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

FORM 10-Q

(Mark One)

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

For the Quarterly Period Ended September 30, 2019

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: 001-36019

TONIX PHARMACEUTICALS HOLDING CORP.

(Exact name of registrant as specified in its charter)

Nevada	**26-1434750**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

509 Madison Avenue, Suite 1608
New York, New York 10022
(Address of principal executive offices) (zip code)

(212) 980-9155
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	TNXP	The NASDAQ Global Market

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 (§ 232.405 of this chapter) 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, 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.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☐

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 8, 2019, there were 1,575,246 shares of registrant's common stock outstanding.

TONIX PHARMACEUTICALS HOLDING CORP.

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PART I – FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

TONIX PHARMACEUTICALS HOLDING CORP.
CONDENSED CONSOLIDATED BALANCE SHEETS
(In Thousands, Except Par Value and Share Amounts)

	September 30, 2019 (unaudited)	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 10,024	$ 25,034
Prepaid expenses and other	1,529	1,022
Total current assets	11,553	26,056
Property and equipment, net	34	43
Right to use assets, net	465	—
Restricted cash	100	100
Intangible asset	120	120
Total assets	$ 12,272	$ 26,319
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 1,119	$ 1,404
Accrued expenses and other current liabilities	832	1,251
Lease liability, short term	415	—
Total current liabilities	2,366	2,655
Lease liability, long term	51	—
Total liabilities	2,417	2,655
Commitments (See Note 10)		
Stockholders' equity:		
Preferred stock, $0.001 par value; 5,000,000 shares authorized		
Series A Convertible Preferred stock, $0.001 par value; 11,984 shares designated; 0 and 9,856 shares issued and outstanding as of September 30, 2019 and December 31, 2018, respectively	—	—
Common stock, $0.001 par value; 15,000,000 shares authorized; 1,575,246 and 328,689 shares issued and outstanding as of September 30, 2019 and December 31, 2018, respectively, and 177 shares to be issued as of December 31, 2018	2	—
Additional paid in capital	218,258	212,157
Accumulated deficit	(208,363)	(188,452)
Accumulated other comprehensive loss	(42)	(41)
Total stockholders' equity	9,855	23,664
Total liabilities and stockholders' equity	$ 12,272	$ 26,319

See the accompanying notes to the condensed consolidated financial statements

TONIX PHARMACEUTICALS HOLDING CORP.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(In Thousands, Except Share and Per Share Amounts)
(Unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2019	2018	2019	2018
COSTS AND EXPENSES:				
Research and development	$ 5,052	$ 3,264	$ 12,502	$ 12,501
General and administrative	2,839	2,277	7,592	6,171
	7,891	5,541	20,094	18,672
Operating Loss	(7,891)	(5,541)	(20,094)	(18,672)
Interest income, net	53	62	183	171
NET LOSS	$ (7,838)	$ (5,479)	$ (19,911)	$ (18,501)
Net loss per common share, basic and diluted	$ (5.69)	$ (54.99)	$ (23.93)	$ (195.51)
Weighted average common shares outstanding, basic and diluted	1,377,857	99,640	832,050	94,628

See the accompanying notes to the condensed consolidated financial statements

TONIX PHARMACEUTICALS HOLDING CORP.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(In Thousands)
(Unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2019	2018	2019	2018
Net loss	$ (7,838)	$ (5,479)	$ (19,911)	$ (18,501)
Other comprehensive loss:				
Foreign currency translation (loss) gain	(3)	5	(1)	(17)
Comprehensive loss	$ (7,841)	$ (5,474)	$ (19,912)	$ (18,518)

See the accompanying notes to the condensed consolidated financial statements

TONIX PHARMACEUTICALS HOLDING CORP.
CONDENSED CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY
THREE AND NINE MONTHS ENDED SEPTEMBER 30, 2019
(In Thousands, Except Share and Per Share Amounts)
(unaudited)

	Series A Convertible Preferred stock		Common stock		Additional Paid in Capital	Accumulated Other Comprehensive Gain (loss)	Accumulated Deficit	Total
	Shares	Amount	Shares	Amount				
Balance, December 31, 2018	9,856	$ —	328,689	$ —	$ 212,157	$ (41)	$ (188,452)	$ 23,664
Issuance of common stock upon conversion of Series A Convertible preferred stock	(9,856)	—	281,610	1	(1)	—	—	—
Issuance of common stock in exchange for exercise of warrants in March 2019 ($35.00 per share)	—	—	2,000	—	70	—	—	70
Employee stock purchase plan	—	—	177	—	3	—	—	3
Stock-based compensation	—	—	—	—	305	—	—	305
Foreign currency transaction gain	—	—	—	—	—	2	—	2
Net loss	—	—	—	—	—	—	(6,233)	(6,233)
Balance, March 31, 2019	—	—	612,476	1	212,534	(39)	(194,685)	17,811
Issuance of common stock under 2018 Purchase Agreement	—	—	22,754	—	387	—	—	387
Issuance of common stock under At-the-market offering, net of transactional expenses of $1	—	—	2,106	—	33	—	—	33
Stock-based compensation	—	—	—	—	431	—	—	431
Foreign currency transaction loss	—	—	—	—	—	—	—	—
Net loss	—	—	—	—	—	—	(5,840)	(5,840)
Balance, June 30, 2019	—	—	637,336	1	213,385	(39)	(200,525)	12,822
Issuance of common stock under July 2019 Financing, net of transactional expenses of $484	—	—	900,000	1	4,483	—	—	4,484
Issuance of commitment shares in August 2019 under 2019 Purchase Agreement	—	—	35,529	—	—	—	—	—
Employee stock purchase plan	—	—	2,381	—	28	—	—	28
Stock-based compensation	—	—	—	—	362	—	—	362
Foreign currency transaction gain	—	—	—	—	—	(3)	—	(3)
Net loss	—	—	—	—	—	—	(7,838)	(7,838)
Balance, September 30, 2019	—	$ —	1,575,246	$ 2	$ 218,258	$ (42)	$ (208,363)	$ 9,855

See the accompanying notes to the condensed consolidated financial statements

TONIX PHARMACEUTICALS HOLDING CORP.
CONDENSED CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY
THREE AND NINE MONTHS ENDED SEPTEMBER 30, 2018
(In Thousands, Except Share and Per Share Amounts)
(unaudited)

	Series A Convertible Preferred stock		Common stock		Additional Paid in Capital	Accumulated Other Comprehensive Gain (loss)	Accumulated Deficit	Total
	Shares	Amount	Shares	Amount				
Balance, December 31, 2017	—	$ —	82,064	$ —	$ 186,991	$ (12)	$ (162,363)	$ 24,616
Issuance of common stock related to restricted stock units	—	—	8	—	—	—	—	—
Issuance of common stock in March ($321.00 per share), net of transaction expenses of $45	—	—	1,800	—	532	—	—	532
Stock-based compensation	—	—	—	—	399	—	—	399
Foreign currency transaction loss	—	—	—	—	—	(1)	—	(1)
Net loss	—	—	—	—	—	—	(6,935)	(6,935)
Balance, March 31, 2018	—	—	83,872	—	187,922	(13)	(169,298)	18,611
Issuance of common stock in April ($321.00 per share)	—	—	4,500	—	1,315	—	—	1,315
Issuance of common stock in June 2018 under At-the-market offering, net of transaction expenses of $50	—	—	3,592	—	1,615	—	—	1,615
Stock-based compensation	—	—	—	—	409	—	—	409
Foreign currency transaction loss	—	—	—	—	—	(21)	—	(21)
Net loss	—	—	—	—	—	—	(6,087)	(6,087)
Balance, June 30, 2018	—	—	91,964	—	191,261	(34)	(175,385)	15,842
Issuance of common stock under purchase agreement	—	—	4,500	—	409	—	—	409
Issuance of common stock in July, August and September 2018 under At-the-market offering, net of transaction expenses of $77	—	—	12,115	—	2,481	—	—	2,481
Stock-based compensation	—	—	—	—	451	—	—	451
Foreign currency transaction gain	—	—	—	—	—	5	—	5
Net loss	—	—	—	—	—	—	(5,479)	(5,479)
Balance, September 30, 2018	—	$ —	108,579	$ —	$ 194,602	$ (29)	$ (180,864)	$ 13,709

See the accompanying notes to the condensed consolidated financial statements

TONIX PHARMACEUTICALS HOLDING CORP.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(In Thousands)
(Unaudited)

	Nine months ended September 30,	
	2019	2018
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$ (19,911)	$ (18,501)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	21	43
Stock-based compensation	1,098	1,259
Changes in operating assets and liabilities:		
Prepaid expenses and other	(508)	(149)
Accounts payable	(285)	(249)
Operating lease liabilities	2	—
Accrued expenses and other current liabilities	(386)	450
Net cash used in operating activities	(19,969)	(17,147)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchase of furniture and fixtures	(12)	(7)
Net cash used by investing activities	(12)	(7)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from exercise of warrants	70	—
Proceeds, net of $485 and $172 expenses, from sale of common stock	4,904	6,352
Net cash provided by financing activities	4,974	6,352
Effect of currency rate change on cash	(3)	(10)
Net decrease in cash, cash equivalents and restricted cash	(15,010)	(10,812)
Cash, cash equivalents and restricted cash beginning of the period	25,134	25,585
Cash, cash equivalents and restricted cash end of period	$ 10,124	$ 14,773
Supplemental disclosures of cash flow information:		
Non cash financing activities:		
Issuance of common stock under employee benefit plan	$ 31	$ —

See the accompanying notes to the condensed consolidated financial statements

NOTE 1 – BUSINESS

Tonix Pharmaceuticals Holding Corp., through its wholly owned subsidiary Tonix Pharmaceuticals, Inc. ("Tonix Sub"), clinical-stage biopharmaceutical company focused on discovering and developing small molecules and biologics to treat psychiatric, pain and addiction conditions, to improve biodefense through potential medical counter-measures, to treat transplant rejection and to treat gastric and pancreatic cancers. All drug product candidates are still in development.

The consolidated financial statements include the accounts of Tonix Pharmaceuticals Holding Corp. and its wholly owned subsidiaries, Tonix Sub, Krele LLC, Tonix Pharmaceuticals (Canada), Inc., Tonix Medicines, Inc., Tonix Pharma Holdings Limited and Tonix Pharma Limited (collectively hereafter referred to as the "Company" or "Tonix").

On October 31, 2019, the Company filed a Certificate of Change with the Nevada Secretary of State, which was effective November 1, 2019. Pursuant to the Certificate of Change, the Company effected a 1-for-10 reverse stock split of its issued and outstanding shares of common stock, $0.001 par value, whereby 15,717,402 outstanding shares of the Company's common stock were exchanged for 1,575,246 shares of the Company's common stock. In connection with the reverse stock split, the Company issued an additional 3,457 shares of the Company's common stock due to rounding. Furthermore, pursuant to the Certificate of Change, the number of authorized shares of common stock was reduced from 150 million to 15 million. All per share amounts and number of shares in the condensed consolidated financial statements and related notes have been retroactively restated to reflect the reverse stock split.

Going concern

The accompanying financial statements have been prepared on a basis which assumes that the Company will continue as a going concern and which contemplates the realization of assets and satisfaction of liabilities and commitments in the normal course of business. The Company has suffered recurring losses from operations and negative cash flows from operating activities. At September 30, 2019, the Company had working capital of approximately $9.2 million. At September 30, 2019, the Company had an accumulated deficit of approximately $208.4 million. The Company held cash and cash equivalents of approximately $10 million as of September 30, 2019. The Company does not have enough resources to meet its operating requirements for the one-year period from the date of filing of this report. These factors raise substantial doubt about the Company's ability to continue as a going concern.

The Company continues to face significant challenges and uncertainties and, as a result, the Company's available capital resources may be consumed more rapidly than currently expected due to changes the Company may make in its research and development spending plans. The Company may seek to obtain additional funding through public or private financing or collaborative arrangements with strategic partners to increase the funds available to fund operations. However, the Company may not be able to raise capital with terms acceptable to the Company. Without additional funds, the Company may be forced to delay, scale back or eliminate some of its research and development activities, or other operations and potentially delay product development in an effort to provide sufficient funds to continue its operations. If any of these events occurs, the Company's ability to achieve its development and commercialization goals would be adversely affected. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

NOTE 2 – SIGNIFICANT ACCOUNTING POLICIES

Interim financial statements

The unaudited condensed consolidated interim financial statements of the Company have been prepared in accordance with accounting principles generally accepted in the United States ("GAAP") for interim financial information and the instructions to Form 10-Q and Article 8 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by GAAP for complete financial statements. In the opinion of management, all adjustments (consisting of normal recurring accruals) considered necessary for a fair presentation have been included.

The condensed consolidated balance sheet as of December 31, 2018 contained herein has been derived from audited financial statements.

Operating results for the three and nine months ended September 30, 2019 are not necessarily indicative of results that may be expected for the year ending December 31, 2019. These condensed consolidated financial statements should be read in conjunction with the audited consolidated financial statements and notes thereto for the year ended December 31, 2018 included in the Company's Annual Report on Form 10-K, filed with the Securities and Exchange Commission ("SEC") on March 18, 2019.

Recent accounting pronouncements

In February 2016, the FASB established ASC Topic 842, Leases (Topic 842), by issuing ASU No. 2016-02, which requires lessees to recognize leases on-balance sheet and disclose key information about leasing arrangements. The new standard establishes a right-of-use (ROU) model that requires a lessee to recognize a ROU asset and lease liability on the balance sheet. Leases will be classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the statement of operations. The Company adopted the new standard on January 1, 2019.

The new standard provides a number of optional practical expedients in transition. The Company has elected the 'package of practical expedients', which permit it not to reassess under the new standard its prior conclusions about lease identification, lease classification and initial direct costs. The Company did not elect the use-of-hindsight or the practical expedient pertaining to land easements; the latter is not applicable to the Company.

The new standard has had a material effect on the Company's financial statements. The most significant effects of adoption relate to (1) the recognition of new ROU assets and lease liabilities on its balance sheet for operating leases; and (2) providing new disclosures about its leasing activities.

The new standard also provides practical expedients for an entity's ongoing accounting. The Company elected the short-term lease recognition exemption for all leases that qualify. This means, for those leases that qualify, the Company will not recognize ROU assets or lease liabilities, and this includes not recognizing ROU assets or lease liabilities for existing short-term leases of those assets in transition. In connection with the adoption of this standard, the Company made changes to its disclosed lease recognition policies and practices, as well as to other related financial statement disclosures due to the adoption of this standard. The standard did not have a material impact on the Company's results of operations or liquidity.

Upon adoption, the Company recognized operating lease liabilities of approximately $0.3 million based on the present value of the remaining minimum rental payments under current leasing standards for existing operating leases. The Company recognized corresponding ROU assets of approximately $0.3 million.

Risks and uncertainties

The Company's primary efforts are devoted to conducting research and development of innovative pharmaceutical and biological products to address public health challenges. The Company has experienced net losses and negative cash flows from operations since inception and expects these conditions to continue for the foreseeable future. Further, the Company does not have any commercial products available for sale and has not generated revenues, and there is no assurance that if its products are approved for sale, that the Company will be able to generate cash flow to fund operations. In addition, there can be no assurance that the Company's research and development will be successfully completed or that any product will be approved or commercially viable.

Use of estimates

The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements, and the reported amounts of expenses during the reporting period. Actual results could differ from those estimates. Significant estimates include the useful life of fixed assets, assumptions used in the fair value of stock-based compensation and other equity instruments, and the percent of completion of research and development contracts.

Cash, cash equivalents and restricted cash

The Company considers cash equivalents to be those investments which are highly liquid, readily convertible to cash and have an original maturity of three months or less when purchased. At September 30, 2019 and December 31, 2018, cash equivalents, which consisted of money market funds, amounted to $8.5 million and $10.1 million, respectively. Restricted cash at both September 30, 2019 and December 31, 2018 of approximately $100,000 collateralizes a letter of credit issued in connection with the lease of office space in New York City (see Note 9).

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the condensed consolidated balance sheets that sum to the total of the same amounts shown in the condensed consolidated statement of cash flow:

	September 30, 2019	December 31, 2018
	(in thousands)	
Cash and cash equivalents	$ 10,024	$ 25,034
Restricted cash	100	100
Total	$ 10,124	$ 25,134

Property and equipment

Property and equipment are stated at cost, less accumulated depreciation. Depreciation is calculated using the straight-line method over the asset's estimated useful life, which is three years for computer assets, five years for furniture and all other equipment and term of lease for leasehold improvements. Expenditures for maintenance and repairs are expensed as incurred. Depreciation and amortization expense for the three and nine months ended September 30, 2019 was $5,000 and $21,000, respectively, and $13,000 and $43,000, respectively, for the three and nine months ended September 30, 2018. All property and equipment is located in the United States and Ireland.

Intangible asset with indefinite lives

During 2015, the Company purchased certain internet domain rights, which were determined to have an indefinite life. Identifiable intangibles with indefinite lives are not amortized but are tested for impairment annually or whenever events or changes in circumstances indicate that its carrying amount may be less than fair value. As of September 30, 2019, the Company believed that no impairment existed.

