(53,331,434)
Total stockholders' equity	<u>10,440,875</u>	<u>20,125,982</u>
<b>Total Liabilities and Stockholders' Equity</b>	<b><u>\$ 12,994,310</u></b>	<b><u>\$ 22,833,570</u></b>

The accompanying notes are an integral part of these condensed financial statements.

**RITTER PHARMACEUTICALS, INC.**  
**CONDENSED STATEMENTS OF OPERATIONS**  
(Unaudited)

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2018	2017	2018	2017
<b>Operating costs and expenses:</b>				
Research and development	\$ 3,459,681	\$ 915,268	\$ 6,180,607	\$ 2,121,898
Patent costs	59,068	47,431	170,418	175,794
General and administrative	1,144,750	1,052,236	3,957,545	3,367,781
Total operating costs and expenses	<u>4,663,499</u>	<u>2,014,935</u>	<u>10,308,570</u>	<u>5,665,473</u>
Operating loss	(4,663,499)	(2,014,935)	(10,308,570)	(5,665,473)
<b>Other income:</b>				
Interest income	17,237	4,083	64,965	18,362
Total other income	<u>17,237</u>	<u>4,083</u>	<u>64,965</u>	<u>18,362</u>
<b>Net loss</b>	<b>\$ (4,646,262)</b>	<b>\$ (2,010,852)</b>	<b>\$ (10,243,605)</b>	<b>\$ (5,647,111)</b>
Net loss per common share – basic and diluted	<u>\$ (0.86)</u>	<u>\$ (0.14)</u>	<u>\$ (2.00)</u>	<u>\$ (0.42)</u>
Weighted average common shares outstanding – basic and diluted	<u>5,373,769</u>	<u>14,756,521</u>	<u>5,129,351</u>	<u>13,443,007</u>

The accompanying notes are an integral part of these condensed financial statements.

**RITTER PHARMACEUTICALS, INC.**  
**CONDENSED STATEMENTS OF CASH FLOWS**  
(Unaudited)

	<b>For the Nine Months Ended September 30,</b>	
	<b>2018</b>	<b>2017</b>
<b>Cash flows from operating activities</b>		
Net loss	\$ (10,243,605)	\$ (5,647,111)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	4,257	3,936
Stock –based compensation	561,755	746,362
Settlement of accounts payable	(893,823)	–
Changes in operating assets and liabilities:		
Prepaid expenses	(298,384)	(103,845)
Accounts payable	786,723	849,002
Accrued expenses	(45,692)	(1,026,157)
Other liabilities	(1,362)	1,191
<b>Net cash used in operating activities</b>	<b>(10,130,131)</b>	<b>(5,176,622)</b>
<b>Cash flows from investing activities</b>		
Purchase of property and equipment	(2,008)	–
<b>Net cash used in investing activities</b>	<b>(2,008)</b>	<b>–</b>
<b>Cash flows from financing activities</b>		
Proceeds from the issuance of shares from common stock purchase agreement	–	2,000,000
Deferred offering costs	–	(310,786)
Payout to shareholders for fractional shares	(3,256)	–
<b>Net cash provided by (used in) financing activities</b>	<b>(3,256)</b>	<b>1,689,214</b>
<b>Net decrease in cash and cash equivalents</b>	<b>(10,135,395)</b>	<b>(3,487,408)</b>
<b>Cash and cash equivalents at beginning of period</b>	<b>22,631,971</b>	<b>7,046,282</b>
<b>Cash and cash equivalents at end of period</b>	<b>\$ 12,496,576</b>	<b>\$ 3,558,874</b>
<b>Supplemental disclosure of non-cash financing activities:</b>		
Conversion of preferred stock to common stock	\$ 1,784,327	\$ –
Shares issued as a commitment fee	\$ –	\$ 93,380
Cash paid for taxes	\$ –	\$ 800

The accompanying notes are an integral part of these condensed financial statements.

**RITTER PHARMACEUTICALS, INC.**  
**NOTES TO UNAUDITED CONDENSED FINANCIAL STATEMENTS**

**NOTE 1 - ORGANIZATION AND PRINCIPAL ACTIVITIES**

Ritter Pharmaceuticals, Inc. (“Ritter” or the “Company”) is a Delaware corporation headquartered in Los Angeles, California. The Company was formed as a Nevada limited liability company on March 29, 2004 under the name Ritter Natural Sciences, LLC, and converted into a Delaware corporation on September 16, 2008.

Ritter Pharmaceuticals, Inc. develops novel therapeutic products that modulate the gut microbiome to treat gastrointestinal diseases. Its lead product candidate, RP-G28, has the potential to become the first FDA-approved treatment for lactose intolerance, a condition that affects millions worldwide. RP-G28 has been studied in Phase 2 trials and is now in Phase 3 clinical development with its first Phase 3 study currently underway. The Company is further exploring the functionality and discovering the therapeutic potential that gut microbiome changes may have on treating/preventing a variety of conditions including: gastrointestinal, cancer, metabolic, and liver diseases.

The Company currently operates in one business segment focusing on the development and commercialization of RP-G28. The Company is not organized by market and is managed and operated as one business. A single management team reports to the chief operating decision maker, the Chief Executive Officer. The Company does not currently operate any separate lines of business or separate business entities.

**NOTE 2 - BASIS OF PRESENTATION**

The accompanying interim period unaudited condensed financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”) and applicable rules and regulations of the U.S. Securities and Exchange Commission (“SEC”) regarding interim financial reporting. Accordingly, they do not include all of the information and footnotes required by GAAP for complete financial statements. However, in the opinion of management, all adjustments consisting of normal recurring adjustments considered necessary for a fair presentation of the financial position and results of operations have been included and management believes the disclosures that are made are adequate to make the information presented not misleading.

The condensed balance sheet at December 31, 2017 has been derived from the audited financial statements included in the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 19, 2018 (the “2017 Annual Report”) but does not include all of the information and footnotes required by GAAP for complete financial statements.

The results for the three and nine months ended September 30, 2018 are not necessarily indicative of the results expected for the full fiscal year or any other period. The accompanying interim period unaudited condensed financial statements and related financial information included in this Quarterly Report on Form 10-Q (“Quarterly Report”) should be read in conjunction with the audited financial statements and notes thereto included in the Company’s 2017 Annual Report.

All common share amounts and per share amounts have been adjusted to reflect a 1-for-10 reverse stock split of the Company’s common stock effected on March 23, 2018.

***Going Concern and Liquidity***

The accompanying condensed financial statements have been prepared assuming the Company will continue as a going concern, which contemplates, among other things, the realization of assets and satisfaction of liabilities in the normal course of business. The Company has not generated any product revenue and has not achieved profitable operations. For the nine months ended September 30, 2018, the Company had a net loss of approximately \$10.2 million and had net cash used in operating activities of approximately \$10.1 million. At September 30, 2018, the Company had working capital of approximately \$10.4 million, an accumulated deficit of approximately \$63.6 million, and cash and cash equivalents of approximately \$12.5 million. There is no assurance that profitable operations will ever be achieved, and, if achieved, could be sustained on a continuing basis. In addition, development activities, clinical and pre-clinical testing, and commercialization of the Company’s products will require significant financing. These matters, among others, raise substantial doubt about the Company’s ability to continue as a going concern.

Since inception, the operations of the Company have been funded through the sale of common shares, preferred shares, warrants and convertible debt. Management cannot be certain that additional funding will be available on acceptable terms, or at all. To the extent that the Company raises additional funds by issuing equity securities, the Company’s stockholders may experience significant dilution. Any debt financing, if available, may involve restrictive covenants that could impact the Company’s ability to conduct business. If the Company is not able to raise additional capital when required or on acceptable terms, the Company may have to (i) significantly delay, scale back or discontinue the development and/or commercialization of one or more product candidates; (ii) seek collaborators for product candidates at an earlier stage than otherwise would be desirable and on terms that are less favorable than might otherwise be available; or (iii) relinquish or otherwise dispose of rights to technologies, product candidates or products that the Company would otherwise seek to develop or commercialize.

The financial statements do not include any adjustments that might be necessary if the Company is unable to continue as a going concern.

### **NOTE 3 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

There have been no material changes in the Company's significant accounting policies as of and for the nine months ended September 30, 2018, as compared with the significant accounting policies described in the Company's 2017 Annual Report.

#### ***Use of Estimates***

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

#### ***Cash and Cash Equivalents***

Cash consists of amounts held in financial institutions and consists of immediately available fund balances. The funds are maintained at stable financial institutions, generally at amounts in excess of federally insured limits. The Company has not experienced any losses in such accounts and management believes that the Company is not exposed to significant credit risk due to the financial position of the depository institutions in which those deposits are held.

#### ***Equity-linked Financial Instruments***

The Company classifies outstanding common stock warrants with down-round features as equity if the instrument would otherwise be classified in equity absent the down-round feature. The Company will recognize the value of a down-round feature when it is triggered and the warrant's strike price has been adjusted downward, as a dividend and reduction of income available to common stockholders in computing basic earnings per share.

#### ***Net Loss Per Share***

The Company determines basic net loss per share and diluted net loss per share in accordance with the provisions of ASC 260, "Earnings per Share." Basic net loss per share was calculated by dividing net loss by the weighted-average common shares outstanding during the period. Diluted net loss per share was calculated by dividing net loss by the weighted-average common shares outstanding during the period using the treasury stock method or the two-class method, whichever is more dilutive. The potentially dilutive stock options issued under the 2015 Stock Plan (described in Note 8), Series A Convertible Preferred Stock (described in Note 6) and warrants on the Company's common stock (described in Notes 6 and 7) were not considered in the computation of diluted net loss per share because they would be anti-dilutive.

#### ***Recent Accounting Pronouncements***

On August 26, 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-15, *Statement of Cash Flows (Topic 230)*, a consensus of the FASB's Emerging Issues Task Force ("ASU 2016-15"). The new guidance amends Accounting Standards Codification No. 230 ("ASC 230") to add or clarify guidance on the classification of certain cash receipts and payments in the statement of cash flows. ASC 230 lacks consistent principles for evaluating the classification of cash payments and receipts in the statement of cash flows. This has led to diversity in practice and, in certain circumstances, financial statement restatements. Therefore, the FASB issued ASU 2016-15 with the intent of reducing diversity in practice with respect to eight types of cash flows. ASU 2016-15 is effective for annual and interim periods in fiscal years beginning after December 15, 2017 and is effective for the Company for the year ending December 31, 2018. The Company adopted ASU 2016-15 on January 1, 2018 and it did not have a material impact on the Company's financial statements.

In May 2017, the FASB issued Accounting Standards Update No. 2017-09, *Compensation - Stock Compensation (Topic 718): Scope of Modification Accounting* ("ASU 2017-09"). ASU 2017-09 provides guidance on the types of changes to the terms or conditions of share-based payment awards to which an entity would be required to apply modification accounting. An entity would not apply modification accounting if the fair value, vesting conditions, and classification of the awards are the same immediately before and after the modification. The amendments are effective for the Company's interim and annual reporting periods beginning January 1, 2018. The Company adopted ASU 2017-09 on January 1, 2018 and it did not have a material impact on its financial statements.

In August 2018, the FASB issued Accounting Standards Update No. 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure* (“ASU 2018-13”). ASU 2018-13 improves the disclosure requirements on fair value measurements. It is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. Early adoption is permitted for any removed or modified disclosures. The Company is currently evaluating the impact that adopting this guidance will have on its financial statements.

Other accounting standard updates effective after September 30, 2018 are not expected to have a material effect on the Company’s financial statements.

**NOTE 4 - PROPERTY AND EQUIPMENT**

Property and equipment consists of the following:

	<b>Estimated Life</b>	<b>September 30, 2018</b>	<b>December 31, 2017</b>
Computers and equipment	5 years	\$ 15,589	\$ 13,582
Furniture and fixtures	7 years	19,158	19,158
Total property and equipment		34,747	32,740
Accumulated depreciation		(13,123)	(8,867)
Total property and equipment, net		<u>\$ 21,624</u>	<u>\$ 23,873</u>

Depreciation expense of approximately \$1,500 and \$1,300 was recognized for each of the three months ended September 30, 2018 and 2017, respectively, and approximately \$4,300 and \$3,900 was recognized for the nine months ended September 30, 2018 and 2017, respectively, and classified in general and administrative expense in the accompanying unaudited condensed statements of operations.

**NOTE 5 - COMMITMENTS AND CONTINGENCIES**

***Master Services Agreement***

On December 30, 2015, the Company entered into a Master Service Agreement with a clinical research organization, with an effective date of December 29, 2015. During the nine months ended September 30, 2018, the Company settled a balance with this clinical research organization resulting in a \$894,000 decrease in accounts payable and a reduction in research and development expense under the Master Service Agreement.

On May 1, 2018, the Company entered into an Amended and Restated Master Services Agreement (“Service Agreement”) with a different clinical research organization (“CRO”), pursuant to which the CRO will perform certain services related to the management and execution of certain clinical trials involving the Company’s lead product candidate, RP-G28. The Services Agreement supersedes the Master Service Agreement, dated August 30, 2016, by and between the Company and the CRO. The precise services to be performed by the CRO under the Services Agreement will be mutually agreed upon by the parties in writing and set forth in one or more task orders. The Company is not obligated to purchase any minimum or specific volume or dollar amount of services under the Services Agreement.

The term of the Services Agreement is four years from the effective date of the Service Agreement unless earlier terminated. The Company may terminate the Services Agreement or any task without cause immediately upon giving the CRO notice of such termination. The CRO may terminate a task order if the Company has materially defaulted on its obligations under the Services Agreement or any task order and has not cured such material default with advance notice to the Company, as described in the Services Agreement.

***Clinical Supply and Cooperation Agreement***

Effective July 24, 2015, the Company entered into an amended Clinical Supply and Cooperation Agreement (the “Amended Supply Agreement”) with a contract manufacturer (“Manufacturer”) of active pharmaceutical ingredients and one of its affiliates. The Amended Supply Agreement amends certain terms of the Clinical Supply and Cooperation Agreement, dated December 16, 2009, amended on September 25, 2010 (the “Existing Supply Agreement”).

Under the Existing Supply Agreement, the Manufacturer granted the Company an exclusive worldwide option in a specified field and territory to assignment of all right, title and interest to a purified galacto-oligosaccharides product (“Improved GOS”), the composition of matter of the Improved GOS and any information relating to the Improved GOS, including certain specified technical information and other intellectual property rights (the “Improved GOS IP”). Pursuant to the amended terms, the Company could exercise the option by paying the Manufacturer \$800,000 within ten days after the effective date of the Amended Supply Agreement. The Company exercised this option on July 30, 2015 and the Manufacturer transferred the Improved GOS IP to the Company. Under the terms of the Amended Supply Agreement, if a further option payment of \$1 million due in the future is not made, the Company may be required to return the Improved GOS IP to the Manufacturer.

The Amended Supply Agreement also provides that the Company must pay the Manufacturer \$400,000 within 10 days following FDA approval of a new drug application for the first product owned or controlled by the Company using Improved GOS as its active pharmaceutical ingredient.

#### ***Lease Agreement***

On July 9, 2015, the Company entered into a lease with Century Park, a California limited partnership, pursuant to which the Company leased approximately 2,780 square feet of office space in Los Angeles, California for its headquarters. The lease provides for a term of sixty-one (61) months, commencing on October 1, 2015. The Company paid no rent for the first month of the term and paid base rent of \$9,174 per month for months 2 through 13 of the term, with increasing base rent for each twelve-month period thereafter under the term of the lease to a maximum of \$10,325 per month for months 50 through 61. The base rent payments do not include the Company's proportionate share of any operating expenses, including real estate taxes. The Company has the option to extend the term of the lease for one five-year term, provided that the rent would be subject to market adjustment at the beginning of the renewal term.

Rent expense is recognized on a straight-line basis over the lease term and is recorded in general and administrative expenses in the accompanying unaudited condensed statements of operations. Approximately \$29,000 of rent expense was recognized for the three months ended September 30, 2018 and 2017, and \$88,000 and \$86,000 of rent expense was recognized for the nine months ended September 30, 2018 and 2017, respectively.

#### ***Legal***

From time to time, we are party to legal claims and proceedings that arise in the ordinary course of business, which may relate to our operations or assets. These may include disputes and lawsuits related to intellectual property, licensing, contract law and employee relations matters. Periodically, the Company reviews the status of significant matters, if any exist, and assesses its potential financial exposure. If the potential loss from any claim or legal claim is considered probable and the amount can be estimated, the Company accrues a liability for the estimated loss. Legal proceedings are subject to uncertainties, and the outcomes are difficult to predict. Because of such uncertainties, accruals are based on the best information available at the time. As additional information becomes available, the Company reassesses the potential liability related to pending claims and litigation. We do not believe that any individual legal claim or proceeding that is currently pending is material to the Company or that these claims and proceedings in the aggregate are material to the Company.

#### **NOTE 6 - STOCKHOLDERS' EQUITY**

On September 15, 2017, the Company amended its Amended and Restated Certificate of Incorporation to authorize the issuance of up to 225,000,000 shares of common stock, \$0.001 par value per share, and 15,000,000 shares of preferred stock, \$0.001 par value per share.

Effective March 23, 2018, all common share amounts and per share amounts have been adjusted to reflect a 1-for-10 reverse stock split.

As of September 30, 2018, the Company had 5,734,639 shares of common stock and 5,960 shares of Series A convertible preferred stock issued and outstanding. Each share of the Company's common stock is entitled to one vote, and all shares rank equally as to voting and other matters. Each share of Series A preferred stock is convertible by the holder into 250 shares of common stock at a conversion price of \$4.00 per share; subject to adjustment for stock splits, stock dividends, subsequent rights offerings, pro rata distributions, and fundamental transactions. Holders are entitled to receive, and the Company shall pay, dividends on outstanding shares of Series A preferred stock, on an as-if-converted-to-common-stock basis, equal to and in the same form as dividends actually paid on outstanding common shares when, as and if such dividends are paid on outstanding common shares. Upon any liquidation, dissolution or winding-up of the Company, whether voluntary or involuntary, the holders of Series A preferred stock shall be entitled to receive out of the assets, whether capital or surplus, of the Company the same amount that a holder of common stock would receive if the Series A preferred stock were fully converted to common stock, which amounts shall be paid pari passu with all common shareholders. Holders of Series A preferred stock have no voting rights. However, as long as any shares of Series A preferred stock are outstanding, the Company shall not, without the affirmative vote of the holders of a majority of the then outstanding shares of Series A preferred stock, (a) alter or change adversely the powers, preferences or rights given to the Series A preferred stock or alter or amend the applicable Certificate of Designation, (b) amend the Company's certificate of incorporation or other charter documents in any manner that adversely affects any rights of the holders of Series A preferred stock, (c) increase the number of authorized shares of Series A preferred stock, or (d) enter into any agreement with respect to any of the foregoing.

### Aspire Capital Financing Arrangement

On May 4, 2017, the Company entered into a common stock purchase agreement with Aspire Capital Fund, LLC (“Aspire Capital”) (the “2017 Aspire Purchase Agreement”), which provides that upon the terms and conditions set forth therein, Aspire Capital is committed to purchase up to an aggregate of \$6.5 million shares of the Company’s common stock over the 30-month term of the 2017 Aspire Purchase Agreement. On any trading day on which the closing sale price of the Company’s common stock exceeds \$2.50 per share, the Company has the right, in its sole discretion, to present Aspire Capital with a purchase notice, directing Aspire Capital (as principal) to purchase up to 10,000 shares of the Company’s common stock per trading day, for up to \$6.5 million of the Company’s common stock in the aggregate at a per share price, calculated by reference to the prevailing market price of the Company’s common stock (as provided in the 2017 Aspire Purchase Agreement); provided, however, that (subject to limited exceptions) the total number of shares that may be sold pursuant to the 2017 Aspire Purchase Agreement will be limited to 284,242 shares, which represents 19.99% of our outstanding shares of common stock as of May 2, 2017, unless stockholder approval or an exception pursuant to the rules of Nasdaq is obtained to issue more than 19.99% of our outstanding shares as of May 2, 2017.

As a condition to the 2017 Aspire Purchase Agreement, the Company issued 13,732 shares of its common stock to Aspire Capital as a commitment fee. As of September 30, 2018, no shares of common stock have been sold to Aspire Capital under the 2017 Aspire Purchase Agreement.

### October 2017 Public Offering

On October 3, 2017, the Company closed a public offering, selling an aggregate of (i) 3,455,000 Class A Units consisting of 3,455,000 shares of the Company’s common stock and warrants to purchase 3,455,000 shares of the Company’s common stock at a public offering price of \$4.00 per unit, and (ii) 9,180 Class B Units consisting of 9,180 shares of Series A convertible preferred stock, with a stated value of \$1,000 per unit, and convertible into an aggregate of 2,295,000 shares of the Company’s common stock, and warrants to purchase an aggregate of 2,295,000 shares of the Company’s common stock. The securities were offered by the Company pursuant to a registration statement filed with the SEC that was declared effective on September 28, 2017. The final prospectus relating to the offering was filed with the SEC on October 2, 2017.

The warrants have an exercise price of \$4.40, are exercisable upon issuance and expire five years from the date of issuance. The warrant agreements provide for an adjustment to the number of common shares issuable under the warrants and/or adjustment to the exercise price, including but not limited to, if: (a) the Company issues shares of common stock as a dividend or distribution to holders of its common stock; (b) the Company subdivides or combines its common stock; or (c) the Company issues new securities at a price less than the exercise price of the warrants.

The Company granted the underwriters a 45-day option to purchase an additional 862,500 shares of the Company’s common stock and/or warrants to purchase an additional 862,500 shares of the Company’s common stock. At the closing of the offering, the underwriters exercised their over-allotment option for warrants to purchase 297,500 shares of the Company’s common stock.

Aggregate gross proceeds to the Company from the public offering were approximately \$23.0 million. The Company paid underwriting discounts and commissions of approximately \$1.6 million in connection with the offering, and approximately \$0.4 million of other expenses in connection with the offering.

The Company early adopted the provisions of ASU 2017-11 in recognizing the warrants. As a result, the exercise price reset provisions were excluded from the assessment of whether the warrants are considered indexed to the Company’s own stock. The warrants otherwise meet the requirements for equity classification, and as such were initially classified in Stockholders’ Equity. The Company will recognize the value of the exercise price reset provision if and when it becomes triggered, by recognizing the value of the effect of the exercise price reset as a deemed dividend and a reduction of income available to common shareholders in computing basic earnings per share.

The proceeds received in the October 2017 Public Offering were allocated to each instrument on a relative fair value basis. Total proceeds of \$23.0 million were allocated as follows: \$10.1 million to warrants issued, \$7.8 million to Common Stock, and \$5.1 million to Series A convertible preferred stock. The allocation resulted in an effective conversion price for the Series A preferred stock that was below the quoted market price of the Company’s common stock on the closing date. As such, the Company recognized a beneficial conversion feature equal to the intrinsic value of the conversion feature on the closing date, resulting in a deemed dividend for the Series A convertible preferred stock of approximately \$3.1 million recognized on the closing date.

In the nine-month period ended September 30, 2018, holders of 3,180 shares of Series A convertible preferred stock converted their shares of preferred stock into an aggregate of 795,000 shares of common stock at the stated conversion price of \$4.00 per share.

## NOTE 7 - WARRANTS

Warrants to purchase an aggregate of 6,105,332 shares of the Company's common stock were outstanding at September 30, 2018. These warrants are all vested and exercisable, have exercise prices ranging from \$4.40 to \$93.00 per share, with a weighted average exercise price of \$5.20, and expire at various dates through October 2022.

## NOTE 8 - STOCK-BASED COMPENSATION

### Equity Incentive Plans

The Company has issued equity awards pursuant to its 2015 Equity Incentive Plan (the "2015 Plan"), 2009 Stock Plan and 2008 Stock Plan (collectively the "Plans"). The Plans permit the Company to grant non-statutory stock options, incentive stock options and other equity awards to the Company's employees, outside directors and consultants; however, incentive stock options may only be granted to the Company's employees. Beginning June 29, 2015, no further awards may be granted under the 2009 Stock Plan or 2008 Stock Plan. However, to the extent awards under the 2008 Plan or 2009 Plan are forfeited or lapse unexercised or are settled in cash, the common stock subject to such awards will be available for future issuance under the 2015 Plan.

On June 2, 2017, the stockholders of the Company approved an amendment to the 2015 Plan at the 2017 annual meeting of stockholders, which among other things, increased the number of shares that may be issued pursuant to awards under the 2015 Plan by 83,800 shares of common stock.

On September 15, 2017, the stockholders of the Company approved an amendment to the 2015 Plan at a special meeting of stockholders, which among other things, increased the number of shares that may be issued pursuant to awards under the 2015 Plan by 2,585,871 shares of common stock. As of September 30, 2018, the aggregate number of shares of common stock authorized for issuance under the 2015 Plan, as amended, was 2,750,000 and 2,697,950 shares were available for issuance as of September 30, 2018.

The following represents a summary of the options granted to employees and non-employees that are outstanding at September 30, 2018 and changes during the nine-month period then ended:

	Options	Weighted Average Exercise Price	Aggregate Intrinsic Value	Weighted Average Remaining Contractual Life (in years)
Outstanding at December 31, 2017	254,171	\$ 47.43	\$ —	7.3
Granted	456,718	\$ 3.16	\$ —	9.3
Exercised/ Expired/ Forfeited	(14,504)	\$ 4.69	\$ —	—
Outstanding at September 30, 2018	696,385	\$ 19.29	\$ —	8.5
Exercisable at September 30, 2018	258,523	\$ 53.07	\$ —	6.9

The exercise price for an option issued under the Plans is determined by the Board of Directors, but will be (i) in the case of an incentive stock option (A) granted to an employee who, at the time of grant of such option, is a 10% stockholder, no less than 110% of the fair market value per share on the date of grant; or (B) granted to any other employee, no less than 100% of the fair market value per share on the date of grant; and (ii) in the case of a non-statutory stock option, no less than 100% of the fair market value per share on the date of grant. The options awarded under the Plans will vest as determined by the Board of Directors but will not exceed a ten-year period. The weighted average grant date fair value per share of options granted during the nine months ended September 30, 2018 was \$0.90.

### Fair Value of Equity Awards

The Company utilizes the Black-Scholes option pricing model to value awards under its Plans. Key valuation assumptions include:

- *Expected dividend yield.* The expected dividend is assumed to be zero as the Company has never paid dividends and has no current plans to pay any dividends on the Company's common stock.
- *Expected stock-price volatility.* As the Company's common stock only recently became publicly traded, the expected volatility is derived from the average historical volatilities of publicly traded companies within the Company's industry that the Company considers to be comparable to the Company's business over a period approximately equal to the expected term.
- *Risk-free interest rate.* The risk-free interest rate is based on the U.S. Treasury yield in effect at the time of grant for zero coupon U.S. Treasury notes with maturities approximately equal to the expected term.
- *Expected term.* The expected term represents the period that the stock-based awards are expected to be outstanding. The Company's historical share option exercise experience does not provide a reasonable basis upon which to estimate an expected term because of a lack of sufficient data. Therefore, the Company estimates the expected term by using the simplified method provided by the SEC. The simplified method calculates the expected term as the average of the time-to-vesting and the contractual life of the options.

The material factors incorporated in the Black-Scholes model in estimating the fair value of the options granted for the periods presented were as follows (adjusted for 1-for-10 reverse stock split):

	For the three months ended September 30,		For the nine months ended September 30,	
	2018	2017	2018	2017
Expected dividend yield	0.00%	0.00%	0.00%	0.00%
Expected stock-price volatility	48.89% – 50.22%	53.08% – 53.68%	46.47% – 53.11%	53.08% – 53.90%
Risk-free interest rate	2.78% – 3.07%	1.89% – 2.29%	2.46% – 3.07%	1.98% – 2.37%
Expected average term of options	7 – 10	10	5 – 10	10
Stock price	\$ 1.85 – \$2.22	\$ 3.50 – \$6.50	\$ 1.85 – \$3.40	\$ 3.50 – \$10.80

#### *Stock-Based Compensation*

The Company recognized stock-based compensation expense for services within general and administrative expense in the accompanying statements of operations of approximately \$171,000 and \$203,000 for the three months ended September 30, 2018 and 2017, respectively, and \$562,000 and \$746,000 for the nine months ended September 30, 2018 and 2017, respectively. As of September 30, 2018, there was approximately \$613,000 of total unrecognized compensation cost related to unvested stock-based compensation arrangements. This cost is expected to be recognized over a weighted average period of 1.7 years.

No stock options were exercised during the three and nine months ended September 30, 2018 and 2017.

#### **NOTE 9 - RELATED PARTY TRANSACTIONS**

A director of the Company is a managing director of Javelin Venture Partners GP, LLC, the general partner of Javelin Venture Partners GP, L.P., which holds a significant investment in the Company's common stock and warrants. Two directors of the Company have acted as a managing director of Stonehenge Partners, LLC, which holds an investment in the Company's common stock.

The Company has not entered into or been a participant in any other transaction in which a related party had or will have a direct or indirect material interest.

#### **NOTE 10 – SUBSEQUENT EVENTS**

On November 5, 2018, the Company closed a private placement (“PIPE financing”) with certain institutional investors, a key vendor and a member of its board of directors. Gross proceeds from the PIPE financing were approximately \$6.0 million, before deducting placement agent fees and other offering expenses. The securities sold by the Company consisted of 6,000 shares of a newly designated class of Series B convertible preferred stock of the Company, with a stated value of \$1,000 per share and an initial conversion price per share of \$1.30 (subject to customary adjustment for stock dividends and stock splits). In addition, each investor received a warrant to purchase a number of shares of common stock equal to one half the number of shares of common stock into which their Series B convertible preferred stock is initially convertible. The warrants are exercisable immediately for a five-year period and have an exercise price of \$1.30 per share (subject to customary adjustment for stock dividends and stock splits). Certain investors in the PIPE financing who at the time of closing of the PIPE financing owned shares of the Company's Series A convertible preferred stock, exchanged, on a 1 for 1 share basis, their shares of Series A convertible preferred stock for shares of a newly designated class of Series C convertible preferred stock of the Company, with a stated value of \$1,000 per share and convertible into shares of the Company's common stock at an initial conversion price per share of \$1.64 (subject to customary adjustment for stock dividends and stock splits).

## ITEM 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

*The following discussion and analysis should be read in conjunction with our interim unaudited condensed financial statements and related notes included in this Quarterly Report on Form 10-Q ("Quarterly Report") and the audited financial statements and notes thereto as of and for the year ended December 31, 2017 and the related Management's Discussion and Analysis of Financial Condition and Results of Operations, both of which are contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the Securities and Exchange Commission ("SEC") on March 19, 2018 (the "2017 Annual Report"). As used in this report, unless the context suggests otherwise, "we," "us," "our," or "Ritter" refer to Ritter Pharmaceuticals, Inc. All common share amounts and per share amounts have been adjusted to reflect a 1-for-10 reverse stock split of our common stock on March 23, 2018. In addition to historical information, this discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions.*

### Special Note Regarding Forward-Looking Statements and Industry Data

This Quarterly Report contains forward-looking statements that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this Quarterly Report, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans, objectives of management and expected market growth are forward-looking statements. The words "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "target," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

Some of the factors that we believe could cause actual results to differ from those anticipated or predicted include:

- our ability to obtain additional financing;
- the accuracy of our estimates regarding expenses, future revenues and capital requirements;
- the success and timing of our preclinical studies and clinical trials;
- our ability to obtain and maintain regulatory approval of RP-G28 and any other product candidates we may develop, and the labeling under any approval we may obtain;
- regulatory developments in the United States and other countries;
- the performance of third-party manufacturers;
- our ability to develop and commercialize RP-G28 and any other product candidates that we may develop in the future;
- our ability to obtain and maintain intellectual property protection for RP-G28 and any other product candidates we may develop in the future;
- the successful development of our sales and marketing capabilities;
- the potential markets for RP-G28 and any other product candidates we may develop in the future and our ability to serve those markets;
- the rate and degree of market acceptance of our products, if approved;
- the success of competing drugs that are or become available; and
- the loss of key scientific or management personnel.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events, competitive dynamics, and healthcare, regulatory and scientific developments and depend on the economic circumstances that may or may not occur in the future or may occur on longer or shorter timelines than anticipated. Although we believe that we have a reasonable basis for each forward-looking statement contained in this Quarterly Report, we caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this Quarterly Report. In addition, even if our results of operations, financial condition and liquidity, and the development of the industry in which we operate are consistent with the forward-looking statements contained in this Quarterly Report, they may not be predictive of results or developments in future periods.

Any forward-looking statement that we make in this Quarterly Report speaks only as of the date of such statement, and we undertake no obligation to update such statements to reflect events or circumstances after the date of this Quarterly Report. You should also read carefully the factors described in the “Risk Factors” section of our 2017 Annual Report and this Quarterly Report to better understand the risks and uncertainties inherent in our business and underlying any forward-looking statements.

## Overview

Ritter Pharmaceuticals, Inc. develops novel therapeutic products that modulate the gut microbiome to treat gastrointestinal diseases. Our lead product candidate, RP-G28, has the potential to become the first drug approved by the Food and Drug Administration (“FDA”) for the treatment of lactose intolerance, a condition that affects millions worldwide. RP-G28 has been studied in Phase 2 clinical trials and is now in Phase 3 clinical development with its first Phase 3 study currently underway. We are further exploring the functionality and discovering the therapeutic potential that gut microbiome changes may have on treating/preventing a variety of conditions including: gastrointestinal cancer, metabolic, and liver diseases.

Our first novel microbiome modulator, RP-G28, an orally administered, high purity galacto-oligosaccharide, is currently under development for the treatment of lactose intolerance. RP-G28 is designed to selectively stimulate the growth of lactose-metabolizing bacteria in the colon, thereby effectively adapting the gut microbiome to assist in digesting lactose (the sugar found in milk) that reaches the large intestine.

Our current Phase 3 clinical program includes two confirmatory clinical trials of similar trial design as our Phase 2b clinical trial. The first Phase 3 clinical trial was initiated in the second quarter of 2018.

We have devoted substantially all of our resources to development efforts relating to RP-G28, including conducting clinical trials of RP-G28, providing general and administrative support for these operations and protecting our intellectual property. We currently do not have any products approved for sale and we have not generated any revenue from product sales since our inception.

## Financial Operations Overview

We have incurred net losses in each year since our inception, including net losses of approximately \$10.2 million for the nine months ended September 30, 2018. We had an accumulated deficit of approximately \$63.6 million as of September 30, 2018. Substantially all of our net losses resulted from costs incurred in connection with our research and development programs, patent costs, stock-based compensation, and from general and administrative costs associated with our operations.

We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We anticipate that our expenses will increase substantially as we:

- complete the development of our lead product candidate, RP-G28;
- seek to obtain regulatory approvals for RP-G28;
- outsource the commercial manufacturing of RP-G28 for any indications for which we receive regulatory approval;
- contract with third parties to develop our commercial strategies and for the sales, marketing and distribution of RP-G28 for any indications for which we receive regulatory approval;
- maintain, expand and protect our intellectual property portfolio;
- continue our research and development efforts; and
- add operational, financial and management information systems and personnel, including personnel to support our business and product development and commercialization efforts.

### ***Research and Development Expenses***

Since our inception, we have focused our resources on our research and development activities, including conducting nonclinical studies and clinical trials, manufacturing development efforts and activities related to regulatory filings for RP-G28. Our research and development expenses consist primarily of:

- fees paid to consultants and clinical research organizations (“CROs”), including in connection with our nonclinical and clinical trials, and other related clinical trial fees, such as for investigator grants, patient screening, laboratory work, clinical trial database management, clinical trial material management and statistical compilation and analysis;
- costs related to acquiring and manufacturing clinical trial materials;
- depreciation of equipment, computers and furniture and fixtures;
- costs related to compliance with regulatory requirements; and
- overhead expenses for personnel in research and development functions.

From inception through September 30, 2018, we have incurred approximately \$28.3 million in research and development expenses. We plan to increase our research and development expenses for the foreseeable future as we continue the development of RP-G28 for lactose intolerance and other indications, subject to the availability of additional funding.

The successful development of RP-G28 is highly uncertain. At this time, we cannot reasonably estimate the nature, timing or costs of the efforts that will be necessary to complete the development of RP-G28 or when, if ever, net cash inflows from RP-G28 may commence. This is due to the numerous risks and uncertainties associated with developing drugs, including the uncertainty of:

- the scope, rate of progress and expense of our ongoing, as well as any additional, clinical trials and other research and development activities;
- future clinical trial results; and
- the timing and receipt of any regulatory approvals.

For example, if the FDA or another regulatory authority were to require us to conduct clinical trials beyond those that we currently anticipate will be required for the completion of the clinical development of RP-G28 or if we experience significant delays in enrollment in any of our clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development.

### ***Patent Costs***

Patent costs consist primarily of professional fees for legal services to prosecute patents and maintain patent rights.

### ***General and Administrative Expenses***

General and administrative expenses include allocation of facilities costs, salaries, benefits, and stock-based compensation for employees, professional fees for directors, fees for independent contractors and accounting and legal services.

We expect that our general and administrative expenses will increase if RP-G28 is approved for commercialization. We believe that these increases will likely include increased costs for director and officer liability insurance, and increased fees for outside consultants, lawyers and accountants, among other expenses.

### ***Interest Income and Interest Expense***

Interest income consists of interest earned on our cash.

## **Critical Accounting Policies and Estimates**

This discussion and analysis is based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”). The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities in our financial statements. On an ongoing basis, we evaluate our estimates and judgments, including those related to fair value of financial instruments, research and development costs, accrued expenses and stock-based compensation. We base our estimates on historical experience, known trends and events and various other factors we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

A critical accounting policy is one that is both important to the portrayal of our financial condition and results of operation and requires management’s most difficult, subjective or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. Our critical accounting estimates are disclosed in the Management’s Discussion and Analysis of Financial Condition and Results of Operations section of our 2017 Annual Report on Form 10-K. There have not been any material changes to such critical accounting estimates since December 31, 2017.

### ***Fair Value of Financial Instruments***

Fair value measurement guidelines are prescribed by GAAP to value financial instruments. The guidance includes a definition of fair value, prescribes methods for measuring fair value, establishes a fair value hierarchy based on the inputs used to measure fair value and expands disclosures about the use of fair value measurements.

The valuation techniques utilized are based upon observable and unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect internal market assumptions. Assets are classified in their entirety based on the lowest level of input that is significant to the fair value measurement.

These two types of inputs create the following fair value hierarchy:

Level 1 - Quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 1 primarily consists of financial instruments whose value is based on quoted market prices such as exchange-traded instruments and listed equities.

Level 2 - Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 2 includes financial instruments that are valued using models or other valuation methodologies. These models consider various assumptions, including volatility factors, current market prices and contractual prices for the underlying financial instruments. Substantially all of these assumptions are observable in the marketplace, can be derived from observable data or are supported by observable levels at which transactions are executed in the marketplace.

Level 3 - Unobservable inputs for the asset or liability. Financial instruments are considered Level 3 when their fair values are determined using pricing models, discounted cash flows or similar techniques and at least one significant model assumption or input is unobservable

The carrying amounts reported in the balance sheet for cash and cash equivalents, prepaid expenses, accounts payable, accrued expenses, and the notes payable approximate the fair values due to the short-term nature of the instruments.

### ***Research and Development Costs***

We expense the cost of research and development as incurred. Research and development expenses comprise costs incurred in performing research and development activities, including clinical study costs, contracted services, and other external costs. Nonrefundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity is performed or when the goods have been received, rather than when payment is made, in accordance with ASC 730, *Research and Development*.

### ***Accrued Expenses***

As part of the process of preparing our financial statements, we are required to estimate our accrued expenses. This process involves reviewing quotations and contracts, identifying services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. The majority of our service providers invoice us monthly in arrears for services performed or when contractual milestones are met. We make estimates of our accrued expenses as of each balance sheet date in our financial statements based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make accrued expense adjustments, if necessary. The significant estimates in our accrued research and development expenses include fees due to service providers.

### ***Emerging Growth Company Status***

On April 5, 2012, the Jumpstart Our Business Startups Act of 2012 (“JOBS Act”) was enacted. Section 107 of the JOBS Act provides that an “emerging growth company” can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act of 1933, as amended (the “Securities Act”), for complying with new or revised accounting standards. In other words, an “emerging growth company” can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b)(1) of the JOBS Act. This election allows us to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. As a result of this election, our financial statements may not be comparable to companies that comply with public company effective dates.

We are in the process of evaluating the benefits of relying on other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, as an “emerging growth company,” we intend to rely on certain of these exemptions, including without limitation, (i) providing an auditor’s attestation report on our system of internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act and (ii) complying with any requirement that may be adopted by the PCAOB regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements, known as the auditor discussion and analysis. We will remain an emerging growth company until the earlier of (i) the last day of the fiscal year (a) following the fifth anniversary of the date we completed our initial public offering, which was June 29, 2015, (b) in which we have total annual gross revenue of at least \$1.07 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeded \$700.0 million as of the prior June 30th, and (ii) the date on which we have issued more than \$1.0 billion in non-convertible debt during the prior three-year period.

## Results of Operations

### Comparison of the Three Months Ended September 30, 2018 and 2017

The following table summarizes our results of operations for the three months ended September 30, 2018 and 2017, together with the changes in those items in dollars and as a percentage:

	For the Three Months Ended September 30,		Dollar Change	Percentage Change
	2018	2017		
<b>Statement of Operations Data:</b>				
<i>Operating costs and expenses</i>				
Research and development	\$ 3,459,681	\$ 915,268	\$ 2,544,413	278%
Patent costs	59,068	47,431	11,637	25%
General and administrative	1,144,750	1,052,236	92,514	9%
Total operating costs and expenses	4,663,499	2,014,935	2,648,564	131%
Operating loss	(4,663,499)	(2,014,935)	(2,648,564)	131%
Other income:				
Interest income	17,237	4,083	13,154	322%
Total other income	17,237	4,083	13,154	322%
<b>Net Loss</b>	<b>\$ (4,646,262)</b>	<b>\$ (2,010,852)</b>	<b>\$ (2,635,411)</b>	<b>131%</b>

#### *Research and Development Expenses*

Research and development expenses increased by approximately \$2.5 million, or 278%, during the three months ended September 30, 2018 as compared to the three months ended September 30, 2017. The primary reason for this increase is due to the costs associated with the launch and conduct of our Phase 3 clinical trial of RP-G28 in the current period, including manufacturing costs. Research and development expenses during the three months ended September 30, 2017 primarily reflect extension study costs and continued Phase 3 program analysis costs.