Leases

The Company determines if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use ("ROU") assets, operating lease liabilities, current and operating lease liabilities, noncurrent in the Company's condensed consolidated balance sheets. ROU assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent its obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As the Company's leases do not provide an implicit rate, the Company uses an incremental borrowing rate based on the information available at the transition date and commencement date in determining the present value of lease payments. This is the rate the Company would have to pay if borrowing on a collateralized basis over a similar term to each lease. The operating lease ROU asset also includes any lease payments made and excludes lease incentives. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term.

Upon adoption, the Company recognized operating lease liabilities of approximately $0.3 million based on the present value of the remaining minimum rental payments under current leasing standards for existing operating leases. The Company also recognized corresponding ROU assets of approximately $0.3 million. In January 2019, the Company entered into a new operating lease, resulting in the Company recognizing an operating lease liability of approximately $0.4 million based on the present value of the minimum rental payments. The Company also recognized corresponding ROU assets of approximately $0.4 million. In April 2019, the Company entered into a lease amendment, resulting in the Company recognizing an additional operating lease liability of approximately $0.1 million based on the present value of the minimum rental payments. The Company also recognized a corresponding increase to ROU assets of approximately $0.1 million.

Research and development costs

The Company outsources certain of its research and development efforts and expenses these costs as incurred, including the cost of manufacturing products for testing, as well as licensing fees and costs associated with planning and conducting clinical trials. The value ascribed to patents and other intellectual property acquired has been expensed as research and development costs, as such property related to particular research and development projects and had no alternative future uses.

The Company estimates its expenses resulting from its obligations under contracts with vendors, clinical research organizations and consultants and under clinical site agreements in connection with conducting clinical trials. The financial terms of these contracts are subject to negotiations, which vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided under such contracts. The Company accounts for trial expenses according to the timing of various aspects of the trial. The Company determines accrual estimates taking into account discussion with applicable personnel and outside service providers as to the progress or state of consummation of trials, or the services completed.

During the course of a clinical trial, the Company adjusts its clinical expense recognition if actual results differ from its estimates. The Company makes estimates of its accrued expenses as of each balance sheet date based on the facts and circumstances known to it at that time. The Company's clinical trial accruals are dependent upon the timely and accurate reporting of contract research organizations and other third-party vendors.

Stock-based compensation

All stock-based payments to employees and to nonemployee directors for their services as directors, including grants of restricted stock units ("RSUs"), and stock options, are measured at fair value on the grant date and recognized in the condensed consolidated statements of operations as compensation or other expense over the relevant service period.

Stock-based payments to nonemployees are recognized as an expense over the period of performance. Such payments are measured at fair value at the earlier of the date a performance commitment is reached, or the date performance is completed. In addition, for awards that vest immediately and are non-forfeitable, the measurement date is the date the award is issued.

Foreign currency translation

Operations of the Canadian subsidiary are conducted in local currency, which represents its functional currency. The U.S. dollar is the functional currency of the other foreign subsidiaries. Balance sheet accounts of the Canadian subsidiary were translated from foreign currency into U.S. dollars at the exchange rate in effect at the balance sheet date and income statement accounts were translated at the average rate of exchange prevailing during the period. Translation adjustments resulting from this process were included in accumulated other comprehensive income (loss) on the condensed consolidated balance sheets.

Comprehensive income (loss)

Comprehensive income (loss) is defined as the change in equity of a business during a period from transactions and other events and circumstances from non-owner's sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners. Other comprehensive income (loss) represents foreign currency translation adjustments.

Income taxes

Deferred income tax assets and liabilities are determined based on the estimated future tax effects of net operating loss and credit carryforwards and temporary differences between the tax basis of assets and liabilities and their respective financial reporting amounts measured at the current enacted tax rates. The Company records a valuation allowance on its deferred income tax assets if it is not more likely than not that these deferred income tax assets will be realized.

The Company recognizes a tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by taxing authorities, based on the technical merits of the position. The tax benefits recognized in the consolidated financial statements from such a position are measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. As of September 30, 2019, the Company has not recorded any unrecognized tax benefits.

Per share data

Basic and diluted net loss per common share is calculated by dividing net loss, by the weighted average number of outstanding shares of common stock, adjusted to give effect to the 1-for-10 reverse stock split, which was effected on November 1, 2019 and November 28, 2018 (see Note 1).

As of September 30, 2019, and 2018, there were outstanding warrants to purchase an aggregate of 496,486 and 5,939 shares, respectively, of the Company's common stock. In addition, the Company has issued to employees, directors and consultants, options to acquire shares of the Company's common stock, of which 109,036 and 14,236 were outstanding at September 30, 2019 and 2018, respectively. In computing diluted net loss per share for the three and nine months ended September 30, 2019 and 2018, no effect has been given to such options and warrants (see Note 8) as their effect would be anti-dilutive.

NOTE 3 – FAIR VALUE MEASUREMENTS

Fair value measurements affect the Company's accounting for certain of its financial assets. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date and is measured according to a hierarchy that includes:

Level 1: Observable inputs, such as quoted prices in active markets.

Level 2: Inputs, other than quoted prices in active markets, that are observable either directly or indirectly. Level 2 assets and liabilities include debt securities with quoted market prices that are traded less frequently than exchange-traded instruments. This category includes U.S. government agency-backed debt securities and corporate-debt securities.

Level 3: Unobservable inputs in which there is little or no market data.

As of September 30, 2019, and December 31, 2018, the Company had Level 1 quoted prices in active markets of $8.5 million and $10.1 million, respectively, consisting entirely of cash equivalents.

NOTE 4 – ASSET PURCHASE AGREEMENT WITH TRIMARAN

On August 19, 2019, the Company entered into an asset purchase agreement (the "Asset Purchase Agreement") with TRImaran Pharma, Inc. ("TRImaran") and the selling shareholders named therein (the "Selling Shareholders") pursuant to which Tonix acquired TRImaran's assets related to certain pyran-based compounds (the "Assets"). In connection with the acquisition of the Assets, Tonix entered into a First Amended and Restated Exclusive License Agreement (the "WSU License Agreement") with Wayne State University ("WSU") on August 19, 2019. As consideration for entering into the Asset Purchase Agreement, Tonix has agreed to pay $100,000 to TRImaran and has assumed certain liabilities of TRImaran totaling $68,500. Upon the achievement of specified development, regulatory and sales milestones, Tonix also agreed to pay TRImaran and the Selling Shareholders, in restricted stock or cash, at Tonix's option, a total of approximately $3.4 million. Pursuant to the terms of the Asset Purchase Agreement, TRImaran and the Selling Shareholders are prohibited from disclosing confidential information related to the Assets and are restricted from engaging, for a period of three years, in the development or commercialization of any therapeutic containing any pyran-based drug compound for the treatment of post-traumatic stress disorder, attention deficit hyperactivity disorder or major depressive disorder. Also for a period of three years, if TRImaran or any Selling Shareholder engage in the research or development of any potential therapeutic compound for the treatment of any central nervous system disorder, TRImaran or such Selling Shareholder is obliged to provide notice and opportunity to Tonix to make an offer to acquire or license rights with respect to such product candidate.

Pursuant to the terms of the WSU License Agreement, WSU has granted to Tonix an exclusive license, with the right to sublicense, certain patents, technical information and material (collectively, the "Technology") related to the Assets. WSU has reserved for itself the right to practice the Technology for academic research and educational purposes. Tonix is obligated to use commercially reasonable efforts to obtain regulatory approval for one or more products utilizing the Technology ("WSU Products") and to use commercially reasonable marketing efforts throughout the term of the WSU License Agreement. The WSU License Agreement specifies developmental milestones and the period of time during which such milestones must be completed and provides for an annual maintenance fee payable to WSU. Tonix is obligated to substantially manufacture WSU Products in the United States if WSU Products will be sold in the United States.

Pursuant to the WSU License Agreement, Tonix has agreed to pay $75,000 to WSU as reimbursement of certain patent expenses, and, upon the achievement of specified development, regulatory and sales milestones, the Company also agreed to pay WSU, milestone payments totaling approximately $3.4 million. Tonix has also agreed to pay WSU single-digit royalties on net sales of WSU Products sold by Tonix or a sublicensee on a tiered basis based on net sales, and additional sublicense fees on certain consideration received from sublicensees. Royalties on each particular WSU Product are payable on a country-by-country and Product-by-Product basis until the date of expiration of the last valid claim in the last to expire of the issued patents covered by the WSU License Agreement. Royalties payable on net sales of WSU Products may be reduced by 50% of the royalties payable by Tonix to any third party for intellectual property rights which are necessary for the practice of the rights licensed to Tonix under the WSU License Agreement, provided that the royalty payable on a WSU Product may not be reduced by more than 50%. Each party also has the right to terminate the agreement for customary reasons such as material breach and bankruptcy. The WSU License Agreement contains provisions relating to termination, indemnification, confidentiality and other customary matters for an agreement of this kind.

As of September 30, 2019, no milestone payments have been accrued or paid in relation to this agreement.

NOTE 5 – LICENSE AGREEMENTS WITH COLUMBIA UNIVERSITY

On September 16, 2019, the Company entered into an exclusive License Agreement (the "Columbia License Agreement") with the Trustees of Columbia University in the City of New York ("Columbia") pursuant to which Columbia granted to Tonix an exclusive license, with the right to sublicense, certain patents and technical information (collectively, the "TFF2 Technology") related to a recombinant Trefoil Family Factor 2 (TFF2), and to develop and commercialize products thereunder (each, a "TFF2 Product"). Pursuant to the terms of the Columbia License Agreement, Columbia has reserved for itself the right to practice the TFF2 Technology for academic research and educational purposes.

The Company has agreed to pay a five-digit license fee to Columbia as consideration for entering into the Columbia License Agreement. The Company is obligated to use Commercially Reasonable Efforts, as defined in the Columbia License Agreement, to develop and commercialize the TFF2 Product, and to achieve specified developmental milestones.

The Company has agreed to pay Columbia single-digit royalties on net sales of (i) TFF2 Products sold by Tonix or a sublicensee and (ii) any other products that involve material or technical information related to the TFF2 Product and transferred to Tonix pursuant to the Columbia License Agreement ("Other Products") sold by Tonix or a sublicensee. Royalties on each particular TFF2 Product are payable on a country-by-country and Product-by-Product basis until the latest of (i) the date of expiration of the last valid claim in the last to expire of the issued patents covered by the Columbia License Agreement, and (ii) a specified period of time after the first commercial sale of a TFF2 Product in the country in question. Royalties on each particular Other Product are payable on a country-by-country and product-by-product basis until a specified period of time after the first commercial sale of such particular Other Product in such country. Royalties payable on net sales of the TFF2 Product and Other Products may be reduced by 50% of the royalties payable by Tonix to any third party for intellectual property rights which are necessary for the practice of the rights licensed to Tonix under the Columbia License Agreement, provided that the royalty payable on a Product or Other Product may not be reduced by more than 50%.

The Company is also obligated to make contingent milestone payments to Columbia totaling $3.1 million on a Product-by-Product basis upon the achievement of certain development, approval and sales milestones related to a TFF2 Product. In addition, the Company shall pay Columbia 5% of consideration, other than royalty payments and certain other categories of consideration, payable to the Company by a sublicensee. As of September 30, 2019, no milestone payments have been accrued or paid in relation to this agreement.

On May 20, 2019, the Company entered into an exclusive License Agreement (the "License Agreement") with Columbia pursuant to which Columbia, for itself and on behalf of the University of Kentucky and the University of Michigan (collectively, the "Institutions") granted to the Company an exclusive license, with the right to sublicense, certain patents, technical information and material (collectively, the "Technology") related to a double-mutant cocaine esterase, and to develop and commercialize products thereunder (each, a "Product"). Pursuant to the terms of the License Agreement, Columbia has reserved for itself and the Institutions the right to practice the Technology for academic research and educational purposes.

The Company has agreed to pay a six-digit license fee to Columbia as consideration for entering into the License Agreement. The Company is obligated to use Commercially Reasonable Efforts, as defined in the License Agreement, to develop and commercialize the Product, and to achieve specified developmental milestones. The first 50% of the license fee was paid by June 30, 2019, while the remaining 50% license fee has been accrued for within accrued expenses and other current liabilities as of September 30, 2019.

The Company has agreed to pay Columbia single-digit royalties on net sales of (i) Products sold by the Company or a sublicensee and (ii) any other products that involve material or technical information related to the Product and transferred to the Company pursuant to the License Agreement ("Other Products") sold by the Company or a sublicensee. Royalties on each particular Product are payable on a country-by-country and Product-by-Product basis until the latest of (i) the date of expiration of the last valid claim in the last to expire of the issued patents covered by the License Agreement, (ii) a specified period of time after the first commercial sale of a Product in the country in question, or (iii) expiration of any market exclusivity period granted by a regulatory agency. Royalties on each particular Other Product are payable on a country-by-country and product-by-product basis until the later of (i) a specified period of time after the first commercial sale of such particular Other Product in such country or (ii) expiration of any market exclusivity period granted by a regulatory agency. Royalties payable on net sales of the Product and Other Products may be reduced by 50% of the royalties payable by the Company to any third party for intellectual property rights which are necessary for the practice of the rights licensed to the Company under the License Agreement, provided that the royalty payable on a Product or Other Product may not be reduced by more than 50%.

The Company is also obligated to make contingent milestone payments to Columbia totaling $3 million on a Product-by-Product basis upon the achievement of certain development, approval and sales milestones related to a Product. In addition, the Company shall pay Columbia 5% of consideration, other than royalty payments and certain other categories of consideration, payable to the Company by a sublicensee. As of September 30, 2019, no milestone payments have been accrued or paid in relation to this agreement.

NOTE 6 – SALE OF COMMON STOCK

2019 Lincoln Park Transaction

On August 20, 2019, the Company entered into a purchase agreement (the "2019 Purchase Agreement") and a registration rights agreement (the "2019 Registration Rights Agreement") with Lincoln Park Capital Fund, LLC ("Lincoln Park"). Pursuant to the terms of the 2019 Purchase Agreement, Lincoln Park has agreed to purchase from us up to $15,000,000 of the Company's common stock (subject to certain limitations) from time to time during the term of the 2019 Purchase Agreement. Pursuant to the terms of the 2019 Registration Rights Agreement, the Company filed with the SEC a registration statement to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the 2019 Purchase Agreement.

Pursuant to the terms of the 2019 Purchase Agreement, at the time the Company signed the 2019 Purchase Agreement and the 2019 Registration Rights Agreement, the Company issued 35,529 shares of common stock to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the 2019 Purchase Agreement. The commitment shares were valued at $200,000 and recorded as an addition to equity for the issuance of the common stock and treated as a reduction to equity as a cost of capital to be raised under the 2019 Purchase Agreement.

The Company did not sell any shares of common stock under the 2019 Purchase Agreement during the nine months ended September 30, 2019.

July 2019 Financing

On July 16, 2019, the Company entered into an underwriting agreement with Aegis Capital Corp., as representatives of the underwriters ("Aegis"), relating to the issuance and sale of 900,000 shares of its common stock, in an underwritten public offering (the "July 2019 Financing"). The public offering price for each share of common stock was $6.00. The Company granted Aegis a 45-day option to purchase up to an additional 135,000 shares of common stock to cover over-allotments, if any.

The July 2019 Financing closed on July 18, 2019. Aegis purchased the shares at an eight percent discount to the then current public price, for an aggregate discount of $0.4 million (or $0.48 per share). The Company incurred offering expenses of approximately $0.5 million. We received net proceeds of approximately $4.5 million.

December 2018 Financing

On December 7, 2018, the Company entered into an underwriting agreement with Alliance Global Partners ("AGP") and Dawson James Securities, Inc. (collectively, the "Underwriters") pursuant to which the Company sold securities consisting of 86,171 Class A Units at a public offering price of $35.00 per unit, with each unit consisting of one share of common stock and a warrant to purchase one share of common stock, and 11,984 Class B Units at a public offering price of $1,000 per unit, with each unit consisting of one share of Series A Convertible Preferred Stock, with a conversion price of $35.00 per share, and warrants to purchase 28.5714 shares of Common Stock. The warrants have an exercise price of $35.00, are exercisable and expire five years from the date of issuance.

The Company also granted the Underwriters a 45-day option to purchase up to 64,286 shares of common stock and/or additional warrants to purchase up to 64,286 additional shares of common stock.

The December 2018 Financing closed on December 11, 2018. The Underwriters purchased the Units at a seven-percent discount to the public offering price, for an aggregate discount of approximately $1.1 million (or $2.40 per share). The Company received net proceeds from the December 2018 Financing of approximately $13.6 million, after deducting the underwriting discount and other offering expenses of approximately $0.4 million. Additionally, the Underwriters fully exercised the over-allotment option related to the warrants and purchased additional warrants to acquire 64,000 shares of common stock for net proceeds of approximately $6,000.

On December 13, 2018, the Underwriters partially exercised the over-allotment option and purchased 25,000 shares of common stock for net proceeds of approximately $0.8 million, net of an aggregate discount of $0.1 million (or $2.40 per share).

During the first quarter of 2019, the remaining 9,856 shares of Series A Convertible Preferred Stock were converted into 281,610 shares of common stock. As of March 11, 2019, all Series A Convertible Preferred Stock has been converted into common stock.

2018 Lincoln Park Transaction

On October 18, 2018, the Company entered into a purchase agreement (the "2018 Purchase Agreement") and a registration rights agreement (the "2018 Registration Rights Agreement") with Lincoln Park Capital Fund, LLC ("Lincoln Park"). Pursuant to the terms of the 2018 Purchase Agreement, Lincoln Park has agreed to purchase from us up to $15,000,000 of the Company's common stock (subject to certain limitations) from time to time during the term of the 2018 Purchase Agreement. Pursuant to the terms of the 2018 Registration Rights Agreement, the Company filed with the SEC a registration statement to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the 2018 Purchase Agreement.

Pursuant to the terms of the 2018 Purchase Agreement, at the time the Company signed the 2018 Purchase Agreement and the 2018 Registration Rights Agreement, the Company issued 3,500 shares of common stock to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the 2018 Purchase Agreement. The commitment shares were valued at $245,000 and recorded as an addition to equity for the issuance of the common stock and treated as a reduction to equity as a cost of capital to be raised under the 2018 Purchase Agreement.

During the nine months ended September 30, 2019, the Company sold an aggregate of approximately 22,700 shares of common stock under the 2018 Purchase Agreement, for gross proceeds of approximately $0.4 million.

Under applicable rules of the NASDAQ Global Market, the Company could not issue or sell more than 19.99% of the shares of its common stock outstanding immediately prior to the execution of the 2018 Purchase Agreement (approximately 26,200 shares) to Lincoln Park under the 2018 Purchase Agreement without stockholder approval, unless the average price of all applicable sales of its common stock to Lincoln Park under the 2018 Purchase Agreement equals or exceeds a threshold amount. As the Company has issued approximately 26,200 shares to Lincoln Park, by June 30, 2019, under the 2018 Purchase Agreement at less than the threshold amount, the Company will not sell any additional shares under the 2018 Purchase Agreement without shareholder approval.

2018 At-the-Market Offering

On May 1, 2018, the Company entered into a sales agreement (the "Sales Agreement"), with Cowen and Company, LLC., ("Cowen"), pursuant to which the Company may issue and sell, from time to time, shares of its common stock having an aggregate offering price of up to $9.5 million in at-the-market offerings ("ATM") sales. On the same day, the Company filed a prospectus supplement under its existing shelf registration relating to the Sales Agreement. Cowen acted as sales agent and was paid a 3% commission on each sale under the Sales Agreement. The Company's common stock was sold at prevailing market prices at the time of the sale, and, as a result, prices varied.

During the nine months ended September 30, 2019, the Company sold an aggregate of 2,106 shares of common stock under the ATM for net proceeds of approximately $33,000.

During the nine months ended September 30, 2018, the Company sold an aggregate of approximately 16,000 shares of common stock using the ATM, resulting in net proceeds of $4.1 million, net of expenses of approximately $0.1 million of Cowen's commission.

2017 Lincoln Park Transaction

On September 28, 2017, the Company entered into a purchase agreement (the "2017 Purchase Agreement") and a registration rights agreement (the "Registration Rights Agreement") with Lincoln Park Capital Fund, LLC ("Lincoln Park"). Pursuant to the terms of the Purchase Agreement, Lincoln Park has agreed to purchase from the Company up to $15,000,000 of its common stock (subject to certain limitations) from time to time during the term of the 2017 Purchase Agreement. Pursuant to the terms of the Registration Rights Agreement, the Company filed with the SEC a registration statement to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the 2017 Purchase Agreement.

Pursuant to the terms of the 2017 Purchase Agreement, at the time the Company signed the 2017 Purchase Agreement and the Registration Rights Agreement, the Company issued 731 shares of common stock to Lincoln Park as consideration for its commitment to purchase shares of its common stock under the Purchase Agreement. The commitment shares were valued at $300,000, recorded as an addition to equity for the issuance of the common stock and treated as a reduction to equity as a cost of capital to be raised under the Purchase Agreement.

During the nine months ended September 30, 2018, the Company sold approximately 11,000 shares of common stock under the 2017 Purchase Agreement, resulting in net proceeds of $2.3 million, net of expenses of approximately $45,000. The Company did not sell any shares of common stock under the 2017 Purchase Agreement during the nine months ended September 30, 2019.

Under applicable rules of the NASDAQ Global Market, the Company could not issue or sell more than 19.99% of the shares of its common stock outstanding immediately prior to the execution of the 2017 Purchase Agreement (approximately 15,000 shares) to Lincoln Park under the 2017 Purchase Agreement without stockholder approval, unless the average price of all applicable sales of its common stock to Lincoln Park under the 2017 Purchase Agreement equals or exceeds a threshold amount. As the Company has issued approximately 15,000 shares to Lincoln Park, by December 31, 2018, under the 2017 Purchase Agreement at less than the threshold amount, the Company will not sell any additional shares under the 2017 Purchase Agreement without shareholder approval

NOTE 7 – STOCK-BASED COMPENSATION

2018 Stock Incentive Plan

On June 8, 2018, the Company's stockholders approved the Tonix Pharmaceuticals Holding Corp. 2018 Stock Incentive Plan (the "2018 Plan"). The 2018 Plan provided for the issuance of up to 13,200 shares of common stock. With the adoption of the 2019 Plan (as defined below), no further grants may be made under the 2018 Plan.

2019 Stock Incentive Plan

On May 3, 2019, the Company's stockholders approved the Tonix Pharmaceuticals Holding Corp. 2019 Stock Incentive Plan (the "2019 Plan", and together with the 2018 Plan, the "Plans").

Under the terms of the 2019 Plan, the Company may issue (1) stock options (incentive and nonstatutory), (2) restricted stock, (3) SARs, (4) RSUs, (5) other stock-based awards, and (6) cash-based awards. The 2019 Plan provides for the issuance of up to 140,000 shares of common stock, which amount will be increased to the extent that awards granted under the 2019 Plan and the Plans are forfeited, expire or are settled for cash (except as otherwise provided in the 2019 Plan). The Board of Directors determines the exercise price, vesting and expiration period of the grants under the 2019 Plan. However, the exercise price of an incentive stock option may not be less than 110% of fair value of the common stock at the date of the grant for a 10% or more shareholder and 100% of fair value for a grantee who is not a 10% shareholder. The fair value of the common stock is determined based on quoted market price or in absence of such quoted market price, by the Board of Directors in good faith. Additionally, the expiration period of grants under the 2019 Plan may not more than ten years. As of September 30, 2019, 55,825 shares were available for future grants under the 2019 Plan.

General

A summary of the stock option activity and related information for the Plans for the nine months ended September 30, 2019 is as follows:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at December 31, 2018	13,740	$ 1,430.90	8.14	$
Grants	95,517	$ 21.74		$
Exercised	—			
Forfeitures or expirations	(221)	359.86		
Outstanding at September 30, 2019	109,036	$ 199.57	8.86	$ —
Vested and expected to vest at September 30, 2019	109,036	$ 199.57	8.86	$ —
Exercisable at September 30, 2019	16,723	$ 1,045.31	5.17	$ —

The aggregate intrinsic value in the preceding table represents the total pretax intrinsic value, based on options with an exercise price less than the Company's closing stock price at the respective dates.

The weighted average fair value of options granted during the nine months ended September 30, 2019 was $16.54 per share. The weighted average fair value of options granted during the three and nine months ended September 30, 2018 was $82.64 per share and $277.77 per share, respectively.

The Company measures the fair value of stock options on the date of grant, based on the Black Scholes option pricing model using certain assumptions discussed below, and the closing market price of the Company's common stock on the date of the grant. For employees and directors, the fair value of the award is measured on the grant date and for non-employees, the fair value of the award is generally re-measured on vesting dates and interim financial reporting dates until the service period is complete. Most stock options granted pursuant to the Plans typically vest 1/3rd 12 months from the date of grant and 1/36th each month thereafter for 24 months and expire ten years from the date of grant. In addition, the Company issues options to directors which vest over a one-year period. In addition, the Company also issues performance-based options to executive officers, which options vest when the target parameters are met, and premium options which have an exercise price greater than the grant date fair value, subject in each case to a one year minimum service period prior to vesting. Stock-based compensation expense related to awards is amortized over the applicable vesting period using the straight-line method.

The assumptions used in the valuation of stock options granted during the nine months ended September 30, 2019 and 2018 were as follows:

	Nine Months Ended September 30, 2019	Nine Months Ended September 30, 2018
Risk-free interest rate	2.30% to 2.54%	2.54% to 2.81%
Expected term of option	5.10 to 10.00 years	4.50 to 7.00 years
Expected stock price volatility	107.12% to 109.72%	99.65% to 109.22%
Expected dividend yield	0.0%	0.0%

The risk-free interest rate is based on the yield of Daily U.S. Treasury Yield Curve Rates with terms equal to the expected term of the options as of the grant date. The expected term of options is determined using the simplified method, as provided in an SEC Staff Accounting Bulletin, and the expected stock price volatility is based on the Company' historical stock price volatility.

Stock-based compensation expense relating to options granted of $0.4 million and $1.1 million was recognized for the three and nine-month periods ended September 30, 2019, respectively, and $0.4 million and $1.2 million was recognized for the three and nine-month periods ended September 30, 2018, respectively.

As of September 30, 2019, the Company had approximately $2.1 million of total unrecognized compensation cost related to non-vested awards granted under the Plans, which the Company expects to recognize over a weighted average period of 1.85 years.

2018 Employee Stock Purchase Plan

On June 8, 2018, the Company's stockholders approved the Tonix Pharmaceuticals Holdings Corp. 2018 Employee Stock Purchase Plan (the "2018 ESPP"). As a result of adoption of the 2019 ESPP, as defined below, by the stockholders, no further grants may be made under the 2018 ESPP Plan.

2019 Employee Stock Purchase Plan

On May 3, 2019, the Company's stockholders approved the Tonix Pharmaceuticals Holdings Corp. 2019 Employee Stock Purchase Plan (the "2019 ESPP").

The 2019 ESPP allows eligible employees to purchase up to an aggregate of 15,000 shares of the Company's common stock. Under the 2019 ESPP, on the first day of each offering period, each eligible employee for that offering period has the option to enroll for that offering period, which allows the eligible employees to purchase shares of the Company's common stock at the end of the offering period. Each offering period under the 2019 ESPP is for six months, which can be modified from time-to-time. Subject to limitations, each participant will be permitted to purchase a number of shares determined by dividing the employee's accumulated payroll deductions for the offering period by the applicable purchase price, which is equal to 85 percent of the fair market value of our common stock at the beginning or end of each offering period, whichever is less. A participant must designate in his or her enrollment package the percentage (if any) of compensation to be deducted during that offering period for the purchase of stock under the 2019 ESPP, subject to the statutory limit under the Code. As of September 30, 2019, 12,619 shares were available for future grants under the 2019 ESPP.

The 2019 ESPP and 2018 ESPP are considered compensatory plans with the related compensation cost written off over the six-month offering period. The compensation expense related to the 2019 ESPP and 2018 ESPP for the nine months ended September 30, 2019 and 2018 was $28,000 and $32,000, respectively. As of December 31, 2018, approximately $38,000 of employee payroll deductions, which have been withheld since July 1, 2018, the commencement of the offering period ending December 31, 2018, are included in accrued expenses in the accompanying balance sheet. In January 2019, 177 shares that were purchased as of December 31, 2018, were issued under the 2018 ESPP, and approximately $3,000 of employee payroll deductions accumulated at December 31, 2018, related to acquiring such shares, was transferred from accrued expenses to additional paid in capital. The remaining $35,000 was returned to the employees. In August 2019, 2,381 shares that were purchased as of June 30, 2019, were issued under the 2019 ESPP, and approximately $29,000 of employee payroll deductions accumulated at June 30, 2019, related to acquiring such shares, was transferred from accrued expenses to additional paid in capital. The remaining $16,000 was returned to the employees. As of September 30, 2019, approximately $9,000 of employee payroll deductions, which have been withheld since July 1, 2019, the commencement of the offering period ending December 31, 2019, are included in accrued expenses in the accompanying balance sheet.

Restricted Stock Units

In May 2017, a total of 57 restricted stock units ("RSUs") vested that were granted to our non-employee directors for board services in 2016, in lieu of cash, with a one-year vesting from the grant date and a fair value of $2,290 at the date of grant. 49 shares of the Company's common stock were issued upon the vesting of such RSU's during the year ended December 31, 2017. The remaining 8 shares of common stock were issued during the three months ended March 31, 2018.

During the nine months ended September 30, 2019 and 2018, no stock-based compensation expense related to RSU grants was expensed.

NOTE 8 – STOCK WARRANTS

The following table summarizes information with respect to outstanding warrants to purchase common stock of the Company at September 30, 2019:

Exercise Price	Number Outstanding	Expiration Date
$ 35.00	490,571	December 2023
$ 630.00	5,441	October 2021
$ 690.00	474	October 2021
	496,486	

During the nine months ended September 30, 2019, 2,000 warrants with an exercise price of $35.00 were exercised for proceeds of approximately $70,000.

During the nine months ended September 30, 2019, 24 warrants with a per share exercise price of $25,000 expired. During the nine months ended September 30, 2018, 11 and 919 warrants with a per share exercise price of $12,000 and $4,250, respectively, expired.

NOTE 9 – LEASES

The Company has various operating lease agreements, which are primarily for office space. These agreements frequently include one or more renewal options and require the Company to pay for utilities, taxes, insurance and maintenance expense. No lease agreement imposes a restriction on the Company's ability to engage in financing transactions or enter into further lease agreements. At September 30, 2019, the Company has right-of-use assets of $0.5 million and a total lease liability for operating leases of $0.5 million of which $0.1 million is included in operating lease liabilities, noncurrent and $0.4 million is included in operating lease liabilities, current.

At September 30, 2019, future minimum lease payments for operating leases with non-cancelable terms of more than one year were as follows (in thousands):

Year Ending December 31,	
Remainder of 2019	$ 113
2020	358
2021	6
	$ 477

In January 2019, the Company entered into a new operating lease, resulting in the Company recognizing an operating lease liability of approximately $0.4 million based on the present value of the minimum rental payments. The Company also recognized corresponding ROU assets of approximately $0.4 million. In April 2019, the Company entered into a lease amendment, resulting in the Company recognizing an additional operating lease liability of approximately $0.1 million based on the present value of the minimum rental payments. The Company also recognized a corresponding increase to ROU assets of approximately $0.1 million. As the Company's leases do not provide an implicit rate, the Company uses an incremental borrowing rate based on the information available at the transition date and commencement date in determining the present value of lease payments. Operating lease expense was $0.1 million and $0.3 million for the three and nine months ended September 30, 2019. Amortization expense was $0.1 million and $0.3 million for the three and nine months ended September 30, 2019.

Other information related to leases was as follows:

	Nine Months Ended September, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flow from operating leases (in thousands)	$ 333
Weighted Average Remaining Lease Term	
Operating leases	1.09 years
Weighted Average Discount Rate	
Operating leases	3.37%

NOTE 10 – COMMITMENTS

Research and development contracts

The Company has entered into contracts with various contract research organizations with outstanding commitments aggregating approximately $7.2 million at September 30, 2019 for future work to be performed.

Defined contribution plan

The Company has a qualified defined contribution plan (the "401(k) Plan") pursuant to Section 401(k) of the Code, whereby all eligible employees may participate. Participants may elect to defer a percentage of their annual pretax compensation to the 401(k) Plan, subject to defined limitations. The Company is required to make contributions to the 401(k) Plan equal to 100 percent of each participant's pretax contributions of up to six percent of his or her eligible compensation, and the Company is also required to make a contribution equal to three percent of each participant's salary, on an annual basis, subject to limitations under the Code. The Company charged operations $8,000 and $74,000 for the three and nine months ended September 30, 2019, respectively, and $26,000 and $88,000 for the three and nine months ended September 30, 2018, respectively, for contributions under the 401(k) Plan.

NOTE 11 – SUBSEQUENT EVENT

On October 31, 2019, the Company filed a Certificate of Change with the Nevada Secretary of State, which was effective November 1, 2019. Pursuant to the Certificate of Change, the Company effected a 1-for-10 reverse stock split of its issued and outstanding shares of common stock, $0.001 par value, whereby 15,717,402 outstanding shares of the Company's common stock were exchanged for 1,575,246 shares of the Company's common stock. In connection with the reverse stock split, the Company issued an additional 3,457 shares of the Company's common stock due to rounding. Furthermore, pursuant to the Certificate of Change, the number of authorized shares of common stock was reduced from 150 million to 15 million. All per share amounts and number of shares in the condensed consolidated financial statements and related notes have been retroactively restated to reflect the reverse stock split.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Management's Discussion and Analysis of Financial Condition and Results of Operations includes a number of forward-looking statements that reflect Management's current views with respect to future events and financial performance. You can identify these statements by forward-looking words such as "may" "will," "expect," "anticipate," "believe," "estimate" and "continue," or similar words. Those statements include statements regarding the intent, belief or current expectations of us and members of our management team, as well as the assumptions on which such statements are based. Prospective investors are cautioned that any such forward-looking statements are not guarantees of future performance and involve risk and uncertainties, and that actual results may differ materially from those contemplated by such forward-looking statements.