#### *Patent Costs*

Patent costs during the three months ended September 30, 2018 were relatively consistent as compared to the same period in 2017. Patent costs relate to our maintenance of patent rights and the prosecution of patents, new patent applications and our preparation to file national phase applications in certain foreign countries. During the three months ended September 30, 2018, there were no patents issued.

#### *General and Administrative Expenses*

General and administrative expenses increased approximately \$93,000, or 9%, during the three months ended September 30, 2018 as compared to the three months ended September 30, 2017, primarily due to increased insurance expenses, public and investor relations fees and professional fees, offset by a decrease in stock-based compensation. Approximately \$171,000 in stock-based compensation expense was recognized during the three months ended September 30, 2018, as compared to approximately \$203,000 during the same period in 2017.

#### *Other Income*

Other income increased by approximately \$13,000, or 322%, during the three months ended September 30, 2018 as compared to the three months ended September 30, 2017, due to interest income on higher average cash balance in the three months ended September 30, 2018 as compared to the comparative period ended September 30, 2017.

## Comparison of the Nine Months Ended September 30, 2018 and 2017

The following table summarizes our results of operations for the nine months ended September 30, 2018 and 2017, together with the changes in those items in dollars and as a percentage:

	For the Nine Months Ended September 30,		Dollar Change	Percentage Change
	2018	2017		
<b>Statement of Operations Data:</b>				
<i>Operating costs and expenses</i>				
Research and development	\$ 6,180,607	\$ 2,121,898	\$ 4,058,709	191%
Patent costs	170,418	175,794	(5,376)	(3%)
General and administrative	3,957,545	3,367,781	589,764	18%
Total operating costs and expenses	10,308,570	5,665,473	4,643,097	82%
Operating loss	(10,308,570)	(5,665,473)	(4,643,097)	82%
Other income:				
Interest income	64,965	18,362	46,603	254%
Total other income	64,965	18,362	46,603	254%
<b>Net Loss</b>	<b>\$ (10,243,605)</b>	<b>\$ (5,647,111)</b>	<b>\$ (4,596,494)</b>	<b>81%</b>

### Research and Development Expenses

Research and development expenses increased by approximately \$4.1 million, or 191%, during the nine months ended September 30, 2018 as compared to the nine months ended September 30, 2017. The primary reason for this increase is due to costs associated with the preparation, launch and conduct of our Phase 3 clinical trial of RP-G28 in the current period, including manufacturing costs. Research and development expenses during the nine months ended September 30, 2017 primarily reflect extension study costs and continued Phase 3 program analysis costs.

### Patent Costs

Patent costs during the nine months ended September 30, 2018 were relatively consistent as compared to the same period in 2017. Patent costs relate to our maintenance of patent rights and the prosecution of patents, new patent applications and our preparation to file national phase applications in certain foreign countries. During the nine months ended September 30, 2018, there were no patents issued.

### General and Administrative Expenses

General and administrative expenses increased by approximately \$590,000, or 18%, during the nine months ended September 30, 2018 as compared to the nine months ended September 30, 2017, primarily due to increased personnel costs due to hiring and one-time employee separation payments and an increase in professional fees, offset by a decrease in stock-based compensation. Approximately \$562,000 in stock-based compensation expense was recognized during the nine months ended September 30, 2018, as compared to approximately \$746,000 during the same period in 2017.

### Other Income

Other income increased by approximately \$47,000, or 254%, during the nine months ended September 30, 2018 as compared to the nine months ended September 30, 2017, due to increased interest income on higher average cash balance in the nine months ended September 30, 2018 as compared to the nine months ended September 30, 2017.

### Liquidity and Capital Resources

Since our inception, we have incurred net losses and negative cash flows from operations, and, as of September 30, 2018, we had an accumulated deficit of approximately \$63.6 million. Substantially all of our net losses resulted from costs incurred in connection with our research and development programs, stock-based compensation, and from general and administrative costs associated with our operations.

At September 30, 2018, we had working capital of approximately \$10.4 million, and cash of approximately \$12.5 million. We have not generated any product revenues and have not achieved profitable operations.

## Cash Flows

The following table sets forth the significant sources and uses of cash for the periods set forth below:

	For the Nine Months Ended September 30,	
	2018	2017
Net cash (used in) provided by:		
Operating activities	\$ (10,130,131)	\$ (5,176,622)
Investing activities	(2,008)	—
Financing activities	(3,256)	1,689,214
Net decrease in cash and cash equivalents	<u>\$ (10,135,395)</u>	<u>\$ (3,487,408)</u>

### Operating Activities

During the nine months ended September 30, 2018, net cash used in operating activities of approximately \$10.1 million primarily reflects our net loss for the period of approximately \$10.2 million and a non-cash adjustment of approximately \$894,000 relating to an accounts payable settlement, offset by non-cash charges of approximately \$562,000 for stock-based compensation expense and changes in our working capital accounts, mainly consisting of an increase in accounts payable of \$787,000 and a decrease in accrued expenses of \$46,000.

Net cash used in operating activities of approximately \$5.2 million during the nine months ended September 30, 2017 primarily reflects our net loss for the period of approximately \$5.6 million, offset by non-cash charges of approximately \$746,000 for stock-based compensation expense and changes in our working capital accounts, mainly consisting of an increase in accounts payable of \$849,000 and a decrease in accrued expenses of approximately \$1.0 million.

### Investing Activities

Net cash used in investing activities of approximately \$2,000 during the nine months ended September 30, 2018 related to the purchase of office furniture and equipment.

No cash was used in investing activities for the nine months ended September 30, 2017.

### Financing Activities

Net cash used in financing activities of approximately \$3,000 during the nine months ended September 30, 2018 related to the payout of fractional shares to stockholders relating to the reverse stock split.

Net cash provided by financing activities of approximately \$1.7 million during the nine months ended September 30, 2017 resulted from proceeds received from the sale of common shares to Aspire Capital Fund, LLC (“Aspire Capital”) pursuant to a previous stock purchase agreement with Aspire Capital which was terminated on May 4, 2017, offset by \$0.3 million of deferred offering costs.

## Sources of Liquidity

### Aspire Capital Financing Arrangement

On May 4, 2017, we entered into a common stock purchase agreement (the “2017 Aspire Purchase Agreement”) with Aspire Capital. The 2017 Aspire Purchase Agreement provides us with access of up to an aggregate of \$6.5 million through the sale of shares of our common stock, over a 30-month period (subject to limitations described below). In consideration for entering into the 2017 Aspire Purchase Agreement, we issued to Aspire Capital 13,732 shares of our common stock with an aggregate dollar value equal to \$97,500 (the “Commitment Shares”).

Under the 2017 Aspire Purchase Agreement, on any trading day on which the closing price of our common stock exceeds \$2.50 per share, we have the right, in our sole discretion, to present Aspire Capital with a purchase notice (each, a “Purchase Notice”), directing Aspire Capital (as principal) to purchase up to 10,000 shares of our common stock per trading day (which may be increased by as much as an additional 200,000 shares per trading day by mutual agreement), up to an aggregate of \$6.5 million of our common stock (subject to limitations described below), at a per share price (the “Purchase Price”) equal to the lesser of:

- the lowest sale price of our common stock on the sale date; or
- the arithmetic average of the three lowest closing sale prices for our common stock during the ten (10) consecutive trading days ending on the trading day immediately preceding the sale date.

The aggregate purchase price payable by Aspire Capital on any one purchase date may not exceed \$50,000, unless otherwise mutually agreed.

In addition, on any date on which we submit a Purchase Notice to Aspire Capital in an amount equal to 10,000 shares and our stock price is not less than \$2.50 per share, we may also, in our sole discretion, present Aspire Capital with a volume-weighted average price purchase notice (each, a “VWAP Purchase Notice”) directing Aspire Capital to purchase an amount of our common stock equal to up to 30% of the aggregate shares of our common stock traded on its principal market on the next trading day (the “VWAP Purchase Date”), as determined by us. The purchase price per share pursuant to such VWAP Purchase Notice is generally 97% of the volume-weighted average price for our common stock traded on its principal market on the VWAP Purchase Date.

We may deliver multiple Purchase Notices and VWAP Purchase Notices to Aspire Capital from time to time during the term of the 2017 Aspire Purchase Agreement, so long as the most recent purchase has been completed.

The 2017 Aspire Purchase Agreement provides that the number of shares that may be sold to Aspire Capital (including the Commitment Shares) will be limited to 284,242 shares (the “Exchange Cap”), which represents 19.99% of our outstanding shares of common stock as of May 2, 2017, unless stockholder approval or an exception pursuant to the rules of Nasdaq is obtained to issue more than 19.99% of our outstanding shares as of May 2, 2017. This limitation will not apply if, at any time the Exchange Cap is reached and at all times thereafter, the average price paid for all shares issued under the 2017 Aspire Purchase Agreement is equal to or greater than \$6.80, which was the consolidated closing bid price of our common stock on May 4, 2017. We are not required or permitted to issue any shares of common stock under the 2017 Aspire Purchase Agreement if such issuance would breach our obligations under the rules or regulations of Nasdaq.

As of September 30, 2018, no shares of common stock have been sold to Aspire Capital under the 2017 Aspire Purchase Agreement.

#### ***October 2017 Public Offering***

On October 3, 2017, we closed a public offering of (i) 3,455,000 Class A Units consisting of 3,455,000 shares of our common stock and warrants to purchase 3,455,000 shares of our common stock, at a public offering price of \$4.00 per unit, and (ii) 9,180 Class B Units consisting of 9,180 shares of our Series A Convertible Preferred stock, with a stated value of \$1,000, and convertible into an aggregate of 2,295,000 shares of our common stock, and warrants to purchase 2,295,000 shares of our common stock, at a public offering price of \$1,000 per unit. We received approximately \$21.0 million in net proceeds from this offering, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. The offering was made pursuant to a shelf registration statement on Form S-1 (Registration Number 333-219147).

#### ***November 2018 Private Placement Financing***

On November 5, 2018, we closed a private placement (“PIPE financing”) with certain institutional investors, a key vendor and a member of our board of directors. Gross proceeds from the PIPE financing were approximately \$6.0 million, before deducting placement agent fees and other offering expenses. The securities that we sold consisted of 6,000 shares of our newly designated class of Series B convertible preferred stock, with a stated value of \$1,000 per share and an initial conversion price per share of \$1.30 (subject to customary adjustment for stock dividends and stock splits). In addition, each investor received a warrant to purchase a number of shares of common stock equal to one half the number of shares of common stock into which their Series B convertible preferred stock is initially convertible. The warrants are exercisable immediately for a five-year period and have an exercise price of \$1.30 per share (subject to customary adjustment for stock dividends and stock splits). Certain investors in the PIPE financing who at the time of closing of the PIPE financing owned shares of our Series A convertible preferred stock, exchanged, on a 1 for 1 share basis, their shares of Series A convertible preferred stock for shares of our newly designated class of Series C convertible preferred stock, with a stated value of \$1,000 per share and convertible into shares of the our common stock at an initial conversion price per share of \$1.64 (subject to customary adjustment for stock dividends and stock splits).

#### **Future Funding Requirements**

To date, we have not generated any revenue. We do not know when, or if, we will generate any revenue from product sales. We do not expect to generate significant revenue from product sales unless and until we obtain regulatory approval of and commercialize RP-G28 or any of our other product candidates. At the same time, we expect our expenses to increase in connection with our ongoing development activities, particularly as we continue the research, development and clinical trials of, and seek regulatory approval for, RP-G28. In addition, subject to obtaining regulatory approval of RP-G28, we expect to incur significant commercialization expenses for product sales, marketing, manufacturing and distribution. We anticipate that we will need substantial additional funding in connection with our continuing operations.

Our future capital requirements will depend on many factors, including:

- the ability of RP-G28 and any other product candidates that we may develop in the future to progress through clinical development successfully;
- the outcome, costs and timing of seeking and obtaining FDA approval;
- the willingness of the European Medicines Agency or other regulatory agencies outside the United States to accept our Phase 2b and any Phase 3 trials of RP-G28, as well as our other completed and planned clinical and nonclinical studies and other work, as the basis for review and approval of RP-G28 in the European Union for the reduction of symptoms associated with lactose intolerance in patients;
- our need to expand our research and development activities;
- the costs associated with securing and establishing commercialization and manufacturing capabilities;
- market acceptance of RP-G28 and any other product candidates that we may develop in the future;
- the costs of acquiring, licensing or investing in businesses, products, product candidates and technologies;
- our ability to maintain, expand and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make, or that we may receive, in connection with the licensing, filing, prosecution, defense and enforcement of any patents or other intellectual property rights;
- our need and ability to hire additional management and scientific and medical personnel;
- the effect of competing technological and market developments;
- our need to implement additional internal systems and infrastructure, including financial and reporting systems;
- the economic and other terms, timing of and success of our existing licensing arrangements and any collaboration, licensing or other arrangements into which we may enter in the future; and
- the costs of operating as a public company.

We expect that significant ongoing operating expenditures will be necessary to successfully implement our business plan and develop, manufacture, and market our products. Based on our current operating plan, our existing cash and cash equivalents, together with interest, may not be sufficient to fund our operations for the next twelve months from the date of this filing. Our operations have been and will continue to be dependent upon management's ability to raise operating capital through a combination of equity offerings (including sales pursuant to the 2017 Aspire Purchase Agreement), debt financings, government or other third-party funding, commercialization, marketing and distribution arrangements and other collaborations, strategic alliances and licensing agreements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our common stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through government or other third-party funding, commercialization, marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us.

#### **Contractual Obligations and Commitments**

Other than as disclosed in Note 5 Commitment and Contingencies of our unaudited financial statements included in the Quarterly Report, there have been no material changes to our contractual obligations and commitments from those disclosed in our 2017 Annual Report.

#### **Off-Balance Sheet Arrangements**

Through September 30, 2018, we do not have any off-balance sheet arrangements, as defined by applicable SEC regulations.

### **ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

As a “smaller reporting company” as defined by Item 10 of Regulation S-K, we are not required to provide the information required by Item 3.

### **ITEM 4. CONTROLS AND PROCEDURES**

#### **Evaluation of Disclosure Controls and Procedures**

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2018, the end of the period covered by this Quarterly Report.

Based on their evaluation, we believe that our disclosure controls and procedures as of September 30, 2018 were effective to provide reasonable assurance that the information required to be disclosed by us in reports filed under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. We believe that a controls system, no matter how well designed and operated, cannot provide absolute assurance that the objectives of the controls system are met, and no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within a company have been detected.

#### **Changes in Internal Control over Financial Reporting**

There were no changes in our internal control over financial reporting that occurred during our fiscal quarter ended September 30, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

## PART II - OTHER INFORMATION

### ITEM 1. LEGAL PROCEEDINGS

The Company is not currently involved in any legal matters arising in the normal course of business. From time to time, the Company could become involved in disputes and various litigation matters that arise in the normal course of business. These may include disputes and lawsuits related to intellectual property, licensing, contract law and employee relations matters.

### ITEM 1A. RISK FACTORS.

The risks described in Item 1A. Risk Factors of our 2017 Annual Report filed with the SEC on March 19, 2018 could materially and adversely affect our business, financial condition and results of operations. The risk factors discussed in our 2017 Annual Report do not identify all risks that we face because our business operations could also be affected by additional factors that are not presently known to us or that we currently consider to be immaterial to our operations. Except as set forth below, there are no material changes from the disclosure provided in the Annual Report with respect to the Risk Factors. Investors should consider the Risk Factors prior to making an investment decision with respect to our stock.

#### *Our failure to meet the continued listing requirements of Nasdaq could result in a de-listing of our common stock.*

If we fail to satisfy the continued listing requirements of Nasdaq, such as the corporate governance requirements or the minimum closing bid price requirement, Nasdaq may take steps to de-list our common stock. Such a de-listing would likely have a negative effect on the price of our common stock and would impair your ability to sell or purchase our common stock when you wish to do so. In the event of a de-listing, we would take actions to restore our compliance with Nasdaq's listing requirements, but we can provide no assurance that any such action taken by us would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the Nasdaq minimum bid price requirement or prevent future non-compliance with Nasdaq's listing requirements.

On June 7, 2017, we received a notice from Nasdaq that, because the closing bid price of our common stock had been below \$1.00 per share for 30 consecutive business days, we no longer complied with the minimum bid price requirement for continued listing on The Nasdaq Capital Market. Nasdaq Listing Rule 550(a)(2) requires listed securities to maintain a minimum bid price of \$1.00 per share, and Listing Rule 5810(c)(3)(A) provides that a failure to meet the minimum bid price requirement exists if the deficiency continues for a period of 30 consecutive business days.

On November 2, 2017, our board of directors approved a reverse stock split of our outstanding shares of common stock at a ratio within a range of 1-for-8 to 1-for-15, to be determined by the board of directors at a later date, and subject to stockholder approval. At a special meeting of stockholders held on December 20, 2017, our stockholders approved the reverse stock split within a range of 1-for-8 to 1-for-15. On March 1, 2018, our board of directors approved a 1-for-10 reverse stock split, with an anticipated effective date of on or before March 23, 2018. On May 23, 2018, we effected a 1-for-10 reverse stock split in order to regain compliance with the minimum bid price requirement. On April 9, 2018, after 10 consecutive days of trading, we received notification from the Nasdaq Stock Market indicating that we had regained compliance. However, there can be no assurance that the closing bid price of our common stock will not fall below the minimum bid price requirement again.

#### *We cannot be certain that RP-G28 will receive regulatory approval, and without regulatory approval we will not be able to market RP-G28.*

The development of a product candidate and issues relating to its approval and marketing are subject to extensive regulation by the FDA in the United States, the EMA in Europe, and regulatory authorities in other countries, with regulations differing from country to country. We are not permitted to market our product candidates in the United States or Europe until we receive approval of a NDA from the FDA or a MAA from the EMA, respectively. We have not submitted any marketing applications for RP-G28.

NDAs and MAAs must include extensive preclinical and clinical data and supporting information to establish the product candidate's safety and effectiveness for each desired indication. NDAs and MAAs must also include significant information regarding the chemistry, manufacturing and controls for the product. Obtaining approval of a NDA or a MAA is a lengthy, expensive and uncertain process, and we may not be successful in obtaining approval. The FDA and the EMA review processes can take years to complete and approval is never guaranteed. If we submit a NDA to the FDA, the FDA must decide whether to accept or reject the submission for filing. We cannot be certain that any submissions will be accepted for filing and review by the FDA. Regulators of other jurisdictions, such as the EMA, have their own procedures for approval of product candidates. Even if a product is approved, the FDA or the EMA, as the case may be, may limit the indications for which the product may be marketed, require extensive warnings on the product labeling or require expensive and time-consuming clinical trials or reporting as conditions of approval. Regulatory authorities in countries outside of the United States and Europe also have requirements for approval of drug candidates with which we must comply prior to marketing in those countries. Obtaining regulatory approval for marketing of a product candidate in one country does not ensure that we will be able to obtain regulatory approval in any other country. In addition, delays in approvals or rejections of marketing applications in the United States, Europe or other countries may be based upon many factors, including regulatory requests for additional analyses, reports, data, preclinical studies and clinical trials, regulatory questions regarding different interpretations of data and results, changes in regulatory policy during the period of product development and the emergence of new information regarding our product candidates or other products. Also, regulatory approval for any of our product candidates may be withdrawn.

We have completed a Phase 2a clinical trial and a Phase 2b clinical trial for RP-G28. In June 2018, we commenced the first pivotal Phase 3 clinical trial of RP-G28.

We will also need to conduct rat and embryo-fetal development toxicity studies.

Additional non-clinical development may be required to be conducted based on future FDA feedback and guidance. We cannot predict whether our future trials and studies will be successful or whether regulators will agree with our conclusions regarding the preclinical studies and clinical trials we have conducted to date.

If we are unable to obtain approval from the FDA, the EMA or other regulatory agencies for RP-G28, we will not be able to market RP-G28. If we are unable to market RP-G28, we may not be able to ever become profitable.

***Our current and future operations substantially depend on our Chief Executive Officer and our ability to hire other key personnel, the loss of any of whom could disrupt our business operations.***

Our business depends and will continue to depend in substantial part on the continued service of Mr. Andrew Ritter, the Company's Chief Executive Officer. The loss of the services of Mr. Ritter would significantly impede implementation and execution of our business strategy and may result in the failure to reach our goals.

Our future viability and ability to achieve sales and profits will also depend on our ability to attract, train, retain and motivate highly qualified personnel in the diverse areas required for continuing operations. There is a risk that we will be unable to attract, train, retain or motivate qualified personnel, both near term or in the future, and the failure to do so may severely damage its prospects.

## **ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS**

### **Unregistered Sales of Equity Securities**

None

### **Purchases of Equity Securities by the Issuer and Affiliated Purchasers**

None

ITEM 6. EXHIBITS

Exhibit No.	Description	Incorporated by Reference		
		Form	File No.	Filing Date
3.1	<a href="#">Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock</a>			
3.2	<a href="#">Certificate of Designation of Preferences, Rights and Limitations Series C Convertible Preferred Stock</a>			
4.2	<a href="#">Agreement and General Release, dated June 26, 2018, by and between Ritter Pharmaceuticals, Inc. and Michael D. Step</a>	8-K	001-37428	10.1 7/2/2018
10.1	<a href="#">Consulting Agreement, dated June 28, 2018, by and between Ritter Pharmaceuticals, and Michael D. Step</a>	8-K	001-37428	10.2 7/2/2018
10.2	<a href="#">Amended and Restated Offer Letter, dated June 26, 2018, by and between Ritter Pharmaceuticals, Inc and Andrew J. Ritter</a>	10-Q	001-37428	10.5 8/14/2018
10.3	<a href="#">Securities Purchase Agreement, by and among Ritter Pharmaceuticals, Inc. and the Purchasers signatory thereto, dated October 30, 2018</a>			
10.4	<a href="#">Form of Common Stock Purchase Warrant</a>			
10.5	<a href="#">Registration Rights Agreement, by and among Ritter Pharmaceuticals, Inc. and the Purchasers signatory thereto, dated October 30, 2018</a>			
10.6	<a href="#">Placement Agency Agreement, by and between Ritter Pharmaceuticals, Inc. and A.G.P./Alliance Global Partners, dated October 30, 2018</a>			
31.1	<a href="#">Certificate of principal executive officer pursuant to Rule 13a-14(a)/15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>			
31.2	<a href="#">Certificate of principal financial officer pursuant to Rule 13a-14(a)/15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>			
32.1	<a href="#">Certificate of principal executive officer and principal financial officer pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</a>			
101.INS#	XBRL Instance Document.			
101.SCH#	XBRL Taxonomy Extension Schema Document.			
101.CAL#	XBRL Taxonomy Extension Calculation Linkbase Document.			
101.DEF#	XBRL Taxonomy Extension Definition Linkbase Document.			
101.LAB#	XBRL Taxonomy Extension Label Linkbase Document.			
101.PRE#	XBRL Taxonomy Extension Presentation Linkbase Document.			

# XBRL (Extensible Business Reporting Language) information is furnished and not filed herewith, is not a part of a registration statement or Prospectus for purposes of sections 11 or 12 of the Securities Act of 1933, is deemed not filed for purposes of section 18 of the Securities Exchange Act of 1934, and otherwise is not subject to liability under these sections.

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

November 9, 2018

**RITTER PHARMACEUTICALS, INC.**

By: /s/ Andrew J. Ritter

Name: Andrew J. Ritter

Title: Chief Executive Officer (Principal Executive Officer)



**RITTER PHARMACEUTICALS, INC.**  
**CERTIFICATE OF DESIGNATION OF PREFERENCES,**  
**RIGHTS AND LIMITATIONS**  
**OF**  
**SERIES B CONVERTIBLE PREFERRED STOCK**  
**PURSUANT TO SECTION 151 OF THE**  
**DELAWARE GENERAL CORPORATION LAW**

The undersigned, Andrew J. Ritter, does hereby certify that:

1. He is the Chief Executive Officer of Ritter Pharmaceuticals, Inc., a Delaware corporation (the “**Corporation**”).

2. The Corporation is authorized to issue 15,000,000 shares of preferred stock, \$0.001 par value per share, 9,500 of which heretofore have been designated as Series A Convertible Preferred Stock (the “**Series A Preferred Stock**”) and all of which shares of Series A Preferred Stock heretofore have been issued by the Corporation.

3. The following resolutions were duly adopted by the board of directors of the Corporation (the “**Board of Directors**”):

**WHEREAS**, the Amended and Restated Certificate of Incorporation of the Corporation, as amended, provides for a class of its authorized capital stock known as preferred stock, consisting of 15,000,000 shares, \$0.001 par value per share, issuable from time to time in one or more series;

**WHEREAS**, the Board of Directors is authorized to provide for the issuance of the shares of preferred stock in series and to establish, from time to time, the number of shares to be included in each such series, and to fix the designation, powers, preferences and rights of the shares of each such series and any qualifications, limitations or restrictions thereon; and

**WHEREAS**, it is the desire of the Board of Directors, pursuant to its authority as aforesaid, to fix the rights, preferences, restrictions and other matters relating to a series of the preferred stock, which shall consist of, except as otherwise set forth in the Purchase Agreement (as defined), up to 6,000 shares of the preferred stock which the Corporation has the authority to issue as Series B Convertible Preferred Stock, as follows;

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**NOW, THEREFORE, BE IT RESOLVED**, that the Board of Directors does hereby provide for the issuance of a series of preferred stock to be designated the "Series B Convertible Preferred Stock" for cash or exchange of other securities, rights or property and does hereby fix and determine the number, rights, preferences, restrictions and other matters relating to such series of preferred stock as follows:

#### **TERMS OF PREFERRED STOCK**

Section 1. Definitions. For the purposes hereof, the following terms shall have the following meanings:

"**Affiliate**" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 of the Securities Act.

"**Alternate Consideration**" shall have the meaning set forth in Section 7(d).

"**Beneficial Ownership Limitation**" shall have the meaning set forth in Section 6(d).

"**Business Day**" means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"**Buy-In**" shall have the meaning set forth in Section 6(c)(iv).

"**Closing**" means the closing of the purchase and sale of the Securities pursuant to Section 2.1 of the Purchase Agreement.

"**Closing Date**" means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto and all conditions precedent to (i) each Holder's obligations to pay the Subscription Amount and (ii) the Corporation's obligations to deliver the Securities have been satisfied or waived.

"**Commission**" means the United States Securities and Exchange Commission.

"**Common Stock**" means the Corporation's common stock, par value \$0.001 per share, and stock of any other class of securities into which such securities may hereafter be reclassified or changed.

"**Common Stock Equivalents**" means any securities of the Corporation or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, rights, options, warrants or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

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“**Conversion Amount**” means the sum of the Stated Value at issue.

“**Conversion Date**” shall have the meaning set forth in Section 6(a).

“**Conversion Price**” shall have the meaning set forth in Section 6(b).

“**Conversion Shares**” means, collectively, the shares of Common Stock issuable upon conversion of the shares of Preferred Stock in accordance with the terms hereof.

“**Conversion Shares Registration Statement**” means a registration statement that registers the resale of all Conversion Shares of the Holders, who shall be named as “selling stockholders” therein, and meets the requirements of the Registration Rights Agreement.

“**Effective Date**” means the date that the Conversion Shares Registration Statement filed by the Corporation pursuant to the Registration Rights Agreement is first declared effective by the Commission.

“**Exchange Act**” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“**Fundamental Transaction**” shall have the meaning set forth in Section 7(d).

“**GAAP**” means United States generally accepted accounting principles.

“**Holder**” shall have the meaning set forth in Section 2.

“**Liquidation**” shall have the meaning set forth in Section 5.

“**New York Courts**” shall have the meaning set forth in Section 8(d).

“**Notice of Conversion**” shall have the meaning set forth in Section 6(a).

“**Original Issue Date**” means the date of the first issuance of any shares of the Preferred Stock regardless of the number of transfers of any particular shares of Preferred Stock and regardless of the number of certificates which may be issued to evidence such Preferred Stock.

“**Person**” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“**Preferred Stock**” shall have the meaning set forth in Section 2.

“**Purchase Agreement**” means the Securities Purchase Agreement, dated October 31, 2018, among the Corporation and the original Holders, as amended, modified or supplemented from time to time in accordance with its terms.

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“**Registration Rights Agreement**” means the Registration Rights Agreement, dated October 31, 2018, among the Corporation and the original Holders, substantially in the form of Exhibit B attached to the Purchase Agreement.

“**Rule 144**” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

“**Rule 424**” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“**Securities**” means the Preferred Stock and the Warrants.

“**Securities Act**” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“**Share Delivery Date**” shall have the meaning set forth in Section 6(c).

“**Stated Value**” shall have the meaning set forth in Section 2, as the same may be increased pursuant to Section 3.

“**Subscription Amount**” shall mean, as to each Holder, the aggregate amount to be paid for the Preferred Stock and Warrants purchased pursuant to the Purchase Agreement as specified below such Holder’s name on the signature page of the Purchase Agreement and next to the heading “Subscription Amount,” in United States dollars and in immediately available funds.

“**Subsidiary**” means any subsidiary of the Corporation and shall, where applicable, also include any direct or indirect subsidiary of the Corporation formed or acquired after the date hereof.

“**Successor Entity**” shall have the meaning set forth in Section 7(d).

“**Trading Day**” means a day on which the principal Trading Market is open for business.

“**Trading Market**” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE MKT, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange or the OTCQB or OTCQX (or any successors to any of the foregoing).

“**Transaction Documents**” means this Certificate of Designation, the Purchase Agreement, the Warrants, the Registration Rights Agreement, all exhibits and schedules thereto and hereto and any other documents or agreements executed in connection with the transactions contemplated pursuant to the Purchase Agreement.

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“**Transfer Agent**” means Corporate Stock Transfer, Inc., the current transfer agent of the Corporation, with a mailing address of 3200 Cherry Creek South Drive, Suite 430, Denver, Colorado 80209 and a facsimile number of (303) 282-5800 and any successor transfer agent of the Corporation.

“**Warrants**” means, collectively, the Common Stock purchase warrants delivered to the Holder at the Closing in accordance with Section 2.2(a) of the Purchase Agreement, substantially in the form of Exhibit D attached to the Purchase Agreement.

Section 2. Designation, Amount and Par Value. The series of preferred stock shall be designated as the Series B Convertible Preferred Stock (the “**Preferred Stock**”) and the number of shares so designated shall be up to 6,000 (which shall not be subject to increase without the written consent of a majority of the holders of the Preferred Stock (each, a “**Holder**” and collectively, the “**Holders**”). Each share of Preferred Stock shall have a par value of \$0.001 per share and a stated value equal to \$1,000 (the “**Stated Value**”).

Section 3. Dividends. Except for stock dividends or distributions for which adjustments are to be made pursuant to Section 7, Holders shall be entitled to receive, and the Corporation shall pay, dividends on shares of Preferred Stock equal (on an as-if-converted-to-Common-Stock basis, without regard to conversion limitations herein) to and in the same form as dividends actually paid on shares of the Common Stock when, as and if such dividends are paid on shares of the Common Stock. No other dividends shall be paid on shares of Preferred Stock. The Corporation shall not pay any dividends on the Common Stock unless the Corporation simultaneously complies with this provision.

Section 4. Voting Rights. Except as otherwise provided herein or as otherwise required by law, the Preferred Stock shall have no voting rights. However, as long as any shares of Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote of the Holders of at least 60% of the then outstanding shares of the Preferred Stock, (a) alter or change adversely the powers, preferences or rights given to the Preferred Stock or alter or amend this Certificate of Designation, (b) amend its certificate of incorporation or other charter documents in any manner that adversely affects any rights of the Holders, (c) increase the number of authorized shares of Preferred Stock, or (d) enter into any agreement with respect to any of the foregoing.

Section 5. Liquidation. Upon any liquidation, dissolution or winding-up of the Corporation, whether voluntary or involuntary (a “**Liquidation**”), the Holders shall be entitled to receive out of the assets, whether capital or surplus, of the Corporation the same amount that a holder of Common Stock would receive if the Preferred Stock were fully converted (disregarding for such purposes any conversion limitations hereunder) to Common Stock which amounts shall be paid *pari passu* with all holders of Common Stock. The Corporation shall mail written notice of any such Liquidation, not less than 45 days prior to the payment date stated therein, to each Holder.

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Section 6. Conversion.

a) Conversions at Option of Holder. Each share of Preferred Stock shall be convertible, at any time and from time to time from and after the Original Issue Date at the option of the Holder thereof, into that number of shares of Common Stock (subject to the limitations set forth in Section 6(d)) determined by dividing the Stated Value of such share of Preferred Stock by the Conversion Price. Holders shall effect conversions by providing the Corporation with the form of conversion notice attached hereto as Annex A (a "**Notice of Conversion**"). Each Notice of Conversion shall specify the number of shares of Preferred Stock to be converted, the number of shares of Preferred Stock owned prior to the conversion at issue, the number of shares of Preferred Stock owned subsequent to the conversion at issue and the date on which such conversion is to be effected, which date may not be prior to the date the applicable Holder delivers by facsimile such Notice of Conversion to the Corporation (such date, the "**Conversion Date**"). If no Conversion Date is specified in a Notice of Conversion, the Conversion Date shall be the date that such Notice of Conversion to the Corporation is deemed delivered hereunder. No ink-original Notice of Conversion shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Conversion form be required. The calculations and entries set forth in the Notice of Conversion shall control in the absence of manifest or mathematical error. To effect conversions of shares of Preferred Stock, a Holder shall not be required to surrender the certificate(s) representing the shares of Preferred Stock to the Corporation unless all of the shares of Preferred Stock represented thereby are so converted, in which case such Holder shall deliver the certificate representing such shares of Preferred Stock promptly following the Conversion Date at issue. Shares of Preferred Stock converted into Common Stock or redeemed in accordance with the terms hereof shall be canceled and shall not be reissued.

b) Conversion Price. The conversion price for the Preferred Stock shall equal \$1.30 subject to adjustment herein (the "**Conversion Price**").

c) Mechanics of Conversion.

i. Delivery of Conversion Shares Upon Conversion. Not later than the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined below) after each Conversion Date (the "**Share Delivery Date**"), the Corporation shall deliver, or cause to be delivered, to the converting Holder (A) the number of Conversion Shares to which the Holder is entitled pursuant to such conversion of Preferred Stock either electronically through the Depository Trust Company ("**DTC**") or another established clearing corporation performing similar functions, or otherwise by physical delivery of a certificate registered in the Company's share register in the name of the Holder or its designee to the address specified by the Holder in the Notice of Conversion, which Conversion Shares shall be free of restrictive legends and trading restrictions (other than those which may then be required by the Purchase Agreement) if, at the time of such conversion, either (1) the Conversion Shares Registration Statement registering the resale of such Conversion Shares by the Holder is then effective under the Securities Act or (2) such Conversion Shares are then eligible for resale by the Holder without volume or manner-of-sale limitations pursuant to Rule 144, and (B) a bank check in the amount of accrued and unpaid dividends, if any. As used herein, "**Standard Settlement Period**" means the standard settlement period, expressed in a number of Trading Days, on the Corporation's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Conversion.

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ii. Failure to Deliver Conversion Shares. If, in the case of any Notice of Conversion, such Conversion Shares are not delivered to or as directed by the applicable Holder by the Share Delivery Date, the Holder shall be entitled to elect by written notice to the Corporation at any time on or before its receipt of such Conversion Shares, to rescind such Conversion, in which event the Corporation shall promptly return to the Holder any original Preferred Stock certificate delivered to the Corporation and the Holder shall promptly return to the Corporation the Conversion Shares issued to such Holder pursuant to the rescinded Notice of Conversion.

iii. Obligation Absolute: Partial Liquidated Damages. The Corporation's obligation to issue and deliver the Conversion Shares upon conversion of Preferred Stock in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by a Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by such Holder or any other Person of any obligation to the Corporation or any violation or alleged violation of law by such Holder or any other person, and irrespective of any other circumstance which might otherwise limit such obligation of the Corporation to such Holder in connection with the issuance of such Conversion Shares; provided, however, that such delivery shall not operate as a waiver by the Corporation of any such action that the Corporation may have against such Holder. In the event a Holder shall elect to convert any or all of the Stated Value of its Preferred Stock, the Corporation may not refuse conversion based on any claim that such Holder or anyone associated or affiliated with such Holder has been engaged in any violation of law, agreement or for any other reason, unless an injunction from a court, on notice to Holder, restraining and/or enjoining conversion of all or part of the Preferred Stock of such Holder shall have been sought and obtained, and the Corporation posts a surety bond for the benefit of such Holder in the amount of 150% of the Stated Value of Preferred Stock which is subject to the injunction, which bond shall remain in effect until the completion of arbitration/litigation of the underlying dispute and the proceeds of which shall be payable to such Holder to the extent it obtains judgment. In the absence of such injunction, the Corporation shall issue Conversion Shares and, if applicable, cash, upon a properly noticed conversion. If the Corporation fails to deliver to a Holder such Conversion Shares pursuant to Section 6(c)(i) by the Share Delivery Date applicable to such conversion, the Corporation shall pay to such Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Stated Value of Preferred Stock being converted, \$5 per Trading Day (increasing to \$10 per Trading Day five (5) Trading Days after damages have begun to accrue) for each Trading Day after the Share Delivery Date until such Conversion Shares are delivered or Holder rescinds such conversion. Nothing herein shall limit a Holder's right to pursue actual damages for the Corporation's failure to deliver Conversion Shares within the period specified herein and such Holder shall have the right to pursue all remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief. The exercise of any such rights shall not prohibit a Holder from seeking to enforce damages pursuant to any other Section hereof or under applicable law.

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iv. Compensation for Buy-In on Failure to Timely Deliver Conversion Shares Upon Conversion. In addition to any other rights available to the Holder, if the Corporation fails for any reason to deliver to a Holder the applicable Conversion Shares by the Share Delivery Date pursuant to Section 6(c)(i), and if after such Share Delivery Date such Holder is required by its brokerage firm to purchase (in an open market transaction or otherwise), or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by such Holder of the Conversion Shares which such Holder was entitled to receive upon the conversion relating to such Share Delivery Date (a "**Buy-In**"), then the Corporation shall (A) pay in cash to such Holder (in addition to any other remedies available to or elected by such Holder) the amount, if any, by which (x) such Holder's total purchase price (including any brokerage commissions) for the Common Stock so purchased exceeds (y) the product of (1) the aggregate number of shares of Common Stock that such Holder was entitled to receive from the conversion at issue multiplied by (2) the actual sale price at which the sell order giving rise to such purchase obligation was executed (including any brokerage commissions) and (B) at the option of such Holder, either reissue (if surrendered) the shares of Preferred Stock equal to the number of shares of Preferred Stock submitted for conversion (in which case, such conversion shall be deemed rescinded) or deliver to such Holder the number of shares of Common Stock that would have been issued if the Corporation had timely complied with its delivery requirements under Section 6(c)(i). For example, if a Holder purchases shares of Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted conversion of shares of Preferred Stock with respect to which the actual sale price of the Conversion Shares (including any brokerage commissions) giving rise to such purchase obligation was a total of \$10,000 under clause (A) of the immediately preceding sentence, the Corporation shall be required to pay such Holder \$1,000. The Holder shall provide the Corporation written notice indicating the amounts payable to such Holder in respect of the Buy-In and, upon request of the Corporation, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Corporation's failure to timely deliver Conversion Shares upon conversion of the shares of Preferred Stock as required pursuant to the terms hereof.

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v. Reservation of Shares Issuable Upon Conversion. The Corporation covenants that it will at all times reserve and keep available out of its authorized and unissued shares of Common Stock for the sole purpose of issuance upon conversion of the Preferred Stock as herein provided, free from preemptive rights or any other actual contingent purchase rights of Persons other than the Holder (and the other holders of the Preferred Stock), not less than such aggregate number of shares of the Common Stock as shall be issuable (taking into account the adjustments and restrictions of Section 7) upon the conversion of the then outstanding shares of Preferred Stock. The Corporation covenants that all shares of Common Stock that shall be so issuable shall, upon issue, be duly authorized, validly issued, fully paid and nonassessable and, if the Conversion Shares Registration Statement is then effective under the Securities Act, shall be registered for public resale in accordance with such Conversion Shares Registration Statement (subject to such Holder's compliance with its obligations under the Registration Rights Agreement).

vi. Fractional Shares. No fractional shares or scrip representing fractional shares shall be issued upon the conversion of the Preferred Stock. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such conversion, the Corporation shall at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Conversion Price or round up to the next whole share.

vii. Transfer Taxes and Expenses. The issuance of Conversion Shares on conversion of this Preferred Stock shall be made without charge to any Holder for any documentary stamp or similar taxes that may be payable in respect of the issue or delivery of such Conversion Shares, provided that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the issuance and delivery of any such Conversion Shares upon conversion in a name other than that of the Holders of such shares of Preferred Stock and the Corporation shall not be required to issue or deliver such Conversion Shares unless or until the Person or Persons requesting the issuance thereof shall have paid to the Corporation the amount of such tax or shall have established to the satisfaction of the Corporation that such tax has been paid. The Corporation shall pay all Transfer Agent fees required for same-day processing of any Notice of Conversion and all fees to the DTC (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Conversion Shares.