The following discussion contains certain statements that may be deemed "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Readers are urged to carefully review and consider the various disclosures made by us in this report and in our other reports filed with the Securities and Exchange Commission, including our Annual Report on Form 10-K for the year ended December 31, 2018, as filed with the Securities and Exchange Commission on March 18, 2019. Important factors known to us could cause actual results to differ materially from those in forward-looking statements. We undertake no obligation to update or revise forward-looking statements to reflect changed assumptions, the occurrence of unanticipated events or changes in the future operating results over time. We believe that its assumptions are based upon reasonable data derived from and known about our business and operations. No assurances are made that actual results of operations or the results of our future activities will not differ materially from its assumptions. Factors that could cause differences include, but are not limited to: substantial competition; our possible need for additional financing; uncertainties of patent protection and litigation; uncertainties of government or third party payor reimbursement; limited research and development efforts and dependence upon third parties; and risks related to failure to obtain clearances or approvals from the United States Food and Drug Administration, or FDA, and noncompliance with FDA regulations.

Business Overview

We are a clinical-stage biopharmaceutical company focused on discovering and developing small molecules and biologics to treat psychiatric, pain and addiction conditions, to improve biodefense through potential medical counter-measures, to treat organ transplant rejection and to treat gastric and pancreatic cancers. Our most advanced drug development program is focused on delivering a safe and effective long-term treatment for posttraumatic stress disorder, or PTSD. PTSD is characterized by chronic disability, inadequate treatment options, high utilization of healthcare services, and significant economic burden. We have assembled a management team with significant industry experience to lead the development of our product candidates. We complement our management team with a network of scientific, clinical, and regulatory advisors that includes recognized experts in the fields of PTSD, other central nervous system disorders and biodefense.

Our lead product candidate, TNX-102 SL is a proprietary sublingual tablet formulation of cyclobenzaprine, or CBP, designed for bedtime administration. TNX-102 SL is an investigational new drug that has not been approved for any indication. TNX-102 SL is in Phase 3 development as a potential treatment for PTSD. We are currently enrolling participants in the Phase 3 RECOVERY trial, which is a double-blind, placebo-controlled study evaluating daily bedtime administration of TNX-102 SL in individuals with PTSD from trauma within 9 years of screening. The FDA has conditionally accepted the proposed trade name Tonmya® for TNX-102 SL for the treatment of PTSD. Tonix is also developing TNX-102 SL as a bedtime treatment for fibromyalgia and agitation in Alzheimer's disease, under separate Investigational New Drug applications, or INDs, to support potential pivotal efficacy studies. Tonix has met with FDA to discuss a separate IND for treating alcohol use disorder. The fibromyalgia program is in Phase 3 development, the agitation in Alzheimer's program is Phase 2 ready and the alcohol use disorder program is in the pre-IND application stage. TNX-1300 (double-mutant cocaine esterase) is being developed under an IND and is in Phase 2 development for the treatment of life-threatening cocaine intoxication. Tonix has two other programs in the pre-IND application stage of development for PTSD, but with different mechanisms than TNX-102 SL and designed for daytime dosing: TNX-601 (tianeptine oxalate) and TNX-1600, a triple reuptake inhibitor. TNX-601 is also in development for a potential indication - neurocognitive dysfunction associated with corticosteroid use. Data on TNX-601 from a Phase 1 clinical formulation selection pharmacokinetic study that is being conducted outside of the U.S. is expected in the second half of 2019. TNX-801 (live virus vaccine for percutaneous [scarification] administration) is a potential smallpox-preventing vaccine based on a live synthetic version of horsepox virus, currently in the pre-IND application stage. TNX-1500 is being developed to prevent and treat organ transplant rejection, as well as to treat autoimmune conditions, and is in the pre-IND application stage. Finally, TNX-1700 is being developed to treat gastric and pancreatic cancers and is currently in the pre-IND application stage.

Current Operating Trends

Our current research and development efforts are focused on developing Tonmya for the treatment of PTSD and TNX-102 SL for the treatment of fibromyalgia, agitation in Alzheimer's Disease and AUD, but we also expend effort on our other pipeline programs, primarily related to TNX-1300, TNX-601, TNX-701, TNX-801, TNX-1500 and TNX-1700. Our research and development expenses consist of manufacturing work and the cost of drug ingredients used in such work, fees paid to consultants for work related to clinical trial design and regulatory activities, fees paid to providers for conducting various clinical studies as well as for the analysis of the results of such studies, and for other medical research addressing the potential efficacy and safety of our study drugs. We believe that significant investment in product development is a competitive necessity, and we plan to continue these investments in order to be in a position to realize the potential of our product candidates and proprietary technologies.

We expect that all of our research and development expenses in the near-term future will be incurred in support of our current and future preclinical and clinical development programs rather than technology development. These expenditures are subject to numerous uncertainties relating to timing and cost to completion. We test compounds in numerous preclinical studies for safety, toxicology and efficacy. At the appropriate time, subject to the approval of regulatory authorities, we expect to conduct early-stage clinical trials for each drug candidate. We anticipate funding these trials ourselves, and possibly with the assistance of federal grants, contracts or other agreements. As we obtain results from trials, we may elect to discontinue or delay clinical trials for certain products in order to focus our resources on more promising products. Completion of clinical trials may take several years, and the length of time generally varies substantially according to the type, complexity, novelty and intended use of a product candidate.

The commencement and completion of clinical trials for our products may be delayed by many factors, including lack of efficacy during clinical trials, unforeseen safety issues, slower than expected participant recruitment, lack of funding or government delays. In addition, we may encounter regulatory delays or rejections as a result of many factors, including results that do not support the intended safety or efficacy of our product candidates, perceived defects in the design of clinical trials and changes in regulatory policy during the period of product development. As a result of these risks and uncertainties, we are unable to accurately estimate the specific timing and costs of our clinical development programs or the timing of material cash inflows, if any, from our product candidates. Our business, financial condition and results of operations may be materially adversely affected by any delays in, or termination of, our clinical trials or a determination by the FDA that the results of our trials are inadequate to justify regulatory approval, insofar as cash in-flows from the relevant drug or program would be delayed or would not occur.

Results of Operations

We anticipate that our results of operations will fluctuate for the foreseeable future due to several factors, such as the progress of our research and development efforts and the timing and outcome of regulatory submissions. Due to these uncertainties, accurate predictions of future operations are difficult or impossible to make.

Three Months Ended September 30, 2019 Compared to Three Months Ended September 30, 2018

Research and Development Expenses. Research and development expenses for the three months ended September 30, 2019 were $5.1 million, an increase of $1.8 million, or 55%, from $3.3 million for the three months ended September 30, 2018. This increase is predominately due to timing of development activities related to the PTSD RECOVERY study, which resulted in a $1.0 million increase in clinical expenses in 2019, ramp up of work related to TNX-601, resulting in a $0.3 million increase in manufacturing expenses in 2019, and an increase in non-clinical of $0.3 million in 2019 related to our development pipeline.

General and Administrative Expenses. General and administrative expenses for the three months ended September 30, 2019 were $2.8 million, an increase of $0.5 million, or 22%, from $2.3 million incurred in the three months ended September 30, 2018. The increase is primarily due to an increase in legal fees of $0.3 million due to increased patent prosecution costs and an increase in insurance expenses of $0.2 million due to higher premiums in 2019.

Net Loss. As a result of the foregoing, the net loss for the three months ended September 30, 2019 was $7.8 million, compared to a net loss of $5.5 million for the three months ended September 30, 2018.

Nine Months Ended September 30, 2019 Compared to Nine Months Ended September 30, 2018

Research and Development Expenses. Research and development expenses were $12.5 million for both the nine months ended September 30, 2019 and the nine months ended September 30, 2018. Costs incurred in 2019 are predominately due to the PTSD RECOVERY study while costs incurred in 2018 are predominately due to the PTSD HONOR study.

General and Administrative Expenses. General and administrative expenses for the nine months ended September 30, 2019 were $7.6 million, an increase of $1.4 million, or 23%, from $6.2 million incurred in the nine months ended September 30, 2018. The increase is primarily due to an increase in legal fees of $0.4 million due to increased patent prosecution costs, an increase in investor and public relations expenses of $0.2 million due to increased investor meetings and an increase in insurance expenses of $0.5 million due to higher premiums in 2019.

Net Loss. As a result of the foregoing, the net loss for the nine months ended September 30, 2019 was $19.9 million, compared to a net loss of $18.5 million for the nine months ended September 30, 2018.

License Agreements with Columbia University

On September 16, 2019, we entered into an exclusive License Agreement (the "Columbia License Agreement") with the Trustees of Columbia University in the City of New York ("Columbia") pursuant to which Columbia granted to Tonix an exclusive license, with the right to sublicense, certain patents and technical information (collectively, the "TFF2 Technology") related to a recombinant Trefoil Family Factor 2 (TFF2), and to develop and commercialize products thereunder (each, a "TFF2 Product"). Pursuant to the terms of the Columbia License Agreement, Columbia has reserved for itself the right to practice the TFF2 Technology for academic research and educational purposes.

We have agreed to pay a five-digit license fee to Columbia as consideration for entering into the Columbia License Agreement. The Company is obligated to use Commercially Reasonable Efforts, as defined in the Columbia License Agreement, to develop and commercialize the TFF2 Product, and to achieve specified developmental milestones.

We have agreed to pay Columbia single-digit royalties on net sales of (i) TFF2 Products sold by Tonix or a sublicensee and (ii) any other products that involve material or technical information related to the TFF2 Product and transferred to Tonix pursuant to the License Agreement ("Other Products") sold by Tonix or a sublicensee. Royalties on each particular TFF2 Product are payable on a country-by-country and Product-by-Product basis until the latest of (i) the date of expiration of the last valid claim in the last to expire of the issued patents covered by the Columbia License Agreement, and (ii) a specified period of time after the first commercial sale of a TFF2 Product in the country in question. Royalties on each particular Other Product are payable on a country-by-country and product-by-product basis until a specified period of time after the first commercial sale of such particular Other Product in such country. Royalties payable on net sales of the TFF2 Product and Other Products may be reduced by 50% of the royalties payable by Tonix to any third party for intellectual property rights which are necessary for the practice of the rights licensed to Tonix under the Columbia License Agreement, provided that the royalty payable on a TFF2 Product or Other Product may not be reduced by more than 50%.

We are also obligated to make contingent milestone payments to Columbia totaling $3.1 million on a Product-by-Product basis upon the achievement of certain development, approval and sales milestones related to a TFF2 Product. In addition, we shall pay Columbia 5% of consideration, other than royalty payments and certain other categories of consideration, payable to us by a sublicensee. As of September 30, 2019, no milestone payments have been accrued or paid in relation to this agreement.

On May 20, 2019, we entered into an exclusive License Agreement (the "License Agreement") with Columbia pursuant to which Columbia, for itself and on behalf of the University of Kentucky and the University of Michigan (collectively, the "Institutions") granted to us an exclusive license, with the right to sublicense, certain patents, technical information and material (collectively, the "Technology") related to a double-mutant cocaine esterase, and to develop and commercialize products thereunder (each, a "Product"). Pursuant to the terms of the License Agreement, Columbia has reserved for itself and the Institutions the right to practice the Technology for academic research and educational purposes.

We have agreed to pay a six-digit license fee to Columbia as consideration for entering into the License Agreement. We are obligated to use Commercially Reasonable Efforts, as defined in the License Agreement, to develop and commercialize the Product, and to achieve specified developmental milestones. The first 50% of the license fee was paid by June 30, 2019, while the remaining 50% license fee has been accrued for within accrued expenses and other current liabilities as of September 30, 2019.

We has agreed to pay Columbia single-digit royalties on net sales of (i) Products sold by Tonix or a sublicensee and (ii) any other products that involve material or technical information related to the Product and transferred to us pursuant to the License Agreement ("Other Products") sold by Tonix or a sublicensee. Royalties on each particular Product are payable on a country-by-country and Product-by-Product basis until the latest of (i) the date of expiration of the last valid claim in the last to expire of the issued patents covered by the License Agreement, (ii) a specified period of time after the first commercial sale of a Product in the country in question, or (iii) expiration of any market exclusivity period granted by a regulatory agency. Royalties on each particular Other Product are payable on a country-by-country and product-by-product basis until the later of (i) a specified period of time after the first commercial sale of such particular Other Product in such country or (ii) expiration of any market exclusivity period granted by a regulatory agency. Royalties payable on net sales of the Product and Other Products may be reduced by 50% of the royalties payable by us to any third party for intellectual property rights which are necessary for the practice of the rights licensed to us under the License Agreement, provided that the royalty payable on a Product or Other Product may not be reduced by more than 50%.

We are also obligated to make contingent milestone payments to Columbia totaling $3 million on a Product-by-Product basis upon the achievement of certain development, approval and sales milestones related to a Product. In addition, we shall pay Columbia 5% of consideration, other than royalty payments and certain other categories of consideration, payable to us by a sublicensee. As of September 30, 2019, no milestone payments have been accrued or paid in relation to this agreement.

Liquidity and Capital Resources

As of September 30, 2019, we had working capital of $9.2 million, comprised primarily of cash and cash equivalents of $10.0 million and prepaid expenses and other of $1.5 million, which was offset by $1.1 million of accounts payable, $0.9 million of accrued expenses and other current liabilities and $0.4 million of current operating lease liabilities. A significant portion of the accounts payable and accrued expenses are due to work performed in relation to our ongoing Phase 3 RECOVERY study of TNX-102 SL for the treatment of PTSD. For the nine months ended September 30, 2019 and 2018, we used approximately $20.0 million and $17.2 million of cash in operating activities, respectively, which represents cash outlays for research and development and general and administrative expenses in such periods. The increase in cash used in operations is due primarily to close-out costs for the Phase 3 HONOR study and costs related to the current Phase 3 RECOVERY study. Additionally, our annual insurance premiums also increased over the prior year, the payments for which all occur in the first quarter. For the nine months ended September 30, 2019, net proceeds from financing activities were from the sale of our common stock of approximately $4.9 million and approximately $70,000 through the exercise of warrants into common stock. In the comparable 2018 period, approximately $6.4 million was raised through the sale of shares of common stock.

Cash used in investing activities for the nine months ended September 30, 2019 and 2018, was $12,000 and $7,000 respectively, related to the purchase of property and equipment.

2019 Lincoln Park Transaction

On August 20, 2019, we entered into a purchase agreement (the "2019 Purchase Agreement") and a registration rights agreement (the "2019 Registration Rights Agreement") with Lincoln Park Capital Fund, LLC ("Lincoln Park"). Pursuant to the terms of the 2019 Purchase Agreement, Lincoln Park has agreed to purchase from us up to $15,000,000 of our common stock (subject to certain limitations) from time to time during the term of the 2019 Purchase Agreement. Pursuant to the terms of the 2019 Registration Rights Agreement, we filed with the SEC a registration statement to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the 2019 Purchase Agreement.

Pursuant to the terms of the 2019 Purchase Agreement, at the time we signed the 2019 Purchase Agreement and the 2019 Registration Rights Agreement, we issued 35,529 shares of common stock to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the 2019 Purchase Agreement. The commitment shares were valued at $200,000 and recorded as an addition to equity for the issuance of the common stock and treated as a reduction to equity as a cost of capital to be raised under the 2019 Purchase Agreement.

We did not sell any shares of common stock under the 2019 Purchase Agreement during the nine months ended September 30, 2019.

July 2019 Financing

On July 16, 2019, we entered into an underwriting agreement with Aegis Capital Corp., as representatives of the underwriters ("Aegis"), relating to the issuance and sale of 900,000 shares of our common stock, in an underwritten public offering (the "July 2019 Financing"). The public offering price for each share of common stock was $6.00. We granted Aegis a 45-day option to purchase up to an additional 135,000 shares of common stock to cover over-allotments, if any.

The July 2019 Financing closed on July 18, 2019. Aegis purchased the shares at an eight percent discount to the then current public price, for an aggregate discount of $0.4 million (or $0.48 per share). We incurred offering expenses of approximately $0.5 million. We received net proceeds of approximately $4.5 million.

December 2018 Financing

On December 7, 2018, we entered into an underwriting agreement with Alliance Global Partners ("AGP") and Dawson James Securities, Inc. (collectively, the "Underwriters") pursuant to which we sold securities consisting of 86,171 Class A Units at a public offering price of $35.00 per unit, with each unit consisting of one share of common stock and a warrant to purchase one share of common stock, and 11,984 Class B Units at a public offering price of $1,000 per unit, with each unit consisting of one share of Series A Convertible Preferred Stock, with a conversion price of $35.00 per share, and warrants to purchase 28.5714 shares of Common Stock. The warrants have an exercise price of $35.00, are exercisable and expire five years from the date of issuance.

We also granted the Underwriters a 45-day option to purchase up to 64,286 shares of common stock and/or additional warrants to purchase up to 64,286 additional shares of common stock.

The December 2018 Financing closed on December 11, 2018. The Underwriters purchased the Units at a seven-percent discount to the public offering price, for an aggregate discount of approximately $1.1 million (or $0.24 per share). We received net proceeds from the December 2018 Financing of approximately $13.6 million, after deducting the underwriting discount and other offering expenses of approximately $0.4 million. Additionally, the Underwriters fully exercised the over-allotment option related to the warrants and purchased additional warrants to acquire 64,000 shares of common stock for net proceeds of approximately $6,000.