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d) **Beneficial Ownership Limitation.** Notwithstanding anything to the contrary herein, the Corporation shall not effect any conversion of the Preferred Stock, and a Holder shall not have the right to convert any portion of the Preferred Stock, to the extent that, after giving effect to the conversion set forth on the applicable Notice of Conversion, such Holder (together with such Holder's Affiliates, and any Persons acting as a group together with such Holder or any of such Holder's Affiliates (such Persons, "**Attribution Parties**")) would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by such Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon conversion of the Preferred Stock with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which are issuable upon (i) conversion of the remaining, unconverted Stated Value of Preferred Stock beneficially owned by such Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Corporation subject to a limitation on conversion or exercise analogous to the limitation contained herein (including, without limitation, the Preferred Stock or the Warrants) beneficially owned by such Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 6(d), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. To the extent that the limitation contained in this Section 6(d) applies, the determination of whether the Preferred Stock is convertible (in relation to other securities owned by such Holder together with any Affiliates and Attribution Parties) and of how many shares of Preferred Stock are convertible shall be in the sole discretion of such Holder, and the submission of a Notice of Conversion shall be deemed to be such Holder's determination of whether the shares of Preferred Stock may be converted (in relation to other securities owned by such Holder together with any Affiliates and Attribution Parties) and how many shares of the Preferred Stock are convertible, in each case subject to the Beneficial Ownership Limitation. To ensure compliance with this restriction, each Holder will be deemed to represent to the Corporation each time it delivers a Notice of Conversion that such conversion will not violate the restrictions set forth in this paragraph and the Corporation shall have no obligation to verify or confirm the accuracy of such representation. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 6(d), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as stated in the most recent of the following: (i) the Corporation's most recent periodic or annual report filed with the Commission, as the case may be, (ii) a more recent public announcement by the Corporation or (iii) a more recent written notice by the Corporation or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request (which may be via email) of a Holder, the Corporation shall within two Trading Days confirm orally and in writing to such Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Corporation, including the Preferred Stock, by such Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "**Beneficial Ownership Limitation**" shall be 4.99% (except as otherwise specified or provided for in the Beneficial Ownership Limitation Adjustment Notice (as defined below)) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon conversion of Preferred Stock held by the applicable Holder. A Holder may increase or decrease the Beneficial Ownership Limitation applicable to its Preferred Stock by providing not less than 61 days' prior written notice to the Company (which notice may not be waived) (the "**Beneficial Ownership Limitation Adjustment Notice**"); provided that the Beneficial Ownership Limitation in no event may exceed 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon conversion of this Preferred Stock held by the Holder and the provisions of this Section 6(d) shall continue to apply. Any such increase in the Beneficial Ownership Limitation will not be effective until the 61st day after such Beneficial Ownership Limitation Adjustment Notice is delivered to the Corporation and shall only apply to such Holder and no other Holder. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 6(d) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation contained herein or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of Preferred Stock.

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## Section 7. Certain Adjustments.

a) Stock Dividends and Stock Splits. If the Corporation, at any time while this Preferred Stock is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions payable in shares of Common Stock on shares of Common Stock or any other Common Stock Equivalents (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Corporation upon conversion of, or payment of a dividend on, this Preferred Stock), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of a reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues, in the event of a reclassification of shares of the Common Stock, any shares of capital stock of the Corporation, then the Conversion Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding any treasury shares of the Corporation) outstanding immediately before such event, and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to this Section 7(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 7(a) above, if at any time the Corporation grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "**Purchase Rights**"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete conversion of such Holder's Preferred Stock (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

c) Pro Rata Distributions. During such time as this Preferred Stock is outstanding, if the Corporation declares or makes any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "**Distribution**"), at any time after the issuance of this Preferred Stock, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete conversion of this Preferred Stock (without regard to any limitations on conversion hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

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d) Fundamental Transaction. If, at any time while any shares of Preferred Stock are outstanding, (i) the Corporation, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Corporation with or into another Person, (ii) the Corporation, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Corporation or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Corporation, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Corporation, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with the other Persons making or party to, such stock or share purchase agreement or other business combination) (each a “**Fundamental Transaction**”), then, upon any subsequent conversion of the Preferred Stock by the Holder thereof, the Holder shall receive, for each Conversion Share that would have been issuable upon such conversion immediately prior to the occurrence of such Fundamental Transaction (without regard to any limitation in Section 6(d) on the conversion of the Preferred Stock), the number of shares of common stock (as applicable) of the successor or acquiring corporation or the number of shares of Common Stock of the Corporation (as applicable), if it is the surviving corporation, and all additional securities (equity or debt), cash, property or other consideration (all such additional consideration, the “**Alternate Consideration**”), receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which such Holder’s Preferred Stock is convertible immediately prior to such Fundamental Transaction (without regard to any limitation in Section 6(d) on the conversion of the Preferred Stock). For purposes of any such conversion, the determination of the Conversion Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Corporation shall apportion the Conversion Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are entitled to elect the proportion of securities, cash, property or other consideration to be received by holders of Common Stock in a Fundamental Transaction, then each Holder of Preferred Stock shall be given the same choice as to the proportion of securities, cash, property or other consideration such Holder is entitled to receive upon any conversion of such Holder’s shares of Preferred Stock following such Fundamental Transaction. To the extent necessary to effectuate the foregoing provisions, any successor to the Corporation or surviving entity in such Fundamental Transaction shall file a new Certificate of Designation in respect of a new series of preferred stock of the successor or acquiring corporation, or the Corporation, if it is the surviving corporation, setting forth the same rights, preferences, privileges and other terms contained in this Certificate of Designation in respect of the Preferred Stock, including, without limitation, the provisions contained in this Section 7(d) and evidencing, among other things, the Holders’ right to convert such new preferred stock into Alternate Consideration. The Corporation shall cause any successor entity in a Fundamental Transaction in which the Corporation is not the survivor (the “**Successor Entity**”) to assume in writing all of the obligations of the Corporation under this Certificate of Designation in accordance with the provisions of this Section 7(d) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of a Holder of Preferred Stock, deliver to such Holder in exchange for such Holder’s Preferred Stock a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to the Preferred Stock which is convertible for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon conversion of the Preferred Stock (without regard to any limitations on the conversion of the Preferred Stock) prior to such Fundamental Transaction, and with a conversion price which applies the conversion price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such conversion price being for the purpose of protecting the economic value of the Preferred Stock immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder(s) thereof. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Certificate of Designation referring to the “Corporation” shall refer instead to the Successor Entity), and may exercise every right and power of the Corporation and shall assume all of the obligations of the Corporation under this Certificate of Designation with the same effect as if such Successor Entity had been named as the Corporation herein. For the avoidance of doubt, if, at any time while any shares of Preferred Stock are outstanding, a Fundamental Transaction occurs, pursuant to the terms of this Section 7(d), a Holder of Preferred Stock shall not be entitled to receive any consideration in such Fundamental Transaction in respect of such Holder’s shares of Preferred Stock, except as provided for in this Certificate of Designation (or any new Certificate of Designation in respect of a new series of preferred stock issued to the Holders of Preferred Stock as contemplated hereby).

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f) Calculations. All calculations under this Section 7 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 7, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding any treasury shares of the Corporation) issued and outstanding.

g) Notice to the Holders.

i. Adjustment to Conversion Price. Whenever the Conversion Price is adjusted pursuant to any provision of this Section 7, the Corporation shall promptly deliver to each Holder a notice setting forth the Conversion Price after such adjustment and setting forth a brief statement of the facts requiring such adjustment.

ii. Notice to Allow Conversion by Holder. If (A) the Corporation shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Corporation shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Corporation shall authorize the granting to all holders of the Common Stock of rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Corporation shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Corporation is a party, any sale or transfer of all or substantially all of the assets of the Corporation, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property or (E) the Corporation shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Corporation, then, in each case, the Corporation shall cause to be filed at each office or agency maintained for the purpose of conversion of this Preferred Stock, and shall cause to be delivered to each Holder at its last address as it shall appear upon the stock books of the Corporation, at least fifteen (15) calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange, provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Corporation or any of the Subsidiaries, the Corporation shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to convert the Conversion Amount of this Preferred Stock (or any part hereof) during the 15-day period commencing on the date of such notice through the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

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Section 8. Miscellaneous.

a) Notices. Any and all notices or other communications or deliveries to be provided by the Holders hereunder including, without limitation, any Notice of Conversion, shall be in writing and delivered personally, by facsimile, or sent by a nationally recognized overnight courier service, addressed to the Corporation at:

Ritter Pharmaceuticals, Inc.  
1880 Century Park East, Suite 1000  
Los Angeles, CA 90067  
Facsimile: (310) 919-1600  
Attention: Andrew J. Ritter

with a copy (for informational purposes only) to:

Reed Smith LLP  
1901 Avenue of the Stars  
Suite 700  
Los Angeles, CA 90067-6708  
Facsimile: (310) 734-5299  
Attention: Michael Sanders, Esq.

or such other facsimile number or address as the Corporation may specify for such purposes by notice to the Holders delivered in accordance with this Section 8. Any and all notices or other communications or deliveries to be provided by the Corporation hereunder shall be in writing and delivered personally, by facsimile, or sent by a nationally recognized overnight courier service addressed to each Holder at the facsimile number or address of such Holder appearing on the books of the Corporation, or if no such facsimile number or address appears on the books of the Corporation, at the principal place of business of such Holder. Any notice or other communication or deliveries hereunder shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number set forth in this Section prior to 5:30 p.m. (New York City time) on any date, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number set forth in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the second Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (iv) upon actual receipt by the Person to whom such notice is required to be given.

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b) Absolute Obligation. Except as expressly provided herein, no provision of this Certificate of Designation shall alter or impair the obligation of the Corporation, which is absolute and unconditional, to pay liquidated damages and accrued dividends, as applicable, on the shares of Preferred Stock at the time, place, and rate, and in the coin or currency, herein prescribed.

c) Lost or Mutilated Preferred Stock Certificate. If a Holder's Preferred Stock certificate shall be mutilated, lost, stolen or destroyed, the Corporation shall execute and deliver, in exchange and substitution for and upon cancellation of a mutilated certificate, or in lieu of or in substitution for a lost, stolen or destroyed certificate, a new certificate for the shares of Preferred Stock so mutilated, lost, stolen or destroyed, but only upon receipt of evidence of such loss, theft or destruction of such certificate, and of the ownership hereof reasonably satisfactory to the Corporation.

d) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Certificate of Designation shall be governed by and construed and enforced in accordance with the internal laws of the State of Delaware, without regard to the principles of conflict of laws thereof. Each of the Corporation and each Holder agrees that all legal proceedings concerning the interpretation, enforcement and defense of the transactions contemplated by this Certificate of Designation (whether brought against the Corporation, a Holder or any of their respective Affiliates, directors, officers, shareholders, employees or agents) shall be commenced in the state and federal courts sitting in the City of New York, Borough of Manhattan (the "**New York Courts**"). Each of the Corporation and each Holder hereby irrevocably submits to the exclusive jurisdiction of the New York Courts for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of such New York Courts, or such New York Courts are improper or inconvenient venue for such proceeding. Each of the Corporation and each Holder hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such Person at the address in effect for notices to it under this Certificate of Designation and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by applicable law. Each of the Corporation and each Holder hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Certificate of Designation or the transactions contemplated hereby. If the Corporation or any Holder shall commence an action or proceeding to enforce any provisions of this Certificate of Designation, then the prevailing party in such action or proceeding shall be reimbursed by the other party for its attorneys' fees and other costs and expenses incurred in the investigation, preparation and prosecution of such action or proceeding.

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e) Waiver. Any waiver by the Corporation or a Holder of a breach of any provision of this Certificate of Designation shall not operate as or be construed to be a waiver of any other breach of such provision or of any breach of any other provision of this Certificate of Designation or a waiver by any other Holders. The failure of the Corporation or a Holder to insist upon strict adherence to any term of this Certificate of Designation on one or more occasions shall not be considered a waiver or deprive that Person (or any other Holder) of the right thereafter to insist upon strict adherence to that term or any other term of this Certificate of Designation on any other occasion. Any waiver by the Corporation or a Holder must be in writing.

f) Severability. If any provision of this Certificate of Designation is invalid, illegal or unenforceable, the balance of this Certificate of Designation shall remain in effect, and if any provision is inapplicable to any Person or circumstance, it shall nevertheless remain applicable to all other Persons and circumstances. If it shall be found that any interest or other amount deemed interest due hereunder violates the applicable law governing usury, the applicable rate of interest due hereunder shall automatically be lowered to equal the maximum rate of interest permitted under applicable law.

g) Next Business Day. Whenever any payment or other obligation hereunder shall be due on a day other than a Business Day, such payment shall be made on the next succeeding Business Day.

h) Headings. The headings contained herein are for convenience only, do not constitute a part of this Certificate of Designation and shall not be deemed to limit or affect any of the provisions hereof.

i) Status of Converted or Redeemed Preferred Stock. If any shares of Preferred Stock shall be converted, redeemed or reacquired by the Corporation, such shares shall resume the status of authorized but unissued shares of preferred stock and shall no longer be designated as Series B Convertible Preferred Stock.

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**RESOLVED, FURTHER**, that the Chairman, the president or any vice-president, and the secretary or any assistant secretary, of the Corporation be and they hereby are authorized and directed to prepare and file this Certificate of Designation of Preferences, Rights and Limitations in accordance with the foregoing resolution and the provisions of Delaware law.

**IN WITNESS WHEREOF**, the undersigned have executed this Certificate this \_\_\_\_ day of \_\_\_\_\_ 2018.

RITTER PHARMACEUTICALS, INC.

Name: \_\_\_\_\_  
Title: President and Chief Executive Officer

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ANNEX A

NOTICE OF CONVERSION

(TO BE EXECUTED BY THE REGISTERED HOLDER IN ORDER TO CONVERT SHARES OF PREFERRED STOCK)

The undersigned hereby elects to convert the number of shares of Series B Convertible Preferred Stock indicated below into shares of common stock, par value \$0.001 per share (the "**Common Stock**"), of Ritter Pharmaceuticals, Inc., a Delaware corporation (the "**Corporation**"), according to the conditions hereof, as of the date written below. If shares of Common Stock are to be issued in the name of a Person other than the undersigned, the undersigned will pay all transfer taxes payable with respect thereto and is delivering herewith such certificates and opinions as may be required by the Corporation in accordance with the Purchase Agreement. No fee will be charged to the Holders for any conversion, except for any such transfer taxes.

Conversion calculations:

Date to Effect Conversion: \_\_\_\_\_

Number of shares of Preferred Stock owned prior to Conversion: \_\_\_\_\_

Number of shares of Preferred Stock to be Converted: \_\_\_\_\_

Stated Value of shares of Preferred Stock to be Converted: \_\_\_\_\_

Number of shares of Common Stock to be Issued: \_\_\_\_\_

Applicable Conversion Price: \_\_\_\_\_

Number of shares of Preferred Stock subsequent to Conversion: \_\_\_\_\_

Address for Delivery: \_\_\_\_\_

or

DWAC Instructions:

Broker no: \_\_\_\_\_

Account no: \_\_\_\_\_

[HOLDER]

By: \_\_\_\_\_

Name:

Title:

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RITTER PHARMACEUTICALS, INC.  
CERTIFICATE OF DESIGNATION OF PREFERENCES,  
RIGHTS AND LIMITATIONS  
OF  
SERIES C CONVERTIBLE PREFERRED STOCK  
PURSUANT TO SECTION 151 OF THE  
DELAWARE GENERAL CORPORATION LAW

The undersigned, Andrew J. Ritter, does hereby certify that:

1. He is the Chief Executive Officer of Ritter Pharmaceuticals, Inc., a Delaware corporation (the “**Corporation**”).

2. The Corporation is authorized to issue 15,000,000 shares of preferred stock, \$0.001 par value per share, 9,500 of which heretofore have been designated as Series A Convertible Preferred Stock (the “**Series A Preferred Stock**”) and all of which shares of Series A Preferred Stock heretofore have been issued by the Corporation, and 6,000 of which heretofore have been designated as Series B Convertible Preferred Stock (the “**Series B Preferred Stock**”) and all of which shares of Series B Preferred Stock heretofore have been issued by the Corporation.

3. The following resolutions were duly adopted by the board of directors of the Corporation (the “**Board of Directors**”):

**WHEREAS**, the Amended and Restated Certificate of Incorporation of the Corporation, as amended, provides for a class of its authorized capital stock known as preferred stock, consisting of 15,000,000 shares, \$0.001 par value per share, issuable from time to time in one or more series;

**WHEREAS**, the Board of Directors is authorized to provide for the issuance of the shares of preferred stock in series and to establish, from time to time, the number of shares to be included in each such series, and to fix the designation, powers, preferences and rights of the shares of each such series and any qualifications, limitations or restrictions thereon; and

**WHEREAS**, it is the desire of the Board of Directors, pursuant to its authority as aforesaid, to fix the rights, preferences, restrictions and other matters relating to a series of the preferred stock, which shall consist of, except as otherwise set forth in the Purchase Agreement (as defined), up to 1,880 shares of the preferred stock which the Corporation has the authority to issue as Series C Convertible Preferred Stock, as follows;

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**NOW, THEREFORE, BE IT RESOLVED**, that the Board of Directors does hereby provide for the issuance of a series of preferred stock to be designated the "Series C Convertible Preferred Stock" for cash or exchange of other securities, rights or property and does hereby fix and determine the number, rights, preferences, restrictions and other matters relating to such series of preferred stock as follows:

#### **TERMS OF PREFERRED STOCK**

Section 1. Definitions. For the purposes hereof, the following terms shall have the following meanings:

"**Affiliate**" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 of the Securities Act.

"**Alternate Consideration**" shall have the meaning set forth in Section 7(d).

"**Beneficial Ownership Limitation**" shall have the meaning set forth in Section 6(d).

"**Business Day**" means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"**Buy-In**" shall have the meaning set forth in Section 6(c)(iv).

"**Commission**" means the United States Securities and Exchange Commission.

"**Common Stock**" means the Corporation's common stock, par value \$0.001 per share, and stock of any other class of securities into which such securities may hereafter be reclassified or changed.

"**Common Stock Equivalents**" means any securities of the Corporation or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, rights, options, warrants or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

"**Conversion Amount**" means the sum of the Stated Value at issue.

"**Conversion Date**" shall have the meaning set forth in Section 6(a).

"**Conversion Price**" shall have the meaning set forth in Section 6(b).

"**Conversion Shares**" means, collectively, the shares of Common Stock issuable upon conversion of the shares of Preferred Stock in accordance with the terms hereof.

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“**Conversion Shares Registration Statement**” means a registration statement that registers the resale of all Conversion Shares of the Holders, who shall be named as “selling stockholders” therein, and meets the requirements of the Registration Rights Agreement.

“**Exchange Act**” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“**Fundamental Transaction**” shall have the meaning set forth in Section 7(d).

“**GAAP**” means United States generally accepted accounting principles.

“**Holder**” shall have the meaning set forth in Section 2.

“**Liquidation**” shall have the meaning set forth in Section 5.

“**New York Courts**” shall have the meaning set forth in Section 8(d).

“**Notice of Conversion**” shall have the meaning set forth in Section 6(a).

“**Original Issue Date**” means the date of the first issuance of any shares of the Preferred Stock regardless of the number of transfers of any particular shares of Preferred Stock and regardless of the number of certificates which may be issued to evidence such Preferred Stock.

“**Person**” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“**Preferred Stock**” shall have the meaning set forth in Section 2.

“**Purchase Agreement**” means the Securities Purchase Agreement, dated October 30, 2018, among the Corporation and each of the several purchasers signatory thereto (including the original Holders), as amended, modified or supplemented from time to time in accordance with its terms.

“**Purchase Agreement Date**” means the Trading Day on which the Purchase Agreement has been executed and delivered by the applicable parties thereto.

“**Registration Rights Agreement**” means the Registration Rights Agreement, dated October 30, 2018, among the Corporation and each of the several purchasers signatory thereto (including the original Holders), substantially in the form of Exhibit B attached to the Purchase Agreement.

“**Rule 144**” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

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“**Rule 424**” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“**Securities Act**” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“**Share Delivery Date**” shall have the meaning set forth in Section 6(c).

“**Stockholder Approval**” means such approval as may be required by the applicable rules and regulations of The Nasdaq Stock Market (or any successor entity) from the stockholders of the Corporation with respect to the issuance of all of the Conversion Shares in excess of 19.99% of the issued and outstanding Common Stock on the Purchase Agreement Date, without regard to any restrictions or limitations set forth under this Certificate of Designation.

“**Stated Value**” shall have the meaning set forth in Section 2, as the same may be increased pursuant to Section 3.

“**Subsidiary**” means any subsidiary of the Corporation and shall, where applicable, also include any direct or indirect subsidiary of the Corporation formed or acquired after the date hereof.

“**Successor Entity**” shall have the meaning set forth in Section 7(d).

“**Trading Day**” means a day on which the principal Trading Market is open for business.

“**Trading Market**” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE MKT, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange or the OTCQB or OTCQX (or any successors to any of the foregoing).

“**Transfer Agent**” means Corporate Stock Transfer, Inc., the current transfer agent of the Corporation, with a mailing address of 3200 Cherry Creek South Drive, Suite 430, Denver, Colorado 80209 and a facsimile number of (303) 282-5800 and any successor transfer agent of the Corporation.

Section 2. Designation, Amount and Par Value. The series of preferred stock shall be designated as the Series C Convertible Preferred Stock (the “**Preferred Stock**”) and the number of shares so designated shall be up to 1,880 (which shall not be subject to increase without the written consent of a majority of the holders of the Preferred Stock (each, a “**Holder**” and collectively, the “**Holders**”). Each share of Preferred Stock shall have a par value of \$0.001 per share and a stated value equal to \$1,000 (the “**Stated Value**”).

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Section 3. Dividends. Except for stock dividends or distributions for which adjustments are to be made pursuant to Section 7, Holders shall be entitled to receive, and the Corporation shall pay, dividends on shares of Preferred Stock equal (on an as-if-converted-to-Common-Stock basis, without regard to conversion limitations herein) to and in the same form as dividends actually paid on shares of the Common Stock when, as and if such dividends are paid on shares of the Common Stock. No other dividends shall be paid on shares of Preferred Stock. The Corporation shall not pay any dividends on the Common Stock unless the Corporation simultaneously complies with this provision.

Section 4. Voting Rights. Except as otherwise provided herein or as otherwise required by law, the Preferred Stock shall have no voting rights. However, as long as any shares of Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote of the Holders of a majority of the then outstanding shares of the Preferred Stock, (a) alter or change adversely the powers, preferences or rights given to the Preferred Stock or alter or amend this Certificate of Designation, (b) amend its certificate of incorporation or other charter documents in any manner that adversely affects any rights of the Holders, (c) increase the number of authorized shares of Preferred Stock, or (d) enter into any agreement with respect to any of the foregoing.

Section 5. Liquidation. Upon any liquidation, dissolution or winding-up of the Corporation, whether voluntary or involuntary (a "**Liquidation**"), the Holders shall be entitled to receive out of the assets, whether capital or surplus, of the Corporation the same amount that a holder of Common Stock would receive if the Preferred Stock were fully converted (disregarding for such purposes any conversion limitations hereunder) to Common Stock which amounts shall be paid *pari passu* with all holders of Common Stock. The Corporation shall mail written notice of any such Liquidation, not less than 45 days prior to the payment date stated therein, to each Holder.

Section 6. Conversion.

a) Conversions at Option of Holder. Each share of Preferred Stock shall be convertible, at any time and from time to time from and after the Original Issue Date at the option of the Holder thereof, into that number of shares of Common Stock (subject to the limitations set forth in Section 6(d) and Section 6(e)) determined by dividing the Stated Value of such share of Preferred Stock by the Conversion Price. Holders shall effect conversions by providing the Corporation with the form of conversion notice attached hereto as Annex A (a "**Notice of Conversion**"). Each Notice of Conversion shall specify the number of shares of Preferred Stock to be converted, the number of shares of Preferred Stock owned prior to the conversion at issue, the number of shares of Preferred Stock owned subsequent to the conversion at issue and the date on which such conversion is to be effected, which date may not be prior to the date the applicable Holder delivers by facsimile such Notice of Conversion to the Corporation (such date, the "**Conversion Date**"). If no Conversion Date is specified in a Notice of Conversion, the Conversion Date shall be the date that such Notice of Conversion to the Corporation is deemed delivered hereunder. No ink-original Notice of Conversion shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Conversion form be required. The calculations and entries set forth in the Notice of Conversion shall control in the absence of manifest or mathematical error. To effect conversions of shares of Preferred Stock, a Holder shall not be required to surrender the certificate(s) representing the shares of Preferred Stock to the Corporation unless all of the shares of Preferred Stock represented thereby are so converted, in which case such Holder shall deliver the certificate representing such shares of Preferred Stock promptly following the Conversion Date at issue. Shares of Preferred Stock converted into Common Stock or redeemed in accordance with the terms hereof shall be canceled and shall not be reissued.

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b) Conversion Price. The conversion price for the Preferred Stock shall equal \$1.64, subject to adjustment herein (the “**Conversion Price**”).

c) Mechanics of Conversion.

i. Delivery of Conversion Shares Upon Conversion. Not later than the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined below) after each Conversion Date (the “**Share Delivery Date**”), the Corporation shall deliver, or cause to be delivered, to the converting Holder (A) the number of Conversion Shares to which the Holder is entitled pursuant to such conversion of Preferred Stock either electronically through the Depository Trust Company (“**DTC**”) or another established clearing corporation performing similar functions, or otherwise by physical delivery of a certificate registered in the Company’s share register in the name of the Holder or its designee to the address specified by the Holder in the Notice of Conversion, which Conversion Shares shall be free of restrictive legends and trading restrictions (other than those which may then be required by the Purchase Agreement) if, at the time of such conversion, either (1) the Conversion Shares Registration Statement registering the resale of such Conversion Shares by the Holder is then effective under the Securities Act or (2) such Conversion Shares are then eligible for resale by the Holder without volume or manner-of-sale limitations pursuant to Rule 144, and (B) a bank check in the amount of accrued and unpaid dividends, if any. As used herein, “**Standard Settlement Period**” means the standard settlement period, expressed in a number of Trading Days, on the Corporation’s primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Conversion.

ii. Failure to Deliver Conversion Shares. If, in the case of any Notice of Conversion, such Conversion Shares are not delivered to or as directed by the applicable Holder by the Share Delivery Date, the Holder shall be entitled to elect by written notice to the Corporation at any time on or before its receipt of such Conversion Shares, to rescind such Conversion, in which event the Corporation shall promptly return to the Holder any original Preferred Stock certificate delivered to the Corporation and the Holder shall promptly return to the Corporation the Conversion Shares issued to such Holder pursuant to the rescinded Notice of Conversion.

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iii. Obligation Absolute: Partial Liquidated Damages. The Corporation's obligation to issue and deliver the Conversion Shares upon conversion of Preferred Stock in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by a Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by such Holder or any other Person of any obligation to the Corporation or any violation or alleged violation of law by such Holder or any other person, and irrespective of any other circumstance which might otherwise limit such obligation of the Corporation to such Holder in connection with the issuance of such Conversion Shares; provided, however, that such delivery shall not operate as a waiver by the Corporation of any such action that the Corporation may have against such Holder. If the Corporation fails to deliver to a Holder such Conversion Shares pursuant to Section 6(c)(i) by the Share Delivery Date applicable to such conversion, the Corporation shall pay to such Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Stated Value of Preferred Stock being converted, \$5 per Trading Day (increasing to \$10 per Trading Day ten (10) Trading Days after damages have begun to accrue) for each Trading Day after the Share Delivery Date until such Conversion Shares are delivered or Holder rescinds such conversion. Nothing herein shall limit a Holder's right to pursue actual damages for the Corporation's failure to deliver Conversion Shares within the period specified herein and such Holder shall have the right to pursue all remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief. The exercise of any such rights shall not prohibit a Holder from seeking to enforce damages pursuant to any other Section hereof or under applicable law.

iv. Compensation for Buy-In on Failure to Timely Deliver Conversion Shares Upon Conversion. In addition to any other rights available to the Holder, if the Corporation fails for any reason to deliver to a Holder the applicable Conversion Shares by the Share Delivery Date pursuant to Section 6(c)(i), and if after such Share Delivery Date such Holder is required by its brokerage firm to purchase (in an open market transaction or otherwise), or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by such Holder of the Conversion Shares which such Holder was entitled to receive upon the conversion relating to such Share Delivery Date (a "**Buy-In**"), then the Corporation shall (A) pay in cash to such Holder (in addition to any other remedies available to or elected by such Holder) the amount, if any, by which (x) such Holder's total purchase price (including any brokerage commissions) for the Common Stock so purchased exceeds (y) the product of (1) the aggregate number of shares of Common Stock that such Holder was entitled to receive from the conversion at issue multiplied by (2) the actual sale price at which the sell order giving rise to such purchase obligation was executed (including any brokerage commissions) and (B) at the option of such Holder, either reissue (if surrendered) the shares of Preferred Stock equal to the number of shares of Preferred Stock submitted for conversion (in which case, such conversion shall be deemed rescinded) or deliver to such Holder the number of shares of Common Stock that would have been issued if the Corporation had timely complied with its delivery requirements under Section 6(c)(i). For example, if a Holder purchases shares of Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted conversion of shares of Preferred Stock with respect to which the actual sale price of the Conversion Shares (including any brokerage commissions) giving rise to such purchase obligation was a total of \$10,000 under clause (A) of the immediately preceding sentence, the Corporation shall be required to pay such Holder \$1,000. The Holder shall provide the Corporation written notice indicating the amounts payable to such Holder in respect of the Buy-In and, upon request of the Corporation, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Corporation's failure to timely deliver Conversion Shares upon conversion of the shares of Preferred Stock as required pursuant to the terms hereof.

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v. Reservation of Shares Issuable Upon Conversion. The Corporation covenants that it will at all times reserve and keep available out of its authorized and unissued shares of Common Stock for the sole purpose of issuance upon conversion of the Preferred Stock as herein provided, free from preemptive rights or any other actual contingent purchase rights of Persons other than the Holder (and the other holders of the Preferred Stock), not less than such aggregate number of shares of the Common Stock as shall be issuable (taking into account the adjustments and restrictions of Section 7) upon the conversion of the then outstanding shares of Preferred Stock. The Corporation covenants that all shares of Common Stock that shall be so issuable shall, upon issue, be duly authorized, validly issued, fully paid and nonassessable and, if the Conversion Shares Registration Statement is then effective under the Securities Act, shall be registered for public resale in accordance with such Conversion Shares Registration Statement (subject to such Holder's compliance with its obligations under the Registration Rights Agreement).

vi. Fractional Shares. No fractional shares or scrip representing fractional shares shall be issued upon the conversion of the Preferred Stock. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such conversion, the Corporation shall at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Conversion Price or round up to the next whole share.

vii. Transfer Taxes and Expenses. The issuance of Conversion Shares on conversion of this Preferred Stock shall be made without charge to any Holder for any documentary stamp or similar taxes that may be payable in respect of the issue or delivery of such Conversion Shares, provided that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the issuance and delivery of any such Conversion Shares upon conversion in a name other than that of the Holders of such shares of Preferred Stock and the Corporation shall not be required to issue or deliver such Conversion Shares unless or until the Person or Persons requesting the issuance thereof shall have paid to the Corporation the amount of such tax or shall have established to the satisfaction of the Corporation that such tax has been paid. The Corporation shall pay all Transfer Agent fees required for same-day processing of any Notice of Conversion and all fees to the DTC (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Conversion Shares.

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d) **Beneficial Ownership Limitation.** Notwithstanding anything to the contrary herein, the Corporation shall not effect any conversion of the Preferred Stock, and a Holder shall not have the right to convert any portion of the Preferred Stock, to the extent that, after giving effect to the conversion set forth on the applicable Notice of Conversion, such Holder (together with such Holder's Affiliates, and any Persons acting as a group together with such Holder or any of such Holder's Affiliates (such Persons, "**Attribution Parties**")) would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by such Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon conversion of the Preferred Stock with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which are issuable upon (i) conversion of the remaining, unconverted Stated Value of Preferred Stock beneficially owned by such Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Corporation subject to a limitation on conversion or exercise analogous to the limitation contained herein (including, without limitation, the Preferred Stock or the Warrants) beneficially owned by such Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 6(d), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. To the extent that the limitation contained in this Section 6(d) applies, the determination of whether the Preferred Stock is convertible (in relation to other securities owned by such Holder together with any Affiliates and Attribution Parties) and of how many shares of Preferred Stock are convertible shall be in the sole discretion of such Holder, and the submission of a Notice of Conversion shall be deemed to be such Holder's determination of whether the shares of Preferred Stock may be converted (in relation to other securities owned by such Holder together with any Affiliates and Attribution Parties) and how many shares of the Preferred Stock are convertible, in each case subject to the Beneficial Ownership Limitation. To ensure compliance with this restriction, each Holder will be deemed to represent to the Corporation each time it delivers a Notice of Conversion that such conversion will not violate the restrictions set forth in this paragraph and the Corporation shall have no obligation to verify or confirm the accuracy of such representation. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 6(d), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as stated in the most recent of the following: (i) the Corporation's most recent periodic or annual report filed with the Commission, as the case may be, (ii) a more recent public announcement by the Corporation or (iii) a more recent written notice by the Corporation or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request (which may be via email) of a Holder, the Corporation shall within two Trading Days confirm orally and in writing to such Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Corporation, including the Preferred Stock, by such Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "**Beneficial Ownership Limitation**" shall be 4.99% (except as otherwise specified or provided for in the Beneficial Ownership Limitation Adjustment Notice (as defined below)) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon conversion of Preferred Stock held by the applicable Holder. A Holder may increase or decrease the Beneficial Ownership Limitation applicable to its Preferred Stock by providing not less than 61 days' prior written notice to the Company (which notice may not be waived) (the "**Beneficial Ownership Limitation Adjustment Notice**"); provided that the Beneficial Ownership Limitation in no event may exceed 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon conversion of this Preferred Stock held by the Holder and the provisions of this Section 6(d) shall continue to apply. Any such increase in the Beneficial Ownership Limitation will not be effective until the 61st day after such Beneficial Ownership Limitation Adjustment Notice is delivered to the Corporation and shall only apply to such Holder and no other Holder. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 6(d) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation contained herein or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of Preferred Stock.

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e) Issuance Limitations. The Corporation shall not be obligated to issue, and the Holder shall not have the right to receive, upon conversion of the Preferred Stock, any shares of Common Stock if the issuance of such shares of Common Stock would exceed 1,146,354 shares of Common Stock in the aggregate, which equals 19.99% of the Corporation's outstanding shares of Common Stock as of the Purchase Agreement Date (the "**Exchange Cap**"), except that such limitation shall not apply after the date that Stockholder Approval is obtained. Until such date, no holder of Preferred Stock shall be issued, in the aggregate pursuant to the terms of this Certificate of Designation, shares of Common Stock in an amount greater than the product of the Exchange Cap multiplied by a fraction, the numerator of which is the number of shares of Preferred Stock held by such Holder and the denominator of which is the aggregate number of shares of Preferred Stock held by all Holders (with respect to each Holder, the "**Exchange Cap Allocation**"). In the event that the Holder shall sell or otherwise transfer any of the Holder's Preferred Stock, the transferee shall be allocated a pro rata portion of the Holder's Exchange Cap Allocation, and the restrictions of the prior sentence shall apply to such transferee with respect to the portion of the Exchange Cap Allocation allocated to such transferee. In the event that any holder of Preferred Stock shall convert all of such holder's Preferred Stock into a number of shares of Common Stock which, in the aggregate, is less than such holder's Exchange Cap Allocation, then the difference between such holder's Exchange Cap Allocation and the number of shares of Common Stock actually issued to such holder shall be allocated to the respective Exchange Cap Allocations of the remaining holders of Preferred Stock on a pro rata basis in proportion to the shares of Preferred Stock then held by each such Holder.

Section 7. Certain Adjustments.

a) Stock Dividends and Stock Splits. If the Corporation, at any time while this Preferred Stock is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions payable in shares of Common Stock on shares of Common Stock or any other Common Stock Equivalents (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Corporation upon conversion of, or payment of a dividend on, this Preferred Stock), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of a reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues, in the event of a reclassification of shares of the Common Stock, any shares of capital stock of the Corporation, then the Conversion Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding any treasury shares of the Corporation) outstanding immediately before such event, and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to this Section 7(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

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b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 7(a) above, if at any time the Corporation grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "**Purchase Rights**"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete conversion of such Holder's Preferred Stock (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

c) Pro Rata Distributions. During such time as this Preferred Stock is outstanding, if the Corporation declares or makes any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "**Distribution**"), at any time after the issuance of this Preferred Stock, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete conversion of this Preferred Stock (without regard to any limitations on conversion hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

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d) **Fundamental Transaction.** If, at any time while any shares of Preferred Stock are outstanding, (i) the Corporation, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Corporation with or into another Person, (ii) the Corporation, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Corporation or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Corporation, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Corporation, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with the other Persons making or party to, such stock or share purchase agreement or other business combination) (each a “**Fundamental Transaction**”), then, upon any subsequent conversion of the Preferred Stock by the Holder thereof, the Holder shall receive, for each Conversion Share that would have been issuable upon such conversion immediately prior to the occurrence of such Fundamental Transaction (without regard to any limitation in Section 6(d) and Section 6(e) on the conversion of the Preferred Stock), the number of shares of common stock (as applicable) of the successor or acquiring corporation or the number of shares of Common Stock of the Corporation (as applicable), if it is the surviving corporation, and all additional securities (equity or debt), cash, property or other consideration (all such additional consideration, the “**Alternate Consideration**”), receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which such Holder’s Preferred Stock is convertible immediately prior to such Fundamental Transaction (without regard to any limitation in Section 6(d) and Section 6(e) on the conversion of the Preferred Stock). For purposes of any such conversion, the determination of the Conversion Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Corporation shall apportion the Conversion Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are entitled to elect the proportion of securities, cash, property or other consideration to be received by holders of Common Stock in a Fundamental Transaction, then each Holder of Preferred Stock shall be given the same choice as to the proportion of securities, cash, property or other consideration such Holder is entitled to receive upon any conversion of such Holder’s shares of Preferred Stock following such Fundamental Transaction. To the extent necessary to effectuate the foregoing provisions, any successor to the Corporation or surviving entity in such Fundamental Transaction shall file a new Certificate of Designation in respect of a new series of preferred stock of the successor or acquiring corporation, or the Corporation, if it is the surviving corporation, setting forth the same rights, preferences, privileges and other terms contained in this Certificate of Designation in respect of the Preferred Stock, including, without limitation, the provisions contained in this Section 7(d) and evidencing, among other things, the Holders’ right to convert such new preferred stock into Alternate Consideration. The Corporation shall cause any successor entity in a Fundamental Transaction in which the Corporation is not the survivor (the “**Successor Entity**”) to assume in writing all of the obligations of the Corporation under this Certificate of Designation in accordance with the provisions of this Section 7(d) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of a Holder of Preferred Stock, deliver to such Holder in exchange for such Holder’s Preferred Stock a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to the Preferred Stock which is convertible for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon conversion of the Preferred Stock (without regard to any limitations on the conversion of the Preferred Stock) prior to such Fundamental Transaction, and with a conversion price which applies the conversion price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such conversion price being for the purpose of protecting the economic value of the Preferred Stock immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder(s) thereof. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Certificate of Designation referring to the “Corporation” shall refer instead to the Successor Entity), and may exercise every right and power of the Corporation and shall assume all of the obligations of the Corporation under this Certificate of Designation with the same effect as if such Successor Entity had been named as the Corporation herein. For the avoidance of doubt, if, at any time while any shares of Preferred Stock are outstanding, a Fundamental Transaction occurs, pursuant to the terms of this Section 7(d), a Holder of Preferred Stock shall not be entitled to receive any consideration in such Fundamental Transaction in respect of such Holder’s shares of Preferred Stock, except as provided for in this Certificate of Designation (or any new Certificate of Designation in respect of a new series of preferred stock issued to the Holders of Preferred Stock as contemplated hereby).

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f) Calculations. All calculations under this Section 7 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 7, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding any treasury shares of the Corporation) issued and outstanding.

g) Notice to the Holders.

i. Adjustment to Conversion Price. Whenever the Conversion Price is adjusted pursuant to any provision of this Section 7, the Corporation shall promptly deliver to each Holder a notice setting forth the Conversion Price after such adjustment and setting forth a brief statement of the facts requiring such adjustment.

ii. Notice to Allow Conversion by Holder. If (A) the Corporation shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Corporation shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Corporation shall authorize the granting to all holders of the Common Stock of rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Corporation shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Corporation is a party, any sale or transfer of all or substantially all of the assets of the Corporation, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property or (E) the Corporation shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Corporation, then, in each case, the Corporation shall cause to be filed at each office or agency maintained for the purpose of conversion of this Preferred Stock, and shall cause to be delivered to each Holder at its last address as it shall appear upon the stock books of the Corporation, at least fifteen (15) calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange, provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Corporation or any of the Subsidiaries, the Corporation shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to convert the Conversion Amount of this Preferred Stock (or any part hereof) during the 15-day period commencing on the date of such notice through the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

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Section 8. Miscellaneous.

a) Notices. Any and all notices or other communications or deliveries to be provided by the Holders hereunder including, without limitation, any Notice of Conversion, shall be in writing and delivered personally, by facsimile, or sent by a nationally recognized overnight courier service, addressed to the Corporation at:

Ritter Pharmaceuticals, Inc.  
1880 Century Park East, Suite 1000  
Los Angeles, CA 90067  
Facsimile: (310) 919-1600  
Attention: Andrew J. Ritter

with a copy (for informational purposes only) to:

Reed Smith LLP  
1901 Avenue of the Stars  
Suite 700  
Los Angeles, CA 90067-6708  
Facsimile: (310) 734-5299  
Attention: Michael Sanders, Esq.

or such other facsimile number or address as the Corporation may specify for such purposes by notice to the Holders delivered in accordance with this Section 8. Any and all notices or other communications or deliveries to be provided by the Corporation hereunder shall be in writing and delivered personally, by facsimile, or sent by a nationally recognized overnight courier service addressed to each Holder at the facsimile number or address of such Holder appearing on the books of the Corporation, or if no such facsimile number or address appears on the books of the Corporation, at the principal place of business of such Holder. Any notice or other communication or deliveries hereunder shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number set forth in this Section prior to 5:30 p.m. (New York City time) on any date, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number set forth in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the second Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (iv) upon actual receipt by the Person to whom such notice is required to be given.

b) Absolute Obligation. Except as expressly provided herein, no provision of this Certificate of Designation shall alter or impair the obligation of the Corporation, which is absolute and unconditional, to pay liquidated damages and accrued dividends, as applicable, on the shares of Preferred Stock at the time, place, and rate, and in the coin or currency, herein prescribed.

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c) Lost or Mutilated Preferred Stock Certificate. If a Holder's Preferred Stock certificate shall be mutilated, lost, stolen or destroyed, the Corporation shall execute and deliver, in exchange and substitution for and upon cancellation of a mutilated certificate, or in lieu of or in substitution for a lost, stolen or destroyed certificate, a new certificate for the shares of Preferred Stock so mutilated, lost, stolen or destroyed, but only upon receipt of evidence of such loss, theft or destruction of such certificate, and of the ownership hereof reasonably satisfactory to the Corporation.

d) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Certificate of Designation shall be governed by and construed and enforced in accordance with the internal laws of the State of Delaware, without regard to the principles of conflict of laws thereof. Each of the Corporation and each Holder agrees that all legal proceedings concerning the interpretation, enforcement and defense of the transactions contemplated by this Certificate of Designation (whether brought against the Corporation, a Holder or any of their respective Affiliates, directors, officers, shareholders, employees or agents) shall be commenced in the state and federal courts sitting in the City of New York, Borough of Manhattan (the "**New York Courts**"). Each of the Corporation and each Holder hereby irrevocably submits to the exclusive jurisdiction of the New York Courts for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of such New York Courts, or such New York Courts are improper or inconvenient venue for such proceeding. Each of the Corporation and each Holder hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such Person at the address in effect for notices to it under this Certificate of Designation and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by applicable law. Each of the Corporation and each Holder hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Certificate of Designation or the transactions contemplated hereby. If the Corporation or any Holder shall commence an action or proceeding to enforce any provisions of this Certificate of Designation, then the prevailing party in such action or proceeding shall be reimbursed by the other party for its attorneys' fees and other costs and expenses incurred in the investigation, preparation and prosecution of such action or proceeding.

e) Waiver. Any waiver by the Corporation or a Holder of a breach of any provision of this Certificate of Designation shall not operate as or be construed to be a waiver of any other breach of such provision or of any breach of any other provision of this Certificate of Designation or a waiver by any other Holders. The failure of the Corporation or a Holder to insist upon strict adherence to any term of this Certificate of Designation on one or more occasions shall not be considered a waiver or deprive that Person (or any other Holder) of the right thereafter to insist upon strict adherence to that term or any other term of this Certificate of Designation on any other occasion. Any waiver by the Corporation or a Holder must be in writing.

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f) Severability. If any provision of this Certificate of Designation is invalid, illegal or unenforceable, the balance of this Certificate of Designation shall remain in effect, and if any provision is inapplicable to any Person or circumstance, it shall nevertheless remain applicable to all other Persons and circumstances. If it shall be found that any interest or other amount deemed interest due hereunder violates the applicable law governing usury, the applicable rate of interest due hereunder shall automatically be lowered to equal the maximum rate of interest permitted under applicable law.

g) Next Business Day. Whenever any payment or other obligation hereunder shall be due on a day other than a Business Day, such payment shall be made on the next succeeding Business Day.

h) Headings. The headings contained herein are for convenience only, do not constitute a part of this Certificate of Designation and shall not be deemed to limit or affect any of the provisions hereof.

i) Status of Converted or Redeemed Preferred Stock. If any shares of Preferred Stock shall be converted, redeemed or reacquired by the Corporation, such shares shall resume the status of authorized but unissued shares of preferred stock and shall no longer be designated as Series C Convertible Preferred Stock.

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**RESOLVED, FURTHER**, that the Chairman, the president or any vice-president, and the secretary or any assistant secretary, of the Corporation be and they hereby are authorized and directed to prepare and file this Certificate of Designation of Preferences, Rights and Limitations in accordance with the foregoing resolution and the provisions of Delaware law.

**IN WITNESS WHEREOF**, the undersigned have executed this Certificate this \_\_\_\_ day of \_\_\_\_\_ 2018.

RITTER PHARMACEUTICALS, INC.

Name: Andrew J. Ritter  
Title: President and Chief Executive Officer

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ANNEX A

NOTICE OF CONVERSION

(TO BE EXECUTED BY THE REGISTERED HOLDER IN ORDER TO CONVERT SHARES OF PREFERRED STOCK)

The undersigned hereby elects to convert the number of shares of Series C Convertible Preferred Stock indicated below into shares of common stock, par value \$0.001 per share (the "**Common Stock**"), of Ritter Pharmaceuticals, Inc., a Delaware corporation (the "**Corporation**"), according to the conditions hereof, as of the date written below. If shares of Common Stock are to be issued in the name of a Person other than the undersigned, the undersigned will pay all transfer taxes payable with respect thereto and is delivering herewith such certificates and opinions as may be required by the Corporation in accordance with the Purchase Agreement. No fee will be charged to the Holders for any conversion, except for any such transfer taxes.

Conversion calculations:

Date to Effect Conversion: \_\_\_\_\_

Number of shares of Preferred Stock owned prior to Conversion: \_\_\_\_\_

Number of shares of Preferred Stock to be Converted: \_\_\_\_\_

Stated Value of shares of Preferred Stock to be Converted: \_\_\_\_\_

Number of shares of Common Stock to be Issued: \_\_\_\_\_

Applicable Conversion Price: \_\_\_\_\_

Number of shares of Preferred Stock subsequent to Conversion: \_\_\_\_\_

Address for Delivery: \_\_\_\_\_

or

DWAC Instructions:

Broker no: \_\_\_\_\_

Account no: \_\_\_\_\_

[HOLDER]

By: \_\_\_\_\_

Name:

Title:

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## SECURITIES PURCHASE AGREEMENT

This Securities Purchase Agreement (this "Agreement") is dated as of October 30, 2018, between Ritter Pharmaceuticals, Inc., a Delaware corporation (the "Company"), and each purchaser identified on the signature pages hereto (each, including its successors and assigns, a "Purchaser" and collectively, the "Purchasers").

WHEREAS, subject to the terms and conditions set forth in this Agreement and pursuant to Section 4(a)(2) of the Securities Act of 1933, as amended (the "Securities Act"), and Rule 506(b) of Regulation D promulgated thereunder, the Company (i) desires to issue and sell to each Purchaser, and each Purchaser, severally and not jointly, desires to purchase from the Company, securities of the Company and (ii) desires to issue and exchange with certain Purchasers, and each such Purchaser, severally and not jointly, desires to deliver and exchange with the Company, securities of the Company, in each case as more fully described in this Agreement.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Company and each Purchaser agree as follows:

**ARTICLE I.  
DEFINITIONS**

1.1 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement: (a) capitalized terms that are not otherwise defined herein have the meanings given to such terms in the Series B Certificate of Designation (as defined herein), and (b) the following terms have the meanings set forth in this Section 1.1:

"Acquiring Person" shall have the meaning ascribed to such term in Section 4.5.

"Action" shall have the meaning ascribed to such term in Section 3.1(j).

"Affiliate" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

"Base Share Price" shall have the meaning ascribed to such term in Section 4.12(b).

"Board of Directors" means the board of directors of the Company.

"Business Day" means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"Closing" means the simultaneous closing of the Purchase and the Exchange pursuant to Section 2.1.

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“Closing Date” means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto, and all conditions precedent to (a) (i) the Purchasers’ obligations to pay the Subscription Amount to the Company in the Purchase and (ii) the Company’s obligations to deliver the Purchased Securities to such Purchasers in the Purchase, and (b) (i) the obligations of the Purchasers who are participating in the Exchange to deliver and exchange their Exchanged Series A Preferred Shares and (ii) the Company’s obligations to deliver the Exchanged Series C Preferred Shares to such Purchasers participating, severally and not jointly, in the Exchange, in each case, have been satisfied or, where legally permissible, waived.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Company Counsel” means Reed Smith LLP, with offices located at 1901 Avenue of the Stars, Suite 700, Los Angeles, CA 90067-6708.

“Dilutive Issuance” shall have the meaning ascribed to such term in Section 4.12(b).

“Disclosure Schedules” shall have the meaning ascribed to such term in Section 3.1.

“Effective Date” means the earliest of the date that (a) the initial Registration Statement has been declared effective by the Commission, (b) all of the Series B Conversion Shares, Series C Conversion Shares and Warrant Shares have been sold pursuant to Rule 144 or may be sold pursuant to Rule 144 without the requirement for the Company to be in compliance with the current public information required under Rule 144 and without volume or manner-of-sale restrictions, (c) following the one year anniversary of the Closing Date provided that a holder of Series B Conversion Shares, Series C Conversion Shares or Warrant Shares is not an Affiliate of the Company, or (d) all of the Series B Conversion Shares, Series C Conversion Shares and Warrant Shares may be sold pursuant to an exemption from registration under Section 4(a)(1) of the Securities Act without volume or manner-of-sale restrictions and Company Counsel has delivered to such holders a standing written unqualified opinion that resales may then be made by such holders of the Series B Conversion Shares, Series C Conversion Shares and Warrant Shares pursuant to such exemption which opinion shall be in form and substance reasonably acceptable to such holders.

“EMA” shall have the meaning ascribed to such term in Section 3.1(kk).

“Escrow Agent” means Collegiate Peaks Bank.

“Escrow Agreement” means the escrow agreement entered into prior to the date hereof, by and among the Company, the Escrow Agent, the Escrow Manager and the Placement Agent, pursuant to which the Purchasers shall deposit Subscription Amounts with the Escrow Agent to be applied to the Purchase contemplated hereunder.

“Escrow Manager” means Corporate Stock Transfer, Inc.

“Evaluation Date” shall have the meaning ascribed to such term in Section 3.1(s).

“Exchange” means the exchange of all of the Exchanged Series A Securities by the Purchasers who are participating, severally and not jointly, in the Exchange, for all of the Exchanged Series C Securities pursuant to this Agreement on the Closing Date.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Exchanged Securities” means, collectively, the Exchanged Series A Securities and the Exchanged Series C Securities.

“Exchanged Series A Preferred Shares” means, collectively, the aggregate number of shares of Series A Preferred Stock that each Purchaser participating, severally and not jointly, in the Exchange, has elected to exchange in the Exchange as specified below such Purchaser’s name on the signature page of this Agreement.

“Exchanged Series A Securities” means, collectively, the Exchanged Series A Preferred Shares and the Series A Conversion Shares into which such Exchanged Series A Preferred Shares are convertible as of the Closing Date.

“Exchanged Series C Preferred Shares” means, collectively, the aggregate number of shares of Series C Preferred Stock to be issued by the Company in the Exchange to the Purchasers who are participating, severally and not jointly, in the Exchange pursuant to this Agreement.

“Exchanged Series C Securities” means, collectively, the Exchanged Series C Preferred Shares and the Series C Conversion Shares into which such Exchanged Series C Preferred Shares are convertible as of the Closing Date.

“Exempt Issuance” means the issuance of (a) shares of Common Stock or options to employees, officers or directors of the Company pursuant to any stock or option plan duly adopted for such purpose, by a majority of the non-employee members of the Board of Directors or a majority of the members of a committee of non-employee directors established for such purpose for services rendered to the Company, (b) securities upon the exercise or exchange of or conversion of any Securities issued hereunder and/or other securities exercisable or exchangeable for or convertible into shares of Common Stock issued and outstanding on the date of this Agreement, provided that such securities have not been amended since the date of this Agreement to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits or combinations) or to extend the term of such securities, and (c) securities issued pursuant to acquisitions or strategic transactions approved by a majority of the disinterested directors of the Company, provided that any such issuance shall only be to a Person (or to the equityholders of a Person) which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities.

“FCPA” means the Foreign Corrupt Practices Act of 1977, as amended.

“FDA” shall have the meaning ascribed to such term in Section 3.1(kk).

“GAAP” shall have the meaning ascribed to such term in Section 3.1(h).

“Indebtedness” shall have the meaning ascribed to such term in Section 3.1(ss).

“Intellectual Property Rights” shall have the meaning ascribed to such term in Section 3.1(p).

“Legend Removal Date” shall have the meaning ascribed to such term in Section 4.1(c).

“Liens” means a lien, charge pledge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

“Lock-Up Period” shall have the meaning assigned to such term in Section 4.12(a).

“Material Adverse Effect” shall have the meaning assigned to such term in Section 3.1(b).

“Material Permits” shall have the meaning ascribed to such term in Section 3.1(n).

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Placement Agency Agreement” means the Placement Agency Agreement, dated as of the date hereof, by and between the Company and the Placement Agent.

“Placement Agent” means A.G.P./Alliance Global Partners.

“Placement Agent’s Counsel” means Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., with offices located at 666 Third Avenue, New York, New York 10017.

“Proceeding” means an action, claim, suit, investigation or proceeding (including, without limitation, an informal investigation or partial proceeding, such as a deposition), whether commenced or threatened.

“Public Information Failure” shall have the meaning ascribed to such term in Section 4.2(b).

“Public Information Failure Payments” shall have the meaning ascribed to such term in Section 4.2(b).

“Purchase” means the issuance and sale by the Company, and the purchase by the Purchasers, severally and not jointly, of all of the Purchased Securities pursuant to this Agreement on the Closing Date.

“Purchased Series B Preferred Shares” means, collectively, the aggregate number of shares of Series B Preferred Stock to be issued and sold by the Company to the Purchasers in the Purchase pursuant to this Agreement.

“Purchased Securities” means, collectively, the Purchased Series B Preferred Shares, the Series B Conversion Shares into which such Purchased Series B Preferred Shares are convertible, the Warrants and the Warrant Shares.

“Purchaser Party” shall have the meaning ascribed to such term in Section 4.8.

“Registration Rights Agreement” means the Registration Rights Agreement, dated the date hereof, among the Company and the Purchasers, substantially in the form of Exhibit C attached hereto.

“Registration Statement” means a registration statement meeting the requirements set forth in the Registration Rights Agreement and covering the resale by the Purchasers of the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares.

“Required Approvals” shall have the meaning ascribed to such term in Section 3.1(e).

“Required Holders” means, as of the applicable date of determination, the Purchasers holding 60% of the then outstanding shares of Series B Preferred Stock.

“Required Minimum” means, as of any date, the maximum aggregate number of shares of Common Stock then issued or potentially issuable in the future pursuant to the Transaction Documents, including (i) the maximum number of Series B Conversion Shares issuable upon conversion in full of all shares of Series B Preferred Stock, ignoring any conversion limits set forth therein and assuming that any previously unconverted shares of Series B Preferred Stock are held until the third anniversary of the Closing Date, (ii) the maximum number of Series C Conversion Shares issuable upon conversion in full of all shares of Series C Preferred Stock, ignoring any conversion limits set forth therein and assuming that any previously unconverted shares of Series C Preferred Stock are held until the third anniversary of the Closing Date, and (iii) the maximum number of Warrant Shares issuable upon exercise in full of all Warrants, ignoring any exercise limits set forth therein.

“Restricted Period” shall have the meaning ascribed to such term in Section 4.12(b).

“Rule 144” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 415” means Rule 415 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 424” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“SEC Reports” shall have the meaning ascribed to such term in Section 3.1(h).

“Securities” means the Series B Preferred Stock, the Series B Conversion Shares, the Series C Preferred Stock, the Series C Conversion Shares, the Warrants and the Warrant Shares.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Series A Certificate of Designation” means the Certificate of Designation of Preferences, Rights and Limitations of the Series A Preferred Stock filed by the Company with the Secretary of State of the State of Delaware on September 29, 2017.

“Series A Conversion Shares” shall have the meaning ascribed to the term “Conversion Shares” in the Series A Certificate of Designation.

“Series A Preferred Stock” means the Company’s Series A Convertible Preferred Stock, \$0.001 par value per share, having the rights, preferences and privileges set forth in the Series A Certificate of Designation.

“Series B Certificate of Designation” means the Certificate of Designation of Preferences, Rights and Limitations of the Series B Preferred Stock to be filed prior to the Closing by the Company with the Secretary of State of the State of Delaware, substantially in the form of Exhibit A attached hereto.

“Series B Conversion Price” shall have the meaning ascribed to the term “Conversion Price” in the Series B Certificate of Designation, and shall initially be \$1.30 (subject to adjustment as described therein).

“Series B Conversion Shares” shall have the meaning ascribed to the term “Conversion Shares” in the Series B Certificate of Designation.

“Series B Preferred Stock” means the aggregate of up to 6,000 shares of the Company’s Series B Convertible Preferred Stock to be issued and sold in the Purchase hereunder, having the rights, preferences and privileges set forth in the Series B Certificate of Designation.

“Series C Certificate of Designation” means the Certificate of Designation of Preferences, Rights and Limitations of the Series C Preferred Stock to be filed prior to the Closing by the Company with the Secretary of State of the State of Delaware, substantially in the form of Exhibit B attached hereto.

“Series C Conversion Price” shall have the meaning ascribed to the term “Conversion Price” in the Series C Certificate of Designation, and shall initially be \$1.64 (subject to adjustment as described therein).

“Series C Conversion Shares” shall have the meaning ascribed to the term “Conversion Shares” in the Series C Certificate of Designation.

“Series C Preferred Stock” means the aggregate of up to 1,880 shares of the Company’s Series C Convertible Preferred Stock to be issued and exchanged in the Exchange hereunder, having the rights, preferences and privileges set forth in the Series C Certificate of Designation.

“Short Sales” means all “short sales” as defined in Rule 200 of Regulation SHO under the Exchange Act (but shall not be deemed to include locating and/or borrowing shares of Common Stock).

“Stated Value” means \$1,000 per share of Series B Preferred Stock.

“Subscription Amount” means, as to each Purchaser, the aggregate amount to be paid for Purchased Securities purchased by such Purchaser hereunder in the Purchase, severally and not jointly, as specified below such Purchaser’s name on the signature page of this Agreement and next to the heading “Subscription Amount,” in United States dollars and in immediately available funds.

“Subsidiary” means any subsidiary of the Company as set forth on Schedule 3.1(a) and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the principal Trading Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: The Nasdaq Capital Market, The Nasdaq Global Market, The Nasdaq Global Select Market, the New York Stock Exchange, the NYSE American, or the OTCQX or OTCQB operated by the OTC Markets Group, Inc. (or any successors to any of the foregoing).

“Transaction Documents” means this Agreement, the Series B Certificate of Designation, the Series C Certificate of Designation, the Warrants, the Registration Rights Agreement, all exhibits and schedules hereto and thereto and any other documents or agreements executed in connection with the transactions contemplated hereunder.

“Transfer Agent” means Corporate Stock Transfer, Inc., the current transfer agent of the Company, with a mailing address of 3200 Cherry Creek South Drive, Suite 430, Denver, Colorado 80209 and a facsimile number of (303) 282-5800, and any successor transfer agent of the Company.

“Variable Rate Transaction” shall have the meaning ascribed to such term in Section 4.12(b).

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Warrants” means, collectively, the Common Stock purchase warrants, substantially in the form of Exhibit D attached hereto, delivered to the Purchasers in the Purchase at the Closing in accordance with Section 2.2(a) hereof, which Warrants shall be exercisable for a period of five (5) years commencing on the Closing Date.

“Warrant Shares” means the shares of Common Stock issuable upon exercise of the Warrants.

**ARTICLE II.  
PURCHASE AND EXCHANGE**

2.1 Purchase of Purchased Securities; Exchange of Exchanged Securities

(a) Purchase of Purchased Series B Preferred Shares and Warrants. On the Closing Date, upon the terms and subject to the conditions set forth herein, the Company shall issue and sell to each Purchaser, and each Purchaser shall, severally and not jointly, purchase from the Company, such number of Purchased Series B Preferred Shares equal to the quotient resulting from dividing (i) the Subscription Amount for such Purchaser by (ii) the Stated Value, rounded down to the nearest whole share. In addition, each Purchaser shall receive a Warrant to purchase a number of Warrant Shares equal to the product of (A) 0.5 multiplied by (B) the quotient resulting from dividing (x) the total aggregate Stated Value of all Purchased Series B Preferred Shares purchased by such Purchaser in the Purchase by (y) the initial Series B Conversion Price set forth in the Series B Certificate of Designation, rounded to the nearest whole share, and ignoring any conversion limits set forth in the Series B Certificate of Designation), with an exercise price equal to \$1.30, subject to adjustment therein.

(b) Exchange of Exchanged Securities. On the Closing Date, upon the terms and subject to the conditions set forth herein, each Purchaser participating, severally and not jointly, in the Exchange shall exchange such Purchaser's Exchanged Series A Preferred Shares, if any, for the Exchanged Series C Preferred Shares to be issued by the Company in exchange for such Purchaser's Exchanged Series A Preferred Shares, on a 1-for-1 share basis.

2.2 Section 4(a)(2) and Rule 506(b) of Regulation D. (i) The offer, issuance and sale of the Purchased Securities by the Company to the Purchasers in the Purchase and (ii) the issuance and exchange of the Exchanged Series C Securities by the Company for the Exchanged Series A Securities in the Exchange, in each case pursuant to this Agreement, will be effected without registration under the Securities Act in reliance upon the exemption therefrom provided by Section 4(a)(2) of the Securities Act and Rule 506(b) of Regulation D promulgated thereunder. Each Purchaser, severally for itself and for no other Purchaser, acknowledges that the Company is relying upon the truth and accuracy of, and such Purchaser's compliance with, such Purchaser's respective representations, warranties, agreements, acknowledgments and understandings set forth herein in order to determine the availability of such exemptions and the eligibility of such Purchaser to participate, severally and not jointly, in the Purchase and, if applicable to such Purchaser, the Exchange.

2.3 Closing of Purchase and Exchange. On the Closing Date, upon satisfaction of the covenants and conditions set forth in Sections 2.4 and 2.5, the Closing of both the Purchase and the Exchange shall occur simultaneously at the offices of Placement Agent's Counsel or such other location as the parties shall mutually agree.

## 2.4 Deliveries.

(a) On or prior to the Closing Date, the Company shall deliver or cause to be delivered to each Purchaser the following:

(i) this Agreement duly executed by the Company;

(ii) a legal opinion of Company Counsel, addressed to the Purchasers and the Placement Agent, in the form and substance reasonably satisfactory to the Purchasers and the Placement Agent;

(iii) evidence of the filing and acceptance of the Series B Certificate of Designation and the Series C Certificate of Designation from the Secretary of State of the State of Delaware;

(iv) for each Purchaser, as applicable, a copy of the irrevocable instructions to the Transfer Agent instructing the Transfer Agent to deliver, within three (3) Trading Days of the Closing, a certificate or in book entry form, at the Purchaser's election (unless a Purchaser indicates otherwise, shares of Series B Preferred Stock and shares of Series C Preferred Stock, as applicable, shall be delivered in book entry form), registered in the name of such Purchaser (1) the number of Purchased Series B Shares such Purchaser is purchasing, as determined in accordance with Section 2.1(a) of this Agreement and (2) if such Purchaser is participating, severally and not jointly, in the Exchange hereunder, the number of Exchanged Series C Preferred Shares such Purchaser is entitled to receive for its Exchanged Series A Preferred Shares, as determined in accordance with Section 2.1(b) of this Agreement;

(v) a Warrant registered in the name of such Purchaser to purchase the number of Warrant Shares, as determined in accordance with Section 2.1(a) of this Agreement;

(vi) wire instructions from the Escrow Agent for payment of each Purchaser's Subscription Amount to the Escrow Agent;

(vii) for each Purchaser participating, severally and not jointly, in the Exchange, instructions from the Transfer Agent for delivery of such Purchaser's Exchanged Series A Preferred Shares; and

(viii) the Registration Rights Agreement duly executed by the Company.

(b) On or prior to the Closing Date, each Purchaser shall deliver or cause to be delivered to the Company, the Transfer Agent, or the Escrow Agent, as applicable, the following:

(i) this Agreement duly executed by such Purchaser;

(ii) to the Escrow Agent, such Purchaser's Subscription Amount by wire transfer in accordance with the wire instructions provided by the Company pursuant to Section 2.4(a)(vi) of this Agreement;

(iii) if such Purchaser is participating in the Exchange, to the Transfer Agent, (A) such Purchaser's Exchanged Series A Preferred Shares to be exchanged by such Purchaser hereunder, by instructing such Purchaser's broker to transfer and deliver, in accordance with the written delivery instructions of the Transfer Agent referred to in Section 2.4(a)(vii), such Purchaser's Exchanged Series A Preferred Shares, and (B) all documentation related to the right, title and interest in and to all of such Purchaser's Exchanged Series A Preferred Shares, and whatever documents of conveyance or transfer may be necessary or reasonably required by the Transfer Agent to transfer to and confirm in the Company all right, title and interest in and to (free and clear of any mortgage, lien, pledge, charge, security interest, encumbrance, title retention agreement, option, equity or other adverse claim thereto) such Purchaser's Exchanged Series A Shares; and

(iv) the Registration Rights Agreement duly executed by such Purchaser.

## 2.5 Closing Conditions.

(a) The obligations of the Company hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) on the Closing Date of the representations and warranties of the Purchasers contained herein (unless as of a specific date therein in which case they shall be accurate as of such date);

(ii) all obligations, covenants and agreements of each Purchaser required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by each Purchaser of the items set forth in Section 2.4(b) of this Agreement, as applicable; and

(iv) each of the Series B Certificate of Designation and the Series C Certificate of Designation shall have been filed and be effective in the State of Delaware.

(b) The respective obligations of the Purchasers hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) when made and on the Closing Date of the representations and warranties of the Company contained herein (unless as of a specific date therein in which case they shall be accurate as of such date);

- (ii) all obligations, covenants and agreements of the Company required to be performed at or prior to the Closing Date shall have been performed;
- (iii) the delivery by the Company of the items set forth in Section 2.4(a) of this Agreement, as applicable;
- (iv) there shall have been no Material Adverse Effect with respect to the Company since the date hereof;
- (v) the Company shall have filed with Nasdaq a Notification Form: Listing of Additional Shares for the listing of Series B Conversion Shares, Series C Conversion Shares and Warrant Shares on Nasdaq;
- (vi) each of the Series B Certificate of Designation and the Series C Certificate of Designation shall have been filed and be effective in the State of Delaware; and
- (vii) from the date hereof to the Closing Date, trading in the Common Stock shall not have been suspended by the Commission or the Company's principal Trading Market, and, at any time prior to the Closing Date, trading in securities generally as reported by Bloomberg L.P. shall not have been suspended or limited, or minimum prices shall not have been established on securities whose trades are reported by such service, or on any Trading Market, nor shall a banking moratorium have been declared either by the United States or New York State authorities nor shall there have occurred any material outbreak or escalation of hostilities or other national or international calamity of such magnitude in its effect on, or any material adverse change in, any financial market which, in each case, in the reasonable judgment of such Purchaser, makes it impracticable or inadvisable to purchase the Purchased Securities and/or, if such Purchaser is also participating, severally and not jointly, in the Exchange, inadvisable to exchange the Exchanged Securities, in each case at the Closing.

**ARTICLE III.  
REPRESENTATIONS AND WARRANTIES**

3.1 Representations and Warranties of the Company. Except as set forth in the Disclosure Schedules, which Disclosure Schedules shall be deemed a part hereof and shall qualify any representation or otherwise made herein to the extent of the disclosure contained in the corresponding section of the Disclosure Schedules, the Company hereby makes the following representations and warranties to each Purchaser and the Placement Agent:

- (a) Subsidiaries. All of the direct and indirect subsidiaries of the Company are set forth on Schedule 3.1(a). The Company owns, directly or indirectly, all of the capital stock or other equity interests of each Subsidiary free and clear of any Liens, and all of the issued and outstanding shares of capital stock of each Subsidiary are validly issued and are fully paid, non-assessable and free of preemptive and similar rights to subscribe for or purchase securities. If the Company has no subsidiaries, all other references to the Subsidiaries or any of them in the Transaction Documents shall be disregarded.

(b) Organization and Qualification. The Company and each of the Subsidiaries is an entity duly incorporated or otherwise organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization, with the requisite power and authority to own and use its properties and assets and to carry on its business as currently conducted. Neither the Company nor any Subsidiary is in violation or default of any of the provisions of its respective certificate or articles of incorporation, bylaws or other organizational or charter documents. Each of the Company and the Subsidiaries is duly qualified to conduct business and is in good standing as a foreign corporation or other entity in each jurisdiction in which the nature of the business conducted or property owned by it makes such qualification necessary, except where the failure to be so qualified or in good standing, as the case may be, would not have or reasonably be expected to result in: (i) a material adverse effect on the legality, validity or enforceability of any Transaction Document, (ii) a material adverse effect on the results of operations, assets, business, prospects or condition (financial or otherwise) of the Company and the Subsidiaries, taken as a whole, or (iii) a material adverse effect on the Company's ability to perform in any material respect on a timely basis its obligations under any Transaction Document (any of (i), (ii) or (iii), a "Material Adverse Effect") and no Proceeding has been instituted in any such jurisdiction revoking, limiting or curtailing or seeking to revoke, limit or curtail such power and authority or qualification.

(c) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and each of the other Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of each of this Agreement and the other Transaction Documents by the Company and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Board of Directors or the Company's stockholders in connection herewith or therewith other than in connection with the Required Approvals. This Agreement and each other Transaction Document to which it is a party has been (or upon delivery will have been) duly executed by the Company and, when delivered in accordance with the terms hereof and thereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except: (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(d) No Conflicts. The execution, delivery and performance by the Company of this Agreement and the other Transaction Documents to which it is a party, the issuance and sale of the Purchased Securities, the issuance and Exchange of the Exchanged Series C Securities and the consummation by it of the transactions contemplated hereby and thereby, including, without limitation, the Purchase and the Exchange, do not and will not: (i) conflict with or violate any provision of the Company's or any Subsidiary's certificate or articles of incorporation, bylaws or other organizational or charter documents, (ii) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, result in the creation of any Lien upon any of the properties or assets of the Company or any Subsidiary, or give to others any rights of termination, amendment, acceleration or cancellation (with or without notice, lapse of time or both) of, any agreement, credit facility, debt or other instrument (evidencing a Company or Subsidiary debt or otherwise) or other understanding to which the Company or any Subsidiary is a party or by which any property or asset of the Company or any Subsidiary is bound or affected, or (iii) subject to the Required Approvals, conflict with or result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or a Subsidiary is subject (including federal and state securities laws and regulations), or by which any property or asset of the Company or a Subsidiary is bound or affected; except in the case of each of clauses (ii) and (iii), such as would not have or reasonably be expected to result in a Material Adverse Effect.

(e) Filings, Consents and Approvals. The Company is not required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any court or other federal, state, local or other governmental authority or other Person in connection with the execution, delivery and performance by the Company of the Transaction Documents, other than: (i) the filings required pursuant to Section 4.4 of this Agreement, (ii) the filing with the Commission pursuant to the Registration Rights Agreement, (iii) the notice and/or application(s) to each applicable Trading Market for the issuance and sale of the Purchased Securities, the issuance and Exchange of the Exchanged Series C Securities, and the listing of the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares for trading thereon in the time and manner required thereby, (iv) the filing of Form D with the Commission and such filings as are required to be made under applicable state securities laws, and (v) the filing of each of the Series B Certificate of Designation and the Series C Certificate of Designation with the office of the Secretary of State of the State of Delaware (collectively, the "Required Approvals").

(f) Issuance of the Securities. The Securities are duly authorized and, when issued and paid for in accordance with the applicable Transaction Documents, will be duly and validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company other than restrictions on transfer provided for in the Transaction Documents. The Series B Conversion Shares, when issued in accordance with the terms of the Series B Certificate of Designation, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company other than restrictions on transfer provided for in the Series B Certificate of Designation and this Agreement. The Series C Conversion Shares, when issued in accordance with the terms of the Series C Certificate of Designation, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company other than restrictions on transfer provided for in the Series C Certificate of Designation and this Agreement. The Warrant Shares, when issued in accordance with the terms of the Warrants, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company other than restrictions on transfer provided for in the Warrants and this Agreement. The Company has reserved from its duly authorized capital stock a total number of shares of Common Stock for issuance as Series B Conversion Shares upon conversion of the Series B Preferred Stock, for issuance as Series C Conversion Shares upon conversion of the Series C Preferred Stock and for issuance as Warrant Shares upon exercise of the Warrants in an aggregate amount at least equal to the Required Minimum as of the date hereof.

(g) Capitalization. The capitalization of the Company is as set forth on Schedule 3.1(g). The Company has not issued any capital stock since its most recently filed periodic report under the Exchange Act, other than pursuant to the exercise of employee stock options under the Company's stock option plans, the issuance of shares of Common Stock to employees pursuant to the Company's employee stock purchase plans and pursuant to the conversion and/or exercise of Common Stock Equivalents outstanding as of the date of the most recently filed periodic report under the Exchange Act. No Person has any right of first refusal, preemptive right, right of participation, or any similar right to participate in the transactions contemplated by the Transaction Documents. Except as a result of the Purchase of the Purchased Securities and the Exchange of the Exchanged Securities, and as described on Schedule 3.1(g), there are no outstanding options, warrants, scrip rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities, rights or obligations convertible into or exercisable or exchangeable for, or giving any Person any right to subscribe for or acquire any shares of Common Stock or the capital stock of any Subsidiary, or contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to issue additional shares of Common Stock or Common Stock Equivalents or capital stock of any Subsidiary. Except as described on Schedule 3.1(g), the issuance and sale of the Securities will not obligate the Company or any Subsidiary to issue shares of Common Stock or other securities to any Person (other than the Purchasers) and will not result in a right of any holder of Company securities to adjust the exercise, conversion, exchange or reset price under any of such securities. There are no outstanding securities or instruments of the Company or any Subsidiary that contain any redemption or similar provisions, and there are no contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to redeem a security of the Company or such Subsidiary. The Company does not have any stock appreciation rights or "phantom stock" plans or any similar plan or agreement. All of the outstanding shares of capital stock of the Company are duly authorized, validly issued, fully paid and nonassessable, have been issued in compliance with all applicable federal and state securities laws, and none of such outstanding shares was issued in violation of any preemptive rights or similar rights to subscribe for or purchase securities. No further approval or authorization of any stockholder, the Board of Directors or others is required for the Purchase of the Purchased Securities and the Exchange of the Exchanged Securities. There are no stockholders agreements, voting agreements or other similar agreements with respect to the Company's capital stock to which the Company is a party or, to the knowledge of the Company, between or among any of the Company's stockholders.

(h) SEC Reports; Financial Statements. The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Securities Act and the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, for the two years preceding the date hereof (or such shorter period as the Company was required by law or regulation to file such material) (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, being collectively referred to herein as the “SEC Reports”) on a timely basis or has received a valid extension of such time of filing and has filed any such SEC Reports prior to the expiration of any such extension. As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Company has never been an issuer subject to Rule 144(i) under the Securities Act. The financial statements of the Company included in the SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with United States generally accepted accounting principles applied on a consistent basis during the periods involved (“GAAP”), except as may be otherwise specified in such financial statements or the notes thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Company and its consolidated Subsidiaries as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial, year-end audit adjustments.

(i) Material Changes; Undisclosed Events, Liabilities or Developments. Since December 31, 2017, except as specifically disclosed in an SEC Report filed with the Commission after December 31, 2017 and prior to the date hereof: (i) there has been no event, occurrence or development that has had or that would reasonably be expected to result in a Material Adverse Effect, (ii) the Company has not incurred any liabilities (contingent or otherwise) other than (A) trade payables and accrued expenses incurred in the ordinary course of business consistent with past practice and (B) liabilities not required to be reflected in the Company’s financial statements pursuant to GAAP or disclosed in filings made with the Commission, (iii) the Company has not altered its method of accounting, (iv) the Company has not declared or made any dividend or distribution of cash or other property to its stockholders or purchased, redeemed or made any agreements to purchase or redeem any shares of its capital stock and (v) the Company has not issued any equity securities to any officer, director or Affiliate, except pursuant to existing Company stock option plans. The Company does not have pending before the Commission any request for confidential treatment of information. Except for the Purchase of the Purchased Securities and the Exchange of the Exchanged Securities contemplated by this Agreement or as set forth on Schedule 3.1(i), no event, liability, fact, circumstance, occurrence or development has occurred or exists, or is reasonably expected to occur or exist, with respect to the Company or its Subsidiaries or their respective businesses, properties, operations, assets or financial condition, that would be required to be disclosed by the Company under applicable securities laws at the time this representation is made or deemed made that has not been publicly disclosed at least 1 Trading Day prior to the date that this representation is made.

(j) Litigation. There is no action, suit, inquiry, notice of violation, proceeding or investigation pending or, to the knowledge of the Company, threatened against or affecting the Company, any Subsidiary or any of their respective properties before or by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) (collectively, an “Action”) which (i) adversely affects or challenges the legality, validity or enforceability of any of the Transaction Documents or the Securities or (ii) would, if there were an unfavorable decision, have or reasonably be expected to result in a Material Adverse Effect. Neither the Company nor any Subsidiary, nor any director or officer thereof (in his or her capacity as such), is or has been the subject of any Action involving a claim of violation of or liability under federal or state securities laws or a claim of breach of fiduciary duty. There has not been, and to the knowledge of the Company, there is not pending or contemplated, any investigation by the Commission involving the Company or any current or former director or officer of the Company (in his or her capacity as such). The Commission has not issued any stop order or other order suspending the effectiveness of any registration statement filed by the Company or any Subsidiary under the Exchange Act or the Securities Act.

(k) Labor Relations. No material labor dispute exists or, to the knowledge of the Company, is imminent with respect to any of the employees of the Company, which would reasonably be expected to result in a Material Adverse Effect. None of the Company’s or its Subsidiaries’ employees is a member of a union that relates to such employee’s relationship with the Company or such Subsidiary, and neither the Company nor any of its Subsidiaries is a party to a collective bargaining agreement, and the Company and its Subsidiaries believe that their relationships with their employees are good. To the knowledge of the Company, no executive officer of the Company or any Subsidiary is, or is now expected to be, in violation of any material term of any employment contract, confidentiality, disclosure or proprietary information agreement or non-competition agreement, or any other contract or agreement or any restrictive covenant in favor of any third party, and, to the Company’s knowledge, the continued employment of each such executive officer does not subject the Company or any of its Subsidiaries to any liability with respect to any of the foregoing matters. The Company and its Subsidiaries are in compliance with all applicable U.S. federal, state, local and foreign laws and regulations relating to employment and employment practices, terms and conditions of employment and wages and hours, except where the failure to be in compliance would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(l) Compliance. Neither the Company nor any Subsidiary: (i) is in default under or in violation of (and no event has occurred that has not been waived that, with notice or lapse of time or both, would result in a default by the Company or any Subsidiary under), nor has the Company or any Subsidiary received notice of a claim that it is in default under or that it is in violation of, any indenture, loan or credit agreement or any other agreement or instrument to which it is a party or by which it or any of its properties is bound (whether or not such default or violation has been waived), (ii) is in violation of any judgment, decree, or order of any court, arbitrator or other governmental authority or (iii) is or has been in violation of any statute, rule, ordinance or regulation of any governmental authority, including without limitation all foreign, federal, state and local laws relating to taxes, environmental protection, occupational health and safety, product quality and safety and employment and labor matters, except in each case as would not have or reasonably be expected to result in a Material Adverse Effect.

(m) Environmental Laws. The Company and its Subsidiaries (i) are in compliance with all federal, state, local and foreign laws relating to pollution or protection of human health or the environment (including ambient air, surface water, groundwater, land surface or subsurface strata), including laws relating to emissions, discharges, releases or threatened releases of chemicals, pollutants, contaminants, or toxic or hazardous substances or wastes (collectively, "Hazardous Materials") into the environment, or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials that are applicable to the Company's business, as well as all authorizations, codes, decrees, demands, or demand letters, injunctions, judgments, licenses, notices or notice letters, orders, permits, plans or regulations, issued, entered, promulgated or approved thereunder ("Environmental Laws"); (ii) have received all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses; and (iii) are in compliance with all terms and conditions of any such permit, license or approval where in each clause (i), (ii) and (iii), the failure to so comply would be reasonably expected to have, individually or in the aggregate, a Material Adverse Effect.

(n) Regulatory Permits. The Company and the Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state, local or foreign regulatory authorities necessary to conduct their respective businesses as described in the SEC Reports, except where the failure to possess such permits would not reasonably be expected to result in a Material Adverse Effect ("Material Permits"), and neither the Company nor any Subsidiary has received any notice of proceedings relating to the revocation or modification of any Material Permit.

(o) Title to Assets. The Company and the Subsidiaries have good and marketable title in fee simple to all real property owned by them and good and marketable title in all personal property owned by them that is material to the business of the Company and the Subsidiaries, in each case free and clear of all Liens, except for (i) Liens as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and the Subsidiaries and (ii) Liens for the payment of federal, state or other taxes, for which appropriate reserves have been made therefor in accordance with GAAP and the payment of which is neither delinquent nor subject to penalties. Any real property and facilities held under lease by the Company and the Subsidiaries are held by them under valid, subsisting and enforceable leases with which the Company and the Subsidiaries are in compliance.

(p) Intellectual Property. The Company and the Subsidiaries have, or have rights to use, all patents, patent applications, trademarks, trademark applications, service marks, trade names, trade secrets, inventions, copyrights, licenses and other intellectual property rights and similar rights as described in the SEC Reports as necessary or required for use in connection with their respective businesses and which the failure to so have would have a Material Adverse Effect (collectively, the “Intellectual Property Rights”). Neither the Company nor any Subsidiary has received a notice (written or otherwise) that any of, the Intellectual Property Rights has expired, terminated or been abandoned, or is expected to expire or terminate or be abandoned, within two (2) years from the date of this Agreement. Neither the Company nor any Subsidiary has received, since the date of the latest audited financial statements included within the SEC Reports, a written notice of a claim or otherwise has any knowledge that the Intellectual Property Rights violate or infringe upon the rights of any Person, except as would not have or reasonably be expected to not have a Material Adverse Effect. To the knowledge of the Company, all such Intellectual Property Rights are enforceable and there is no existing infringement by another Person of any of the Intellectual Property Rights. The Company and its Subsidiaries have taken reasonable security measures to protect the secrecy, confidentiality and value of all of their intellectual properties, except where failure to do so would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(q) Insurance. The Company and the Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are prudent and customary in the businesses in which the Company and the Subsidiaries are engaged, including, but not limited to, directors and officers insurance coverage. Neither the Company nor any Subsidiary has been notified in writing that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business without a significant increase in cost.

(r) Transactions With Affiliates and Employees. Except as set forth in the Company’s definitive proxy statement on Schedule 14A filed with the Commission on May 15, 2018, none of the officers or directors of the Company or any Subsidiary and, to the knowledge of the Company, none of the employees of the Company or any Subsidiary is presently a party to any transaction with the Company or any Subsidiary (other than for services as employees, officers and directors), including any contract, agreement or other arrangement providing for the furnishing of services to or by, providing for rental of real or personal property to or from, providing for the borrowing of money from or lending of money to or otherwise requiring payments to or from any officer, director or such employee or, to the knowledge of the Company, any entity in which any officer, director, or any such employee has a substantial interest or is an officer, director, trustee, stockholder, member or partner, in each case in excess of \$120,000 other than for: (i) payment of salary or consulting fees for services rendered, (ii) reimbursement for expenses incurred on behalf of the Company and (iii) other employee benefits, including stock option agreements under any stock option plan of the Company.