On December 13, 2018, the Underwriters partially exercised the over-allotment option and purchased 25,000 shares of common stock for net proceeds of approximately $0.8 million, net of an aggregate discount of $0.1 million (or $2.40 per share).

During the first quarter of 2019, the remaining 9,856 shares of Series A Convertible Preferred Stock were converted into 281,610 shares of common stock. As of March 11, 2019, all Series A Convertible Preferred Stock has been converted into common stock.

2018 At-the-Market Offering

On May 1, 2018, we entered into a sales agreement (the "Sales Agreement"), with Cowen and Company, LLC., ("Cowen"), pursuant to which we may issue and sell, from time to time, shares of our common stock having an aggregate offering price of up to $9.5 million in at-the-market offerings ("ATM") sales. On the same day, we filed a prospectus supplement under its existing shelf registration relating to the Sales Agreement. Cowen acted as sales agent and was paid a 3% commission on each sale under the Sales Agreement. Our common stock was sold at prevailing market prices at the time of the sale, and, as a result, prices varied.

During the nine months ended September 30, 2019, we sold an aggregate of 2,106 shares of common stock under the ATM for net proceeds of approximately $33,000.

During the quarter ended June 30, 2018, we sold an aggregate of approximately 16,000 shares of common stock using the ATM, resulting in net proceeds of $4.1 million, net of expenses of approximately $0.1 of Cowen's commission.

2018 Lincoln Park Transaction

On October 18, 2018, we entered into a purchase agreement (the "2018 Purchase Agreement") and a registration rights agreement (the "2018 Registration Rights Agreement") with Lincoln Park Capital Fund, LLC ("Lincoln Park"). Pursuant to the terms of the 2018 Purchase Agreement, Lincoln Park has agreed to purchase from us up to $15,000,000 of our common stock (subject to certain limitations) from time to time during the term of the 2018 Purchase Agreement. Pursuant to the terms of the 2018 Registration Rights Agreement, we filed with the SEC a registration statement to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the 2018 Purchase Agreement.

Pursuant to the terms of the 2018 Purchase Agreement, at the time we signed the 2018 Purchase Agreement and the 2018 Registration Rights Agreement, we issued 3,500 shares of common stock to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the 2018 Purchase Agreement. The commitment shares were valued at $245,000 and recorded as an addition to equity for the issuance of the common stock and treated as a reduction to equity as a cost of capital to be raised under the 2018 Purchase Agreement.

During the nine months ended September 30, 2019, we sold an aggregate of approximately 22,700 shares of common stock under the 2018 Purchase Agreement, for gross proceeds of approximately $0.4 million.

Under applicable rules of the NASDAQ Global Market, we could not issue or sell more than 19.99% of the shares of our common stock outstanding immediately prior to the execution of the 2018 Purchase Agreement (approximately 26,200 shares) to Lincoln Park under the 2018 Purchase Agreement without stockholder approval, unless the average price of all applicable sales of our common stock to Lincoln Park under the 2018 Purchase Agreement equals or exceeds a threshold amount. As we have issued approximately 26,200 shares to Lincoln Park, by June 30, 2019, under the 2018 Purchase Agreement at less than the threshold amount, we will not sell any additional shares under the 2018 Purchase Agreement without shareholder approval.

2017 Lincoln Park Transaction

On September 28, 2017, we entered into a purchase agreement (the "2017 Purchase Agreement") and a registration rights agreement (the "Registration Rights Agreement") with Lincoln Park Capital Fund, LLC ("Lincoln Park"). Pursuant to the terms of the 2017 Purchase Agreement, Lincoln Park has agreed to purchase from us up to $15,000,000 of its common stock (subject to certain limitations) from time to time during the term of the 2017 Purchase Agreement. Pursuant to the terms of the Registration Rights Agreement, we filed with the SEC a registration statement to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the 2017 Purchase Agreement.

Pursuant to the terms of the 2017 Purchase Agreement, at the time we signed the 2017 Purchase Agreement and the Registration Rights Agreement, we issued 731 shares of common stock to Lincoln Park as consideration for its commitment to purchase shares of its common stock under the 2017 Purchase Agreement. The commitment shares were valued at $300,000, recorded as an addition to equity for the issuance of the common stock and treated as a reduction to equity as a cost of capital to be raised under the 2017 Purchase Agreement.

During the nine months ended September 30, 2018, we sold an aggregate of approximately 11,000 shares of common stock under the 2017 Purchase Agreement, for gross proceeds of approximately $2.3 million.

Under applicable rules of the NASDAQ Global Market, we could not issue or sell more than 19.99% of the shares of our common stock outstanding immediately prior to the execution of the 2017 Purchase Agreement (approximately 15,000 shares) to Lincoln Park under the 2017 Purchase Agreement without stockholder approval, unless the average price of all applicable sales of our common stock to Lincoln Park under the 2017 Purchase Agreement equals or exceeds a threshold amount. As we had issued approximately 15,000 shares to Lincoln Park, by December 31, 2018, under the 2017 Purchase Agreement at less than the threshold amount, we will not sell any additional shares under the 2017 Purchase Agreement without shareholder approval.

Future Liquidity Requirements

We expect to incur losses from operations for the near future. We expect to incur increasing research and development expenses, including expenses related to additional clinical trials. We will not have enough resources to meet our operating requirements for the one-year period from filing date of this report.

Our future capital requirements will depend on a number of factors, including the progress of our research and development of product candidates, the timing and outcome of regulatory approvals, the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims and other intellectual property rights, the status of competitive products, the availability of financing and our success in developing markets for our product candidates.

We will need to obtain additional capital in order to fund future research and development activities. Future financing may include the issuance of equity or debt securities, obtaining credit facilities, or other financing mechanisms. Even if we are able to raise the funds required, it is possible that we could incur unexpected costs and expenses, fail to collect significant amounts owed to us, or experience unexpected cash requirements that would force us to seek alternative financing. Furthermore, if we issue additional equity or debt securities, shareholders may experience additional dilution or the new equity securities may have rights, preferences or privileges senior to those of existing holders of our common stock.

If additional financing is not available or is not available on acceptable terms, we may be required to delay, reduce the scope of or eliminate our research and development programs, reduce our commercialization efforts or obtain funds through arrangements with collaborative partners or others that may require us to relinquish rights to certain product candidates that we might otherwise seek to develop or commercialize independently.

Stock Compensation

Stock Options

On June 8, 2018, our stockholders approved the Tonix Pharmaceuticals Holding Corp. 2018 Stock Incentive Plan (the "2018 Plan"). The 2018 Plan provided for the issuance of up to 13,200 shares of common stock. With the adoption of the 2019 Plan (as defined below), no further grants may be made under the 2018 Plan.

On May 3, 2019, our stockholders approved the Tonix Pharmaceuticals Holding Corp. 2019 Stock Incentive Plan (the "2019 Plan", and together with the 2018 Plan, the "Plans").

Under the terms of the 2019 Plan, we may issue (1) stock options (incentive and nonstatutory), (2) restricted stock, (3) SARs, (4) RSUs, (5) other stock-based awards, and (6) cash-based awards. The 2018 Plan provides for the issuance of up to 140,000 shares of common stock, which amount will be increased to the extent that awards granted under the 2019 Plan and the Plans are forfeited, expire or are settled for cash (except as otherwise provided in the 2019 Plan). The Board of Directors determines the exercise price, vesting and expiration period of the grants under the 2019 Plan. However, the exercise price of an incentive stock option may not be less than 110% of fair value of the common stock at the date of the grant for a 10% or more shareholder and 100% of fair value for a grantee who is not a 10% shareholder. The fair value of the common stock is determined based on quoted market price or in absence of such quoted market price, by the Board of Directors in good faith. Additionally, the expiration period of grants under the 2019 Plan may not more than ten years. As of September 30, 2019, 55,825 shares were available for future grants under the 2019 Plan.

The weighted average fair value of options granted during the nine months ended September 30, 2019 was $16.54 per share. The weighted average fair value of options granted during the three and nine months ended September 30, 2018 was $82.64 per share and $277.77 per share, respectively.

We measure the fair value of stock options on the date of grant, based on the Black Scholes option pricing model using certain assumptions discussed in the following paragraph, and the closing market price of our common stock on the date of the grant. For employees and directors, the fair value of the award is measured on the grant date and for non-employees, the fair value of the award is generally re-measured on vesting dates and interim financial reporting dates until the service period is complete. Most stock options granted pursuant to the Plans typically vest 1/3rd 12 months from the date of grant and 1/36th each month thereafter for 24 months and expire ten years from the date of grant. In addition, we issue options to directors which vest over a one-year period. In addition, we also issue performance-based options to executive officers, which options vest when the target parameters are met, subject to a one year minimum service period prior to vesting. Stock-based compensation expense related to awards is amortized over the applicable vesting period using the straight-line method.

Stock-based compensation expense relating to options granted of $0.4 million and $1.1 million was recognized for the three and nine-month periods ended September 30, 2019, respectively, and $0.4 million and $1.2 million was recognized for the three and nine-month periods ended September 30, 2018, respectively.

As of September 30, 2019, we had approximately $2.1 million of total unrecognized compensation cost related to non-vested awards granted under the Plans, which we expect to recognize over a weighted average period of 1.85 years.

Employee Stock Purchase Plan

On May 3, 2019, our stockholders approved the Tonix Pharmaceuticals Holdings Corp. 2019 Employee Stock Purchase Plan (the "2019 ESPP"). As a result of adoption of the 2019 ESPP by the stockholders, no further grants may be made under the Tonix Pharmaceuticals Holdings Corp. 2018 Employee Stock Purchase Plan ("2018 ESPP").

The 2019 ESPP allows eligible employees to purchase up to an aggregate of 15,000 shares of our common stock. Under the 2019 ESPP, on the first day of each offering period, each eligible employee for that offering period has the option to enroll for that offering period, which allows the eligible employees to purchase shares of our common stock at the end of the offering period. Each offering period under the 2019 ESPP is for six months, which can be modified from time-to-time. Subject to limitations, each participant will be permitted to purchase a number of shares determined by dividing the employee's accumulated payroll deductions for the offering period by the applicable purchase price, which is equal to 85 percent of the fair market value of our common stock at the beginning or end of each offering period, whichever is less. A participant must designate in his or her enrollment package the percentage (if any) of compensation to be deducted during that offering period for the purchase of stock under the 2019 ESPP, subject to the statutory limit under the Code. As of September 30, 2019, 12,619 shares were available for future grants under the 2019 ESPP.

The 2019 ESPP and 2018 ESPP are considered compensatory plans with the related compensation cost written off over the six-month offering period. The compensation expense related to the 2019 ESPP and 2018 ESPP for the nine months ended September 30, 2019 and 2018 was $28,000 and $32,000, respectively. As of December 31, 2018, approximately $38,000 of employee payroll deductions, which have been withheld since July 1, 2018, the commencement of the offering period ending December 31, 2018, are included in accrued expenses in the accompanying balance sheet. In January 2019, 177 shares that were purchased as of December 31, 2018, were issued under the 2018 ESPP, and approximately $3,000 of employee payroll deductions accumulated at December 31, 2018, related to acquiring such shares, was transferred from accrued expenses to additional paid in capital. The remaining $35,000 was returned to the employees. In August 2019, 2,381 shares that were purchased as of June 30, 2019, were issued under the 2019 ESPP, and approximately $29,000 of employee payroll deductions accumulated at June 30, 2019, related to acquiring such shares, was transferred from accrued expenses to additional paid in capital. The remaining $16,000 was returned to the employees. As of September 30, 2019, approximately $9,000 of employee payroll deductions, which have been withheld since July 1, 2019, the commencement of the offering period ending December 31, 2019, are included in accrued expenses in the accompanying balance sheet.

Restricted Stock Units

In May 2017, a total of 57 restricted stock units ("RSUs") vested that were granted to our non-employee directors for board services in 2016, in lieu of cash, with a one-year vesting from the grant date and a fair value of $229 at the date of grant. 49 shares of we's common stock were issued upon the vesting of such RSU's during the year ended December 31, 2017. The remaining 8 shares of common stock were issued during the three months ended March 31, 2018.

During the nine months ended September 30, 2019 and 2018, no stock-based compensation expense related to RSU grants was expensed.

Commitments

Research and development contracts

We have entered into contracts with various contract research organizations with outstanding commitments aggregating approximately $7.2 million at September 30, 2019 for future work to be performed.

Operating leases

As of September 30, 2019, future minimum lease payments are as follows (in thousands):

Year Ending December 31,		
2019	$	113
2020		358
2021		6
	$	477

Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities and expenses. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and on assumptions that 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.

We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our consolidated financial statements.

Leases. We determine if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use ("ROU") assets, other current liabilities and operating lease liabilities in our consolidated balance sheets. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent its obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As our leases do not provide an implicit rate, we use an incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. This is the rate we would have to pay if borrowing on a collateralized basis over a similar term to each lease. The operating lease ROU asset also includes any lease payments made and excludes lease incentives. We lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term.

Research and Development. We outsource our research and development efforts and expense the related costs as incurred, including the cost of manufacturing product for testing, licensing fees and costs associated with planning and conducting clinical trials. The value ascribed to patents and other intellectual property acquired was expensed as research and development costs, as it related to particular research and development projects and had no alternative future uses.

We estimate our accrued expenses. Our clinical trial accrual process is designed to account for expenses resulting from our obligations under contracts with vendors, consultants and clinical research organizations and clinical site agreements in connection with conducting clinical trials. The financial terms of these contracts are subject to negotiations, which vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided to us under such contracts. We account for trial expenses according to the progress of the trial as measured by participant progression and the timing of various aspects of the trial. We determine accrual estimates that take into account discussions with applicable personnel and outside service providers as to the progress or state of completion of trials, or the services completed. During the course of a clinical trial, we adjust our clinical expense recognition if actual results differ from our estimates. We make estimates of our accrued expenses as of each balance sheet date based on the facts and circumstances known to us at that time. Our clinical trial accruals and prepaid assets are dependent upon the timely and accurate reporting of contract research organizations and other third-party vendors.

Stock-Based Compensation. All stock-based payments to employees and to nonemployee directors for their services as directors consisted of grants of restricted stock and stock options, which are measured at fair value on the grant date and recognized in the condensed consolidated statements of operations as compensation expense over the relevant vesting period. Restricted stock payments to nonemployees are recognized as an expense over the period of performance. Such payments are measured at fair value at the earlier of the date a performance commitment is reached or the date performance is completed. In addition, for awards that vest immediately and are nonforfeitable, the measurement date is the date the award is issued.

Recent Accounting Pronouncements

In February 2016, the FASB established ASC Topic 842, Leases (Topic 842), by issuing ASU No. 2016-02, which requires lessees to recognize leases on-balance sheet and disclose key information about leasing arrangements. The new standard establishes a right-of-use (ROU) model that requires a lessee to recognize a ROU asset and lease liability on the balance sheet. Leases will be classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the statement of operations. We adopted the new standard on January 1, 2019.

The new standard provides a number of optional practical expedients in transition. We have elected the ‘package of practical expedients’, which permit us not to reassess under the new standard its prior conclusions about lease identification, lease classification and initial direct costs. We did not elect the use-of-hindsight or the practical expedient pertaining to land easements; the latter is not applicable to us.

The new standard has had a material effect on our financial statements. The most significant effects of adoption relate to (1) the recognition of new ROU assets and lease liabilities on its balance sheet for real estate operating leases; and (2) providing significant new disclosures about its leasing activities.

The new standard also provides practical expedients for an entity’s ongoing accounting. We elected the short-term lease recognition exemption for all leases that qualify. This means, for those leases that qualify, we will not recognize ROU assets or lease liabilities, and this includes not recognizing ROU assets or lease liabilities for existing short-term leases of those assets in transition. Beginning in 2019, we expect changes to our disclosed lease recognition policies and practices, as well as to other related financial statement disclosures due to the adoption of this standard. The standard did not have a material impact on our results of operations or liquidity.

Upon adoption, we recognized operating lease liabilities of approximately $0.3 million based on the present value of the remaining minimum rental payments under current leasing standards for existing operating leases. We recognized corresponding ROU assets of approximately $0.3 million.

Off-Balance Sheet Arrangements

Other than contractual obligations incurred in the normal course of business, we do not have any off-balance sheet financing arrangements or liabilities, guarantee contracts, retain or contingent interests in transferred assets or any obligation arising out of a material variable interest in an unconsolidated entity.

ITEM 3 – QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not required under Regulation S-K for "smaller reporting companies."

ITEM 4 – CONTROLS AND PROCEDURES

Evaluation of disclosure controls and procedures.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15 under the Securities Exchange Act of 1934 as of the end of the period covered by this Quarterly Report on Form 10-Q. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Based on our evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of September 30, 2019, our disclosure controls and procedures are designed at a reasonable assurance level and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Changes in internal control over financial reporting.

There were no changes in our internal control over financial reporting that occurred during the quarter ended September 30, 2019 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

We are currently not a party to any material legal proceedings or claims.

Item 1A. Risk Factors

Not required under Regulation S-K for "smaller reporting companies."

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

On August 20, 2019, we issued 35,529 commitment shares to Lincoln Park Capital Fund, LLC as a fee for its commitment to purchase shares of our common stock pursuant to that certain Purchase Agreement dated August 20, 2019.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

None.