(s) Sarbanes-Oxley; Internal Accounting Controls. The Company and the Subsidiaries are in material compliance with any and all applicable requirements of the Sarbanes-Oxley Act of 2002 that are effective as of the date hereof, and any and all applicable rules and regulations promulgated by the Commission thereunder that are effective as of the date hereof and as of the Closing Date. The Company and the Subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurance that: (i) transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management's general or specific authorization, and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. The Company and the Subsidiaries have established disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the Company and the Subsidiaries and designed such disclosure controls and procedures to ensure that information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Commission's rules and forms. The Company's certifying officers have evaluated the effectiveness of the disclosure controls and procedures of the Company and the Subsidiaries as of the end of the period covered by the most recently filed periodic report under the Exchange Act (such date, the "Evaluation Date"). The Company presented in its most recently filed periodic report under the Exchange Act the conclusions of the certifying officers about the effectiveness of the disclosure controls and procedures based on their evaluations as of the Evaluation Date. Since the Evaluation Date, there have been no changes in the internal control over financial reporting (as such term is defined in the Exchange Act) of the Company and its Subsidiaries that have materially affected, or is reasonably likely to materially affect, the internal control over financial reporting of the Company or its Subsidiaries.

(t) Certain Fees. Other than fees to the Placement Agent, no brokerage or finder's fees or commissions are or will be payable by the Company or any Subsidiary to any broker, financial advisor or consultant, finder, placement agent, investment banker, bank or other Person with respect to the transactions contemplated by the Transaction Documents. No Purchasers shall have any obligation with respect to any fees or with respect to any claims (other than such fees or commissions owed by such Purchaser pursuant to agreements entered into by such Purchaser, which fees or commissions shall be the sole responsibility of such Purchaser) made by or on behalf of other Persons for fees of a type contemplated in this Section that may be due in connection with the transactions contemplated by the Transaction Documents due to an arrangement or agreement made by the Company.

(u) Private Placement. Assuming the accuracy of the Purchasers' representations and warranties set forth in Section 3.2, no registration under the Securities Act is required for (i) the offer, issuance and sale of the Purchased Securities by the Company to the Purchasers in the Purchase and (ii) the issuance and exchange of the Exchanged Series C Securities by the Company for the Exchanged Series A Securities in the Exchange as contemplated hereby pursuant to the exemptions from the registration requirements of the Securities Act provided by Section 4(a)(2) of the Securities Act and Rule 506(b) of Regulation D promulgated thereunder. Neither (i) the offer, issuance and sale of the Purchased Securities by the Company to the Purchasers in the Purchase or (ii) the issuance and exchange of the Exchanged Series C Securities by the Company for the Exchanged Series A Securities in the Exchange, contravenes the rules and regulations of the Trading Market or requires any registration or qualification to be made under any applicable state securities or "blue sky" laws.

(v) Investment Company. The Company is not, and is not an Affiliate of, and immediately after receipt of payment for the Purchased Securities, will not be or be an Affiliate of, an “investment company” within the meaning of the Investment Company Act of 1940, as amended. The Company shall conduct its business in a manner so that it will not become an “investment company” subject to registration under the Investment Company Act of 1940, as amended.

(w) Registration Rights. Other than each of the Purchasers and except as set forth on Schedule 3.1(w), no Person has any right to cause the Company to effect the registration under the Securities Act of any securities of the Company or any Subsidiary.

(x) Listing and Maintenance Requirements. The Common Stock is registered pursuant to Section 12(b) or 12(g) of the Exchange Act, and the Company has taken no action designed to, or which to its knowledge is likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act nor has the Company received any notification that the Commission is contemplating terminating such registration. Except as described on Schedule 3.1(x), the Company has not, in the 12 months preceding the date hereof, received notice from any Trading Market on which the Common Stock is or has been listed or quoted to the effect that the Company is not in compliance with the listing or maintenance requirements of such Trading Market. The Company is, and has no reason to believe that it will not in the foreseeable future continue to be, in compliance with all such listing and maintenance requirements. The Common Stock is currently eligible for electronic transfer through the Depository Trust Company or another established clearing corporation and the Company is current in payment of the fees to the Depository Trust Company (or such other established clearing corporation) in connection with such electronic transfer.

(y) Application of Takeover Protections. Except as described on Schedule 3.1(y), the Company and the Board of Directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Company’s certificate of incorporation, as amended to date (or similar charter documents), or the laws of its state of incorporation that is or could become applicable to the Purchasers as a result of the Purchasers and the Company fulfilling their obligations or exercising their rights under the Transaction Documents, including without limitation as a result of the Company’s issuance of the Securities and the Purchasers’ ownership of the Securities, as applicable.

(z) Disclosure. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, the Company confirms that neither it nor any other Person acting on its behalf has provided any of the Purchasers or their agents or counsel with any information that it believes constitutes or might constitute material, non-public information. The Company understands and confirms that the Purchasers will rely on the foregoing representation in effecting transactions in securities of the Company. All of the disclosure furnished by or on behalf of the Company to the Purchasers regarding the Company and its Subsidiaries, their respective businesses and the transactions contemplated hereby is true and correct in all material respects and does not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in light of the circumstances under which they were made, not misleading. The Company acknowledges and agrees that no Purchaser makes or has made any representations or warranties with respect to the transactions contemplated hereby other than those specifically set forth in Section 3.2 hereof.

(aa) No Integrated Offering. Assuming the accuracy of the Purchasers' representations and warranties set forth in Section 3.2, neither the Company, nor any of its Affiliates, nor any Person acting on its or their behalf has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would cause the transactions contemplated hereunder, including, without limitation, the Purchase and the Exchange, to be integrated with prior offerings by the Company for purposes of (i) the Securities Act which would require the registration of any such securities under the Securities Act, or (ii) any applicable stockholder approval provisions of any Trading Market on which any of the securities of the Company are listed or designated.

(bb) Tax Status. Except for matters that would not, individually or in the aggregate, have or reasonably be expected to result in a Material Adverse Effect, the Company and its Subsidiaries each (i) has made or filed all United States federal, state and local income and all foreign income and franchise tax returns, reports and declarations required by any jurisdiction to which it is subject, (ii) has paid all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such returns, reports and declarations, other than those being contested in good faith for which adequate reserves have been established by the Company and (iii) has set aside on its books provision reasonably adequate for the payment of all material taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction, and the officers of the Company or of any Subsidiary know of no basis for any such claim.

(cc) No General Solicitation. Neither the Company nor any Person acting on behalf of the Company has offered or sold any of the Securities by any form of general solicitation or general advertising. The Company has offered the Purchased Securities for sale only to the Purchasers and certain other "accredited investors" within the meaning of Rule 501 under the Securities Act and has offered the Exchanged Series C Securities only to those Purchasers who hold shares of Series A Preferred Stock.

(dd) Foreign Corrupt Practices. Neither the Company nor any Subsidiary, to the knowledge of the Company or any Subsidiary, any agent or other person acting on behalf of the Company or any Subsidiary, has: (i) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (iii) failed to disclose fully any contribution made by the Company or any Subsidiary (or made by any person acting on its behalf of which the Company is aware) which is in violation of law or (iv) violated in any material respect any provision of FCPA.

(ee) Accountants. To the Company's knowledge, the Company's accounting firm, Mayer Hoffman McCann P.C., who have expressed their opinion with respect to the financial statements included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, is an independent registered public accounting firm as required by the Exchange Act.

(ff) No Disagreements with Accountants and Lawyers. To the Company's knowledge, there are no disagreements of any kind presently existing, or reasonably anticipated by the Company to arise, between the Company and the accountants and lawyers formerly or presently employed by the Company which would reasonably be likely to affect the Company's ability to perform any of its obligations under any of the Transaction Documents. The Company is current with respect to any fees owed to its accountants or lawyers which would reasonably be expected to adversely affect the Company's ability to perform any of its obligations under any of the Transaction Documents.

(gg) Acknowledgment Regarding Purchasers' Investment in Securities. The Company acknowledges and agrees that each of the Purchasers is acting solely in the capacity of an arm's length purchaser with respect to the Transaction Documents and the transactions contemplated thereby. The Company further acknowledges that no Purchaser is acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to the Transaction Documents and the transactions contemplated thereby and any advice given by any Purchaser or any of their respective representatives or agents in connection with the Transaction Documents and the transactions contemplated thereby is merely incidental to the Purchasers' investment in the Securities. The Company further represents to each Purchaser that the Company's decision to enter into this Agreement and the other Transaction Documents has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

(hh) Acknowledgment Regarding Purchaser's Trading Activity. Anything in this Agreement or elsewhere herein to the contrary notwithstanding (except for Sections 3.2(g) and 4.14 hereof), it is understood and acknowledged by the Company that: (i) none of the Purchasers has been asked by the Company to agree, nor has any Purchaser agreed, to desist from purchasing or selling, long and/or short, securities of the Company, or "derivative" securities based on securities issued by the Company or to hold the Securities for any specified term, (ii) past or future open market or other transactions by any Purchaser, specifically including, without limitation, Short Sales or "derivative" transactions, before or after the closing of this or future private placement transactions, may negatively impact the market price of the Company's publicly-traded securities, (iii) any Purchaser, and counter-parties in "derivative" transactions to which any such Purchaser is a party, directly or indirectly, may presently have a "short" position in the Common Stock and (iv) each Purchaser shall not be deemed to have any affiliation with or control over any arm's length counter-party in any "derivative" transaction. The Company further understands and acknowledges that (y) one or more Purchasers may engage in hedging activities at various times during the period that the Securities are outstanding, including, without limitation, during the periods that the value of the Series B Conversion Shares issuable upon conversion of the Series B Preferred Stock, the Series C Conversion Shares issuable upon conversion of the Series C Preferred Stock or the Warrant Shares issuable upon exercise of the Warrants are being determined, and (z) such hedging activities (if any) could reduce the value of the existing stockholders' equity interests in the Company at and after the time that the hedging activities are being conducted. The Company acknowledges that such aforementioned hedging activities do not constitute a breach of any of the Transaction Documents.

(ii) Regulation M Compliance. The Company has not, and to its knowledge no one acting on its behalf has, (i) taken, directly or indirectly, any action designed to cause or to result in the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of any of the Securities, (ii) sold, bid for, purchased, or paid any compensation for soliciting purchases of, any of the Securities, or (iii) paid or agreed to pay to any Person any compensation for soliciting another to purchase any other securities of the Company, other than, in the case of clauses (ii) and (iii), compensation paid to the Placement Agent in connection with the transactions contemplated hereby.

(jj) Regulatory. All preclinical and clinical studies conducted by or on behalf of the Company that are material to the Company have been adequately described in the SEC Reports, in all material respects. The clinical and preclinical studies conducted by or on behalf of the Company that are described in the SEC Reports or the results of such studies which are referred to in the SEC Reports were and, if still ongoing, are, to the best of the Company's knowledge, being conducted in material compliance with all laws and regulations applicable thereto in the jurisdictions in which they are being conducted. The descriptions in the SEC Reports of the results of such studies are accurate and complete in all material respects and fairly present the data derived from such studies, and the Company has no knowledge of any large well-controlled clinical study the aggregate results of which are inconsistent with or otherwise call into question the results of any clinical study conducted by or on behalf of the Company that are described in the SEC Reports or the results of which are referred to in the SEC Reports. Except as disclosed in the SEC Reports, the Company has not received any written notices or statements from the FDA, the European Medicines Agency ("EMA") or any other governmental agency or authority imposing, requiring, requesting or suggesting a clinical hold, termination, suspension or material modification of any clinical or preclinical studies that are described in the SEC Reports or the results of which are referred to in the SEC Reports. Except as disclosed in the SEC Reports, the Company has not received any written notices or statements from the FDA, the EMA or any other governmental agency, and otherwise has no knowledge of, or reason to believe that, (i) any investigational new drug application for potential product of the Company is or has been rejected or determined to be non-approvable or conditionally approvable; and (ii) any license, approval, permit or authorization to conduct any clinical trial of any potential product of the Company has been, will be or may be suspended, revoked, modified or limited.

(kk) Stock Option Plans. Each stock option granted by the Company under the Company's stock option plan was granted (i) in accordance with the terms of the Company's stock option plan and (ii) with an exercise price at least equal to the fair market value of the Common Stock on the date such stock option would be considered granted under GAAP and applicable law. No stock option granted under the Company's stock option plan has been backdated. The Company has not knowingly granted, and there is no and has been no Company policy or practice to knowingly grant, stock options prior to, or otherwise knowingly coordinate the grant of stock options with, the release or other public announcement of material information regarding the Company or its Subsidiaries or their financial results or prospects.

(ll) Office of Foreign Assets Control. Neither the Company nor any Subsidiary nor, to the Company's knowledge, any director, officer, agent, employee or affiliate of the Company or any Subsidiary is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department ("OFAC").

(mm) U.S. Real Property Holding Corporation. The Company is not and has never been a U.S. real property holding corporation within the meaning of Section 897 of the Internal Revenue Code of 1986, as amended, and the Company shall so certify upon Purchaser's request.

(nn) Bank Holding Company Act. Neither the Company nor any of its Subsidiaries or Affiliates is subject to the Bank Holding Company Act of 1956, as amended (the "BHCA") and to regulation by the Board of Governors of the Federal Reserve System (the "Federal Reserve"). Neither the Company nor any of its Subsidiaries or Affiliates owns or controls, directly or indirectly, five percent (5%) or more of the outstanding shares of any class of voting securities or twenty-five percent or more of the total equity of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve. Neither the Company nor any of its Subsidiaries or Affiliates exercises a controlling influence over the management or policies of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve.

(oo) Money Laundering. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the "Money Laundering Laws"), and no Action or Proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any Subsidiary with respect to the Money Laundering Laws is pending or, to the knowledge of the Company or any Subsidiary, threatened.

(pp) No Disqualification Events. With respect to the Securities to be offered and sold hereunder in reliance on Rule 506 under the Securities Act, none of the Company, any of its predecessors, or any affiliated issuer, nor any director, executive officer, other officer of the Company participating in the offering hereunder, any beneficial owner of 20% or more of the Company's outstanding voting equity securities, calculated on the basis of voting power, nor any promoter (as that term is defined in Rule 405 under the Securities Act) connected with the Company in any capacity at the time of sale (each, an "Issuer Covered Person" and, together, "Issuer Covered Persons") is subject to any of the "Bad Actor" disqualifications described in Rule 506(d)(1)(i) to (viii) under the Securities Act (a "Disqualification Event"), except for a Disqualification Event covered by Rule 506(d)(2) or (d)(3). The Company has exercised reasonable care to determine whether any Issuer Covered Person is subject to a Disqualification Event. The Company has complied, to the extent applicable, with its disclosure obligations under Rule 506(e), and has furnished to the Purchasers a copy of any disclosures provided thereunder.

(qq) Other Covered Persons. Other than the Placement Agent, the Company is not aware of any person (other than any Issuer Covered Person) that has been or will be paid (directly or indirectly) remuneration for solicitation of purchasers in connection with the transactions contemplated hereby.

(rr) Notice of Disqualification Events. The Company will notify the Purchasers and the Placement Agent in writing, prior to the Closing Date of (i) any Disqualification Event of which it becomes aware relating to any Issuer Covered Person and (ii) any event that would, with the passage of time, become a Disqualification Event relating to any Issuer Covered Person.

(ss) Solvency. Based on the consolidated financial condition of the Company as of the Closing Date, after giving effect to the receipt by the Company of the net proceeds from the sale of the Purchased Series B Preferred Shares and Warrants to the Purchasers in the Purchase hereunder, the fair saleable value of the Company's assets exceeds the amount that will be required to be paid on or in respect of the Company's existing debts and other liabilities (including known contingent liabilities) as they mature, and (ii) the current cash flow of the Company, together with the proceeds the Company would receive, were it to liquidate all of its assets, after taking into account all anticipated uses of the cash, would be sufficient to pay all amounts on or in respect of its liabilities when such amounts are required to be paid. The Company does not presently intend to incur material debts beyond its ability to pay such material debts as they mature (taking into account the timing and amounts of cash to be payable on or in respect of its debt). The Company has no knowledge of any facts or circumstances which lead it to believe that it will file for voluntary reorganization or liquidation under the bankruptcy or reorganization laws of any jurisdiction within six (6) months from the Closing Date. As of the date hereof, neither the Company nor any Subsidiary is in default with respect to any Indebtedness. For the purposes of this Agreement, "Indebtedness" means (x) any liabilities for borrowed money or amounts owed in excess of \$100,000 (other than trade accounts payable incurred in the ordinary course of business), (y) all guaranties, endorsements and other contingent obligations in respect of indebtedness of others, whether or not the same are or should be reflected in the Company's consolidated balance sheet (or the notes thereto), except guaranties by endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business; and (z) the present value of any lease payments in excess of \$100,000 due under leases required to be capitalized in accordance with GAAP.

3.2 Representations and Warranties of the Purchasers. Each Purchaser, severally for itself and for no other Purchaser, hereby represents and warrants as of the date hereof and as of the Closing Date to the Company and the Placement Agent (and solely with respect to the representations and warranties contained in Section 3.2(n) below made only by each Purchaser who is participating in the Exchange, to each other Purchaser participating in the Purchase hereunder) as follows (unless as of a specific date therein, in which case they shall be accurate as of such date):

(a) Organization; Authority. Such Purchaser is either an individual or an entity duly incorporated or formed, validly existing and in good standing under the laws of the jurisdiction of its incorporation or formation with full right, corporate, partnership, limited liability company or similar power and authority to enter into and to consummate the transactions contemplated by the Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of the Transaction Documents and performance by such Purchaser of the transactions contemplated by the Transaction Documents have been duly authorized by all necessary corporate, partnership, limited liability company or similar action, as applicable, on the part of such Purchaser. Each Transaction Document to which it is a party has been duly executed by such Purchaser, and when delivered by such Purchaser in accordance with the terms hereof, will constitute the valid and legally binding obligation of such Purchaser, enforceable against it in accordance with its terms, except: (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(b) Own Account. Such Purchaser understands that the Securities are "restricted securities" and have not been registered under the Securities Act or any applicable state securities law and is acquiring the Securities as principal for its own account and not with a view to or for distributing or reselling such Securities or any part thereof in violation of the Securities Act or any applicable state securities law, has no present intention of distributing any of such Securities in violation of the Securities Act or any applicable state securities law and has no direct or indirect arrangement or understandings with any other persons to distribute or regarding the distribution of such Securities in violation of the Securities Act or any applicable state securities law (this representation and warranty not limiting such Purchaser's right to sell the Securities pursuant to the Registration Statement or otherwise in compliance with applicable federal and state securities laws). Such Purchaser is acquiring the Securities hereunder in the ordinary course of its business.

(c) Purchaser Status. At the time such Purchaser was offered the Securities, it was, and as of the date hereof it is, and on each date on which it exercises any Warrants or converts any Series B Preferred Stock or any Series C Preferred Stock (as applicable), it will be either: (i) an “accredited investor” as defined in Rule 501(a)(1), (a)(2), (a)(3), (a)(7) or (a)(8) under the Securities Act or (ii) a “qualified institutional buyer” as defined in Rule 144A(a) under the Securities Act.

(d) Experience of Such Purchaser. Such Purchaser, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. Such Purchaser is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment. Such Purchaser and its advisors, if any, have been furnished with all materials relating to the business, financial condition and results of operations of the Company, and materials relating to the offer and sale of the Securities, that have been requested by such Purchaser or its advisors, if any. Such Purchaser acknowledges and understands that its investment in the Securities involves a significant degree of risk.

(e) General Solicitation. Such Purchaser is not purchasing or acquiring the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or, to such Purchaser’s knowledge, any other general solicitation or general advertisement.

(f) Access to Information. Such Purchaser acknowledges that it has had the opportunity to review the Transaction Documents (including all exhibits and schedules thereto) and the SEC Reports and has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the Purchase of the Purchased Securities and the Exchange of the Exchanged Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. Such Purchaser acknowledges and agrees that neither the Placement Agent nor any Affiliate of the Placement Agent has provided such Purchaser with any information or advice with respect to the Securities nor is such information or advice necessary or desired. Neither the Placement Agent nor any Affiliate has made or makes any representation as to the Company or the quality of the Securities and the Placement Agent and any Affiliate may have acquired non-public information with respect to the Company which such Purchaser agrees need not be provided to it. In connection with the issuance of the Securities to such Purchaser, neither the Placement Agent nor any of its Affiliates has acted as a financial advisor or fiduciary to such Purchaser.

(g) Certain Transactions and Confidentiality. Other than consummating the transactions contemplated hereunder, such Purchaser has not directly or indirectly, nor has any Person acting on behalf of or pursuant to any understanding with such Purchaser, executed any purchases or sales, including Short Sales, of the securities of the Company during the period commencing as of the time that such Purchaser first received a term sheet (written or oral) from the Company or any other Person representing the Company setting forth the material terms of the transactions contemplated hereunder and ending immediately prior to the execution hereof. Notwithstanding the foregoing, in the case of a Purchaser that is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of such Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Purchaser's assets, the representation set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made the investment decision to purchase or acquire the Securities covered by this Agreement. Other than to other Persons party to this Agreement or to such Purchaser's representatives (including, without limitation, its officers, directors, partners, legal and other advisors, employees, agents and Affiliates), bound by a duty of confidentiality to such Purchaser and whom such Purchaser has taken reasonable actions to cause them to maintain such confidentiality, such Purchaser has maintained the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction). Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty against, or a prohibition of, any actions with respect to the borrowing of, arrangement to borrow, identification of the availability of, and/or securing of, securities of the Company in order for such Purchaser (or its broker or other financial representative) to effect Short Sales or similar transactions in the future.

(h) No Governmental Review. Such Purchaser understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

(i) No Conflicts. The execution, delivery and performance by such Purchaser of this Agreement and the consummation by such Purchaser of the transactions contemplated hereby will not (i) result in a violation of the organizational documents of such Purchaser or (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which such Purchaser is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to such Purchaser, except in the case of clauses (ii) and (iii) above, for such that are not material and do not otherwise affect the ability of such Purchaser to consummate the transactions contemplated hereby.

(j) No Legal, Tax or Investment Advice. Such Purchaser understands that nothing in this Agreement or any other materials presented by or on behalf of the Company to the Purchaser in connection with the purchase of the Securities constitutes legal, tax or investment advice. Such Purchaser has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities. Such Purchaser understands that the Placement Agent has acted solely as the agents of and advisors to the Company in this placement of the Securities and not as agents to or advisors of the Purchaser, and that the Placement Agent makes no representation or warranty with regard to the merits of this transaction or as to the accuracy of any information such Purchaser may have received in connection therewith. Such Purchaser acknowledges that he/she has not relied on any information or advice furnished by or on behalf of the Placement Agent.

(k) Title to Exchanged Series A Securities. If such Purchaser is participating, severally and not jointly, in the Exchange, such Purchaser (i) has good and valid title to the Exchanged Series A Securities, free and clear of any mortgage, lien, pledge, charge, security interest, encumbrance, title retention agreement, option, equity or other adverse claim thereto, and (ii) has not, in whole or in part, (A) assigned, transferred, hypothecated, pledged or otherwise disposed of the Exchanged Series A Securities or its rights in such Exchanged Series A Securities or (B) given any Person any transfer order, power of attorney or other authority of any nature whatsoever with respect to such Exchanged Series A Securities, which would limit such Purchaser's power to transfer the Exchanged Series A Securities hereunder.

(l) Affiliate Status. Such Purchaser is not, and has not been during the preceding three months, an "affiliate" of the Company as such term is defined in Rule 144 under the Securities Act.

(m) Beneficial Ownership. Following the Closing Date, such Purchaser (together with such Purchaser's Affiliates, and any other Persons acting as a group together with the Purchaser or any of the Purchaser's Affiliates) will not beneficially own in excess of 19.9% of the number of shares of Common Stock outstanding immediately after the Closing Date. Beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder.

(n) Acquisition Date of Exchanged Series C Preferred Securities. Each Purchaser receiving Exchanged Series C Preferred Securities in the Exchange acknowledges and agrees that, for purposes of Rule 144, the Exchanged Series C Preferred Securities will be deemed to have been acquired on the Closing Date and shall not assume the registered character of the Exchanged Series A Preferred Shares. The Company, the Placement Agent and each of the Purchasers of the Purchased Securities (other than such Purchaser) are relying upon the truth and accuracy of such Purchaser's acknowledgment and understanding contained in this Section 3.2(n) in deciding whether to participate in the Purchase hereunder.

The Company acknowledges and agrees that the representations contained in this Section 3.2 shall not modify, amend or affect such Purchaser's right to rely on the Company's representations and warranties contained in this Agreement or any representations and warranties contained in any other Transaction Document or any other document or instrument executed and/or delivered in connection with this Agreement or the consummation of the transactions contemplated hereby.

**ARTICLE IV.  
OTHER AGREEMENTS OF THE PARTIES**

4.1 Transfer Restrictions.

(a) The Securities may only be disposed of in compliance with state and federal securities laws. In connection with any transfer of Securities other than pursuant to an effective registration statement or Rule 144, to the Company or to an Affiliate of a Purchaser or in connection with a pledge as contemplated in Section 4.1(b), the Company may require the transferor thereof to provide to the Company an opinion of counsel selected by the transferor and reasonably acceptable to the Company, the form and substance of which opinion shall be reasonably satisfactory to the Company, to the effect that such transfer does not require registration of such transferred Securities under the Securities Act. As a condition of transfer, any such transferee shall agree in writing to be bound by the terms of this Agreement and the Registration Rights Agreement and shall have the rights and obligations of a Purchaser under this Agreement and the Registration Rights Agreement.

(b) The Purchasers agree to the imprinting, so long as is required by this Section 4.1, of a legend on any of the Securities in the following form:

[NEITHER] THIS SECURITY [NOR THE SECURITIES INTO WHICH THIS SECURITY IS [EXERCISABLE] [CONVERTIBLE]] HAS [NOT] BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS. THIS SECURITY [AND THE SECURITIES ISSUABLE UPON [EXERCISE] [CONVERSION] OF THIS SECURITY] MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT WITH A REGISTERED BROKER-DEALER OR OTHER LOAN WITH A FINANCIAL INSTITUTION THAT IS AN "ACCREDITED INVESTOR" AS DEFINED IN RULE 501(a) UNDER THE SECURITIES ACT OR OTHER LOAN SECURED BY SUCH SECURITIES.

The Company acknowledges and agrees that a Purchaser may from time to time pledge pursuant to a bona fide margin agreement with a registered broker-dealer or grant a security interest in some or all of the Securities to a financial institution that is an "accredited investor" as defined in Rule 501(a) under the Securities Act and who agrees to be bound by the provisions of this Agreement and the Registration Rights Agreement and, if required under the terms of such arrangement, such Purchaser may transfer pledged or secured Securities to the pledgees or secured parties. Such a pledge or transfer would not be subject to approval of the Company and no legal opinion of legal counsel of the pledgee, secured party or pledgor shall be required in connection therewith. Further, no notice shall be required of such pledge. At the appropriate Purchaser's expense, the Company will execute and deliver such reasonable documentation as a pledgee or secured party of Securities may reasonably request in connection with a pledge or transfer of the Securities, including, if the Securities are subject to registration pursuant to the Registration Rights Agreement, the preparation and filing of any required prospectus supplement under Rule 424(b)(3) under the Securities Act or other applicable provision of the Securities Act to appropriately amend the list of Selling Stockholders (as defined in the Registration Rights Agreement) thereunder.

(c) Instruments, whether certificated or uncertificated, evidencing the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares shall not contain any legend (including the legend set forth in Section 4.1(b) hereof), (i) while a registration statement (including the Registration Statement) covering the resale of such security is effective under the Securities Act, (ii) following any sale of such Series B Conversion Shares, Series C Conversion Shares or Warrant Shares pursuant to Rule 144, (iii) if such Series B Conversion Shares, Series C Conversion Shares or Warrant Shares are eligible for sale under Rule 144, without the requirement for the Company to be in compliance with the current public information required under Rule 144 as to such Series B Conversion Shares, Series C Conversion Shares and Warrant Shares and without volume or manner-of-sale restrictions, or (iv) if such legend is not required under applicable requirements of the Securities Act (including judicial interpretations and pronouncements issued by the staff of the Commission). Promptly after the Effective Date, the Company shall cause its counsel to issue a legal opinion to the Transfer Agent if required by the Transfer Agent to effect the removal of the legend hereunder. If all or any Series B Preferred Stock or Series C Preferred Stock is converted or all or any portion of a Warrant is exercised at a time when there is an effective registration statement to cover the resale of the Series B Conversion Shares, Series C Conversion Shares or Warrant Shares, as applicable, or if such Series B Conversion Shares, Series C Conversion Shares or Warrant Shares, as applicable, may be sold under Rule 144 and the Company is then in compliance with the current public information required under Rule 144, or if the Series B Conversion Shares, Series C Conversion Shares or Warrant Shares, as applicable, may be sold under Rule 144 without the requirement for the Company to be in compliance with the current public information required under Rule 144 as to such Series B Conversion Shares, Series C Conversion Shares or Warrant Shares or if such legend is not otherwise required under applicable requirements of the Securities Act (including judicial interpretations and pronouncements issued by the staff of the Commission) then such Series B Conversion Shares, Series C Conversion Shares and Warrant Shares, as applicable, shall be issued free of all legends. The Company agrees that following the Effective Date or at such time as such legend is no longer required under this Section 4.1(c), it will, no later than the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined below) following the delivery by a Purchaser to the Company or the Transfer Agent of a certificate or book entry (at the election of such Purchaser, provided absent instructions to the contrary the default shall be book-entry) representing Series B Conversion Shares, Series C Conversion Shares or Warrant Shares, as the case may be, issued with a restrictive legend (such third Trading Day, the "Legend Removal Date"), deliver or cause to be delivered to such Purchaser a certificate or book entry (at the election of such Purchaser, provided absent instructions to the contrary the default shall be book-entry) representing such shares that is free from all restrictive and other legends. The Company may not make any notation on its records or give instructions to the Transfer Agent that enlarge the restrictions on transfer set forth in this Section 4. Instruments, whether certificated or uncertificated, for Securities subject to legend removal hereunder shall be transmitted by the Transfer Agent to the Purchaser by crediting the account of the Purchaser's prime broker with the Depository Trust Company System as directed by such Purchaser. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of a certificate or book entry (at the election of such Purchaser, provided absent instructions to the contrary the default shall be book-entry) representing Series B Conversion Shares, Series C Conversion Shares or Warrants Shares, as the case may be, issued with a restrictive legend.

(d) In addition to such Purchaser's other available remedies, the Company shall pay to a Purchaser, in cash, (i) as partial liquidated damages and not as a penalty, for each \$1,000 of Series B Conversion Shares and Warrant Shares (based on the VWAP of the Common Stock on the date such Series B Conversion Shares and Warrant Shares are submitted to the Transfer Agent) delivered for removal of the restrictive legend (as applicable) and subject to Section 4.1(c), \$5 per Trading Day (increasing to \$10 per Trading Day ten (10) Trading Days after such damages have begun to accrue) for each Trading Day after the Legend Removal Date until such evidence representing the Series B Conversion Shares or Warrant Shares (as applicable), whether certificated or uncertificated, is delivered without a legend and (ii) if the Company fails to (A) issue and deliver (or cause to be delivered) to a Purchaser by the Legend Removal Date evidence, whether certificated or uncertificated, representing the Series B Conversion Shares or Warrant Shares (as applicable) so delivered to the Company by such Purchaser that is free from all restrictive and other legends and (B) if after the Legend Removal Date such Purchaser purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by such Purchaser of all or any portion of the number of shares of Common Stock, or a sale of a number of shares of Common Stock equal to all or any portion of the number of shares of Common Stock that such Purchaser anticipated receiving from the Company without any restrictive legend, then, an amount equal to the excess of such Purchaser's total purchase price (including brokerage commissions and other out-of-pocket expenses, if any) for the shares of Common Stock so purchased (including brokerage commissions and other out-of-pocket expenses, if any) (the "Buy-In Price") over the product of (1) such number of Series B Conversion Shares and Warrant Shares (as the case may be) that the Company was required to deliver to such Purchaser by the Legend Removal Date multiplied by (2) the lowest closing sale price of the Common Stock on any Trading Day during the period commencing on the date of the delivery by such Purchaser to the Company of the applicable Series B Conversion Shares and Warrant Shares (as the case may be) and ending on the date of such delivery and payment under this clause (d).

(e) With respect to a Purchaser that is participating in the Exchange, in addition to such Purchaser's other available remedies, the Company shall pay to a Purchaser that has participated in the Exchange, in cash, (i) as partial liquidated damages and not as a penalty, for each \$1,000 of Series C Conversion Shares (based on the VWAP of the Common Stock on the date such Series C Conversion Shares are submitted to the Transfer Agent) delivered for removal of the restrictive legend (as applicable) and subject to Section 4.1(c), \$5 per Trading Day (increasing to \$10 per Trading Day ten (10) Trading Days after such damages have begun to accrue) for each Trading Day after the Legend Removal Date until such evidence representing the Series C Conversion Shares, whether certificated or uncertificated, is delivered without a legend and (ii) if the Company fails to (A) issue and deliver (or cause to be delivered) to a Purchaser by the Legend Removal Date evidence, whether certificated or uncertificated, representing the Series C Conversion Shares so delivered to the Company by such Purchaser that is free from all restrictive and other legends and (B) if after the Legend Removal Date such Purchaser purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by such Purchaser of all or any portion of the number of shares of Common Stock, or a sale of a number of shares of Common Stock equal to all or any portion of the number of shares of Common Stock that such Purchaser anticipated receiving from the Company without any restrictive legend, then, an amount equal to the Buy-In Price over the product of (1) such number of Series C Conversion Shares that the Company was required to deliver to such Purchaser by the Legend Removal Date multiplied by (2) the lowest closing sale price of the Common Stock on any Trading Day during the period commencing on the date of the delivery by such Purchaser to the Company of the applicable Series C Conversion Shares and ending on the date of such delivery and payment under this clause (e).

(f) Each Purchaser, severally and not jointly with the other Purchasers, agrees with the Company that such Purchaser will sell any Securities pursuant to either the registration requirements of the Securities Act, including any applicable prospectus delivery requirements, or an exemption therefrom, and that if Securities are sold pursuant to a Registration Statement, they will be sold in compliance with the plan of distribution set forth therein, and acknowledges that the removal of the restrictive legend from instruments representing Securities as set forth in this Section 4.1 is predicated upon the Company's reliance upon this understanding.

#### 4.2 Furnishing of Information; Public Information.

(a) Until the earliest of the time that (i) no Purchaser owns Securities or (ii) the Warrants have expired, the Company covenants to maintain the registration of the Common Stock under Section 12(b) or 12(g) of the Exchange Act and to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act, even if the Company is not then subject to the reporting requirements of the Exchange Act.

(b) At any time during the period commencing from the six (6) month anniversary of the date hereof and ending at such time that all of the Securities may be sold without the requirement for the Company to be in compliance with Rule 144(c)(1) and otherwise without restriction or limitation pursuant to Rule 144, if the Company (i) shall fail for any reason to satisfy the current public information requirement under Rule 144(c) or (ii) has ever been an issuer described in Rule 144(i)(1)(i) or becomes an issuer in the future, and the Company shall fail to satisfy any condition set forth in Rule 144(i)(2) (a “Public Information Failure”) then, in addition to such Purchaser’s other available remedies, the Company shall pay to a Purchaser, in cash, as partial liquidated damages and not as a penalty, by reason of any such delay in or reduction of its ability to sell the Securities, an amount in cash equal to one-and-a-half percent (1.5%) of the aggregate Subscription Amount of such Purchaser’s Securities on the day of a Public Information Failure and on every thirtieth (30<sup>th</sup>) day (pro rated for periods totaling less than thirty days) thereafter until the earlier of (a) the date such Public Information Failure is cured and (b) such time that such public information is no longer required for the Purchasers to transfer the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares pursuant to Rule 144, subject to a maximum cap of eight percent (8.0%). The payments to which a Purchaser shall be entitled pursuant to this Section 4.2(b) are referred to herein as “Public Information Failure Payments.” Public Information Failure Payments shall be paid on the earlier of (i) the last day of the calendar month during which such Public Information Failure Payments are incurred and (ii) the third (3<sup>rd</sup>) Business Day after the event or failure giving rise to the Public Information Failure Payments is cured. In the event the Company fails to make Public Information Failure Payments in a timely manner, such Public Information Failure Payments shall bear interest at the rate of 1.0% per month (prorated for partial months) until paid in full. Nothing herein shall limit such Purchaser’s right to pursue actual damages for the Public Information Failure, and such Purchaser shall have the right to pursue all remedies available to it at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief.

4.3 Integration. The Company shall not sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that would be integrated with the offer, sale or exchange of the Securities in the Purchase and the Exchange hereunder in a manner that would require the registration under the Securities Act of such offer, sale or exchange of the Securities or that would be integrated with such offer, sale or exchange of the Securities for purposes of the rules and regulations of any Trading Market such that it would require shareholder approval prior to the closing of such other transaction unless shareholder approval is obtained before the closing of such subsequent transaction.

4.4 Securities Laws Disclosure: Publicity. The Company shall (a) by 9:00 a.m. (New York City time) on the Trading Day immediately following the date hereof, issue a press release disclosing the material terms of the transactions contemplated hereby, and (b) file a Current Report on Form 8-K, including the Transaction Documents as exhibits thereto, with the Commission within the time required by the Exchange Act. From and after the issuance of such press release, the Company represents to the Purchasers that it shall have publicly disclosed all material, non-public information delivered to any of the Purchasers by the Company or any of its Subsidiaries, or any of their respective officers, directors, employees or agents in connection with the transactions contemplated by the Transaction Documents. In addition, effective upon the issuance of such press release, the Company acknowledges and agrees that any and all confidentiality or similar obligations under any agreement, whether written or oral, between the Company, any of its Subsidiaries or any of their respective officers, directors, agents, employees or Affiliates on the one hand, and any of the Purchasers or any of their Affiliates on the other hand, shall terminate (unless otherwise agreed between such parties in separate written confidentiality or similar agreements, the terms of which shall not otherwise be modified by this provision). The Company and each Purchaser shall consult with each other in issuing any other press releases with respect to the transactions contemplated hereby, and neither the Company nor any Purchaser shall issue any such press release nor otherwise make any such public statement without the prior consent of the Company, with respect to any press release of any Purchaser, or without the prior consent of each Purchaser, with respect to any press release of the Company, which consent shall not unreasonably be withheld or delayed, except if such disclosure is required by law, in which case the disclosing party shall promptly provide the other party with prior notice of such public statement or communication. Notwithstanding the foregoing, the Company shall not publicly disclose the name of any Purchaser, or include the name of any Purchaser in any filing with the Commission or any regulatory agency or Trading Market, without the prior written consent of such Purchaser, except: (a) as required by federal securities law in connection with (i) any registration statement contemplated by the Registration Rights Agreement and (ii) the filing of final Transaction Documents with the Commission and (b) to the extent such disclosure is required by law or Trading Market regulations, in which case the Company shall provide the Purchasers with prior notice of such disclosure permitted under this clause (b).

4.5 Shareholder Rights Plan. No claim will be made or enforced by the Company or, with the consent of the Company, any other Person, that any Purchaser is an “Acquiring Person” under any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or similar anti-takeover plan or arrangement in effect or hereafter adopted by the Company, or that any Purchaser could be deemed to trigger the provisions of any such plan or arrangement, by virtue of receiving Securities under the Transaction Documents or under any other agreement between the Company and the Purchasers.

4.6 Non-Public Information. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, which shall be disclosed pursuant to Section 4.4, the Company covenants and agrees that neither it, nor any other Person acting on its behalf will provide any Purchaser or its agents or counsel with any information that constitutes, or the Company reasonably believes constitutes, material non-public information, unless prior thereto such Purchaser shall have consented to the receipt of such information and agreed with the Company to keep such information confidential. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company. To the extent that the Company delivers any material, non-public information to a Purchaser without such Purchaser’s consent, the Company hereby covenants and agrees that such purchaser shall not have any duty of confidentiality to Company, any of its Subsidiaries, or any of their respective officers, directors, agents, employees or Affiliates, or a duty to the Company, and of its Subsidiaries or any of their respective officers, directors, agents, employees or Affiliates not to trade on the basis of, such material, non-public information, provided that the Purchaser shall remain subject to applicable law. To the extent that any notice provided pursuant to any Transaction Document constitutes, or contains, material, non-public information regarding the Company or any Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company.

4.7 Use of Proceeds. Except as set forth on Schedule 4.7 attached hereto, the Company shall use the net proceeds from the sale of the Securities hereunder for working capital purposes and shall not use such proceeds: (a) for the satisfaction of any portion of the Company's debt (other than payment of trade payables in the ordinary course of the Company's business and prior practices), (b) for the redemption of any Common Stock or Common Stock Equivalents, (c) for the settlement of any outstanding litigation or (d) in violation of FCPA or OFAC regulations.

4.8 Indemnification of Purchasers. Subject to the provisions of this Section 4.8, the Company will indemnify and hold each Purchaser and its directors, officers, shareholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls such Purchaser (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, shareholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling persons (each, a "Purchaser Party") harmless from any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, amounts paid in settlements, court costs and reasonable attorneys' fees and costs of investigation that any such Purchaser Party may suffer or incur as a result of or relating to (a) any breach of any of the representations, warranties, covenants or agreements made by the Company in this Agreement or in the other Transaction Documents or (b) any action instituted against the Purchaser Parties in any capacity, or any of them or their respective Affiliates, by any stockholder of the Company who is not an Affiliate of such Purchaser Parties, with respect to any of the transactions contemplated by the Transaction Documents (unless such action is based upon a breach of such Purchaser Party's representations, warranties or covenants under the Transaction Documents or any agreements or understandings such Purchaser Parties may have with any such stockholder or any violations by such Purchaser Parties of state or federal securities laws or any conduct by such Purchaser Parties which constitutes fraud, gross negligence, willful misconduct or malfeasance). If any action shall be brought against any Purchaser Party in respect of which indemnity may be sought pursuant to this Agreement, such Purchaser Party shall promptly notify the Company in writing, and the Company shall have the right to assume the defense thereof with counsel of its own choosing reasonably acceptable to the Purchaser Party. Any Purchaser Party shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Purchaser Party except to the extent that (i) the employment thereof has been specifically authorized by the Company in writing, (ii) the Company has failed after a reasonable period of time to assume such defense and to employ counsel or (iii) in such action there is, in the reasonable opinion of counsel, a material conflict on any material issue between the position of the Company and the position of such Purchaser Party, in which case the Company shall be responsible for the reasonable fees and expenses of no more than one such separate counsel. The Company will not be liable to any Purchaser Party under this Agreement (y) for any settlement by a Purchaser Party effected without the Company's prior written consent, which shall not be unreasonably withheld or delayed; or (z) to the extent, but only to the extent that a loss, claim, damage or liability is attributable to (A) any Purchaser Party's breach of any of the representations, warranties, covenants or agreements made by such Purchaser Party in this Agreement or in the other Transaction Documents, or (B) any conduct by such Purchaser Party which constitutes gross negligence or willful misconduct. The indemnification required by this Section 4.8 shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or are incurred. The indemnity agreements contained herein shall be in addition to any cause of action or similar right of any Purchaser Party against the Company or others and any liabilities the Company may be subject to pursuant to law.

4.9 Reservation of Common Stock. As of the date hereof, the Company has reserved and the Company shall continue to reserve and keep available at all times from its duly authorized capital stock a total number of shares of Common Stock for issuance as Series B Conversion Shares upon conversion of the Series B Preferred Stock, for issuance as Series C Conversion Shares upon conversion of the Series C Preferred Stock and for issuance as Warrant Shares upon exercise of the Warrants in an aggregate amount at least equal to the Required Minimum.

4.10 Listing of Common Stock. The Company hereby agrees to use commercially reasonable efforts to maintain the listing or quotation of the Common Stock on the Trading Market on which it is currently listed, and concurrently with the Closing, the Company shall apply to list or quote all of the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares on such Trading Market and promptly secure the listing of all of the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares on such Trading Market. The Company further agrees, if the Company applies to have the Common Stock traded on any other Trading Market, it will then include in such application all of the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares, and will take such other action as is necessary to cause all of the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares to be listed or quoted on such other Trading Market as promptly as possible. The Company will then take all action reasonably necessary to continue the listing or quotation and trading of its Common Stock on a Trading Market and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of the Trading Market. The Company agrees to maintain the eligibility of the Common Stock for electronic transfer through the Depository Trust Company or another established clearing corporation, including, without limitation, by timely payment of fees to the Depository Trust Company or such other established clearing corporation in connection with such electronic transfer.

4.11 Conversion and Exercise Procedures. Each of the form of Notice of Exercise included in the Warrants, the form of Notice of Conversion included in the Series B Certificate of Designation and the form of Notice of Conversion included in the Series C Certificate of Designation set forth the totality of the procedures required of the Purchasers in order to exercise the Warrants, to convert the Series B Preferred Stock or to convert the Series C Preferred Stock, respectively. Without limiting the preceding sentences, no ink-original Notice of Exercise or Notice of Conversion shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise or Notice of Conversion form be required in order to exercise the Warrants, to convert the Series B Preferred Stock or to convert the Series C Preferred Stock, unless required by the Transfer Agent. No additional legal opinion, other information or instructions shall be required of the Purchasers to exercise their Warrants, to convert their Series B Preferred Stock or to convert their Series C Preferred Stock, as applicable. The Company shall honor exercises of the Warrants, conversions of the Series B Preferred Stock and conversions of the Series C Preferred Stock, shall deliver Series B Conversion Shares in accordance with the terms, conditions and time periods set forth in the Series B Certificate of Designation and this Agreement, shall deliver Series C Conversion Shares in accordance with the terms, conditions and time periods set forth in the Series C Certificate of Designation and this Agreement, and shall deliver Warrant Shares in accordance with the terms, conditions and time periods set forth in the Warrants and this Agreement.

#### 4.12 Subsequent Equity Sales.

(a) From the date hereof until ninety (90) days after the Effective Date (the “Lock-Up Period”), without the prior written consent of the Required Holders, neither the Company nor any Subsidiary shall issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of Common Stock or Common Stock Equivalents.

(b) From the date hereof until the later of (i) the first Business Day next following the date of expiration of the Lock-Up Period and (ii) the first Business Day next following the date that is the 135<sup>th</sup> day immediately after the date on which the Company first publicly announces (through the issuance of a press release or other public announcement or by filing or furnishing a current report on Form 8-K or other filing, report or statement with the Commission under the Exchange Act) topline data from its Phase 3 clinical trial (G28-006) of the Company’s RP-G28 drug candidate for the treatment of lactose intolerance (the “Restricted Period”), without the prior written consent of the Required Holders, the Company shall be prohibited from: (A) effecting or entering into an agreement to effect any issuance by the Company or any of its Subsidiaries of Common Stock or Common Stock Equivalents (or a combination of units thereof) involving a Variable Rate Transaction, and (B) selling or granting any option to purchase, or selling or granting any right to repurchase, or otherwise disposing of or issuing (or announcing any offer, sale, grant or any option to purchase or other disposition of) any Common Stock or Common Stock Equivalents, at an effective price per share less than \$1.64 (subject to adjustment as provided in Section 5.20 for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement) (the “Base Share Price” and any such issuance, a “Dilutive Issuance”) (it being understood and agreed that (x) if the holder of the Common Stock or Common Stock Equivalents so issued shall at any time, whether by operation of purchase price adjustments, reset provisions, floating conversion, exercise or exchange prices or otherwise, or due to warrants, options or rights per share which are issued in connection with such issuance, be entitled to receive shares of Common Stock at an effective price per share that is less than the Base Share Price then in effect, such issuance shall be deemed to have occurred for less than the Base Share Price on such date of the Dilutive Issuance and (y) if the Company enters into a Variable Rate Transaction, the Company shall be deemed to have issued Common Stock or Common Stock Equivalents at the lowest possible conversion, exercise or exchange price at which such securities may be converted, exercised or exchanged). “Variable Rate Transaction” means a transaction in which the Company (i) issues or sells any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive, additional shares of Common Stock either (A) at a conversion price, exercise price or exchange rate or other price that is based upon, and/or varies with, the trading prices of or quotations for the shares of Common Stock at any time after the initial issuance of such debt or equity securities or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for the Common Stock or (ii) enters into, or effects a transaction under, any agreement, including, but not limited to, an equity line of credit, whereby the Company may issue securities at a future determined price; provided, however, that (I) from and after the first Business Day next following the date of expiration of the Lock-Up Period (and notwithstanding whether the Restricted Period has then expired), the Company may issue and sell shares of Common Stock at a per share price that exceeds the Base Share Price then in effect (and not otherwise constituting a Dilutive Issuance), pursuant to that certain Purchase Agreement, dated as of May 4, 2017, by and between the Company and Aspire Capital Fund, LLC (as may be amended, supplemented or replaced from time to time, the “Aspire ELOC Agreement”), (II) any issuance or sale by the Company of any of its Common Stock or other securities under the Aspire ELOC Agreement or in connection with the transactions contemplated thereby at any time during the Lock-Up Period shall constitute a “Variable Rate Transaction” for all purposes of this Agreement, including this Section 4.12, and (III) any issuance or sale by the Company, at any time from and after the date of this Agreement and prior to the expiration of the Restricted Period, of any of its Common Stock or other securities under the Aspire ELOC Agreement or in connection with the transactions contemplated thereby at a per share price less than the Base Share Price then in effect (or otherwise constituting a Dilutive Issuance) shall also constitute a “Variable Rate Transaction” for all purposes of this Agreement, including this Section 4.12. Any Purchaser shall be entitled to obtain injunctive relief against the Company to preclude any such issuance, which remedy shall be in addition to any right to collect damages.

(c) Notwithstanding the foregoing, this Section 4.12 shall not apply in respect of an Exempt Issuance, except that no Variable Rate Transaction shall be an Exempt Issuance.

4.13 Equal Treatment of Purchasers. After the Closing Date, no consideration (including any modification of any Transaction Document) shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of the Transaction Documents unless the same consideration is also offered to all of the parties to the Transaction Documents. For clarification purposes, this provision constitutes a separate right granted to each Purchaser by the Company and negotiated separately by each Purchaser, and is intended for the Company to treat the Purchasers as a class and shall not in any way be construed as the Purchasers acting in concert or as a group with respect to the purchase, disposition or voting of Securities or otherwise.

4.14 Certain Transactions and Confidentiality. Each Purchaser, severally and not jointly with the other Purchasers, covenants that neither it, nor any Affiliate acting on its behalf or pursuant to any understanding with it will execute any purchases or sales, including Short Sales, of any of the Company's securities during the period commencing with the execution of this Agreement and ending at such time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4. Each Purchaser, severally and not jointly with the other Purchasers, covenants that until such time as the transactions contemplated by this Agreement are publicly disclosed by the Company pursuant to the initial press release as described in Section 4.4, such Purchaser will maintain the confidentiality of the existence and terms of this transaction and the information included in the Transaction Documents and the Disclosure Schedules. Notwithstanding the foregoing, and notwithstanding anything contained in this Agreement to the contrary, the Company expressly acknowledges and agrees that (i) no Purchaser makes any representation, warranty or covenant hereby that it will not engage in effecting transactions in any securities of the Company after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4, (ii) no Purchaser shall be restricted or prohibited from effecting any transactions in any securities of the Company in accordance with applicable securities laws from and after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4 and (iii) no Purchaser shall have any duty of confidentiality or duty not to trade in the securities of the Company to the Company or its Subsidiaries after the issuance of the initial press release as described in Section 4.4. Notwithstanding the foregoing, in the case of a Purchaser that is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of such Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Purchaser's assets, the covenant set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made the investment decision to purchase the Securities covered by this Agreement.

4.15 Form D; Blue Sky Filings. The Company agrees to timely file a Form D with respect to the Securities as required under Regulation D and to provide a copy thereof, promptly upon request of any Purchaser. The Company shall take such action as the Company shall reasonably determine is necessary in order to obtain an exemption for, or to qualify the Securities for, sale or exchange (as applicable) to the Purchasers at the Closing under applicable securities or "Blue Sky" laws of the states of the United States, and shall provide evidence of such actions promptly upon request of any Purchaser.

4.16 Acknowledgment of Dilution. The Company acknowledges that the issuance of the Securities may result in dilution of the outstanding shares of Common Stock, which dilution may be substantial under certain market conditions. The Company further acknowledges that its obligations under the Transaction Documents, including, without limitation, its obligation to issue the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares pursuant to the Transaction Documents, are unconditional and absolute and not subject to any right of set off, counterclaim, delay or reduction, regardless of the effect of any such dilution or any claim the Company may have against any Purchaser and regardless of the dilutive effect that such issuance may have on the ownership of the other stockholders of the Company.

**ARTICLE V.  
MISCELLANEOUS**

5.1 Termination. This Agreement may be terminated by any Purchaser, as to such Purchaser's obligations hereunder only and without any effect whatsoever on the obligations between the Company and the other Purchasers, by written notice to the other parties, if the Closing has not been consummated on or before November 5, 2018; provided, however, that the right to terminate this Agreement under this Section 5.1 shall not be available to a Purchaser whose failure to fulfill any obligation under this Agreement has been the proximate cause of or resulted in the failure of the transactions contemplated hereunder to occur on or before such date; provided further, however, that such termination will not affect the right of any party to sue for any breach by any other party (or parties).

5.2 Fees and Expenses. At the Closing, the Company has agreed to reimburse the Placement Agent up to of \$35,000 for its legal fees and other out of pocket expenses. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, counsel, accountants and other experts, if any, and all other expenses incurred by such party incident to the negotiation, preparation, execution, delivery and performance of this Agreement. The Company shall pay all Transfer Agent fees (including, without limitation, any fees required for same-day processing of any instruction letter delivered by the Company and any exercise notice delivered by a Purchaser), stamp taxes and other taxes and duties levied in connection with the delivery of any Securities to the Purchasers.

5.3 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, contain the entire understanding of the parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules.

5.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of: (a) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number or email attachment as set forth on the signature pages attached hereto at or prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number or email attachment as set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the second (2<sup>nd</sup>) Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto. To the extent that any notice provided pursuant to any Transaction Document constitutes, or contains material, non-public information regarding the Company or any of the Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K.

5.5 Amendments; Waivers. No provision of this Agreement may be waived, modified, supplemented or amended except in a written instrument signed, in the case of an amendment, by the Company and the Required Holders, or, in the case of a waiver, by the party against whom enforcement of any such waived provision is sought, provided that if any amendment, modification or waiver disproportionately and adversely impacts a Purchaser (or group of Purchasers), the consent of such disproportionately impacted Purchaser (or group of Purchasers) shall also be required. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of any party to exercise any right hereunder in any manner impair the exercise of any such right. Any proposed amendment or waiver that disproportionately, materially and adversely affects the rights and obligations of any Purchaser relative to the comparable rights and obligations of the other Purchasers shall require the prior written consent of such adversely affected Purchaser. Any amendment effected in accordance with this Section 5.5 shall be binding upon each Purchaser and holder of Securities and the Company.

5.6 Headings. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof.

5.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of each Purchaser (other than by merger). Any Purchaser may assign any or all of its rights under this Agreement to any Person to whom such Purchaser assigns or transfers any Securities, provided that such transferee agrees in writing to be bound, with respect to the transferred Securities, by the provisions of the Transaction Documents that apply to the "Purchasers."

5.8 No Third-Party Beneficiaries. The Placement Agent shall be the third party beneficiary of the representations and warranties of the Company in Section 3.1 and the representations and warranties of the Purchasers in Section 3.2. This Agreement is intended for the benefit of the parties hereto and their respective successors and permitted assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other Person, except as otherwise set forth in Section 4.8 and this Section 5.8.

5.9 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal Proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any Action or Proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such Action or Proceeding is improper or is an inconvenient venue for such Proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such Action or Proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If any party hereto shall commence an Action or Proceeding to enforce any provisions of the Transaction Documents, then, in addition to the obligations of the Company under Section 4.8, the prevailing party in such Action or Proceeding shall be reimbursed by the non-prevailing party for its reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such Action or Proceeding.

5.10 Survival. The representations and warranties contained herein shall survive the Closing and the delivery of the Securities.

5.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

5.12 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

5.13 Rescission and Withdrawal Right. Notwithstanding anything to the contrary contained in (and without limiting any similar provisions of) any of the other Transaction Documents, whenever any Purchaser exercises a right, election, demand or option under a Transaction Document and the Company does not timely perform its related obligations within the periods therein provided, then such Purchaser may rescind or withdraw, in its sole discretion from time to time upon written notice to the Company, any relevant notice, demand or election in whole or in part without prejudice to its future actions and rights; provided, however, that in the case of a rescission of an exercise of a Warrant or a conversion of the Series B Preferred Stock or the Series C Preferred Stock, as applicable, the applicable Purchaser shall be required to return any shares of Common Stock subject to any such rescinded conversion or exercise notice concurrently, in the case of a rescinded Warrant exercise, with the return to such Purchaser of the aggregate exercise price paid to the Company for such shares and the restoration of such Purchaser's right to acquire such shares pursuant to such Purchaser's Warrant (including, issuance of a replacement warrant certificate evidencing such restored right).

5.14 Replacement of Securities. If any certificate or instrument evidencing any Securities is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof (in the case of mutilation), or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction. The applicant for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs (including customary indemnity) associated with the issuance of such replacement Securities.

5.15 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, each of the Purchasers and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agree to waive and not to assert in any Action for specific performance of any such obligation the defense that a remedy at law would be adequate.

5.16 Payment Set Aside. To the extent that the Company makes a payment or payments to any Purchaser pursuant to any Transaction Document or a Purchaser enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other Person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

5.17 Independent Nature of Purchasers' Obligations and Rights. The obligations of each Purchaser under any Transaction Document are several and not joint with the obligations of any other Purchaser, and no Purchaser shall be responsible in any way for the performance or non-performance of the obligations of any other Purchaser under any Transaction Document. Nothing contained herein or in any other Transaction Document, and no action taken by any Purchaser pursuant hereof or thereto, shall be deemed to constitute the Purchasers as a partnership, an association, a joint venture or any other kind of entity, or create a presumption that the Purchasers are in any way acting in concert or as a group with respect to such obligations or the transactions contemplated by the Transaction Documents. Each Purchaser shall be entitled to independently protect and enforce its rights, including, without limitation, the rights arising out of this Agreement or out of the other Transaction Documents, and it shall not be necessary for any other Purchaser to be joined as an additional party in any proceeding for such purpose. Each Purchaser has been represented by its own separate legal counsel in its review and negotiation of the Transaction Documents. For reasons of administrative convenience only, each Purchaser and its respective counsel have chosen to communicate with the Company through Placement Agent Counsel. Placement Agent Counsel does not represent any of the Purchasers and only represents the Placement Agent. The Company has elected to provide all Purchasers with the same terms and Transaction Documents for the convenience of the Company and not because it was required or requested to do so by any of the Purchasers. It is expressly understood and agreed that each provision contained in this Agreement and in each other Transaction Document is between the Company and a Purchaser, solely, and not between the Company and the Purchasers collectively and not between and among the Purchasers.

5.18 Liquidated Damages. The Company's obligations to pay any partial liquidated damages or other amounts owing under the Transaction Documents is a continuing obligation of the Company and shall not terminate until all unpaid partial liquidated damages and other amounts have been paid notwithstanding the fact that the instrument or security pursuant to which such partial liquidated damages or other amounts are due and payable shall have been canceled.

5.19 Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

5.20 Construction. The parties agree that each of them and/or their respective counsel have reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments thereto. In addition, each and every reference to share prices and shares of Common Stock in any Transaction Document shall be subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement.

5.21 **WAIVER OF JURY TRIAL. IN ANY ACTION, SUIT, OR PROCEEDING IN ANY JURISDICTION BROUGHT BY ANY PARTY AGAINST ANY OTHER PARTY, THE PARTIES EACH KNOWINGLY AND INTENTIONALLY, TO THE GREATEST EXTENT PERMITTED BY APPLICABLE LAW, HEREBY ABSOLUTELY, UNCONDITIONALLY, IRREVOCABLY AND EXPRESSLY WAIVES FOREVER TRIAL BY JURY.**

*(Signature Pages Follow)*

IN WITNESS WHEREOF, the parties hereto have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

**RITTER PHARMACEUTICALS, INC.**

By: \_\_\_\_\_  
Name: Andrew J. Ritter  
Title: President and Chief Executive Officer

Address for Notice:

Ritter Pharmaceuticals, Inc.  
1880 Century Park East, Suite 1000  
Los Angeles, CA 90067  
Facsimile: (310) 919-1600  
Attention:

With a copy to (which shall not constitute notice):

Reed Smith LLP  
1901 Avenue of the Stars  
Suite 700  
Los Angeles, CA 90067-6708  
Facsimile: (310) 734-5299  
Attention: Michael Sanders, Esq.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK  
SIGNATURE PAGE FOR PURCHASER FOLLOWS]

[PURCHASER SIGNATURE PAGES TO SECURITIES PURCHASE AGREEMENT]

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: \_\_\_\_\_

*Signature of Authorized Signatory of Purchaser:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Email Address of Authorized Signatory: \_\_\_\_\_

Facsimile Number of Authorized Signatory: \_\_\_\_\_

Address for Notice to Purchaser:

Address for Delivery of Securities to Purchaser (if not same as address for notice):

Purchase:

Subscription Amount: \$ \_\_\_\_\_

Number of Purchased Series B Preferred Shares: \_\_\_\_\_

Number of Warrant Shares underlying Warrants (calculated per Section 2.2(iv)): \_\_\_\_\_

EIN Number: \_\_\_\_\_

Exchange (if applicable):

Number of Exchanged Series A Preferred Shares to be exchanged by Purchaser: \_\_\_\_\_

[SIGNATURE PAGES CONTINUE]

EXHIBIT A

SERIES B CERTIFICATE OF DESIGNATION

EXHIBIT B

SERIES C CERTIFICATE OF DESIGNATION

EXHIBIT C  
REGISTRATION RIGHTS AGREEMENT

EXHIBIT D  
FORM OF COMMON STOCK WARRANT



NEITHER THIS SECURITY NOR THE SECURITIES FOR WHICH THIS SECURITY IS EXERCISABLE HAVE BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS. THIS SECURITY AND THE SECURITIES ISSUABLE UPON EXERCISE OF THIS SECURITY MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN SECURED BY SUCH SECURITIES.

### COMMON STOCK PURCHASE WARRANT

#### RITTER PHARMACEUTICALS, INC.

Warrant Shares: [ \_\_\_\_\_ ]

Original Issue Date: [ \_\_\_\_\_ ], 2018

THIS COMMON STOCK PURCHASE WARRANT (the "Warrant") certifies that, for value received, \_\_\_\_\_ or its assigns (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after [ \_\_\_\_\_ ], 2018 (the "Initial Exercise Date") and on or prior to the close of business on the fifth (5<sup>th</sup>) year anniversary of the Initial Exercise Date (the "Termination Date") but not thereafter, to subscribe for and purchase from Ritter Pharmaceuticals, Inc., a Delaware corporation (the "Company"), up to [ \_\_\_\_\_ ] shares (as subject to adjustment hereunder, the "Warrant Shares") of Common Stock. The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b).

Section 1. Definitions. Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Securities Purchase Agreement (the "Purchase Agreement"), dated October 30, 2018, among the Company and the purchasers signatory thereto.

#### Section 2. Exercise.

a ) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company or the Transfer Agent (or such other office or agency that the Company may designate by notice in writing to the registered Holder at the address of the Holder appearing on the books of the Company), as applicable, of a duly executed facsimile copy or PDF copy submitted by electronic (or e-mail attachment) of the Notice of Exercise in the form annexed hereto ("Notice of Exercise"). Within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the shares specified in the applicable Notice of Exercise by wire transfer or cashier's check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise form be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within two (2) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise within one (1) Business Day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

b ) Exercise Price. The exercise price per share of the Common Stock under this Warrant shall be \$1.30, subject to adjustment hereunder (the "Exercise Price").

c) Cashless Exercise. This Warrant may also be exercised, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date, by means of a "cashless exercise" in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of "regular trading hours" (as defined in Rule 600(b)(64) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) the Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. as of the time of the Holder's execution of the applicable Notice of Exercise if such Notice of Exercise is executed during "regular trading hours" on a Trading Day and is delivered within two (2) hours thereafter pursuant to Section 2(a) hereof or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is both executed and delivered pursuant to Section 2(a) hereof after the close of "regular trading hours" on such Trading Day;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the characteristics of the Warrants being exercised, and the holding period of the Warrant Shares being issued may be tacked on to the holding period of this Warrant. The Company agrees not to take any position contrary to this Section 2(c).

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

Notwithstanding anything herein to the contrary, subject to the limitations set forth in Section 2(e), on the Termination Date, this Warrant shall be automatically exercised via cashless exercise pursuant to this Section 2(c).

d) Mechanics of Exercise.

i. Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder's or its designee's balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system ("DWAC") if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the resale of the Warrant Shares by the Holder or (B) the Warrant Shares are eligible for resale by the Holder without volume or manner-of-sale limitations pursuant to Rule 144, and otherwise by physical delivery of a certificate, registered in the Company's share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earliest of (i) two (2) Trading Days after the delivery to the Company of the Notice of Exercise, (ii) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company and (iii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the "Warrant Share Delivery Date"). Upon delivery of the Notice of Exercise, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise. If the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$5 per Trading Day (increasing to \$10 per Trading Day on the fifth (5<sup>th</sup>) Trading Day after such liquidated damages begin to accrue) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise.

i i . Delivery of New Warrants Upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

i i i . Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d)(i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

i v . Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

v. No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

vi. Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

vii. Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other Common Stock Equivalents) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within two (2) Trading Days confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon not less than 61 days' notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any such increase or decrease in the Beneficial Ownership Limitation will not be effective until the 61<sup>st</sup> day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

Section 3. Certain Adjustments.

a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise of this Warrant), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant shall remain unchanged, subject to the limitation on fractional shares in Section 2(d)(v). Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b) [Reserved].

c) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

d) Pro Rata Distributions. During such time as this Warrant is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a “Distribution”), at any time after the issuance of this Warrant, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, to the extent that the Holder’s right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation). To the extent that this Warrant has not been partially or completely exercised at the time of such Distribution, such portion of the Distribution shall be held in abeyance for the benefit of the Holder until the Holder has exercised this Warrant.

e) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with the other Persons making or party to, such stock or share purchase agreement or other business combination) (each a “Fundamental Transaction”), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 2(e) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the “Alternate Consideration”) receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. Notwithstanding anything to the contrary, in the event of a Fundamental Transaction, the Company or any Successor Entity (as defined below) shall, at the Holder’s option, exercisable at any time concurrently with, or within 30 days after, the consummation of the Fundamental Transaction, purchase this Warrant from the Holder by paying to the Holder an amount of cash equal to the Black Scholes Value of the remaining unexercised portion of this Warrant on the date of the consummation of such Fundamental Transaction. “Black Scholes Value” means the value of this Warrant based on the Black and Scholes Option Pricing Model obtained from the “OV” function on Bloomberg, L.P. (“Bloomberg”) determined as of the day of consummation of the applicable Fundamental Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date, (B) an expected volatility equal to the greater of 100% and the 100 day volatility obtained from the HVT function on Bloomberg as of the Trading Day immediately following the public announcement of the applicable Fundamental Transaction, (C) the underlying price per share used in such calculation shall be the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction and (D) a remaining option time equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date. The payment of the Black Scholes Value will be made by wire transfer of immediately available funds within five (5) Business Days of the Holder’s election (or, if later, on the effective date of the Fundamental Transaction). The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the “Successor Entity”) and for which stockholders of the Company received any equity securities of the Successor Entity to assume in writing all of the obligations of the Company under this Warrant and the other Transaction Documents in accordance with the provisions of this Section 3(e) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the “Company” shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant and the other Transaction Documents with the same effect as if such Successor Entity had been named as the Company herein.

f) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

g) Notice to Holder.

i. Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by facsimile or email a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

ii. Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company is a party, any sale or transfer of all or substantially all of the assets of the Company, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be delivered by facsimile or email to the Holder at its last facsimile number or email address as it shall appear upon the Warrant Register of the Company, at least ten (10) calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided in this Warrant constitutes, or contains, material, non-public information regarding the Company or any of the Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

#### Section 4. Transfer of Warrant.

a ) Transferability. Subject to compliance with any applicable securities laws and the conditions set forth in Section 4(d) hereof and to the provisions of Section 4.1 of the Purchase Agreement, this Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within two (2) Trading Days of the date on which the Holder delivers an assignment form to the Company assigning this Warrant in full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

b) New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the Original Issue Date and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

c) Warrant Register. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the "Warrant Register"), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

d) Transfer Restrictions. If, at the time of the surrender of this Warrant in connection with any transfer of this Warrant, the transfer of this Warrant shall not be either (i) registered pursuant to an effective registration statement under the Securities Act and under applicable state securities or blue sky laws or (ii) eligible for resale without volume or manner-of-sale restrictions or current public information requirements pursuant to Rule 144, the Company may require, as a condition of allowing such transfer, that the Holder or transferee of this Warrant, as the case may be, comply with the provisions of Section 5.7 of the Purchase Agreement.

e ) Representation by the Holder. The Holder, by the acceptance hereof, represents and warrants that it is acquiring this Warrant and, upon any exercise hereof, will acquire the Warrant Shares issuable upon such exercise, for its own account and not with a view to or for distributing or reselling such Warrant Shares or any part thereof in violation of the Securities Act or any applicable state securities law, except pursuant to sales registered or exempted under the Securities Act and under applicable state securities laws.

Section 5. Miscellaneous.

- a) No Rights as Stockholder Until Exercise. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3.
- b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.
- c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then, such action may be taken or such right may be exercised on the next succeeding Business Day.
- d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

- e ) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the provisions of the Purchase Agreement.
- f ) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.
- g ) Nonwaiver and Expenses. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies, notwithstanding the fact that all rights hereunder terminate on the Termination Date. If the Company willfully and knowingly fails to comply with any provision of this Warrant, which results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable attorneys' fees, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.
- h ) Notices. Any notice, request or other document required or permitted to be given or delivered to the Holder by the Company shall be delivered in accordance with the notice provisions of the Purchase Agreement.

i) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company and the Holder.

m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

n) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

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*(Signature Page Follows)*

IN WITNESS WHEREOF, the Company has caused this Warrant to be executed by its officer thereunto duly authorized as of the date first above indicated.

**RITTER PHARMACEUTICALS, INC.**

By: \_\_\_\_\_

Name: Andrew J. Ritter

Title: President and Chief Executive Officer

**NOTICE OF EXERCISE**

TO: RITTER PHARMACEUTICALS, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

in lawful money of the United States; or

[the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

\_\_\_\_\_

The Warrant Shares shall be delivered to the following DWAC Account Number:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(4) Accredited Investor. The undersigned is an “accredited investor” as defined in Regulation D promulgated under the Securities Act of 1933, as amended.

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

*Signature of Authorized Signatory of Investing Entity:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

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ASSIGNMENT FORM

*(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)*

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: \_\_\_\_\_  
(Please Print)

Address: \_\_\_\_\_  
(Please Print)

Phone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

Dated: \_\_\_\_\_, \_\_\_\_\_

Holder's Signature: \_\_\_\_\_

Holder's Address: \_\_\_\_\_

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## REGISTRATION RIGHTS AGREEMENT

This Registration Rights Agreement (this "Agreement") is made and entered into as of October 30, 2018, between Ritter Pharmaceuticals, Inc., a Delaware corporation (the "Company"), and each of the several purchasers signatory hereto (each such purchaser, a "Purchaser" and, collectively, the "Purchasers").

This Agreement is made pursuant to the Securities Purchase Agreement, dated as of the date hereof, between the Company and each Purchaser (the "Purchase Agreement").

The Company and each Purchaser hereby agrees as follows:

1. Definitions.

**Capitalized terms used and not otherwise defined herein that are defined in the Purchase Agreement shall have the meanings given such terms in the Purchase Agreement.** As used in this Agreement, the following terms shall have the following meanings:

"Advice" shall have the meaning set forth in Section 6(d).

"Effectiveness Date" means, with respect to the Initial Registration Statement required to be filed hereunder, the 60<sup>th</sup> calendar day following the date hereof (or, in the event of a "full review" by the Commission, the 90<sup>th</sup> calendar day following the date hereof) and with respect to any additional Registration Statements which may be required pursuant to Section 2(c) or Section 3(c), the 60<sup>th</sup> calendar day following the date on which the Company first knows, or reasonably should have known, that an additional Registration Statement is required to be filed hereunder (or, in the event of a "full review" by the Commission, the 90<sup>th</sup> calendar day following the date such additional Registration Statement is required to be filed hereunder); provided, however, that in the event the Company is notified by the Commission that one or more of the above Registration Statements will not be reviewed or is no longer subject to further review and comments, the Effectiveness Date as to such Registration Statement shall be the fifth Trading Day following the date on which the Company is so notified if such date precedes the dates otherwise required above, provided, further, if such Effectiveness Date falls on a day that is not a Trading Day, then the Effectiveness Date shall be the next succeeding Trading Day.

"Effectiveness Period" shall have the meaning set forth in Section 2(a).

"Event" shall have the meaning set forth in Section 2(d).

"Event Date" shall have the meaning set forth in Section 2(d).

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“Filing Date” means, with respect to the Initial Registration Statement required hereunder, the 30<sup>th</sup> calendar day following the date hereof and, with respect to any additional Registration Statements which may be required pursuant to Section 2(c) or Section 3(c), the earliest practical date on which the Company is permitted by SEC Guidance to file such additional Registration Statement related to the Registrable Securities.

“Holder” or “Holders” means the holder or holders, as the case may be, from time to time of Registrable Securities.

“Indemnified Party” shall have the meaning set forth in Section 5(c).

“Indemnifying Party” shall have the meaning set forth in Section 5(c).

“Initial Registration Statement” means the initial Registration Statement filed pursuant to this Agreement.

“Losses” shall have the meaning set forth in Section 5(a).

“Plan of Distribution” shall have the meaning set forth in Section 2(a).

“Prospectus” means the prospectus included in a Registration Statement (including, without limitation, a prospectus that includes any information previously omitted from a prospectus filed as part of an effective registration statement in reliance upon Rule 430A or Rule 430B promulgated by the Commission pursuant to the Securities Act), as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities covered by a Registration Statement, and all other amendments and supplements to the Prospectus, including post-effective amendments, and all material incorporated by reference or deemed to be incorporated by reference in such Prospectus.

“Registrable Securities” means, as of any date of determination, (a) all of the shares of Common Stock then issued and issuable upon conversion in full of the Series B Preferred Stock (assuming on such date the shares of Series B Preferred Stock are converted in full without regard to any limitations on conversion set forth in the Series B Certificate of Designation), (b) all of the shares of Common Stock then issued and issuable upon conversion in full of the Series C Preferred Stock (assuming on such date the shares of Series C Preferred Stock are converted in full without regard to any limitations on conversion set forth in the Series C Certificate of Designation), (c) all Warrant Shares then issued and issuable upon exercise of the Warrants (assuming on such date the Warrants are exercised in full without regard to any exercise limitations therein), and (d) any securities issued or then issuable upon any stock split, dividend or other distribution, recapitalization or similar event with respect to the foregoing; provided, however, that any such Registrable Securities shall cease to be Registrable Securities (and the Company shall not be required to maintain the effectiveness of any, or file another, Registration Statement hereunder with respect thereto) for so long as (a) a Registration Statement with respect to the sale of such Registrable Securities is declared effective by the Commission under the Securities Act and such Registrable Securities have been disposed of by the Holder in accordance with such effective Registration Statement, (b) such Registrable Securities have been previously sold in accordance with Rule 144, or (c) such securities become eligible for resale without volume or manner-of-sale restrictions and without current public information pursuant to Rule 144 as set forth in a written opinion letter to such effect, addressed, delivered and acceptable to the Transfer Agent and the affected Holders (assuming that such securities and any securities issuable upon exercise, conversion or exchange of which, or as a dividend upon which, such securities were issued or are issuable, were at no time held by any Affiliate of the Company, and all Warrants are exercised by “cashless exercise” as provided in Section 2(c) of each of the Warrants), as reasonably determined by the Company, upon the advice of counsel to the Company.

“Registration Statement” means any registration statement required to be filed hereunder pursuant to Section 2(a) and any additional registration statements contemplated by Section 2(c) or Section 3(c), including (in each case) the Prospectus, amendments and supplements to any such registration statement or Prospectus, including pre- and post-effective amendments, all exhibits thereto, and all material incorporated by reference or deemed to be incorporated by reference in any such registration statement.

“Rule 415” means Rule 415 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 424” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“SEC Guidance” means (i) any publicly-available written or oral guidance of the Commission staff, or any comments, requirements or requests of the Commission staff and (ii) the Securities Act.

“Selling Stockholder Questionnaire” shall have the meaning set forth in Section 3(a).

## 2. Registration.

(a) On or prior to each Filing Date, the Company shall prepare and file with the Commission a Registration Statement covering the resale of all of the Registrable Securities that are not then registered on an effective Registration Statement for an offering to be made on a continuous basis pursuant to Rule 415. Each Registration Statement filed hereunder shall be on Form S-3 (except if the Company is not then eligible to register for resale the Registrable Securities on Form S-3, in which case such registration shall be on another appropriate form in accordance herewith, subject to the provisions of Section 2(e)) and shall contain (except as otherwise directed by at least 85% in interest of the Holders) the “Plan of Distribution” in substantially the form attached hereto as Annex A (which may be modified to respond to comments, if any, provided by the Commission). Subject to the terms of this Agreement, the Company shall use its commercially reasonable efforts to cause a Registration Statement filed under this Agreement (including, without limitation, under Section 3(c)) to be declared effective under the Securities Act as promptly as reasonably practicable after the filing thereof, but in any event no later than the applicable Effectiveness Date, and shall use its commercially reasonable efforts to keep such Registration Statement continuously effective under the Securities Act until the date that all Registrable Securities covered by such Registration Statement (i) have been sold, thereunder or pursuant to Rule 144, or (ii) may be sold without volume or manner-of-sale restrictions pursuant to Rule 144 and without the requirement for the Company to be in compliance with the current public information requirement under Rule 144, as determined by the counsel to the Company pursuant to a written opinion letter to such effect, addressed and acceptable to the Transfer Agent and the affected Holders (the “Effectiveness Period”). The Company shall telephonically request effectiveness of a Registration Statement as of 5:00 p.m. Eastern Time on a Trading Day. The Company shall immediately notify the Holders via facsimile or by e-mail of the effectiveness of a Registration Statement on the same Trading Day that the Company telephonically confirms effectiveness with the Commission, which shall be the date requested for effectiveness of such Registration Statement. The Company shall, by 9:30 a.m. Eastern Time on the Trading Day after the effective date of such Registration Statement, file a final Prospectus with the Commission as required by Rule 424. Failure to so notify the Holder within one (1) Trading Day of such notification of effectiveness or failure to file a final Prospectus as foresaid shall be deemed an Event under Section 2(d).

(b) Notwithstanding the registration obligations set forth in Section 2(a), if the Commission informs the Company that all of the Registrable Securities cannot, as a result of the application of Rule 415 or any other basis, be registered for resale as a secondary offering on a single registration statement, the Company agrees to promptly inform each of the Holders thereof and use its commercially reasonable efforts to file amendments to the Initial Registration Statement as required by the Commission, covering the maximum number of Registrable Securities permitted to be registered by the Commission, on Form S-3 or such other form available to register for resale the Registrable Securities as a secondary offering, subject to the provisions of Section 2(e); with respect to filing on Form S-3 or other appropriate form, and subject to the provisions of Section 2(d) with respect to the payment of liquidated damages; provided, however, that prior to filing such amendment, the Company shall be obligated to use diligent efforts to advocate with the Commission for the registration of all of the Registrable Securities in accordance with the SEC Guidance, including without limitation, Compliance and Disclosure Interpretation 612.09.

(c) Notwithstanding any other provision of this Agreement and subject to the payment of liquidated damages pursuant to Section 2(d), if the Commission or any SEC Guidance sets forth a limitation on the number of Registrable Securities permitted to be registered on a particular Registration Statement as a secondary offering (and notwithstanding that the Company used diligent efforts to advocate with the Commission for the registration of all or a greater portion of Registrable Securities), unless otherwise directed in writing by a Holder as to its Registrable Securities, the number of Registrable Securities to be registered on such Registration Statement will be reduced as follows:

- a. First, the Company shall reduce or eliminate any securities to be included other than Registrable Securities;
- b. Second, the Company shall reduce Registrable Securities represented by Series C Conversion Shares into which Exchanged Series C Preferred Shares are convertible or have been converted (applied, in the case that some of such Series C Conversion Shares may be registered, to the Holders on a pro rata basis based on the total number of unregistered Series C Conversion Shares into which Exchanged Series C Preferred Shares are convertible or have been converted held by such Holders);
- c. Second, the Company shall reduce Registrable Securities represented by Warrant Shares (applied, in the case that some Warrant Shares may be registered, to the Holders on a pro rata basis based on the total number of unregistered Warrant Shares held by such Holders); and
- d. Third, the Company shall reduce Registrable Securities represented by Series B Conversion Shares into which Purchased Series B Preferred Shares are convertible or have been converted (applied, in the case that some of such Series B Conversion Shares may be registered, to the Holders on a pro rata basis based on the total number of unregistered Series B Conversion Shares into which Purchased Series B Preferred Shares are convertible or have been converted held by such Holders).

In the event of a cutback hereunder, the Company shall give the Holder at least five (5) Trading Days prior written notice along with the calculations as to such Holder's allotment. In the event the Company amends the Initial Registration Statement in accordance with the foregoing, the Company will use its commercially reasonable efforts to file with the Commission, as promptly as allowed by Commission or SEC Guidance provided to the Company or to registrants of securities in general, one or more registration statements on Form S-3 or such other form available to register for resale those Registrable Securities that were not registered for resale on the Initial Registration Statement, as amended.

(d) If: (i) the Initial Registration Statement is not filed on or prior to its Filing Date (if the Company files the Initial Registration Statement without affording the Holders the opportunity to review and comment on the same as required by Section 3(a) herein, the Company shall be deemed to have not satisfied this clause (i)), or (ii) the Company fails to file with the Commission a request for acceleration of a Registration Statement in accordance with Rule 461 promulgated by the Commission pursuant to the Securities Act, within five Trading Days of the date that the Company is notified (orally or in writing, whichever is earlier) by the Commission that such Registration Statement will not be “reviewed” or will not be subject to further review, or (iii) prior to the effective date of a Registration Statement, the Company fails to file a pre-effective amendment and otherwise respond in writing to comments made by the Commission in respect of such Registration Statement within fifteen (15) calendar days after the receipt of comments by or notice from the Commission that such amendment is required in order for such Registration Statement to be declared effective, or (iv) a Registration Statement registering for resale all of the Registrable Securities is not declared effective by the Commission by the Effectiveness Date of the Initial Registration Statement, or (v) after the effective date of a Registration Statement, such Registration Statement ceases for any reason to remain continuously effective as to all Registrable Securities included in such Registration Statement, or the Holders are otherwise not permitted to utilize the Prospectus therein to resell such Registrable Securities, for more than fifteen (15) consecutive Trading Days or more than an aggregate of twenty-five (25) Trading Days in the aggregate (which need not be consecutive Trading Days) during any 12-month period (any such failure or breach being referred to as an “Event”, and for purposes of clauses (i) and (iv), the date on which such Event occurs, and for purpose of clause (ii) the date on which such five (5) Trading Day period is exceeded, and for purpose of clause (iii) the date which such fifteen (15) calendar day period is exceeded, and for purpose of clause (v) the date on which such fifteen (15) or twenty-five (25) Trading Day period, as applicable, is exceeded being referred to as “Event Date”), then, in addition to any other rights the Holders may have hereunder or under applicable law, (A) within five (5) Trading Days after an Event Date relating to a failure of clause (i) only and (B) on each monthly anniversary of any such Event Date (if the applicable Event shall not have been cured by such date) until the applicable Event is cured, the Company shall pay to each Holder an amount in cash, as partial liquidated damages and not as a penalty, equal to 1.5% of the aggregate Subscription Amount paid by such Holder pursuant to the Purchase Agreement for any unregistered Registrable Securities then held by such Holder on the applicable Event Date; provided, however, in the event that at least 50% of the Registrable Securities are registered on or before the Effectiveness Date, then any partial liquidated damages attributable to any Registrable Shares not registered as of the Effectiveness Date as a result of the application of Rule 415 shall not begin to accrue until the 180<sup>th</sup> calendar date following the Closing Date (and shall only begin to accrue if a Registration Statement registering the remaining Registrable Securities shall not have been filed and declared effective by the Commission by such date). The parties agree that the maximum aggregate liquidated damages payable to a Holder under this Agreement shall be 8% of the aggregate Subscription Amount paid by such Holder pursuant to the Purchase Agreement. If the Company fails to pay any partial liquidated damages pursuant to this Section in full within seven days after the date payable, the Company will pay interest thereon at a rate of 15% per annum (or such lesser maximum amount that is permitted to be paid by applicable law) to the Holder, accruing daily from the date such partial liquidated damages are due until such amounts, plus all such interest thereon, are paid in full. The partial liquidated damages pursuant to the terms hereof shall apply on a daily pro rata basis for any portion of a month prior to the cure of an Event.