Item 5. Other Information

None.

Item 6. Exhibits

10.01	Asset Purchase Agreement, dated August 19, 2019, between Tonix Pharmaceuticals Holding Corp. and TRImaran Pharma, Inc. †
10.02	First Amended and Restated Exclusive License Agreement, dated August 19, 2019, between Tonix Pharmaceuticals Holding Corp. and Wayne State University.†
10.03	Exclusive License Agreement, dated September 16, 2019, between Tonix Pharmaceuticals Holding Corp. and The Trustees of Columbia University in the City of New York.†
31.01	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.02	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.01	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101 INS	XBRL Instance Document
101 SCH	XBRL Taxonomy Extension Schema Document
101 CAL	XBRL Taxonomy Calculation Linkbase Document
101 LAB	XBRL Taxonomy Labels Linkbase Document
101 PRE	XBRL Taxonomy Presentation Linkbase Document
101 DEF	XBRL Taxonomy Extension Definition Linkbase Document

† Certain portions of this exhibit, that are not material and would likely cause competitive harm to the registrant if publicly disclosed, have been redacted pursuant to Item 601(b)(10) of Regulation S-K.

SIGNATURES

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

TONIX PHARMACEUTICALS HOLDING CORP.

Date: November 8, 2019

By: /s/ SETH LEDERMAN
Seth Lederman
Chief Executive Officer (Principal Executive Officer)

Date: November 8, 2019

By: /s/ BRADLEY SAENGER
Bradley Saenger
Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

Exhibit 10.01

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED. THE OMISSIONS HAVE BEEN INDICATED BY "[***]."

EXECUTION COPY

ASSET PURCHASE AGREEMENT

This **ASSET PURCHASE AGREEMENT** ("**Agreement**"), dated August 19, 2019 (the "**Effective Date**"), is entered into by and among TRImaran Pharma, Inc., a Delaware corporation ("**Seller**"), Tonix Pharmaceuticals, Inc., a Delaware corporation ("**Buyer**") and, solely for the purposes of Section 3.1(b), Section 6.1, Section 6.2 and **Exhibit F**, each of the Seller Shareholders (as defined below).

Background

WHEREAS, Seller is the sole owner of the Purchased Assets (as defined below); and

WHEREAS, Seller desires to sell, transfer and assign to Buyer, and Buyer desires to acquire and assume from Seller, all of the Purchased Assets and Assumed Liabilities, all as more specifically provided herein;

NOW, **THEREFORE**, in consideration of the foregoing and the representations, warranties, covenants and agreements contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, hereby agree as follows:

ARTICLE 1
DEFINITIONS

Section 1.1 Definitions

All terms not defined below are as defined elsewhere in this Agreement.

"**Affiliate**" means any Person that directly or indirectly Controls, is Controlled by or is under common Control with another Person. A Person will be deemed to "**Control**" another Person if it has the power to direct or cause the direction of the other Person, whether through ownership of securities, by contract or otherwise.

"**Applicable Laws**" means, in respect of any Person, property, transaction, event or course of conduct, all applicable laws, statutes, regulations, rules, ordinances, regulatory policies, codes, guidelines, official directives, orders, rulings, judgments and decrees of any Governmental Authority.

"**Assumed Liabilities**" means (a) any Liabilities of the Seller arising after the Effective Date under the Transferred Contracts and (b) certain accounts payable of Seller identified on **Exhibit A** attached hereto (up to a maximum, aggregate amount of $68,500), to the extent evidenced by invoices from the applicable payee or other documentation reasonably acceptable to Buyer.

"**Business Day**" means any day other than a Saturday, Sunday or other day on which banks in New York, New York, USA, are permitted or required to close by law or regulation.

"**Compounds**" means any and all Pyran-based compounds under development by Seller, including, but not limited to, those certain Pyran-based compounds described on **Exhibit B**.

"**Encumbrance**" means any mortgage, charge, lien, security interest, easement, right of way, pledge or encumbrance of any nature whatsoever.

"**Excluded Liabilities**" means any and all Liabilities of Seller that are not expressly included in the definition of Assumed Liabilities, including, but not limited to:

(a) any and all Liabilities arising prior to or on the Effective Date under the Transferred Contracts;

(b) any and all Liabilities of Seller with respect to taxes;

(c) any and all Liabilities arising out of or otherwise relating to the employment or service of any person by Seller;

(e) any and all Liabilities of Seller under this Agreement or incurred in connection with the negotiation or consummation of this Agreement; and

(f) any and all Liabilities of the Seller arising out of events, transactions, facts, acts or omissions which occurred prior to or on the Effective Date.

"**FDA**" means the United States Food and Drug Administration or any successor agency performing similar functions.

"**Governmental Authority**" means any court, governmental agency, department or commission or other governmental authority or instrumentality, including, but not limited to, the FDA.

"**Intellectual Property Rights**" means all right, title and interest of Seller (including, but not limited to, rights held under any other Transferred Contract) in and to (a) the Patent Rights, (b) the Trademarks, (c) the Know-How, (d) the Technical Information and (e) any copyrights and other intellectual property related to any of the foregoing, the Technology and/or any of the Compounds.

"**Know-How**" means any know-how, show-how, technical and non-technical information, trade secrets, formulae, techniques, sketches, drawings, materials, models, inventions, designs, specifications, processes, apparatus, equipment, databases, research, experimental work, development, pharmacology and clinical data, software programs and applications, software source documents, third-party licenses, and any other type of intellectual property right (other than the Patent Rights), in each case related to the Technology and/or any of the Compounds.

"**Liabilities**" means any and all debts, liabilities and obligations, whether accrued or fixed, absolute or contingent, matured or unmatured, or determined or determinable, including those arising under any law, action or governmental order and those arising under any contract, agreement, arrangement, commitment or undertaking, or otherwise.

"**Losses**" means, collectively, any and all damages, losses, taxes, Liabilities, claims judgments, penalties, costs and expenses (including reasonable legal fees and expenses).

"**Net Sales**" means the amount invoiced by Buyer or any of its Affiliates (each, a "**Selling Party**") for sales of a given Product to a Third Party purchaser, less any and all deductions actually taken by a Selling Party with respect to Product sales in accordance with U.S. generally accepted accounting principles as in effect at the relevant time or for the relevant period, applied on a consistent basis during the period involved, including, but not limited to, deductions for:

(a) trade, quantity and cash discounts, coupons, rebates and other price reductions for the Product;

(b) credits and allowances for rejection or return of Products previously sold, price protection and shelf stock adjustments; reprocurement charges and other similar charges and inventory management fees;

(c) amounts written off as bad debt; and

(d) rebates and chargebacks, including, but not limited to, any payments required by law to be made under Medicaid, Medicare or other government medical assistance programs.

Notwithstanding anything to the contrary, the transfer of a Product shall not be considered a sale of a Product under this Agreement to the extent such transfer (i) is in connection with the research, development or testing of a Product or (ii) is for sample purposes.

For the avoidance of doubt, the transfer of Product by a Selling Party or one of its Affiliates to another Affiliate of such Selling Party for resale shall not be considered a sale; in such cases, Net Sales shall be determined based on the amount invoiced or otherwise billed by such Affiliate to an independent Third Party, less the Net Sales Deductions allowed under this Section.

"**Parties**" means collectively the Seller and Buyer.

"**Party**" means either the Seller or Buyer.

"Patent Rights" means (a) all patents and patent applications licensed to Seller pursuant to the WSU License (including, but not limited to, the patents and patent applications listed on **Exhibit C**) and (b) any and all other patents and patent applications owned by or licensed to Seller.

"**Person**" means any individual, corporation, partnership, limited liability company, joint venture, trust, business association, organization, Governmental Authority or other entity.

"**Product**" means any pharmaceutical product that incorporates any of the Compounds.

"**Purchased Assets**" means:

(a) the Intellectual Property Rights;

(b) the Transferred Contracts;

(c) any inventories of Compound or other supplies, equipment and other tangible assets used in connection with the development of the Compounds;

(d) all authorizations, consents, approvals, licenses, orders, permits and exemptions of, and filings or registrations with, any Governmental Authority, to the extent transferable by the Seller;

(e) all books, records, files and papers relating to, or necessary to the conduct of, the Seller's Business;

(f) all rights and claims of the Seller, whether mature, contingent or otherwise, against any Person, whether in tort, contract or otherwise, including, without limitation, causes of action, unliquidated rights and claims under or pursuant to all warranties, representations and guarantees made by manufacturers, suppliers or vendors, claims for refunds, rights of off-set and credits of all kinds and all other general intangibles; provided, however, that such rights and claims shall not include any rights and claims of Seller under this Agreement;

(g) the benefit of coverage provided by all current and expired insurance policies of Seller to the extent they relate to any of the Purchased Assets or Assumed Liabilities; and

(h) all other assets used or useful in the development of the Compounds, whether or not reflected on the books and records of the Seller.

"**Seller Shareholders**" means each of the following individuals: Walter Piskorski, Frank Bymaster, Timothy Hsu and Aloke Dutta, Ph.D..

"**Technical Information**" means any and all data and other information that exists as of the Effective Date and relates to the Technology and/or any of the Compounds or is otherwise necessary or useful for the further development or commercialization of any of the Compounds or any Products, including, but not limited to, any investigational new drug applications, correspondence with FDA or other governmental authorities, clinical data, pre-clinical data, adverse event data, pharmaceutical development reports, formulations and any and all other medical and technical information.

"**Technology**" means the inventions described in the Patent Rights and any and all other technology under development by Seller related to the Compounds and/or any Products.

"**Third Party**" means any legal person, entity or organization other than Buyer, Seller or an Affiliate of either Party.

"**Tonix Stock**" means the common stock of Tonix Pharmaceuticals Holding Corp., which is the parent company of Buyer.

"**Trademarks**" means all rights with respect to (a) the "TRImaran Pharma" trademark, trade name and related logo, (b) the trimaranpharmainc.com domain name and (c) any and all other trademarks, service marks, service names, trade names, internet domain names, brand marks, brands, trade dress, package designs, product inserts, labels, logos and associated artwork owned by Seller, including any and all applications or registrations for any of the foregoing, and extensions, renewals, continuations or re-issues thereof, or amendments or modifications thereto.

"**Trading Day**" means a day on which Tonix Stock trades on the NASDAQ exchange.

"**Transferred Contracts**" means (a) the WSU License and (b) the contracts listed on **Exhibit D**.

"**WSU License**" means that certain Exclusive License Agreement dated January 11, 2016, by and between Seller and Wayne State University.

Section 1.2 **Interpretation**. When used in this Agreement the words "include", "includes" and "including" will be deemed to be followed by the words "without limitation." Any terms defined in the singular will have a comparable meaning when used in the plural, and vice-versa.

Section 1.3 **Currency**. All currency amounts referred to in this Agreement are in United States Dollars, unless otherwise specified.

ARTICLE 2
PURCHASE AND SALE OF ASSETS

Section 2.1 **Purchase and Sale**. Seller hereby sells, assigns, transfers, conveys and delivers to Buyer, and Buyer hereby purchases, acquires and accepts, all right, title and interest in and to the Purchased Assets, free and clear of all Encumbrances.

Section 2.2 **Assumption of Assumed Liabilities; Excluded Liabilities**. Buyer hereby assumes only the Assumed Liabilities. Buyer will not assume or be liable for any of the Excluded Liabilities. Seller shall pay, discharge and satisfy, as they become due, all Excluded Liabilities.

Section 2.3 **Deliveries**. Within three (3) business days after the Effective Date, Seller will deliver to Buyer (a) any tangible materials included in the Purchased Assets and (b) copies (in the format in which they are maintained by Seller) of all books, records, data, contracts, files and other information included in the Purchased Assets.

Section 2.4 Amended and Restated WSU License. Prior to the Effective Date, Buyer and WSU have entered into an Amended and Restated Exclusive License Agreement, which becomes effective as of the Effective Date and, as of the Effective Date, replaces and supersedes the WSU License in its entirety.

ARTICLE 3
FINANCIAL TERMS

Section 3.1 **Purchase Price**. As consideration for the Purchased Assets, in addition to Buyer's assumption of the Assumed Liabilities, on the twenty-first (21st) Trading Day after occurrence of a milestone set forth in the below table (each, a "**Milestone**"), Buyer will, at Buyer's option, either (a) cause to be issued a number of restricted shares of Tonix Stock determined by dividing (i) the "Consideration Amount" set forth in the below table for such Milestone by (ii) the volume-weighted average price of Tonix Stock on the NASDAQ exchange over the preceding twenty (20) Trading Days (the "**Equity Consideration**") or (b) make a cash payment equal to the "Consideration Amount" set forth in the below table for such Milestone ("**Cash Consideration**"). For the avoidance of doubt, the decision as to whether to provide Equity Consideration or Cash Consideration (collectively, "**Consideration**") for a given Milestone will be made by Buyer in its sole discretion on a Milestone-by-Milestone basis.

Milestone	Consideration Amount
Effective Date	$100,000
[***]	$[***]

Milestone	Consideration Amount
[***]	$[***]
[***]	$[***]
[***]	$[***]
[***]	$[***]
[***]	$[***]
[***]	$[***]
[***]	$[***]

(a) Buyer will pay a portion of any Cash Consideration (or cause a portion of any Equity Consideration to be issued) to each of the Seller Shareholders in the proportions listed on **Exhibit E**. For the avoidance of doubt: (a) any Consideration for a given Milestone will be issued one-time only, even if such Milestone is achieved more than once, (b) each amount set forth in the above table for each Milestone is the aggregate Consideration to be paid or issued by Buyer for such Milestone and (c) Buyer will not pay or issue any Consideration directly to Seller.

(b) Any shares of Tonix Stock to be issued pursuant to this Agreement have not been registered under the Securities Act of 1933, as amended, or state securities laws and may not be offered or sold in the United States absent registration with the Securities and Exchange Commission or an applicable exemption from such registration requirements. Any shares of Tonix Stock to be issued pursuant to this Agreement are subject to a lock-up period ending on the date that is six (6) months after the date on which such shares are issued. Such lock-up period is binding on transferees of such shares. Concurrently with the execution of this Agreement, and as a condition to the issuance of any Equity Consideration, Seller shall cause each Seller Shareholder to execute a Lock-Up Agreement in the form attached hereto as **Exhibit F**.

Section 3.2 **Taxes**. Each Party agrees to report (and to cause its Affiliates to report) the transactions contemplated by this Agreement in a manner consistent with applicable law and with the terms of this Agreement, and agrees not to take any position inconsistent therewith on any tax return, in any tax refund claim, in any litigation or otherwise. [***] Buyer shall have no obligation, however, for any capital gains or other income taxes owed by Seller as a result of the transaction.

ARTICLE 4
REPRESENTATIONS AND WARRANTIES OF SELLER

Seller hereby represents and warrants to Buyer as follows:

Section 4.1 **Organization; Authority; Execution and Delivery**. Seller is a corporation, duly organized, validity existing and in good standing under the laws of the State of Delaware. Seller has the requisite corporate power and authority to enter into this Agreement and to consummate the transaction contemplated hereby. The execution and delivery of this Agreement by Seller and the consummation of the transactions contemplated hereby have been validly authorized. This Agreement has been executed and delivered by Seller and, assuming the due authorization, execution and delivery of this Agreement by Buyer, will constitute the legal and binding obligation of Seller, enforceable against it in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent transfer and other similar laws affecting creditors' rights generally from time to time in effect and to general principles of equity (including concepts of materiality, reasonableness, good faith and fair dealing) regardless of whether considered in a proceeding in equity or at law.

Section 4.2 **Consents; No Violation, Etc**. The execution and delivery of this Agreement do not, and the consummation of the transactions contemplated hereby (including the transfer of the Purchased Assets to Buyer) and the compliance with the terms hereof will not: (i) violate any Applicable Law applicable to Seller, (ii) conflict with any provision of the certificate of incorporation or by-laws (or similar organizational document) of Seller, (iii) conflict with or violate any Transferred Contract or any other contract to which Seller is a party or by which it is otherwise bound or (iv) require Seller to obtain any approval, authorization, consent, license, exemption, filing or registration from or with any court, arbitrator, Governmental Authority or pursuant to any contract by which Seller is bound or that otherwise relates to any of the Purchased Assets or the Product.

Section 4.3 **Litigation**. There are no claims, suits, actions or other proceedings pending or threatened in writing against Seller at law or in equity before or by any Governmental Authority, domestic or foreign, involving or related to the Purchased Assets or which may in any way adversely affect the performance of Seller's obligations under this Agreement or the transactions contemplated hereby.

Section 4.4 **Title to Purchased Assets**. Immediately prior to the transfer of the Purchased Assets to Buyer, Seller is the sole and exclusive owner of, has good and valid title to all of the Purchased Assets, free and clear of all Encumbrances, and has the right to convey the same to Buyer without conflicting with the terms of any contract to which Seller or any of its Affiliates is bound. No Third Party holds any license, option, reversionary interest or other right with respect to any of the Purchased Assets or the Product.

Section 4.5 **No Undisclosed Liabilities.** Seller does not have any Liabilities, except for immaterial Liabilities incurred since December 31, 2018, in the ordinary course of the business of Seller that do not exceed [***] (none of which results from, arises out of or relates to any breach or violation of, or default under, any Transferred Contract or Applicable Law).