(e) If Form S-3 is not available for the registration of the resale of Registrable Securities hereunder, the Company shall (i) register the resale of the Registrable Securities on another appropriate form and (ii) undertake to register the Registrable Securities on Form S-3 as soon as such form is available, provided that the Company shall maintain the effectiveness of the Registration Statement then in effect until such time as a Registration Statement on Form S-3 covering the Registrable Securities has been declared effective by the Commission.

### 3. Registration Procedures.

In connection with the Company's registration obligations hereunder, the Company shall:

(a) Not less than three (3) Trading Days prior to the filing of each Registration Statement and not less than one (1) Trading Day prior to the filing of any related Prospectus or any amendment or supplement thereto (including any document that would be incorporated or deemed to be incorporated therein by reference, but not including (i) any Exchange Act filing or (ii) any supplement or post-effective amendment to a registration statement that is not related to such Holder's Registrable Securities), the Company shall (i) furnish to each Holder copies of all such documents proposed to be filed, which documents (other than those incorporated or deemed to be incorporated by reference) will be subject to the review of such Holders, and (ii) cause its officers and directors, counsel and independent registered public accountants to respond to such inquiries as shall be necessary, in the reasonable opinion of respective counsel to each Holder, to conduct a reasonable investigation within the meaning of the Securities Act. Notwithstanding the above, the Company shall not be obligated to provide the Holders advance copies of any universal shelf registration statement registering securities in addition to those required hereunder, or any Prospectus prepared thereto. The Company shall not file a Registration Statement or any such Prospectus or any amendments or supplements thereto to which the Holders of a majority of the Registrable Securities shall reasonably object in good faith, provided that, the Company is notified of such objection in writing no later than three (3) Trading Days after the Holders have been so furnished copies of a Registration Statement or one (1) Trading Day after the Holders have been so furnished copies of any related Prospectus or amendments or supplements thereto. Each Holder agrees to furnish to the Company a completed questionnaire in the form attached to this Agreement as Annex B (a "Selling Stockholder Questionnaire") on a date that is not less than two (2) Trading Days prior to the Filing Date or by the end of the fourth (4<sup>th</sup>) Trading Day following the date on which such Holder receives draft materials in accordance with this Section.

(b) (i) Prepare and file with the Commission such amendments, including post-effective amendments, to a Registration Statement and the Prospectus used in connection therewith as may be necessary to keep a Registration Statement continuously effective (subject to any requirement that a post-effective amendment be declared effective by the Commission) as to the applicable Registrable Securities for the Effectiveness Period and prepare and file with the Commission such additional Registration Statements in order to register for resale under the Securities Act all of the Registrable Securities, subject to any SEC Guidance that sets forth a limitation on the number of Registrable Securities permitted to be registered on a particular Registration Statement, (ii) cause the related Prospectus to be amended or supplemented by any required Prospectus supplement (subject to the terms of this Agreement), and, as so supplemented or amended, to be filed pursuant to Rule 424, (iii) respond as promptly as reasonably possible to any comments received from the Commission with respect to a Registration Statement or any amendment thereto and provide as promptly as reasonably possible to the Holders true and complete copies of all correspondence from and to the Commission relating to a Registration Statement (provided that, the Company shall excise any information contained therein which would constitute material non-public information as to any Holder which has not executed a confidentiality agreement with respect thereto with the Company regarding the Company or any of its Subsidiaries), and (iv) comply in all material respects with the applicable provisions of the Securities Act and the Exchange Act with respect to the disposition of all Registrable Securities covered by a Registration Statement during the applicable period in accordance (subject to the terms of this Agreement) with the intended methods of disposition by the Holders thereof set forth in such Registration Statement as so amended or in such Prospectus as so supplemented.

(c) If during the Effectiveness Period, the number of Registrable Securities at any time exceeds 100% of the number of shares of Common Stock then registered in a Registration Statement, then the Company shall file as soon as reasonably practicable, but in any case prior to the applicable Filing Date, an additional Registration Statement covering the resale by the Holders of not less than the number of such Registrable Securities.

(d) Notify the Holders of Registrable Securities to be sold (which notice shall, pursuant to clauses (iii) through (vi) hereof, be accompanied by an instruction to suspend the use of the Prospectus until the requisite changes have been made) as promptly as reasonably possible (and, in the case of (i)(A) below, not less than one (1) Trading Day prior to such filing) and (if requested by any such Person) confirm such notice in writing no later than one (1) Trading Day following the day (i)(A) when a Prospectus or any Prospectus supplement or post-effective amendment to a Registration Statement is proposed to be filed (but not including (i) any Exchange Act filing or (ii) any supplement or post-effective amendment to a registration statement that is not related to such Holder's Registrable Securities), (B) when the Commission notifies the Company whether there will be a "review" of such Registration Statement and whenever the Commission comments in writing on such Registration Statement, and (C) with respect to a Registration Statement or any post-effective amendment, when the same has become effective, (ii) of any request by the Commission or any other federal or state governmental authority for amendments or supplements to a Registration Statement or Prospectus or for additional information, (iii) of the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of a Registration Statement covering any or all of the Registrable Securities or the initiation of any Proceedings for that purpose, (iv) of the receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Registrable Securities for sale in any jurisdiction, or the initiation or threatening of any Proceeding for such purpose, (v) of the occurrence of any event or passage of time that makes the financial statements included in a Registration Statement ineligible for inclusion therein or any statement made in a Registration Statement or Prospectus or any document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires any revisions to a Registration Statement, Prospectus or other documents so that, in the case of a Registration Statement or the Prospectus, as the case may be, it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and (vi) of the occurrence or existence of any pending corporate development with respect to the Company that the Company believes may be material and that, in the determination of the Company, makes it not in the best interest of the Company to allow continued availability of a Registration Statement or Prospectus, provided, however, in no event shall any such notice contain any information which would constitute material, non-public information regarding the Company or any of its Subsidiaries.

(e) Use its commercially reasonable efforts to avoid the issuance of, or, if issued, obtain the withdrawal of (i) any order stopping or suspending the effectiveness of a Registration Statement, or (ii) any suspension of the qualification (or exemption from qualification) of any of the Registrable Securities for sale in any jurisdiction, at the earliest practicable moment.

(f) Furnish to each Holder, without charge, at least one conformed copy of each such Registration Statement and each amendment thereto, including financial statements and schedules, all documents incorporated or deemed to be incorporated therein by reference to the extent requested by such Person, and all exhibits to the extent requested by such Person (including those previously furnished or incorporated by reference) promptly after the filing of such documents with the Commission; provided, that any such item which is available on the EDGAR system (or successor thereto) need not be furnished in physical form.

(g) Subject to the terms of this Agreement, the Company hereby consents to the use of such Prospectus and each amendment or supplement thereto by each of the selling Holders in connection with the offering and sale of the Registrable Securities covered by such Prospectus and any amendment or supplement thereto, except after the giving of any notice pursuant to Section 3(d).

(h) Prior to any resale of Registrable Securities by a Holder, use its commercially reasonable efforts to register or qualify or cooperate with the selling Holders in connection with the registration or qualification (or exemption from the Registration or qualification) of such Registrable Securities for the resale by the Holder under the securities or Blue Sky laws of such jurisdictions within the United States as any Holder reasonably requests in writing, to keep each registration or qualification (or exemption therefrom) effective during the Effectiveness Period and to do any and all other acts or things reasonably necessary to enable the disposition in such jurisdictions of the Registrable Securities covered by each Registration Statement; provided, that, the Company shall not be required to qualify generally to do business in any jurisdiction where it is not then so qualified, subject the Company to any material tax in any such jurisdiction where it is not then so subject or file a general consent to service of process in any such jurisdiction.

(i) If requested by a Holder, cooperate with such Holder to facilitate the timely preparation and delivery of certificates representing Registrable Securities to be delivered to a transferee pursuant to a Registration Statement, which certificates shall be free, to the extent permitted by the Purchase Agreement, of all restrictive legends, and to enable such Registrable Securities to be in such denominations and registered in such names as any such Holder may request.

(j) Upon the occurrence of any event contemplated by Section 3(d), as promptly as reasonably possible under the circumstances taking into account the Company's good faith assessment of any adverse consequences to the Company and its stockholders of the premature disclosure of such event, prepare a supplement or amendment, including a post-effective amendment, to a Registration Statement or a supplement to the related Prospectus or any document incorporated or deemed to be incorporated therein by reference, and file any other required document so that, as thereafter delivered, neither a Registration Statement nor such Prospectus will contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading. If the Company notifies the Holders in accordance with clauses (iii) through (vi) of Section 3(d) above to suspend the use of any Prospectus until the requisite changes to such Prospectus have been made, then the Holders shall suspend use of such Prospectus. The Company will use its commercially reasonable efforts to ensure that the use of the Prospectus may be resumed as promptly as is practicable. The Company shall be entitled to exercise its right under this Section 3(j) to suspend the availability of a Registration Statement and Prospectus, subject to the payment of partial liquidated damages otherwise required pursuant to Section 2(d), for a period not to exceed 60 calendar days (which need not be consecutive days) in any 12-month period.

(k) use its commercially reasonable efforts to comply in all material respects with all applicable rules and regulations of the Commission in connection with obtaining and maintaining the effectiveness of any Registration Statement required to be filed and maintained with the Commission hereunder.

(l) The Company shall use its commercially reasonable efforts to maintain eligibility for use of Form S-3 (or any successor form thereto) for the registration of the resale of Registrable Securities.

(m) The Company may require each selling Holder to furnish to the Company a certified statement as to the number of shares of Common Stock beneficially owned by such Holder and, if required by the Commission, the natural persons thereof that have voting and dispositive control over the shares. During any periods that the Company is unable to meet its obligations hereunder with respect to the registration of the Registrable Securities solely because any Holder fails to furnish such information within three Trading Days of the Company's request, any liquidated damages that are accruing at such time as to such Holder only shall be tolled and any Event that may otherwise occur solely because of such delay shall be suspended as to such Holder only, until such information is delivered to the Company.

4. Registration Expenses. All fees and expenses incident to the performance of or compliance with, this Agreement by the Company shall be borne by the Company whether or not any Registrable Securities are sold pursuant to a Registration Statement. The fees and expenses referred to in the foregoing sentence shall include, without limitation, (i) all registration and filing fees (including, without limitation, fees and expenses of the Company's counsel and independent registered public accountants) (A) with respect to filings made with the Commission, (B) with respect to filings required to be made with any Trading Market on which the Common Stock is then listed for trading, and (C) in compliance with applicable state securities or Blue Sky laws reasonably agreed to by the Company in writing (including, without limitation, fees and disbursements of counsel for the Company in connection with Blue Sky qualifications or exemptions of the Registrable Securities), (ii) printing expenses (including, without limitation, expenses of printing certificates for Registrable Securities), (iii) messenger, telephone and delivery expenses, (iv) fees and disbursements of counsel for the Company, (v) Securities Act liability insurance, if the Company so desires such insurance, and (vi) fees and expenses of all other Persons retained by the Company in connection with the consummation of the transactions contemplated by this Agreement. In addition, the Company shall be responsible for all of its internal expenses incurred in connection with the consummation of the transactions contemplated by this Agreement (including, without limitation, all salaries and expenses of its officers and employees performing legal or accounting duties), the expense of any annual audit and the fees and expenses incurred in connection with the listing of the Registrable Securities on any securities exchange as required hereunder. In no event shall the Company be responsible for any broker or similar commissions of any Holder or, except to the extent provided for in the Transaction Documents, any legal fees or other costs of the Holders.

## 5. Indemnification.

(a) Indemnification by the Company. The Company shall, notwithstanding any termination of this Agreement, indemnify and hold harmless each Holder, the officers, directors, members, partners, agents, brokers (including brokers who offer and sell Registrable Securities as principal as a result of a pledge or any failure to perform under a margin call of Common Stock), investment advisors and employees (and any other Persons with a functionally equivalent role of a Person holding such titles, notwithstanding a lack of such title or any other title) of each of them, each Person who controls any such Holder (within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act) and the officers, directors, members, stockholders, partners, agents and employees (and any other Persons with a functionally equivalent role of a Person holding such titles, notwithstanding a lack of such title or any other title) of each such controlling Person, to the fullest extent permitted by applicable law, from and against any and all losses, claims, damages, liabilities, costs (including, without limitation, reasonable attorneys' fees) and expenses (collectively, "Losses"), as incurred, arising out of or relating to (1) any untrue or alleged untrue statement of a material fact contained in a Registration Statement, any Prospectus or any form of prospectus or in any amendment or supplement thereto or in any preliminary prospectus, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading or (2) any violation or alleged violation by the Company of the Securities Act, the Exchange Act or any state securities law, or any rule or regulation thereunder, in connection with the performance of its obligations under this Agreement, except to the extent, but only to the extent, that (i) such untrue statements or omissions are based solely upon information regarding such Holder furnished in writing to the Company by such Holder expressly for use therein, or to the extent that such information relates to such Holder or such Holder's proposed method of distribution of Registrable Securities and was reviewed and expressly approved in writing by such Holder expressly for use in a Registration Statement, such Prospectus or in any amendment or supplement thereto (it being understood that the Holder has approved Annex A hereto for this purpose) or (ii) in the case of an occurrence of an event of the type specified in Section 3(d)(iii)-(vi), the use by such Holder of an outdated, defective or otherwise unavailable Prospectus after the Company has notified such Holder in writing that the Prospectus is outdated, defective or otherwise unavailable for use by such Holder and prior to the receipt by such Holder of the Advice contemplated in Section 6(d), but only if and to the extent that following the receipt of the Advice the misstatement or omission giving rise to such Loss would have been corrected. The Company shall notify the Holders promptly of the institution, threat or assertion of any Proceeding arising from or in connection with the transactions contemplated by this Agreement of which the Company is aware. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of such indemnified person and shall survive the transfer of any Registrable Securities by any of the Holders in accordance with Section 6(h).

(b) Indemnification by Holders. Each Holder shall, severally and not jointly, indemnify and hold harmless the Company, its directors, officers, agents and employees, each Person who controls the Company (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, agents or employees of such controlling Persons, to the fullest extent permitted by applicable law, from and against all Losses, as incurred, to the extent arising out of or based solely upon: (x) such Holder's failure to comply with any applicable prospectus delivery requirements of the Securities Act through no fault of the Company or (y) any untrue or alleged untrue statement of a material fact contained in any Registration Statement, any Prospectus, or in any amendment or supplement thereto or in any preliminary prospectus, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading (i) to the extent, but only to the extent, that such untrue statement or omission is contained in any information so furnished in writing by such Holder to the Company expressly for inclusion in such Registration Statement or such Prospectus or (ii) to the extent, but only to the extent, that such information relates to such Holder's proposed method of distribution of Registrable Securities and was reviewed and expressly approved in writing by such Holder expressly for use in a Registration Statement (it being understood that the Holder has approved Annex A hereto for this purpose), such Prospectus or in any amendment or supplement thereto or (iii) in the case of an occurrence of an event of the type specified in Section 3(d)(iii)-(vi), to the extent, but only to the extent, related to the use by such Holder of an outdated, defective or otherwise unavailable Prospectus after the Company has notified such Holder in writing that the Prospectus is outdated, defective or otherwise unavailable for use by such Holder and prior to the receipt by such Holder of the Advice contemplated in Section 6(d), but only if and to the extent that following the receipt of the Advice the misstatement or omission giving rise to such Loss would have been corrected. In no event shall the liability of any selling Holder under this Section 5(b) be greater in amount than the dollar amount of the net proceeds received by such Holder upon the sale of the Registrable Securities giving rise to such indemnification obligation.

(c) Conduct of Indemnification Proceedings. If any Proceeding shall be brought or asserted against any Person entitled to indemnity hereunder (an "Indemnified Party"), such Indemnified Party shall promptly notify the Person from whom indemnity is sought (the "Indemnifying Party") in writing, and the Indemnifying Party shall have the right to assume the defense thereof, including the employment of counsel reasonably satisfactory to the Indemnified Party and the payment of all fees and expenses incurred in connection with defense thereof; provided, that, the failure of any Indemnified Party to give such notice shall not relieve the Indemnifying Party of its obligations or liabilities pursuant to this Agreement, except (and only) to the extent that it shall be finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) that such failure shall have materially and adversely prejudiced the Indemnifying Party.

An Indemnified Party shall have the right to employ separate counsel in any such Proceeding and to participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Indemnified Party or Parties unless: (1) the Indemnifying Party has agreed in writing to pay such fees and expenses, (2) the Indemnifying Party shall have failed promptly to assume the defense of such Proceeding and to employ counsel reasonably satisfactory to such Indemnified Party in any such Proceeding, or (3) the named parties to any such Proceeding (including any impleaded parties) include both such Indemnified Party and the Indemnifying Party, and counsel to the Indemnified Party shall reasonably believe that a material conflict of interest is likely to exist if the same counsel were to represent such Indemnified Party and the Indemnifying Party (in which case, if such Indemnified Party notifies the Indemnifying Party in writing that it elects to employ separate counsel at the expense of the Indemnifying Party, the Indemnifying Party shall not have the right to assume the defense thereof and the reasonable fees and expenses of no more than one separate counsel shall be at the expense of the Indemnifying Party). The Indemnifying Party shall not be liable for any settlement of any such Proceeding effected without its written consent, which consent shall not be unreasonably withheld or delayed. No Indemnifying Party shall, without the prior written consent of the Indemnified Party, effect any settlement of any pending Proceeding in respect of which any Indemnified Party is a party, unless such settlement includes an unconditional release of such Indemnified Party from all liability on claims that are the subject matter of such Proceeding.

Subject to the terms of this Agreement, all reasonable fees and expenses of the Indemnified Party (including reasonable fees and expenses to the extent incurred in connection with investigating or preparing to defend such Proceeding in a manner not inconsistent with this Section) shall be paid to the Indemnified Party, as incurred, within ten Trading Days of written notice thereof to the Indemnifying Party; provided, that, the Indemnified Party shall promptly reimburse the Indemnifying Party for that portion of such fees and expenses applicable to such actions for which such Indemnified Party is finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) not to be entitled to indemnification hereunder.

(d) Contribution. If the indemnification under Section 5(a) or 5(b) is unavailable to an Indemnified Party or insufficient to hold an Indemnified Party harmless for any Losses, then each Indemnifying Party shall contribute to the amount paid or payable by such Indemnified Party, in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party and Indemnified Party in connection with the actions, statements or omissions that resulted in such Losses as well as any other relevant equitable considerations. The relative fault of such Indemnifying Party and Indemnified Party shall be determined by reference to, among other things, whether any action in question, including any untrue or alleged untrue statement of a material fact or omission or alleged omission of a material fact, has been taken or made by, or relates to information supplied by, such Indemnifying Party or Indemnified Party, and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such action, statement or omission. The amount paid or payable by a party as a result of any Losses shall be deemed to include, subject to the limitations set forth in this Agreement, any reasonable attorneys' or other fees or expenses incurred by such party in connection with any Proceeding to the extent such party would have been indemnified for such fees or expenses if the indemnification provided for in this Section was available to such party in accordance with its terms.

The parties hereto agree that it would not be just and equitable if contribution pursuant to this Section 5(d) were determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to in the immediately preceding paragraph. Notwithstanding the provisions of this Section 5(d), no Holder shall be required to contribute pursuant to this Section 5(d), in the aggregate, any amount in excess of the amount by which the net proceeds actually received by such Holder from the sale of the Registrable Securities subject to the Proceeding exceeds the amount of any damages that such Holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission.

The indemnity and contribution agreements contained in this Section are in addition to any liability that the Indemnifying Parties may have to the Indemnified Parties.

6. Miscellaneous.

(a) Remedies. In the event of a breach by the Company or by a Holder of any of their respective obligations under this Agreement, each Holder or the Company, as the case may be, in addition to being entitled to exercise all rights granted by law and under this Agreement, including recovery of damages, shall be entitled to specific performance of its rights under this Agreement. Each of the Company and each Holder agrees that monetary damages would not provide adequate compensation for any losses incurred by reason of a breach by it of any of the provisions of this Agreement and hereby further agrees that, in the event of any action for specific performance in respect of such breach, it shall not assert or shall waive the defense that a remedy at law would be adequate.

(b) No Piggyback on Registrations; Prohibition on Filing Other Registration Statements. Except as set forth on Schedule 6(b) attached hereto, neither the Company nor any of its security holders (other than the Holders in such capacity pursuant hereto) may include securities of the Company in any Registration Statements other than the Registrable Securities. The Company shall not file any other registration statements until all Registrable Securities are registered pursuant to a Registration Statement that is declared effective by the Commission, provided that this Section 6(b) shall not prohibit the Company from filing supplements or amendments to registration statements filed prior to the date of this Agreement or from filing any registration statements on Form S-8 or any registration statement with respect to the securities that may be sold to Aspire Capital Fund, LLC pursuant to the Aspire ELOC Agreement, subject to the restrictions applicable to issuances and sales of Common Stock pursuant to the Aspire ELOC Agreement set forth in Section 4.12 of the Purchase Agreement.

(c) Compliance. Each Holder covenants and agrees that it will comply with the prospectus delivery requirements of the Securities Act, if and to the extent applicable to it in connection with sales of Registrable Securities pursuant to a Registration Statement, unless an exemption therefrom is available to such Holder.

(d) Discontinued Disposition. By its acquisition of Registrable Securities, each Holder agrees that, upon receipt of a notice from the Company of the occurrence of any event of the kind described in Section 3(d)(iii) through (vi), such Holder will forthwith discontinue disposition of such Registrable Securities under a Registration Statement until it is advised in writing (the "Advice") by the Company that the use of the applicable Prospectus (as it may have been supplemented or amended) may be resumed. The Company will use its commercially reasonable efforts to ensure that the use of the Prospectus may be resumed as promptly as is practicable. The Company agrees and acknowledges that any periods during which the Holder is required to discontinue the disposition of the Registrable Securities hereunder shall be subject to the provisions of Section 2(d).

(c) Piggy-Back Registrations. If, at any time during the Effectiveness Period, there is not an effective Registration Statement covering all of the Registrable Securities and the Company shall determine to prepare and file with the Commission a registration statement relating to an offering for its own account or the account of others under the Securities Act of any of its equity securities, other than on Form S-4 or Form S-8 (each as promulgated under the Securities Act) or their then equivalents relating to equity securities to be issued solely in connection with any acquisition of any entity or business or equity securities issuable in connection with the Company's stock option or other employee benefit plans or any registration statement with respect to the securities that may be sold to Aspire Capital Fund, LLC pursuant to the Aspire ELOC Agreement, subject to the restrictions applicable to issuances and sales of Common Stock pursuant to the Aspire ELOC Agreement set forth in Section 4.12 of the Purchase Agreement, then the Company shall deliver to each Holder a written notice of such determination and, if within fifteen days after the date of the delivery of such notice, any such Holder shall so request in writing, the Company shall include in such registration statement all or any part of such Registrable Securities such Holder requests to be registered; provided, however, that the Company shall not be required to register any Registrable Securities pursuant to this Section 6(c) that are eligible for resale pursuant to Rule 144 (without volume restrictions or current public information requirements) promulgated by the Commission pursuant to the Securities Act or that are the subject of a then effective Registration Statement that is available for resales or other dispositions by such Holder.

(f) Amendments and Waivers. The provisions of this Agreement, including the provisions of this sentence, may not be amended, modified or supplemented, and waivers or consents to departures from the provisions hereof may not be given, unless the same shall be in writing and signed by the Company and the Holders of a majority or more of the then outstanding Registrable Securities (for purposes of clarification, this includes any Registrable Securities issuable upon exercise or conversion of any Security). If a Registration Statement does not register all of the Registrable Securities pursuant to a waiver or amendment done in compliance with the previous sentence, then the number of Registrable Securities to be registered for each Holder shall be reduced pro rata among all Holders and each Holder shall have the right to designate which of its Registrable Securities shall be omitted from such Registration Statement. Notwithstanding the foregoing, a waiver or consent to depart from the provisions hereof with respect to a matter that relates exclusively to the rights of a Holder or some Holders and that does not directly or indirectly affect the rights of other Holders may be given only by such Holder or Holders of all of the Registrable Securities to which such waiver or consent relates; provided, however, that the provisions of this sentence may not be amended, modified, or supplemented except in accordance with the provisions of the first sentence of this Section 6(f). No consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of this Agreement unless the same consideration also is offered to all of the parties to this Agreement.

(g) Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be delivered as set forth in the Purchase Agreement.

(h) Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the successors and permitted assigns of each of the parties and shall inure to the benefit of each Holder. The Company may not assign (except by merger) its rights or obligations hereunder without the prior written consent of all of the Holders of the then outstanding Registrable Securities. Each Holder may assign their respective rights hereunder in the manner and to the Persons as permitted under Section 5.7 of the Purchase Agreement.

(i) No Inconsistent Agreements. Neither the Company nor any of its Subsidiaries has entered, as of the date hereof, nor shall the Company or any of its Subsidiaries, on or after the date of this Agreement, enter into any agreement with respect to its securities, that would have the effect of impairing the rights granted to the Holders in this Agreement or otherwise conflicts with the provisions hereof. Except as set forth on Schedule 6(i), neither the Company nor any of its Subsidiaries has previously entered into any agreement granting any registration rights with respect to any of its securities to any Person that have not been satisfied in full.

(j) Execution and Counterparts. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party, it being understood that both parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a “.pdf” format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or “.pdf” signature page were an original thereof.

(k) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Agreement shall be determined in accordance with the provisions of the Purchase Agreement.

(l) Cumulative Remedies. The remedies provided herein are cumulative and not exclusive of any other remedies provided by law.

(m) Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

(n) Headings. The headings in this Agreement are for convenience only, do not constitute a part of the Agreement and shall not be deemed to limit or affect any of the provisions hereof.

(o) Independent Nature of Holders' Obligations and Rights. The obligations of each Holder hereunder are several and not joint with the obligations of any other Holder hereunder, and no Holder shall be responsible in any way for the performance of the obligations of any other Holder hereunder. Nothing contained herein or in any other agreement or document delivered at any closing, and no action taken by any Holder pursuant hereto or thereto, shall be deemed to constitute the Holders as a partnership, an association, a joint venture or any other kind of group or entity, or create a presumption that the Holders are in any way acting in concert or as a group or entity with respect to such obligations or the transactions contemplated by this Agreement or any other matters, and the Company acknowledges that the Holders are not acting in concert or as a group, and the Company shall not assert any such claim, with respect to such obligations or transactions. Each Holder shall be entitled to protect and enforce its rights, including without limitation the rights arising out of this Agreement, and it shall not be necessary for any other Holder to be joined as an additional party in any proceeding for such purpose. The use of a single agreement with respect to the obligations of the Company contained was solely in the control of the Company, not the action or decision of any Holder, and was done solely for the convenience of the Company and not because it was required or requested to do so by any Holder. It is expressly understood and agreed that each provision contained in this Agreement is between the Company and a Holder, solely, and not between the Company and the Holders collectively and not between and among Holders.

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*(Signature Pages Follow)*

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IN WITNESS WHEREOF, the parties have executed this Registration Rights Agreement as of the date first written above.

**RITTER PHARMACEUTICALS, INC.**

By: \_\_\_\_\_

Name: Andrew J. Ritter

Title: President and Chief Executive Officer

[SIGNATURE PAGE OF HOLDERS FOLLOWS]

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[SIGNATURE PAGE OF HOLDERS TO REGISTRATION RIGHTS AGREEMENT]

Name of Holder: \_\_\_\_\_

*Signature of Authorized Signatory of Holder:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

[SIGNATURE PAGES CONTINUE]

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**Plan of Distribution**

Each Selling Stockholder (the "Selling Stockholders") of the securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the principal Trading Market or any other stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed or negotiated prices. A Selling Stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- in transactions through broker-dealers that agree with the Selling Stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The Selling Stockholders may also sell securities under Rule 144 or any other exemption from registration under the Securities Act of 1933, as amended (the "Securities Act"), if available, rather than under this prospectus.

Broker-dealers engaged by the Selling Stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the Selling Stockholders (or, if any broker-dealer acts as agent for the purchaser of securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

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In connection with the sale of the securities or interests therein, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The Selling Stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The Selling Stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each Selling Stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify the Selling Stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

We agreed to keep this prospectus effective until the earlier of (i) the date on which the securities may be resold by the Selling Stockholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information under Rule 144 under the Securities Act or any other rule of similar effect or (ii) all of the securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale securities may not simultaneously engage in market making activities with respect to the common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the Selling Stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the common stock by the Selling Stockholders or any other person. We will make copies of this prospectus available to the Selling Stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

**RITTER PHARMACEUTICALS**

**Selling Stockholder Notice and Questionnaire**

The undersigned beneficial owner of common stock (the "Registrable Securities") of Ritter Pharmaceuticals, Inc., a Delaware corporation (the "Company"), understands that the Company has filed or intends to file with the Securities and Exchange Commission (the "Commission") a registration statement (the "Registration Statement") for the registration and resale under Rule 415 of the Securities Act of 1933, as amended (the "Securities Act"), of the Registrable Securities, in accordance with the terms of the Registration Rights Agreement (the "Registration Rights Agreement") to which this document is annexed. A copy of the Registration Rights Agreement is available from the Company upon request at the address set forth below. All capitalized terms not otherwise defined herein shall have the meanings ascribed thereto in the Registration Rights Agreement.

Certain legal consequences arise from being named as a selling stockholder in the Registration Statement and the related prospectus. Accordingly, holders and beneficial owners of Registrable Securities are advised to consult their own securities law counsel regarding the consequences of being named or not being named as a selling stockholder in the Registration Statement and the related prospectus.

**NOTICE**

The undersigned beneficial owner (the "Selling Stockholder") of Registrable Securities hereby elects to include the Registrable Securities owned by it in the Registration Statement.

The undersigned hereby provides the following information to the Company and represents and warrants that such information is accurate:

**QUESTIONNAIRE**

**1. Name.**

(a) Full Legal Name of Selling Stockholder

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(b) Full Legal Name of Registered Holder (if not the same as (a) above) through which Registrable Securities are held:

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(c) Full Legal Name of Natural Control Person (which means a natural person who directly or indirectly alone or with others has power to vote or dispose of the securities covered by this Questionnaire):

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**2. Address for Notices to Selling Stockholder:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Contact Person: \_\_\_\_\_

**3. Broker-Dealer Status:**

(a) Are you a broker-dealer?

Yes [ ] No [ ]

(b) If "yes" to Section 3(a), did you receive your Registrable Securities as compensation for investment banking services to the Company?

Yes [ ] No [ ]

Note: If "no" to Section 3(b), the Commission's staff has indicated that you should be identified as an underwriter in the Registration Statement.

(c) Are you an affiliate of a broker-dealer?

Yes [ ] No [ ]

(d) If you are an affiliate of a broker-dealer, do you certify that you purchased the Registrable Securities in the ordinary course of business, and at the time of the purchase of the Registrable Securities to be resold, you had no agreements or understandings, directly or indirectly, with any person to distribute the Registrable Securities?

Yes [ ] No [ ]

Note: If "no" to Section 3(d), the Commission's staff has indicated that you should be identified as an underwriter in the Registration Statement.

**4. Beneficial Ownership of Securities of the Company Owned by the Selling Stockholder.**

*Except as set forth below in this Item 4, the undersigned is not the beneficial or registered owner of any securities of the Company other than the securities issuable pursuant to the Purchase Agreement.*

(a) Type and Amount of other securities beneficially owned by the Selling Stockholder:

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**5. Relationships with the Company:**

*Except as set forth below, neither the undersigned nor any of its affiliates, officers, directors or principal equity holders (owners of 5% or more of the equity securities of the undersigned) has held any position or office or has had any other material relationship with the Company (or its predecessors or affiliates) during the past three years.*

State any exceptions here:

\_\_\_\_\_  
\_\_\_\_\_

The undersigned agrees to promptly notify the Company of any material inaccuracies or changes in the information provided herein that may occur subsequent to the date hereof at any time while the Registration Statement remains effective; provided, that the undersigned shall not be required to notify the Company of any changes to the number of securities held or owned by the undersigned or its affiliates.

By signing below, the undersigned consents to the disclosure of the information contained herein in its answers to Items 1 through 5 and the inclusion of such information in the Registration Statement and the related prospectus and any amendments or supplements thereto. The undersigned understands that such information will be relied upon by the Company in connection with the preparation or amendment of the Registration Statement and the related prospectus and any amendments or supplements thereto.

IN WITNESS WHEREOF the undersigned, by authority duly given, has caused this Notice and Questionnaire to be executed and delivered either in person or by its duly authorized agent.

Date: \_\_\_\_\_ Beneficial  
Owner: \_\_\_\_\_  
By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**PLEASE FAX A COPY (OR EMAIL A .PDF COPY) OF THE COMPLETED AND EXECUTED NOTICE AND QUESTIONNAIRE TO:**



## PLACEMENT AGENCY AGREEMENT

October 31, 2018

A.G.P./Alliance Global Partners  
590 Madison Avenue  
New York, NY 10022

Ladies and Gentlemen:

**Introductory.** Ritter Pharmaceuticals, Inc., a Delaware corporation (the “**Company**”), proposes to (i) issue and sell to certain purchasers (collectively, the “**Purchasers**”) up to \$6.0 million of (A) the Company’s Series B Convertible Preferred Stock, par value \$0.001 per share (the “**Series B Preferred Stock**”), having the rights, preferences and privileges set forth in the Certificate of Designation of Rights, Preferences and Limitations to be filed by the Company with the Secretary of State of the State of Delaware, substantially in the form of Exhibit A-1 attached hereto (the “**Series B Certificate of Designation**”), which Series B Preferred Stock shall have a stated value of \$1,000 per share and shall be convertible into shares of the Company’s common stock, par value \$0.001 per share (the “**Common Stock**”), as provided in the Series B Certificate of Designation (such shares of Common Stock into which the Series B Preferred Stock is convertible, collectively, the “**Series B Conversion Shares**”), and (B) Common Stock purchase warrants, substantially in the form of Exhibit B attached hereto (collectively, the “**Warrants**”), which Warrants shall entitle the Purchasers to purchase, in the aggregate, a number of shares of Common Stock equal to 50% of the maximum number of Series B Conversion Shares issuable upon conversion in full of all shares of Series B Preferred Stock purchased by the Purchasers (such shares of Common Stock issuable upon exercise of the Warrants, collectively, the “**Warrant Shares**”) and shall be exercisable for a period of five (5) years, and (ii) issue to certain of the Purchasers, in exchange for their shares of the Company’s outstanding Series A Convertible Preferred Stock, par value \$0.001 per share and stated value \$1,000 per share (the “**Series A Preferred Stock**”), shares of the Company’s Series C Convertible Preferred Stock, par value \$0.001 per share (the “**Series C Preferred Stock**”), having the rights, preferences and privileges set forth in the Certificate of Designation of Rights, Preferences and Limitations to be filed by the Company with the Secretary of State of the State of Delaware, substantially in the form of Exhibit A-2 attached hereto (the “**Series C Certificate of Designation**”), which Series C Preferred Stock shall have a stated value of \$1,000 per share and shall be convertible into shares of Common Stock as provided in the Series C Certificate of Designation (such shares of Common Stock into which the Series C Preferred Stock is convertible, collectively, the “**Series C Conversion Shares**”). The Series B Preferred Stock, the Series B Conversion Shares, the Warrants and the Warrant Shares are collectively referred to herein as the “**Purchased Securities**”; the Series C Preferred Stock and the Series C Conversion Shares are collectively referred to herein as the “**Exchanged Securities**”; and the Purchased Securities and the Exchanged Securities are collectively referred to herein as the “**Securities**”.

The Securities will be offered, issued and sold to (or exchanged with, as applicable) the Purchasers in a private placement (the “**Placement**”) without being registered under the Securities Act of 1933, as amended, and the rules and regulations of the Securities and Exchange Commission (the “**Commission**”) thereunder (collectively, the “**Securities Act**”), in reliance upon Section 4(a)(2) (“**Section 4(a)(2)**”) thereof and/or Rule 506(b) of Regulation D (“**Regulation D**”) thereunder. The Company hereby confirms that A.G.P./Alliance Global Partners has agreed to act as Placement Agent (the “**Placement Agent**”) in connection with the Placement, subject to the terms, conditions and other provisions of this Agreement.

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The Securities are to be issued and sold to (or exchanged with, as applicable) the Purchasers pursuant to a Securities Purchase Agreement, substantially in the form of Exhibit C hereto (the “**Securities Purchase Agreement**”), to be entered into by the Company and each of the Purchasers. Holders of the Securities will be entitled to the benefits of those certain resale registration rights set forth in a Registration Rights Agreement, substantially in the form of Exhibit D hereto (the “**Registration Rights Agreement**”) to be entered into between the Company and each of the Purchasers, pursuant to which the Company will agree, among other things, to file with the Commission a resale registration statement pursuant to Rule 415 under the Securities Act (the “**Resale Registration Statement**”) covering the resale of the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares, and to use its commercially reasonable efforts to cause the Resale Registration Statement to be declared effective within the time periods specified in the Registration Rights Agreement.

This Agreement, the Series B Certificate of Designation, the Series C Certificate of Designation, the Warrants, the Securities Purchase Agreement, the Registration Rights Agreement, and the escrow agreement, substantially in the form of Exhibit E hereto, to be entered into by the Company, the Placement Agent, Corporate Stock Transfer, Inc., as Escrow Manager, and Collegiate Peaks Bank, as Escrow Agent, in connection with the Placement (the “**Escrow Agreement**”), are referred to herein collectively as the “**Transaction Documents**”, and the transactions contemplated hereby and thereby are referred to herein collectively as the “**Transaction**.”

The Company has prepared a management presentation dated October 2018 (the “**Management Presentation**”) to be used in connection with the Placement. The information in the Management Presentation is based upon the Company’s public filings, including reports filed or furnished by the Company under the Securities Exchange Act of 1934, as amended, and the rules and regulations of the Commission thereunder (collectively, the “**Exchange Act**”), from and after January 1, 2015 (the “**Public Filings**”). The Management Presentation and the Public Filings, shall collectively be hereinafter referred to as the “**Disclosure Package**.”

The Company hereby confirms its agreement with the Placement Agent as follows:

#### **Section 1. Representations, Warranties and Agreements of the Company and the Placement Agent**

**A. Representations, Warranties and Agreements of the Company:** In addition to the other representations, warranties and agreements contained in this Agreement and in Section 3.1 of Article III of the Securities Purchase Agreement, all of which are incorporated herein by reference and upon which the Placement Agent may rely as a third-party beneficiary thereof, the Company hereby represents, warrants and agrees with, the Placement Agent as follows:

(a) *No Material Misstatement or Omission.* As of their respective dates (or, if amended or superseded by a filing prior to the closing date of the Placement (the “Closing Date”), then as of the date of such filing), each of the Public Filings by the Company complied in all material respects with the requirements of the Securities Act and the Exchange Act and the rules and regulations of the SEC promulgated thereunder. None of the Management Presentation or the Public Filings, as of their respective dates, contains any untrue statement of a material fact or omits to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(b) *Placement Materials.* The Company has delivered to the Placement Agent copies of the Management Presentation in such quantities and at such places as the Placement Agent has reasonably requested or will reasonably request. The Company has not distributed and will not distribute, prior to the Closing Date, any materials in connection with the Placement other than the Management Presentation, its Public Filings and drafts or definitive versions of the Transaction Documents and the other agreements, instruments and documents to be entered into or delivered in connection with the Transaction.

(c) *The Transaction Documents.* The Company has all necessary power and authority to execute and deliver the Transaction Documents and to perform and carry out its obligations hereunder and thereunder; each of the Transaction Documents has been duly authorized by the Company and, when executed and delivered by the Company, will constitute a valid and binding agreement of the Company, enforceable against the Company in accordance with its terms.

(d) *Forward Looking Statements.* The statements (including the assumptions described therein) included in the Management Presentation (i) are and will be within the coverage of Rule 175(b) under the Securities Act to the extent such data constitute forward looking statements as defined in Rule 175(c) and (ii) were and will be made by the Company with a reasonable basis and reflect the Company’s good faith estimate of the matters described therein.

(e) *Stock Exchange Listing.* The Company shall cause the Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares to be listed on The Nasdaq Capital Market prior to the effectiveness of the Resale Registration Statement and shall use its best efforts to maintain the continued listing of such Series B Conversion Shares, the Series C Conversion Shares and the Warrant Shares.