Section 4.6 **Transferred Contracts.** Seller has delivered to Buyer complete copies of each of the Transferred Contracts, including any and all amendments thereto and (i) each Transferred Contract is valid, binding and enforceable on Seller (subject to applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent transfer and other similar laws affecting creditors' rights generally from time to time in effect and to general principles of equity regardless of whether considered in a proceeding in equity or at law) and is in full force and effect, (ii) neither Seller (nor to Seller's knowledge, any other party to a Transferred Contract) is in material breach or violation of, or default under, any Transferred Contract and (iii) no consent of any Person is required in connection with the assignment of the Transferred Contracts to Buyer pursuant to this Agreement.

Section 4.7 **Compliance with Applicable Law.** The research and development of the Compounds and the Technology has at all times been conducted in compliance with all applicable Government Rules.

Section 4.8 **Product Intellectual Property**. There are no Patent Rights, other than the Patent Rights that are licensed to Seller pursuant to the WSU License. All of the Intellectual Property Rights are valid, enforceable and in full force and effect. To Seller's knowledge, the use of the Compounds and the Technology in connection with the development, manufacture, use, sale and commercialization of any Products does not and will not infringe, misappropriate or violate any patent, copyright, trade secret or other intellectual property or contractual right of any Third Party. Seller has not received any charge, complaint, claim, demand, or notice alleging any such infringement, misappropriation, or violation in the Territory (including any claim that Seller must license or refrain from using any intellectual property rights relating to the Compound or any Technology).

Section 4.9 **No Other Product-Related Assets.** The Purchased Assets constitute substantially all of the assets of Seller. Except for the Purchased Assets, neither Seller nor any of its Affiliates nor any Selling Shareholder holds any ownership, license, option, right of reference or other right or interest in or to any patent, copyright, trade secret, trademark, data, know-how, contractual right or other tangible or intangible asset that is necessary or useful for the development or commercialization of the Technology or any Compound or Product.

Section 4.10 **Taxes.** Seller does not have any Liability with respect to any taxes for which Buyer would reasonably be expected to become liable or that would reasonably be expected to adversely affect Buyer's right to use and enjoy any of the Purchased Assets, free and clear of any Encumbrances, including liens for Taxes.

Section 4.11 **No Brokers.** Neither Seller nor any of its Affiliates has any liability or obligation to pay any fees or commissions to any broker, finder or other agent with respect to this Agreement for which Buyer could become liable or obligated or which could result in an Encumbrance being filed against any of the Purchased Assets.

Section 4.12 **No Other Representations or Warranties.** Except for the representations and warranties of Seller expressly set forth in this Article 4 and in **Exhibit E**, neither Seller nor any other Person makes any other express or implied representation or warranty on behalf of Seller.

ARTICLE 5
REPRESENTATIONS AND WARRANTIES OF BUYER

Buyer hereby represents and warrants to Seller as follows:

Section 5.1 **Organization; Authority; Execution and Delivery**. Buyer is a duly organized, validly existing and in good standing under the laws of the State of Delaware. Buyer has the company power and authority to enter into this Agreement and to consummate the transactions contemplated hereby. The execution and delivery of this Agreement by Buyer and the consummation of the transactions contemplated hereby have been authorized. This Agreement has been executed and delivered by Buyer and, assuming the due authorization, execution and delivery of this Agreement by Seller, constitutes the legal and binding obligation of Buyer, enforceable against Buyer in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent transfer and other similar laws affecting creditors' rights generally from time to time in effect and to general principles of equity (including concepts of materiality, reasonableness, good faith and fair dealing regardless) of whether considered in a proceeding in equity or at law.

Section 5.2 **Consents; No Violations, Etc**. The execution and delivery of this Agreement do not, and the consummation of the transactions contemplated hereby (including the transfer of the Purchased Assets to Buyer) and the compliance with the terms hereof will not: (i) violate any Applicable Law applicable to Buyer, (ii) conflict with any provision of the operating agreement (or similar organizational document) of Buyer, (iii) conflict with or violate any contract to which Buyer or any of its Affiliates is a party or by which it is otherwise bound or (iv) require Buyer or any of its Affiliates to obtain any approval, authorization, consent, license, exemption, filing or registration from or with any court, arbitrator, Governmental Authority or pursuant to any contract by which Buyer or any of its Affiliates is bound.

Section 5.3 **No Brokers.** Neither Buyer nor any of its Affiliates has any liability or obligation to pay any fees or commissions to any broker, finder or other agent with respect to this Agreement for which Seller could become liable or obligated.

Section 5.4 **No Other Representations or Warranties.** Except for the representations and warranties of Buyer expressly set forth in this Article 5, neither Buyer nor any other Person makes any other express or implied representation or warranty on behalf of Buyer.

ARTICLE 6
OTHER AGREEMENTS

Section 6.1 **Restrictive Covenants.** As a material inducement for Buyer to enter into this Agreement, Seller and each Seller Shareholder agrees to the covenants and restrictions set forth below in this Section 6.1, and Seller and each Seller Shareholder hereby acknowledges and agrees that Buyer would not execute and deliver this Agreement and consummate the transactions contemplated hereby in the absence of such covenants by Seller and the Seller Shareholders.

(a) Seller and each Seller Shareholder: (i) shall not, directly or indirectly, disclose or use or otherwise exploit for their own benefit or for the benefit of any other Person, any of the Know-How, Technical Information or other non-public information included in the Purchased Assets (collectively, "**Confidential Information**") and (ii) shall safeguard any Confidential Information in their possession or control by all reasonable measures. Seller and each Seller Shareholder acknowledges and agrees that any and all Confidential Information will be, as of the Effective Date, the exclusive property of Buyer.

(b) For a period of three (3) years from the Effective Date (the "**Restricted Period**"), Seller and each Seller Shareholder shall not (whether directly or through any Affiliate, licensee or other Third Party) engage the development or commercialization of any therapeutic containing any pyran-based drug compound for the treatment of post-traumatic stress disorder, attention deficit hyperactivity disorder or major depressive disorder (the "**Restricted Field**") (provided, however, that nothing in this Section 6.1(b) shall restrict Aloke Dutta from conducting research activities for WSU or any other academic institution).

(c) Each Seller Shareholder further agrees that, during the Restricted Period, he will not directly or indirectly, serve as director, consult with, provide services to, own any interest in or otherwise provide finances to any Person that is engaged in the Restricted Field (other than ownership of stock or other securities in a publicly traded entity).

(d) During the Restricted Period, Seller and each Seller Shareholder shall not solicit for employment or other engagement any employee or agent of Buyer or any of its Affiliates.

Section 6.2 **Notice to Buyer of CNS Candidates.** In the event that during the Restricted Period, Seller or any Seller Shareholder engages in the research or development of any potential therapeutic compound for the treatment of any central nervous system disorder in humans (a "**CNS Candidate**"), Seller or such Seller Shareholder (as applicable) shall promptly notify Buyer of such CNS Candidate and provide Buyer a reasonable opportunity to make an offer to acquire or license rights with respect to such CNS Candidate.

Section 6.3 **Seller's Name.** Within ten (10) Business Days after the Effective Date, Seller shall (a) amend its Certificate of Incorporation to a name not containing the word "TRImaran" or any term confusingly similar thereto and (b) abandon any and all fictitious business name filing(s) for any name that includes "TRImaran" or any term confusingly similar thereto.

Section 6.4 **Bulk Sales.** Seller shall use best efforts to comply with the provisions of any bulk sales, bulk transfer or similar Applicable Laws of any jurisdiction that may otherwise be applicable with respect to the sale of any or all of the Purchased Assets to Buyer; it being understood that any Liabilities arising out of the failure of Seller to comply with the requirements and provisions of any bulk sales, bulk transfer or similar Applicable Laws of any jurisdiction shall be treated as Excluded Liabilities.

Section 6.5 **Further Assurances**. Each Party, upon the request of the other Party and without further consideration, will do, execute, acknowledge and deliver or cause to be done, executed, acknowledged or delivered all such further acts, deeds, documents, assignments, transfers, conveyances, powers of attorney and assurances as may be reasonably necessary to effect complete consummation of the transactions contemplated by this Agreement.

ARTICLE 7
INDEMNIFICATION; LIABILITY

Section 7.1 Indemnification by Seller. Seller hereby agrees to indemnify and defend Buyer and its Affiliates, and their respective officers, directors and employees (the "**Buyer Indemnified Parties**") against, and agrees to hold them harmless from, any Losses to the extent such Losses arise from or in connection with the following:

(a) any breach by Seller of any representation or warranty made by Seller under this Agreement;

(b) any breach by Seller of any of its covenants, agreements or obligations contained in this Agreement;

(c) any taxes of Seller; and

(d) any of the Excluded Liabilities.

Section 7.2 Indemnification by Buyer. Buyer hereby agrees to indemnify and defend Seller and its officers, directors and employees (the "**Seller Indemnified Parties**") against, and agrees to hold them harmless from, any Losses to the extent such Losses arise from or in connection with the following:

(a) any breach by Buyer of any representation or warranty made by Buyer under this Agreement;

(b) any breach by Buyer of any of its covenants, agreements or obligations contained in this Agreement; and

(c) any of the Assumed Liabilities.

Section 7.3 Certain Limitations. The aggregate amount of all Losses that may be recovered by the Buyer Indemnified Parties from Seller pursuant to all claims for indemnification for breaches of representations and/or warranties under Section 7.1(a) (other than with respect to (A) fraud and/or (B) Seller's breach of any of the representations or warranties in Section 4.1 ("Organization; Authority; Execution and Delivery"), Section 4.2 ("Consents; No Violation, Etc.") or Section 4.4 ("Title to Purchased Assets") (collectively, the "**Fundamental Representations**")), and the aggregate amount of all Losses that may be recovered by the Seller Indemnified Parties from Buyer pursuant to all claims for indemnification for breaches of representations and/or warranties under Section 7.2(a), shall not exceed, in each case, Four Million Dollars ($4,000,000.00) (the "**Cap**"). For the avoidance of doubt, the Cap shall not apply to either Party's indemnity obligations under Section 7.1(b), Section 7.1(c), Section 7.1(d), Section 7.2(b), or Section 7.2(c).

Section 7.4 Survival of Representations and Warranties. Except for the Fundamental Representations (which shall survive and remain in full force and effect at all times after the Effective Date), the representations and warranties set forth in Article 4 and Article 5 shall survive and remain in full force and effect until the date that is twenty-four (24) months after the Effective Date.

Section 7.5 Sole Remedy. Except in the event of fraud, the Parties acknowledge and agree that their sole and exclusive remedy with respect to any and all claims with respect to breaches of any representation or warranty stated in Article 4 or Article 5 shall be pursuant to the rights to indemnification set forth in this Article 7.

Section 7.6 Indemnity Procedures.

(a) In order for an indemnified party under this Article 7 (an "**Indemnified Party**") to be entitled to any indemnification provided for under this Agreement, the Indemnified Party will, within a reasonable period of time following the discovery of the matters giving rise to any Losses, notify its applicable insurer and the indemnifying party under this Article 7 (the "**Indemnifying Party**") in writing of its claim for indemnification for such Losses, specifying in reasonable detail the nature of the Losses and the amount of the liability estimated to accrue therefrom; provided, however, that failure to give notification will not affect the indemnification provided hereunder, except to the extent the Indemnifying Party will have been actually prejudiced as a result of the failure. Thereafter, the Indemnified Party will deliver to the Indemnifying Party, within a reasonable period of time after the Indemnified Party's receipt of such request, all information, records and documentation reasonably requested by the Indemnifying Party with respect to such Losses. The Indemnifying Party shall control all litigation reflecting to the indemnification. Without limiting the foregoing, the Indemnified Party shall control choice of counsel, staffing, and all decisions to be made with the litigation.

(b) If the indemnification sought pursuant hereto involves a claim made by a Third Party against the Indemnified Party (a "**Third Party Claim**"), the Indemnifying Party will be entitled to participate in the defense of such Third Party Claim and, if it so chooses, to assume the defense of such Third Party Claim with counsel selected by the Indemnifying Party. Should the Indemnifying Party so elect to assume the defense of a Third Party Claim, the Indemnifying Party will not be liable to the Indemnified Party for any legal expenses subsequently incurred by the Indemnified Party in connection with the defense thereof. If the Indemnifying Party assumes such defense, the Indemnifying Party will control such defense. The Indemnifying Party will be liable for the reasonable fees and expenses of counsel employed by the Indemnified Party for any period during which the Indemnifying Party has not assumed the defense thereof (other than during any period in which the Indemnified Party will have failed to give notice of the Third Party Claim as provided above). If the Indemnifying Party chooses to defend or prosecute a Third Party Claim, all of the parties hereto will cooperate in the defense or prosecution thereof. Such cooperation will include the retention and (upon the Indemnifying Party's request) the provision to the Indemnifying Party of records and information, which are reasonably relevant to such Third Party Claim, and making employees available on a mutually convenient basis to provide additional information and explanation of any material provided hereunder. If the indemnifying Party chooses to defend or prosecute any Third Party Claim, the Indemnifying Party will seek the approval of the Indemnified Party (not to be unreasonably withheld) to any settlement, compromise or discharge of such Third Party Claim the Indemnifying Party may recommend and which by its terms obligates the Indemnifying Party to pay the full amount of the liability in connection with such Third Party Claim. Whether or not the Indemnifying Party will have assumed the defense of a Third Party Claim, the Indemnified Party will not admit any liability with respect to, or settle, compromise or discharge, such Third Party Claim without the Indemnifying Party's prior written consent). The Indemnifying Party shall reimburse upon demand, all reasonable costs and expenses incurred by the Indemnified Party in cooperation with the defense or prosecution of the Third Party Claim.

Section 7.7 **Holdback.** Notwithstanding anything herein to the contrary, in addition to any other rights available to any Buyer Indemnified Party under this Agreement or otherwise: (a) Buyer, in its sole discretion, may forever retain all or such portion of the Consideration equal in value to the amount of any indemnification obligations owed by Seller pursuant to this Article 7, as and when the Buyer Indemnified Party incurs or suffers a Loss and (b) in the event that Buyer exercises its right to retain all or any portion of the Consideration, Seller shall remain liable for any unsatisfied indemnification obligations under this Article 7.

ARTICLE 8
GENERAL PROVISIONS

Section 8.1 **Expenses**. Except as otherwise specified in this Agreement, all costs and expenses, including fees and disbursements of counsel, financial advisors and accountants, incurred in connection with this Agreement and the transactions contemplated hereby will be paid by the Party incurring such costs and expenses.

Section 8.2 **Notices**. All notices and other communications required or permitted to be given or made pursuant to this Agreement shall be in writing signed by the sender and shall be deemed duly given: (a) on the date delivered, if personally delivered, (b) on the date sent by facsimile with automatic confirmation by the transmitting machine showing the proper number of pages were transmitted without error, (c) on the Business Day after being sent by Federal Express or another recognized overnight mail service which utilizes a written form of receipt for next day or next business day delivery, or (d) upon receipt after mailing, if mailed by United States postage-prepaid certified or registered mail, return receipt requested, in each case addressed to the applicable party at the address set forth below; provided that a Party may change its address for receiving notice by the proper giving of notice hereunder:

if to Buyer, to:

Tonix Pharmaceuticals, Inc.
509 Madison Avenue, Suite 306
New York, NY 10022
Attention: Seth Lederman, M.D.
Chief Executive Officer

with a copy to:

Lowenstein Sandler LLP
One Lowenstein Drive
Roseland, New Jersey 07068
Facsimile: (973) 597-2400
Attn: Michael J. Lerner, Esq.

if Seller, to:

TRImaran Pharma, Inc.
115 Hawthorne Village Rd.
Nashua, NH 03062
Attention: Walter Piskorski

with a copy to:

Frank Bymaster
8545 N. County Rd. 650 E
Brownsburg, IN 46112

Section 8.3 **Headings**. The table of contents and headings contained in this Agreement are for reference purposes only and will not affect in any way the meaning or interpretation of this Agreement.

Section 8.4 **Severability**. If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced under any law or public policy, all other terms and provisions of this Agreement will nevertheless remain in full force and effect so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner materially adverse to any Party. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the Parties will negotiate in good faith to modify this Agreement so as to effect the original intent of the Parties as closely as possible in an acceptable manner in order to ensure that the transactions contemplated hereby are consummated as originally contemplated to the greatest extent possible.

Section 8.5 **Counterparts**. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument. Signatures provided by facsimile transmission or in Adobe Portable Document Format (PDF) sent by electronic mail shall be deemed to be original signatures.

Section 8.6 **Entire Agreement; No Third Party Beneficiaries.** This Agreement constitutes the entire agreement and supersede all prior agreements and understandings both written and oral (including any letter of intent, memorandum of understanding electronic communicators, e-mail or term sheet), between the Parties with respect to the subject matter hereof. Except as specifically provided herein, this Agreements is not intended to confer upon any Person other than the Parties any rights or remedies hereunder.

Section 8.7 **Governing Law**. This Agreement and all matters arising directly or indirectly herefrom shall be governed by and construed and enforced in accordance with the laws of the State of New York applicable to agreements made and to be performed entirely in such state, without giving effect to the conflict of law principles thereof.