(f) *Non-Contravention of Existing Instruments; No Further Authorizations or Approvals Required.* The Company’s execution, delivery and performance of this Agreement, and each of the other Transaction Documents, do not, and will not, (i) conflict with or violate any provision of the Company’s certificate or articles of incorporation, bylaws or other organizational or charter documents, (ii) conflict with or violate, or constitute a default (or an event that with notice or lapse of time or both would become a default) (a “Default”) under or result in the creation or imposition of any security interest, mortgage, pledge, lien, charge, encumbrance or adverse claim upon any property or assets of the Company, or give to others any rights of termination, amendment, acceleration or cancellation (with or without notice, lapse of time or both) of, any agreement, indenture, mortgage, loan or credit facility, note, contract, franchise, lease, debt or other instrument or other understanding to which the Company is a party (including, without limitation, any agreement or arrangement between the Company and any other investment bank, underwriter, placement agent, broker-dealer or finder) or by which any property or asset of the Company is bound, or affected (each, an “Existing Instrument”) or require the consent of any other party to any Existing Instrument or other third party, except to the extent that such conflict, default, termination, amendment, acceleration or cancellation right would not reasonably be expected to have a Material Adverse Change (defined as: any development that could reasonably be expected to result in a material adverse change in the condition, financial or otherwise, or in the earnings, business, operations or prospects, whether or not arising from transactions in the ordinary course of business, any such change is called a “Material Adverse Change”), or (iii) result in a violation of any law, rule, administrative regulation, order, judgment, injunction, administrative or court decree or other restriction of any court or governmental authority to which the Company is subject, or by which any property or asset of the Company is bound or affected, except to the extent that such violation would not, individually or in the aggregate, result in a Material Adverse Change. No consent, approval, authorization or other order of, or registration or filing with, any court or other governmental or regulatory authority or agency, is required for the Company’s execution, delivery and performance of this Agreement and the other Transaction Documents other than the Required Approvals (as such term is defined in the Securities Purchase Agreement).

(g) *No Price Stabilization or Manipulation; Compliance with Regulation M, etc.* The Company has not taken, directly or indirectly, any action designed to or that might be reasonably expected to cause or result in stabilization or manipulation of the price of its Common Stock or any other “reference security” (as defined in Rule 100 of Regulation M under the 1934 Act (“**Regulation M**”)), whether to facilitate the sale or resale of any of the Securities or otherwise, and has taken no action which would directly or indirectly violate Regulation M or facilitate any short-selling of the Series B Conversion Shares, the Series C Conversion Shares or the Warrant Shares by Purchasers.

(h) *Brokers.* Except for the Placement Agent, there is no broker, finder or other party that is entitled to receive from the Company any brokerage or finder’s fee or other fee or commission as a result of the Placement or the transactions contemplated thereby.

(i) *QIBs and Accredited Investors.* The Company will not offer or sell any of the Securities to any person whom it reasonably believes is not (i) a “qualified institutional buyer” as defined in Rule 144A (“**QIBs**”) or (ii) an institutional “accredited investor” (as defined in clauses (1), (2), (3) and (7) of Rule 501(a) of Regulation D).

(j) *Purchasers; Compliance With Rule 502(d).* The Company will exercise reasonable care to assure that the Purchasers are not “underwriters” within the meaning of Section 2(a)(11) of the Securities Act and, without limiting the foregoing, that such purchases will comply with Rule 502(d) under the Securities Act.

(k) *No General Solicitation.* Neither the Company nor any of its Affiliates have engaged, and will engage, directly or indirectly in any form of “general solicitation” or “general advertising” in connection with the offering of the Securities (as those terms are used in Regulation D) under the Securities Act or in any manner involving a public offering within the meaning of Section 4(a)(2); and the Company has not entered, and will not enter, into any arrangement or agreement with respect to the distribution of the Securities, except for the Transaction Documents, and the Company agrees not to enter into any such arrangement or agreement.

(l) *No Integration.* Neither the Company nor any of its affiliates has directly or indirectly sold, offered for sale, solicited offers to buy or otherwise negotiated in respect of any “security” (as defined in the Securities Act) that is, or would be, integrated with the sale of any of the Securities in a manner that would require the registration under the Securities Act of any of the Securities.

(m) *No Transfer Taxes or Other Fees.* There are no transfer taxes or other similar fees or charges under United States law or the laws of any state or any political subdivision thereof, required to be paid in connection with the execution and delivery of this Agreement and the other Transaction Documents or the issuance and sale by the Company of the Securities.

(n) *Patriot Act Compliance.* Neither the issuance and sale of the Securities by the Company nor the Company’s use of the proceeds thereof will violate the Trading with the Enemy Act, as amended, or any of the foreign assets control regulations of the United States Treasury Department (31 CFR, Subtitle B, Chapter V, as amended) or any enabling legislation or executive order relating thereto. The Company is in compliance, in all material respects, with the USA Patriot Act of 2001 (signed into law October 26, 2001).

(o) *No Offer and Sale Within Six Months.* The Company has not sold or issued any security of the same or similar class or series as any of the Securities or any security convertible into, or exercisable for, shares of Common Stock during the six-month period preceding the date of the Securities Purchase Agreement, including any sales pursuant to Rule 144A under the Securities Act, Section 4(a)(2) or Regulation D (other than shares issued pursuant to employee benefit plans, qualified stock options plans or other employee or director compensation plans or pursuant to outstanding options, rights, warrants or other convertible securities), and has no intention of making, an offer or sale of such securities, for a period of six months after the date of the Securities Purchase Agreement, except for (i) the offering of Securities as contemplated by the Transaction Documents and (ii) any offer or sale of securities that would not be integrated with the sale of any of the Securities in a manner that would require the registration under the Securities Act of the sale by the Company of the Securities, provided that any such offering and sale of securities (other than shares issued pursuant to employee benefit plans, qualified stock options plans or other employee or director compensation plans or pursuant to outstanding options, rights, warrants or other convertible securities) made within six months of the date hereof shall be accompanied by an opinion addressed to or that may be relied upon by the Placement Agent, and provided further, that in no event shall the Company offer or sell any securities prior to the expiration of the Lock-up Period set forth in Section 4.12(a) of the Securities Purchase Agreement, except as otherwise permitted by Section 4.12 of the Securities Purchase Agreement. As used in this paragraph, the terms “offer” and “sale” have the meanings specified in Section 2(a)(3) of the Securities Act.

(p) *No Disqualification Events.* Neither the Company nor any Company Related Persons (as defined below) are subject to any of the disqualifications set forth in Rule 506(d) of Regulation D (each, a “**Disqualification Event**”). The Company has exercised reasonable care to determine whether any Company Related Person is subject to a Disqualification Event. The Disclosure Package contains a true and complete description of the matters required to be disclosed with respect to the Company and the Company Related Persons pursuant to the disclosure requirements of Rule 506(e) of Regulation D, to the extent applicable. As used herein, “**Company Related Persons**” means any predecessor of the Company, any affiliated issuer, any director, executive officer, other officer of the Company participating in the Placement, any general partner or managing member of the Company, any beneficial owner of 20% or more of the Company’s outstanding voting equity securities, calculated on the basis of voting power, and any “promoter” (as defined in Rule 405 under the Securities Act) connected with the Company in any capacity. The Company will promptly notify the Placement Agent in writing of (1) any Disqualification Event relating to any Company Related Person and (2) any event that would, with the passage of time, become a Disqualification Event relating to any Company Related Person.

(q) *Certificates.* Any certificate signed by an officer of the Company and delivered to the Placement Agent in connection herewith shall be deemed to be a representation and warranty by the Company to the Placement Agent as to the matters set forth therein.

(r) *Disclosure.* No representation or warranty contained in Section 2 of this Agreement contains any untrue statement of a material fact or omits to state a material fact necessary to make the statements herein not misleading in the context of such representations and warranties.

The Company acknowledges that each of the Placement Agent and, for purposes of the opinion to be delivered pursuant to Section 4 hereof, counsel to the Company, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

**B. Representations, Warranties and Agreements of the Placement Agent.** The Placement Agent hereby represents, warrants and covenants to, and agrees with, the Company as follows:

(a) *No General Solicitation.* The Placement Agent will not solicit offers for the Company for the Securities by means of any form of general solicitation or general advertising in connection with the offering of the Securities or in any manner involving a public offering within the meaning of Section 4(a)(2).

(b) *Limitation on Offerees.* The Placement Agent will solicit offers for the Company for the Securities only from persons whom it reasonably believes to be (i) a QIB or (ii) an institutional “accredited investor” (as defined in clauses (1), (2), (3) and (7) of Rule 501(a) of Regulation D).

(c) *Authority.* This Agreement has been duly authorized, executed and delivered by the Placement Agent, and upon due execution and delivery by the Company, this Agreement will be a valid and binding agreement of the Placement Agent enforceable against it in accordance with its terms, except as may be limited by principles of public policy and, as to enforceability, subject to applicable bankruptcy, insolvency, reorganization, moratorium and similar laws relating to or affecting creditor’s rights from time to time in effect and subject to general equity principles.

(d) *No Conflict.* None of the execution or delivery of or performance by the Placement Agent under this Agreement or any other agreement or document entered into by the Placement Agent in connection herewith or the consummation of the transactions herein or therein contemplated conflicts with or violates, any agreement or other instrument to which the Placement Agent is a party or by which its assets may be bound, or its limited liability company agreement, or any license, permit, judgment, decree, order, statute, rule or regulation applicable to the Placement Agent or any of its assets, except in each case as would not have a material adverse effect on the transactions contemplated hereby.

(e) *No Disqualification Event.* Neither the Placement Agent nor any Placement Agent Related Persons (as defined below) are subject to any Disqualification Event as of the date hereof. The Placement Agent has exercised reasonable care to determine whether any Placement Agent Related Person is subject to such a Disqualification Event. As used herein, "**Placement Agent Related Persons**" means any predecessor of the Placement Agent, any affiliated issuer, any director, executive officer, other officer of Placement Agent participating in the Placement, any general partner or managing member of the Placement Agent, any beneficial owner of 20% or more of the Placement Agent's outstanding voting equity securities, calculated on the basis of voting power, and any "promoter" (as defined in Rule 405 under the Securities Act) connected with the Placement Agent in any capacity. The Placement Agent agrees to promptly notify the Company in writing of (1) any Disqualification Event relating to any Placement Agent Related Person and (2) any event that would, with the passage of time, become a Disqualification Event relating to any Placement Agent Related Person.

## **Section 2. Engagement of Placement Agent; Fees; Expenses.**

(a) *Engagement of Placement Agent.* The Company agrees that it has engaged A.G.P./Alliance Global Partners as its exclusive placement agent with respect to the Placement, and the Company hereby authorizes the Placement Agent as its exclusive placement agent to act as such in connection with the Placement. On the basis of the representations, warranties and agreements of the Company contained in or incorporated by reference into this Agreement, and subject to, and in accordance with, the terms, conditions and other provisions hereof, A.G.P./Alliance Global Partners agrees to act as exclusive Placement Agent to place the Securities as contemplated by this Agreement and the Securities Purchase Agreement. The term of the Placement Agent's exclusive engagement will be until the earlier of (i) November 30, 2018 and (ii) the completion and consummation of the Placement, subject to earlier termination pursuant to and in accordance with Section 7 below and giving effect to any required notice period as therein provided (the "**Offering Period**"). The date on which the Offering Period expires or terminates referenced in the immediately preceding sentence is referred to herein as the "**Termination Date**." The Company acknowledges that the Placement Agent's engagement hereunder does not constitute any firm commitment or undertaking, express or implied, on the part of the Placement Agent to purchase or place any of the Securities and does not constitute any representation, warranty or agreement that any financing will be available to the Company.

(b) *Placement Agent's Fees and Expenses.* As compensation for the Placement Agent's services hereunder, the Company hereby agrees to pay the Placement Agent, on the Closing Date, a cash fee in an amount equal to seven percent (7%) of the aggregate gross proceeds from the sale of the Series B Preferred Stock and Warrants to the Purchasers in the Placement, excluding any proceeds received from the sale of Securities by the Company to MedPace Inc. In addition to any fees that may be paid to the Placement Agent hereunder, whether or not any Transaction occurs or the Placement Agent's engagement and/or this Agreement is otherwise terminated by any party or expires, the Company shall reimburse the Placement Agent, promptly upon receipt of an invoice therefor, for all out-of-pocket expenses (including, without limitation, the reasonable fees and expenses of Placement Agent's counsel, and the reasonable fees and expenses of any other independent experts retained by the Placement Agent) incurred by the Placement Agent in connection with the Transactions and the Engagement Letter (defined below), in an amount not to exceed \$35,000 in the aggregate (including the fees and expenses of Placement Agent's counsel), without the Company's prior consent (not to be unreasonably withheld); provided, however, that such expense cap in no way limits or impairs the indemnification and contribution provisions of this Agreement or the Engagement Letter.

(c) *Placement Agent as Independent Contractor.* The Company hereby acknowledges that, in connection with the Transactions, (i) the Placement, including the determination of the offering price of the Preferred Stock and Warrants, the initial conversion price of the Preferred Stock and the initial exercise price of the Warrants, and any related discounts, commissions and fees, shall be an arm's-length commercial transaction between the Company and the Purchasers, (ii) the Placement Agent will be acting as an independent contractor and will not be the agent or fiduciary of the Company or its stockholders, creditors, employees, the Purchasers or any other party, (iii) the Placement Agent shall not assume an advisory or fiduciary responsibility in favor of the Company (irrespective of whether the Placement Agent has advised or is currently advising the Company on other matters) and the Placement Agent shall not have an obligation to the Company with respect to the Transactions except as may be set forth expressly herein, (iv) the Placement Agent and its affiliates may be engaged in a broad range of transactions that involve interests that differ from those of the Company and (v) the Placement Agent shall not provide any legal, accounting, regulatory or tax advice with respect to the Transactions and the Company shall consult its own legal, accounting, regulatory and tax advisors to the extent it deems appropriate.

(d) *Company Responsible for the Disclosure Package.* The Company is and will be solely responsible for the contents of the Disclosure Package and any and all other written or oral communications provided to any actual or prospective purchaser of the Securities with the approval of the Company; and the Company recognizes that the Placement Agent, in acting pursuant to this Agreement, will be using information provided by the Company and its agents and representatives and the Placement Agent does not assume responsibility for, and may rely, without independent verification, on the accuracy and completeness of any such information.

(e) *Notification of Potential Purchasers.* In order to allow proper coordination of the proposed Placement, during the term of this engagement, the Company will promptly notify the Placement Agent of any potential purchasers known to the Company to be interested in purchasing any of the Securities, and the Company will keep the Placement Agent fully and promptly informed of the status of any discussions or negotiations between the Company and any such potential purchasers.

(f) *Confidentiality.* The Company agrees that any information or advice rendered by any Placement Agent or any of its representatives in connection with this engagement is for the confidential use of the Company only and the Company will not, and will not permit any third party to, disclose or otherwise refer to such advice or information, or to the Placement Agent, in any manner without the Placement Agent's prior written consent.

**Section 3. Additional Covenants and Agreements of the Company** The Company further covenants and agrees with the Placement Agent as follows:

(a) *Placement Agent's Review of Proposed Amendments and Supplements*. During the period beginning on the date hereof and ending on the Closing Date, prior to amending or supplementing the Disclosure Package (including any amendment or supplement of any Public Filing that is incorporated or deemed incorporated by reference therein), the Company shall furnish to the Placement Agent for review a copy of each such proposed amendment or supplement prior to its distribution or filing.

(b) *Amendments and Supplements to the Disclosure Package*. If, prior to the Closing Date, any event shall occur or condition exist as a result of which it is necessary to amend or supplement the information or documents, or other information or documents incorporated or deemed incorporated by reference, in the Disclosure Package (including any amendment or supplement of any Public Filing that is incorporated or deemed incorporated by reference therein) in order to make the statements therein, in the light of the circumstances when the Management Presentation or any other document contained or incorporated or deemed incorporated by reference in the Disclosure Package is delivered to a Purchaser, not misleading, or if it is otherwise necessary to amend or supplement any portion of the Disclosure Package to comply with law, the Company agrees to promptly prepare and furnish at its own expense to the Placement Agent, amendments or supplements to the Disclosure Package so that the statements therein as so amended or supplemented will not, in the light of the circumstances when the Disclosure Package is delivered to a Purchaser, be misleading or so that the Disclosure Package, as amended or supplemented, will comply with law. Neither the Placement Agent's consent to, or delivery of, any such amendment or supplement shall constitute a waiver of any of the Company's obligations under this Section 3 (b).

(c) *Copies of any Amendments and Supplements to the Disclosure Package*. The Company agrees to furnish the Placement Agent and counsel to the Placement Agent, without charge, as soon as available, as many copies of any amendments and supplements to the Disclosure Package (including any documents incorporated or deemed incorporated by reference therein) as the Placement Agent or its counsel may request.

(d) *Marketing*. The Company shall participate, and cause its officers and representatives to participate, in the Placement as reasonably requested by the Placement Agent, including meeting and participating in telephonic conferences with prospective purchasers of any of the Securities, and afford prospective purchasers the opportunity to conduct customary due diligence and make inquiries relevant to their investment decisions regarding the Securities.

(e) *Blue Sky Compliance*. The Company shall cooperate with the Placement Agent and counsel for the Placement Agent to qualify or register the Securities for sale under (or obtain exemptions from the application of) the state securities or blue sky laws of those jurisdictions designated by the Placement Agent, shall comply with such laws and shall continue such qualifications, registrations and exemptions in effect so long as required for the distribution of the Securities. The Company shall not be required to qualify as a foreign corporation or to take any action that would subject it to general service of process in any such jurisdiction where it is not presently qualified or where it would be subject to taxation as a foreign corporation. The Company will advise the Placement Agent promptly of the suspension of the qualification or registration of (or any such exemption relating to) the Securities for offering, sale or trading in any jurisdiction or any initiation or threat of any proceeding for any such purpose, and in the event of the issuance of any order suspending such qualification, registration or exemption, the Company shall use its best efforts to obtain the withdrawal thereof at the earliest possible moment.

(f) *Use of Proceeds.* The Company shall apply the net proceeds from the sale of the Securities sold by it in the manner described in Section 4.7 of the Securities Purchase Agreement and Schedule 4.7 thereto.

(g) *Transfer Agent.* The Company shall maintain, at its expense, a registrar and transfer agent for the Securities.

(h) *Investment Limitation.* The Company shall not invest, or otherwise use the proceeds received by the Company from its sale of the Securities in such a manner as would require the Company to register as an investment company under the Investment Company Act.

(i) *No Stabilization or Manipulation.* The Company will not take, directly or indirectly, any action designed to or that might be reasonably expected to cause or result in stabilization or manipulation of the price of the Common Stock or any other reference security, whether to facilitate the sale or resale of the Securities or otherwise.

(j) *Press Release.* The Company will not, prior to the earlier of the Closing Date or the termination of this Agreement, issue any press release or other communication directly or indirectly or hold any press conference with respect to the Company, its condition, financial or otherwise, or earnings, business affairs or business prospects (except for routine communications and presentations in the ordinary course of business and consistent with the past practices of the Company and of which the Placement Agent and its counsel are notified), without the prior written consent of the Placement Agent, unless in the judgment of the Company and its counsel, and after notification to the Placement Agent and its counsel, such press release or communication is required by law.

**Section 4. Conditions of the Placement Agent's Obligations.** The obligations of the Placement Agent as provided herein shall be subject to the accuracy of the representations, warranties and agreements of the Company set forth herein as of the date hereof and as of the Closing Date as though then made, to the timely performance by the Company of its covenants and other obligations hereunder, and to each of the following conditions:

(a) *No Material Adverse Change.* For the period from and after the date of this Agreement and prior to the Closing Date, in the sole and absolute discretion of the Placement Agent, there shall have not occurred any Material Adverse Change.

(b) *Opinions of Counsel for the Company.* On the Closing Date, the Placement Agent shall have received an opinion letter of counsel to the Company, dated as of such Closing Date, expressing (i) each of the opinions substantially in the form set forth on Exhibit F hereto and (ii) each of the opinions expressed in the opinion letter provided to the Purchasers by counsel to the Company on the Closing Date pursuant to the Securities Purchase Agreement. Alternatively, the opinions set forth on Exhibit F hereto may be provided in a separate opinion letter of counsel to the Company, dated as of such Closing Date, addressed and delivered only to the Placement Agent, in which case the opinion letter provided to the Purchasers by counsel to the Company on the Closing Date pursuant to the Securities Purchase Agreement shall also be addressed and delivered to the Placement Agent.

(c) *Officers' Certificate*. On the Closing Date, the Placement Agent shall have received a written certificate executed by the President and Chief Executive Officer or President of the Company and the Chief Financial Officer of the Company, dated as of the Closing Date, to the effect that:

(i) for the period from and after the date of this Agreement and prior to the Closing Date, there has not occurred any Material Adverse Change;

(ii) the representations, warranties and covenants of the Company set forth in Section 1(A) of this Agreement and incorporated herein by reference from the Securities Purchase Agreement are true and correct with the same force and effect as though expressly made on and as of such Closing Date; and

(iii) the Company has performed, satisfied and complied with all the covenants, agreements and conditions required hereunder at or prior to such Closing Date.

(d) *No Material Misstatement or Omission*. The Placement Agent shall not have discovered and disclosed to the Company prior to or on the Closing Date that the Disclosure Package, in the opinion of counsel to the Placement Agent, contains an untrue statement of a material fact or omits to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(e) *Placement Agent's Fees and Expenses*. The Placement Agent's fees and expense reimbursement described in Section 2(b) of this Agreement shall have been paid to the Placement Agent by wire transfer of immediately available funds to an account specified by the Placement Agent to the Company on or prior to the Closing Date; provided, however, that the portion of such expense reimbursement specified by the Placement Agent to the Company to be applied toward the legal fees and expenses incurred by the Placement Agent in connection with the Transactions shall be paid directly to the Placement Agent's counsel by wire transfer of immediately available funds to an account specified by the Placement Agent or its counsel to the Company on or prior to the Closing Date.

(g) *Corporate Proceedings*. All corporate proceedings and other legal matters incident to the authorization, form and validity of the Transaction Documents and Securities and all other legal matters relating to the offering, issuance and sale, as applicable, of the Securities and the other Transactions shall be reasonably satisfactory in all material respects to the Placement Agent; and the Company shall have furnished to Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel to the Placement Agent, all documents and information that it may reasonably request to enable them to pass upon such matters, including a Secretary's Certificate, if requested.

(h) *No Material Adverse Change.* The Company has not sustained since the date of the latest audited financial statements incorporated or deemed incorporated by reference in the Disclosure Package (i) any material loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any strike, job action, slowdown, work stoppage, labor dispute or court or governmental action, order or decree or (ii) since such date, there shall not have been any change in the common stock, short-term debt or long-term debt of the Company or any Material Adverse Change, the effect of which, in any such case set forth in clause (i) or (ii), is, in the judgment of the Placement Agent, so material and adverse as to make it impracticable or inadvisable to proceed with the Placement or the delivery of the Securities being delivered on the Closing Date on the terms and in the manner contemplated in this Agreement and the Securities Purchase Agreement.

(i) *No Trading Halt or Disruption.* Subsequent to the execution and delivery of this Agreement, there shall not have occurred any of the following: (i) trading in securities generally on the New York Stock Exchange, the NYSE American, The Nasdaq Stock Market or in the over-the-counter market, or trading in any securities of the Company on any exchange or in the over-the-counter market, shall have been suspended or the settlement of such trading generally shall have been materially disrupted or minimum prices shall have been established on any such exchange or such market by the Commission, by such exchange or by any other regulatory body or governmental authority having jurisdiction, (ii) a banking moratorium shall have been declared by Federal or state authorities of the United States, (iii) the United States shall have become engaged in hostilities, there shall have been a significant escalation in hostilities involving the United States or there shall have been a declaration of a national emergency or war by the United States or (iv) there shall have occurred any other calamity or crisis or any change in general domestic or international economic, political or financial conditions, including without limitation as a result of terrorist activities, or the effect of international conditions on the financial markets in the United States shall be such, as to make it, in the sole discretion of the Placement Agent, impracticable or inadvisable to proceed with the Placement or delivery of the Securities being delivered on the Closing Date on the terms and in the manner contemplated in this Agreement and the Securities Purchase Agreement.

(j) *Transaction Documents.* Each of the Transaction Documents, other than this Agreement, shall be in form and substance reasonably satisfactory to the Placement Agent and shall have been duly executed and delivered by the Company and the other parties thereto, and the Securities shall have been duly executed (as applicable) and delivered by the Company.

(k) *Conditions.* All conditions to closing set forth in the Securities Purchase Agreement shall be satisfied or, where applicable, waived.

(l) *No Injunction.* The issuance and sale of the Preferred Stock and the Warrants to the Purchasers shall not be enjoined (temporarily or permanently) on the Closing Date.

(m) *Additional Documents.* On or before the Closing Date, the Placement Agent shall have received such information, documents and opinions as they may reasonably require in order to evidence the accuracy of any of the representations and warranties, or the satisfaction of any of the conditions or agreements, herein contained.

## Section 5. Indemnification.

(a) *Indemnification of the Placement Agent.* The Company agrees to indemnify and hold harmless the Placement Agent and its affiliates and their respective officers, directors, managers, members, partners, employees and agents, and any other persons controlling the Placement Agent or any of its affiliates within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act (the Placement Agent and each such other person being referred to as an “**Indemnified Person**”), to the fullest extent lawful, from and against all claims, liabilities, losses, damages and expenses (or any actions, claims, suits or proceedings in respect thereof), as incurred (“**Losses**”) related to or arising out of or in connection with the Placement Agent’s services hereunder, to which such Indemnified Person may become subject under the Securities Act, the Exchange Act or other federal or state statutory law or regulation, or the laws or regulations of foreign jurisdictions where the Securities have been offered or at common law or otherwise (including in settlement of any litigation), insofar as such Losses (or actions in respect thereof as contemplated below) arises out of or is based upon:

(A) (i) any untrue statement or alleged untrue statement of a material fact contained in the Disclosure Package (or any amendment or supplement thereto), or the omission or alleged omission therefrom of a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading;

(ii) any untrue statement or alleged untrue statement of a material fact contained in any materials or information provided to investors by, or with the approval in writing of, the Company in connection with the offering of the Securities and the Placement, including any investor presentations made to investors by the Company (whether in person or electronically), or the omission or alleged omission therefrom of a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; or

(iii) any breach by the Company of any representation or warranty or failure to comply with any of the covenants and agreements contained or incorporated by reference in this Agreement; and

(B) the violation by the Company of any applicable laws or regulations of any jurisdiction where the Securities have been offered; and to reimburse the Indemnified Person for:

(i) all expenses (including, without limitation, reasonable fees and expenses of counsel chosen by the Placement Agent) as such expenses are incurred by the Placement Agent in connection with investigating, preparing, defending or settling any action or claim for which indemnification has or is reasonably likely to be sought by the Indemnified Person, whether or not in connection with litigation in which any Indemnified Person is a named party; and

(ii) any other Losses incurred by the Placement Agent.

The indemnity agreement set forth in this Section 5(a) shall be in addition to any liabilities that the Company may otherwise have, including without limitation under Section 19 of the Engagement Letter, dated October 1, 2018 (as the same may be amended from time to time, the “**Engagement Letter**”), between the Placement Agent and the Company, a copy of which is attached as Exhibit G hereto.

(b) *Notifications and Other Indemnification Procedures.* Promptly after receipt by an Indemnified Person under this Section 5 of notice of the commencement of any action, such Indemnified Person will, if a claim in respect thereof is to be made against the Company under this Section 5, notify the Company in writing of the commencement thereof, but the omission so to notify the Company will not relieve it from any liability which it may have to any Indemnified Person for indemnification, except to the extent that the Company shall have been materially prejudiced by such failure. In case any such action is brought against any Indemnified Person and such Indemnified Person seeks or intends to seek indemnity from an Company, the Company will be entitled to participate in, and, to the extent that it shall elect, jointly with all other indemnifying parties similarly notified, by written notice delivered to the Indemnified Person promptly after receiving the aforesaid notice from such Indemnified Person, to assume the defense thereof with counsel reasonably satisfactory to such Indemnified Person; provided, however, if the defendants in any such action include both the Indemnified Person and the Company and the Indemnified Person shall have reasonably concluded that a conflict may arise between the positions of the Company and the Indemnified Person in conducting the defense of any such action or that there may be legal defenses available to it and/or other indemnified parties which are different from or additional to those available to the Company, the Indemnified Person or parties shall have the right to select separate counsel to assume such legal defenses and to otherwise participate in the defense of such action on behalf of such Indemnified Person or parties. Upon receipt of notice from the Company to such Indemnified Person of the Company’s election so to assume the defense of such action and approval by the Indemnified Person of counsel, the Company will not be liable to such Indemnified Person under this Section 5 for any legal or other expenses subsequently incurred by such Indemnified Person in connection with the defense thereof unless (i) the Indemnified Person shall have employed separate counsel in accordance with the proviso to the preceding sentence (it being understood, however, that the Company shall not be liable for the expenses of more than one separate counsel (together with local counsel), approved by the Company, representing the indemnified parties who are parties to such action) or (ii) the Company shall not have employed counsel satisfactory to the Indemnified Person to represent the Indemnified Person within a reasonable time after notice of commencement of the action, in each of which cases the fees and expenses of counsel shall be at the expense of the Company.

(c) *Settlements.* The Company under this Section 5 shall not be liable for any settlement of any proceeding effected without its written consent, which consent shall not be unreasonably withheld, but if settled with such consent or if there be a final judgment for the plaintiff, the Company agrees to indemnify the Indemnified Person against any Losses by reason of such settlement or judgment. Notwithstanding the foregoing sentence, if at any time an Indemnified Person shall have requested the Company to reimburse the Indemnified Person for fees and expenses of counsel as contemplated by Section 5(b) hereof, the Company agrees that it shall be liable for any settlement of any proceeding effected without its written consent if (i) such settlement is entered into more than 30 days after receipt by the Company of the aforesaid request and (ii) the Company shall not have reimbursed the Indemnified Person in accordance with such request prior to the date of such settlement. The Company shall not, without the prior written consent of the Indemnified Person, effect any settlement, compromise or consent to the entry of judgment in any pending or threatened action, suit or proceeding in respect of which any Indemnified Person is or could have been a party and indemnity was or could have been sought hereunder by such Indemnified Person, unless such settlement, compromise or consent includes (i) an unconditional release of such Indemnified Person from all liability on claims that are the subject matter of such action, suit or proceeding and (ii) does not include a statement as to, or an admission of, fault, culpability or a failure to act, by or on behalf of any Indemnified Person.

**Section 6. Contribution.** If the indemnification provided for in Section 5 is for any reason held to be unavailable to or otherwise insufficient to hold harmless an Indemnified Person in respect of any Losses referred to therein, then the Company shall contribute to the aggregate amount paid or payable by such Indemnified Person, as incurred, as a result of any Losses referred to therein (i) in such proportion as is appropriate to reflect the relative benefits received by the Company, on the one hand, and the Placement Agent, on the other hand, from the Placement pursuant to this Agreement or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of the Company, on the one hand, and the Placement Agent, on the other hand, in connection with the statements or omissions which resulted in such Losses, as well as any other relevant equitable considerations. The relative benefits received by the Company, on the one hand, and the Placement Agent, on the other hand, in connection with the Placement pursuant to this Agreement shall be deemed to be in the same respective proportions as the total net proceeds from the Placement pursuant to this Agreement (before deducting expenses) received by the Company, and the fee received by the Placement Agent in connection with the Placement. The relative fault of the Company, on the one hand, and the Placement Agent, on the other hand, shall be determined by reference to, among other things, whether any such untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company, on the one hand, or the Placement Agent, on the other hand, and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. Notwithstanding the provisions of this Section 6, the aggregate contribution of all Indemnified Persons to all Losses shall not exceed the amount of the fees actually received by the Placement Agent pursuant to this Agreement with respect to the services rendered pursuant to this Agreement.

The Company agrees to reimburse the Indemnified Persons for all expenses (including, without limitation, reasonable fees and expenses of counsel) as they are incurred in connection with investigating, preparing, defending or settling any action or claim for which contribution has been sought by the Indemnified Person, whether or not in connection with litigation in which any Indemnified Person is a named party.

The provisions set forth in Section 5(c) with respect to notice of commencement of any action shall apply if a claim for contribution is to be made under this Section 6; *provided, however*, that no additional notice shall be required with respect to any action for which notice has been given under Section 5(b) for purposes of indemnification.

The Company and the Placement Agent agree that it would not be just and equitable if contribution pursuant to this Section 6 were determined by pro rata allocation or by any other method of allocation which does not take account of the equitable considerations referred to in this Section 6.

No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 6, each officer and employee of the Placement Agent and each person, if any, who controls the Placement Agent within the meaning of the Securities Act and the Exchange Act shall have the same rights to contribution as the Placement Agent.

**Section 7. Effectiveness of this Agreement; Termination; and Survival**

(a) This Agreement shall become effective upon signing by the parties hereto.

(b) The Placement Agent may resign and terminate this Agreement at any time and the Company may terminate the Placement Agent's services and terminate this Agreement at any time, in each case by giving at least fifteen (15) days' prior written notice thereof to the other party. If the Placement Agent resigns because of the failure of any condition specified in Section 4 to be satisfied when and as required (whether or not the Company's fault directly or indirectly) or the Company terminates the Placement Agent's services for any reason, the Placement Agent and its counsel shall be entitled to receive all of the amounts due pursuant to and in accordance with the Engagement Letter up to, and including, the effective date of such expiration, termination or resignation, as the case may be.

(c) The respective representations, warranties and other statements of the Company and its officers and the agreements, covenants and the indemnities set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation made by or on behalf of the Placement Agent or the Company or any of its or their partners, members, officers, directors, employees, agents or representatives, or any controlling person of the Placement Agent, as the case may be, and will survive delivery of and payment for the Securities sold hereunder or any termination of this Agreement (for whatever reason).

**Section 8. Notices.** All communications hereunder shall be in writing and shall be mailed, hand delivered or telecopied and confirmed to the parties hereto as follows:

If to the Placement Agent:

A.G.P./Alliance Global Partners  
590 Madison Avenue  
New York, NY 10022  
Email: db@allianceg.com  
Attention: David Bocchi

with a copy to:

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.  
666 Third Avenue  
New York, New York 10017  
Facsimile: (212) 983-3115  
Attention: Anthony J. Marsico, Esq.

If to the Company:

Ritter Pharmaceuticals, Inc.  
1880 Century Park East, Suite 1000  
Los Angeles, CA 90067  
Facsimile: (310) 919-1600  
Attention:

with a copy to:

Reed Smith LLP  
1901 Avenue of the Stars  
Suite 700  
Los Angeles, CA 90067-6708  
Facsimile: (310) 734-5299  
Attention: Michael Sanders, Esq.

Any party hereto may change the address for receipt of communications by giving written notice to the others.

**Section 9. Successors.** This Agreement will inure to the benefit of and be binding upon the parties hereto, and to the benefit of the employees, officers and directors and controlling persons referred to in Section 5 and Section 6, and in each case their respective successors, and personal representatives, and no other person will have any right or obligation hereunder. The term "successors" shall not include any Purchaser.

**Section 10. Partial Unenforceability.** The invalidity or unenforceability of any Section, paragraph or provision of this Agreement shall not affect the validity or enforceability of any other Section, paragraph or provision hereof. If any Section, paragraph or provision of this Agreement is for any reason determined to be invalid or unenforceable, there shall be deemed to be made such minor changes (and only such minor changes) as are necessary to make it valid and enforceable.

**Section 11. Governing Law Provisions.** This Agreement shall be governed by and construed in accordance with the internal laws of the State of New York. Any legal suit, action or proceeding arising out of or based upon this Agreement or the Transactions ("**Related Proceedings**") may be instituted in the federal courts of the United States of America located in the Borough of Manhattan in the City of New York or the courts of the State of New York in each case located in the Borough of Manhattan in the City of New York (collectively, the "**Specified Courts**"), and each party irrevocably submits to the exclusive jurisdiction (except for proceedings instituted in regard to the enforcement of a judgment of any such court (a "**Related Judgment**")), as to which such jurisdiction is non-exclusive) of such courts in any such suit, action or proceeding.

**Section 12. General Provisions.** This Agreement and the Engagement Letter constitute the entire agreement of the parties to this Agreement with respect to the subject matter hereof and thereof and supersedes all prior written or oral and all contemporaneous oral agreements, understandings and negotiations with respect to the subject matter hereof and thereof, except for those certain terms incorporated into this Agreement from the Securities Purchase Agreement. Nothing in this Agreement should be read to limit or otherwise modify the terms and other provisions of the Engagement Letter, provided that, in the event any terms of the Engagement Letter or Indemnification Letter are inconsistent with or contradict any terms of this Agreement, this Agreement shall govern. This Agreement may be executed in two or more counterparts, each one of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument. This Agreement may not be amended or modified unless in writing by all of the parties hereto, and no condition herein (express or implied) may be waived unless waived in writing by each party whom the condition is meant to benefit. The failure by any party to exercise any right or remedy under this Agreement or otherwise, or delay by a party in exercising such right or remedy, shall not operate as a waiver thereof. The Section headings herein are for the convenience of the parties only and shall not affect the construction or interpretation of this Agreement.

Each of the parties hereto acknowledges that it is a sophisticated business person who was adequately represented by counsel during negotiations regarding the provisions hereof, including, without limitation, the indemnification provisions of Section 5 and the contribution provisions of Section 6, and is fully informed regarding said provisions. Each of the parties hereto further acknowledges that the provisions of Sections 5 and 6 hereto fairly allocate the risks in light of the ability of the parties to investigate the Company, its affairs and its business in order to assure that adequate disclosure has been made in the Disclosure Package (and any amendments and supplements thereto), as required by the Securities Act, the Exchange Act and any other applicable law.

If the foregoing is in accordance with your understanding of our agreement, kindly sign and return to the Company the enclosed copies hereof, whereupon this instrument, along with all counterparts hereof, shall become a binding agreement in accordance with its terms.

Very truly yours,

**RITTER PHARMACEUTICALS CORPORATION**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

The foregoing Placement Agency Agreement is hereby confirmed and accepted by the Placement Agent in New York, New York as of the date first above written.

**A.G.P./ALLIANCE GLOBAL PARTNERS**

By: \_\_\_\_\_

Name: David Bocchi

Title: Head of Investment Banking

  

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**EXHIBIT A-1**

**FORM OF SERIES B CERTIFICATE OF DESIGNATIONS**

Exhibit A-1

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**EXHIBIT A-2**

**FORM OF SERIES C CERTIFICATE OF DESIGNATIONS**

Exhibit A-2

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**EXHIBIT B**  
**FORM OF WARRANTS**

Exhibit B

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**EXHIBIT C**

**FORM OF SECURITIES PURCHASE AGREEMENT**

Exhibit C

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**EXHIBIT D**

**FORM OF REGISTRATION RIGHTS AGREEMENT**

Exhibit D

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**EXHIBIT E**

**FORM OF ESCROW AGREEMENT**

Exhibit E

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**EXHIBIT F**

**OPINION OF COMPANY COUNSEL**

References to the Disclosure Package in this Exhibit F include any supplements thereto at the Closing Date.

1. The execution, delivery and performance of each of the Engagement Letter, the Placement Agency Agreement and the Escrow Agreement by the Company have been duly authorized by all necessary corporate action of the Company and each has been duly executed and delivered by the Company.

2. Each of the Engagement Letter, the Placement Agency Agreement and the Escrow Agreement constitutes a valid and binding obligation of the Company and each is enforceable against the Company in accordance with its terms.

3. The execution, delivery and performance of each of the Engagement Letter, the Placement Agency Agreement and the Escrow Agreement by the Company, in each case will not, with or without the giving of notice or the lapse of time or both, (a) result in any breach of or constitute a default under the Certificate of Incorporation or Bylaws, (b) contravene any provision of New York law, federal law or the DGCL, or any rule or regulation thereunder, in each case that, in our experience, is typically applicable to transactions of the nature contemplated by the Engagement Letter, the Placement Agency Agreement and the Escrow Agreement and is applicable to the Company, (c) to our knowledge, result in any breach of or constitute a default under any currently effective decree, judgment or order currently applicable to the Company, or (d) result in any breach of or constitute a default under any Material Agreement.

4. No consent, approval, authorization or other order of, or registration or filing with, any United States federal, New York or Delaware court or other governmental or regulatory authority or agency that, in our experience, is normally applicable to transactions of the type contemplated by the Engagement Letter, the Placement Agency Agreement and the Escrow Agreement is required for the consummation of the transactions contemplated by the Engagement Letter, the Placement Agency Agreement and the Escrow Agreement, except for the filing of a Form D under the Securities Act, and such consents, approvals, authorizations, orders and registrations or filings as may be required under applicable state securities laws, as to which we express no opinion, and from the NASDAQ Capital Market (which has been obtained).

5. We confirm to you that we are not representing the Company in any pending litigation in which the Company is a named defendant that challenges the validity or enforceability of any of the Engagement Letter, the Placement Agency Agreement or the Escrow Agreement, or seeks to enjoin the performance of or the consummation of any of the transactions contemplated by any of the Engagement Letter, the Placement Agency Agreement and the Escrow Agreement.

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Exhibit F

**EXHIBIT G**  
**ENGAGEMENT LETTER**

Exhibit G

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**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO  
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Andrew J. Ritter, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Ritter Pharmaceuticals, Inc., a Delaware corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

November 9, 2018

By: /s/ Andrew J. Ritter

Name: Andrew J. Ritter

Title: Chief Executive Officer (Principal Executive Officer)

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**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO  
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, John W. Beck, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Ritter Pharmaceuticals, Inc., a Delaware corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

November 9, 2018

By: /s/ John W. Beck

Name: John W. Beck

Title: Chief Financial Officer (Principal Financial Officer)

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**CERTIFICATIONS PURSUANT TO 18 U.S.C. SECTION 1350 AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

Each of the undersigned, Andrew J. Ritter, Chief Executive Officer of Ritter Pharmaceuticals, Inc., a Delaware corporation (the "Company"), and John W. Beck, Chief Financial Officer of the Company, do hereby certify, pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes- Oxley Act of 2002, that, to his knowledge (1) the quarterly report on Form 10-Q of the Company for the nine months ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

November 9, 2018

By: /s/ Andrew J. Ritter  
Name: Andrew J. Ritter  
Title: Chief Executive Officer (Principal Executive Officer)

November 9, 2018

By: /s/ John W. Beck  
Name: John W. Beck  
Title: Chief Financial Officer (Principal Financial Officer)

*These certifications accompanying and being "furnished" with this Report, shall not be deemed "filed" by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to liability under that Section and shall not be deemed to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Report, irrespective of any general incorporation language contained in such filing.*

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