Section 8.8 **Jurisdiction; Venue, Service of Process**. Buyer and Seller each agrees to irrevocably submit to the sole and exclusive jurisdiction of the state and federal courts located in New York County, New York for any suit, action or other proceeding arising out of this Agreement or any transaction contemplated hereby, and hereby waives any objection to the laying of venue in such courts. Each Party agrees that service of any process, summons, notice or document by U.S. registered mail or recognized international courier service to such Party's address set forth in this Agreement shall be effective service of process.

Section 8.9 **Publicity**. Neither Party will make any public announcement concerning, or otherwise publicly disclose, any information with respect to the transactions contemplated by this Agreement or any of the terms and conditions hereof without the prior written consent of the other Party. Notwithstanding the foregoing (a) either Party may make any public disclosure concerning the transactions contemplated hereby that in the opinion of such Party's counsel may be required by any Government Rule or the rules of any stock exchange on which such Party's or any of its Affiliates' securities trade and (b) Buyer may publicize its development of the Compounds, the Technology and/or any resulting Products without approval from Seller.

Section 8.10 **Assignment**. Neither Party may assign its rights or obligations under this Agreement without the prior, written consent of the other Party; provided, however, that notwithstanding the foregoing, either Party may assign its rights and obligations under this Agreement, without any obligation to obtain the other Party's consent, to (i) any of its Affiliates or (ii) in connection with any merger, consolidation, sale of all or substantially all of the assets of such Party (or, in the case of Buyer, Buyer's business related to the Product) or any similar transaction. Any permitted assignee or successor-in-interest will assume all obligations of its assignor under this Agreement. No assignment will relieve either Party of its responsibility for the performance of any obligation. This Agreement will be binding upon and inure to the benefit of the Parties hereto and their respective successors and permitted assigns.

Section 8.11 **Amendments and Waivers**. This Agreement may not be amended except by an instrument in writing signed by both Parties. Each Party may, by a signed written instrument, waive compliance by the other Party with any term or provision of this Agreement that such other Party was obligated to comply with or perform.

[Remainder of Page Intentionally Left Blank- Signature Page to Follow]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be signed by their respective representatives thereunto duly authorized, all as of the date first written above.

TONIX PHARMACEUTICALS, INC.	**TRIMARAN PHARMA, INC.**
By: /s/ Seth Lederman	**By:** /s/ Walter Piskorski
Name: Seth Lederman, M.D.	**Name:** Walter Piskorski
Title: Chief Executive Officer	**Title:** Pres. & CEO

Seller Shareholders
(solely for the purposes of Section 3.1(b), Section 6.1, Section 6.2 and Exhibit F):

By: /s/ Walter Piskorski

Name: Walter Piskorski

By: /s/ Frank Bymaster

Name: Frank Bymaster

By: /s/ Timothy Hsu

Name: Timothy Hsu, M.D.

By: /s/ Aloke Dutta

Name: Aloke Dutta, Ph.D.

EXHIBIT A
Certain Assumed Liabilities

Final accounting and distribution for the following may be changed by mutual agreement of the Parties.

[***]	$[***]
[***]	$[***]
[***]	$[***]
[***]	$[***]
[***]	$[***]
[***]	$[***]
Total	$[***]

Note 1: Expense reimbursements cover various expenses such as GoDaddy web hosting, email account hosting, franchise tax payments. With regard to the expense reimbursement for [***], $[***]is for a license fee payment to WSU, and the remainder is for travel expenses, meeting registration fees, attendance expenses and other associated expenses.

Note 2: Expense reimbursements are not income and should not generate a Form1099.

Note 3: With regard to the expenses reimbursements for [***], Buyer may issue one payment to [***]who will then pay [***].

EXHIBIT B
Certain Compounds

[***]

EXHIBIT C
Certain Patent Rights

Application Type / Country	Serial No	Filing Date	Title	Patent Number	Issue Date	Status
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]

EXHIBIT D
Certain Transferred Contracts

None. Other than the License with Wayne State Univ., TRImaran has not executed any other contracts.

EXHIBIT E
Distribution of Consideration

[***]

EXHIBIT F
Form of Lock-Up Agreement

Lock-Up Agreement

August __, 2019

Tonix Pharmaceuticals Holding Corp.
509 Madison Avenue, Suite 1608
New York, New York 10022

Ladies and Gentlemen:

The undersigned understands that TRImaran Pharma, Inc. ("**TRImaran**"), a Delaware corporation, propose to enter into an Asset Purchase Agreement (the "**Agreement**") with Tonix Pharmaceuticals, Inc. ("**TPI**"), a Delaware corporation and wholly owned subsidiary of Tonix Pharmaceuticals Holding Corp., a Nevada corporation (the "**Company**"), providing for, at TPI's option upon occurrence of certain milestones as set forth in the Agreement (each, a " **Milestone**"), the issuance of shares of common stock, par value $0.001 per share, of the Company (the "**Common Shares**"). Capitalized terms used herein and not otherwise defined shall have the meanings set forth in the Agreement.

To induce TPI to enter into the Agreement, the undersigned hereby agrees that, without the prior written consent of the Company, the undersigned will not, during the period commencing on the date hereof and ending six (6) months after the date on which any Common Shares are issued to the undersigned with respect to a given Milestone (the "**Lock-Up Period**"), (1) offer, pledge, sell, contract to sell, grant, lend, or otherwise transfer or dispose of, directly or indirectly, any Common Shares issued with respect to that Milestone or any securities convertible into or exercisable or exchangeable for such Common Shares, whether now owned or hereafter acquired by the undersigned or with respect to which the undersigned has or hereafter acquires the power of disposition (collectively, the "**Lock-Up Securities**"); (2) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the Lock-Up Securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Lock-Up Securities, in cash or otherwise; or (3) publicly disclose the intention to make any offer, sale, pledge or disposition, or to enter into any transaction, swap, hedge or other arrangement relating to any Lock-Up Securities. The undersigned also agrees and consents to the entry of stop transfer instructions with the Company's transfer agent and registrar against the transfer of the undersigned's Lock-Up Securities except in compliance with this lock-up agreement.

The undersigned understands that the Company and TPI are relying upon this lock-up agreement in proceeding toward execution of the Agreement. The undersigned further understands that this lock-up agreement is irrevocable and shall be binding upon the undersigned's heirs, legal representatives, successors and assigns.

[Remainder of Page Intentionally Blank]

Very truly yours,

_____

(Name - Please Print)

_____

(Signature)

_____

(Name of Signatory, in the case of entities - Please Print)

_____

(Title of Signatory, in the case of entities - Please Print)

Address: _____

_____

_____

[signature page to Lock-Up Agreement]

Exhibit 10.02

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED. THE OMISSIONS HAVE BEEN INDICATED BY "[***]."

FIRST AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT

This First Amended and Restated Exclusive License Agreement ("Agreement") is entered into on August 19, 2019 (the "Execution Date") and becomes effective as of the Effective Date (as defined below), by and between Wayne State University, a non-profit Michigan educational institution ("WSU" or "Licensor") and Tonix Pharmaceuticals, Inc. a Delaware corporation duly organized under law and having a usual place of business at 509 Madison Avenue, New York, New York 10022 ("Tonix" or "Licensee").

BACKGROUND

WSU holds certain patents and technology.

WSU and Trimaran Pharma, Inc. ("Trimaran") entered into that certain Exclusive License Agreement dated January 11, 2016 (the "Original License") pursuant to which WSU granted Trimaran and Trimaran acquired a license to develop and use such patents and technology for the benefit of WSU and the public in accordance with the provisions of 35 U.S.C. §§ 201-211 and the regulations promulgated thereunder ("Federal Patent Policy").

Tonix intends to acquire substantially all of the assets of Trimaran, including all of Trimaran's rights and obligations under the Original License, pursuant to an Asset Purchase Agreement to be entered into between Tonix and Trimaran after the Execution Date (the "APA").

Effective immediately upon the date of assignment of the Original License to Tonix pursuant to the APA (the "Effective Date"), WSU and Licensee wish to replace the Original License in its entirety with this Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the premises and mutual promises and agreements hereinafter set forth, the receipt and legal sufficiency of which is hereby acknowledged, accepted and agreed to, the parties hereto agree as follows

1. DEFINITIONS.

1.1. "Affiliate". "Affiliate" means: (i) any partnership, corporation, joint venture, association, trust, unincorporated organization or entity directly or indirectly controlling, controlled by or under direct or indirect common control with Licensee and (ii) any partnership, corporation, joint venture, association, trust, unincorporated organization or entity who is a direct or indirect beneficial holder of at least fifty percent (50%) of any class of the outstanding capital stock of Licensee or an Affiliate (as defined in clause (i)) of Licensee. It is understood that the characterization of any entity as an Affiliate shall be made at the time Licensee and such entity enter into any sublicense agreement.

1.2. "Licensed Field". "Licensed Field" means production of products for all uses in all fields of use.

1.3. "Licensed Patents". "Licensed Patents" shall mean: (i) all U.S. patent applications and patent listed in **Exhibit A** and incorporated herein by reference; (ii) any U.S. patent application filed as a continuation or division of such applications or, to the extent necessary to make, have made, use, sell, import or lease Licensed Products, any continuation-in-part of such applications (provided, such continuation-in-part relates directly to the Licensed Field and development of which was sponsored by Licensee); (iii) any foreign counterpart to such U.S. applications (including divisions, continuations or continuations-in-part of such patent applications that relate directly to the Licensed Field and development of which was sponsored by Licensee); and (iv) any patents which issue from applications described in (i-iii). Licensed Patents are set forth in **Exhibit A** attached hereto, which shall be amended from time to time to include patent applications or patents to be included as Licensed Patents in accordance with this Agreement.

1.4. "Licensed Product(s)". "Licensed Product(s)" means any product(s), services or processes that embody or utilize any aspect of the Licensed Patents or the Licensed Technology or the manufacture, use, license or sale of which: (a) absent the licenses granted herein, would infringe any proprietary right of WSU in respect of the Licensed Patents or the Licensed Technology or (b) the discovery, development, manufacture or use of which employs Licensed Technology or Licensed Patents.

1.5. "Licensed Technology". "Licensed Technology" means all technical information, trade secrets, confidential information including any specifications, methods, processes, documentation and other data, information and know-how owned by WSU and in existence as of the effective date of the Original License and necessary to practice the inventions embodied in the Licensed Patents.

1.6. "Net Sales". "Net Sales" means gross revenue received by Licensee or any of its Affiliates, or any sublicensee of Licensee from the sale or use of Licensed Products less: (i) amounts repaid or credited by reason of defects, returns, rejections or allowances, (ii) sales taxes, excise taxes, value added taxes and customs duties, paid, absorbed or allowed, (iii) commissions paid or actually allowed to independent brokers or agents, (iv) shipping and related reasonable insurance charges that are customary in the industry (v) trade and quantity discounts actually allowed (and taken) as customary in the trade; and (vi) compulsory payments and cash rebates related to sale of the Licensed Product paid to any governmental authority (or agent thereof) pursuant to governmental regulations by reason of any national or local health insurance or similar program (such as Medicaid and Supplemental State Program rebates and Medicare Part D "Donut Hole" Coverage Gap rebates). Net Sales shall not include revenue received by Licensee (or any of its Affiliates) from transactions with an Affiliate, where the Licensed Product in question will be resold by the Affiliate; provided, the revenue received by the Affiliate from resale of the Licensed Product is included in Net Sales and royalties are paid thereon in accordance with Section 3.2. Revenue received by Licensee (or any of its Affiliates) from transactions with an Affiliate, where the Licensed Product in question is used by the Affiliate solely for such Affiliate's internal purposes shall be included in Net Sales and the price charged such Affiliate shall be at least the fair market value of such Licensed Product. Notwithstanding anything to the contrary, for purposes of this definition of "Net Sales," a transfer, sale, or other disposition of Licensed Product shall be deemed not to be sales of such Licensed Product, where such sales, transfers, or other dispositions of a Licensed Product are (A) provided without charge or other consideration to Licensee and for which Licensee does not receive consideration of any type; and (B) are solely provided for or used in: (1) patient assistance programs; (2) sample, charitable, or promotional purposes and where such Licensed Product is provided in reasonable amounts; (3) preclinical, clinical, regulatory or governmental purposes or under so-called "named patient" or other limited access programs; or (4) any tests or studies reasonably necessary to comply with Applicable Law, regulation or request by a Regulatory Authority, each of the foregoing (a "Net Sales Exemption").

1.7. "Royalty Period". "Royalty Period" means each three-month period ending on March 31, June 30, September 30 and December 31 of each year and commencing on or after the Effective Date; provided that the first Royalty Period may be less than three months, starting on the Effective Date and ending on the first to occur of the dates listed above.

1.8. "First Commercial Sale". "First Commercial Sale" shall mean, with respect to a Licensed Product, the first sale for consumption by the public of a Licensed Product after registration has been granted by any applicable authority in any country. For clarity, a Net Sales Exemption does not constitute a First Commercial Sale.

1.9. "Territory" means the world.

2. TITLE; LICENSE GRANT; RESERVATION OF RIGHTS.

2.1. Grant of License. Expressly conditioned on execution of the APA and subject to the other terms and conditions of this Agreement, WSU hereby grants to Licensee, and Licensee hereby accepts, during the Term, an exclusive, worldwide, royalty-bearing license, including the right to grant sublicenses to Licensed Patents and Licensed Technology, to research, develop, practice, make, have made, manufacture, have manufactured, use, lease, have leased, distribute, import, have imported, offer for sale, sell and have sold, Licensed Products in the Licensed Field throughout the Territory.

2.2. Sublicense Agreements. Licensee may grant sublicenses of any or all of its rights under Section 2.1;provided, Licensee shall: (a) notify Licensor of any proposed grant of a sublicense (or amendments thereto) and provide to the Licensor a copy of each proposed draft sublicense agreement (or amendments thereto) granting a third party the right to market and/or sell any Licensed Product(s) (each a "Sublicense," and each such third party, a "Sublicensee") at least seven (7) calendar days prior to the execution of such Sublicense, (b) obtain each Sublicensee's written agreement to be bound by the provisions of Sections 2.3, 3.2, 3.4, 3.5, 3.6, 7, 8 and 9 of this Agreement and (c) not be relieved of any of its obligations hereunder as a consequence of such sublicense(s). Upon termination of this Agreement, Licensee must provide notice of such termination to each Sublicensee under this Agreement within ten (10) business days. Any Sublicense that was in effect immediately prior to such termination, and such Sublicensee's rights under such Sublicense will only survive with WSU as the Sublicensee's direct licensor if (i) such Sublicensee is not the cause of breach that resulted in termination of this Agreement and is not itself in breach of obligation under its sublicense or this Agreement; (ii) within ten (10) business days after receipt of notice of termination of this Agreement, such Sublicensee provides written notice to WSU of its election to continue its Sublicense as a direct license from WSU and of its agreement to assume all obligations, including without limitation, obligations for payment, contained in its Sublicense agreement; and (iii) WSU, at its sole discretion, consents in writing to such election. The royalties payable to WSU in respect to Sublicenses are set forth in Sections 3.2 and 3.3. WSU shall have the right to receive unredacted copies of Sublicenses and all relevant reports received from Sublicensees, and redacted copies containing confidential information unrelated to the license granted herein so long as the redacted information does not prevent WSU from enforcing any of its rights. To the extent any terms, conditions or limitations of any Sublicense agreement are inconsistent with this Agreement, those terms, conditions and limitations are null and void against WSU.

2.3. Proprietary Rights Notices. Licensee shall mark all Licensed Products and their containers in accordance with the patent marking laws of the jurisdiction in which such Licensed Products are manufactured, used or sold. At a minimum, all Licensed Products shall bear a notice indicating that the product is the subject of a patent or pending application and identifying same. Licensee shall notify WSU in writing of any changes to patent markings on Licensed Products.

2.4. Title; Federal Rights.

(a) This Agreement does not convey to Licensee any ownership rights in any Licensed Patents or Licensed Technology by implication, estoppel or otherwise except for the rights expressly granted in this Section 2. Title to the Licensed Patents and Licensed Technology shall at all times remain vested in WSU and WSU retains the right to use the Licensed Patents and Licensed Technology for purposes in accordance with Section 2.5

(b) To the extent that any Licensed Patent or Licensed Technology has been wholly or partially funded by the federal government. Licensee's rights are also subject to the Federal Patent Policy including but not limited to the federal government's nonexclusive nontransferable irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the Licensed Patents and the Licensed Technology throughout the world.

(c) WSU hereby covenants that, if any of the Licensed Patents or Licensed Technology is subject to the Federal Patent Policy, WSU will disclose such Licensed Patent(s) and Licensed Technology to the government agency as required by the Federal Patent Policy, will file all required elections to maintain title to the Licensed Patent(s) and Licensed Technology and will otherwise use its reasonable efforts to obtain the entire right, title and interest in such Licensed Patent(s) and Licensed Technology and seek maximum exclusive licensing rights and extensions thereof.

(d) WSU represents to Licensee that, to the best of its knowledge, it has disclosed to Licensee all agreements with any funding agency or foundation that has provided support of any kind in the development of the Licensed Patents or Licensed Technology.

(e) Licensee shall comply with and, shall ensure that its Sublicensees comply in all material respects with all government statutes and regulations that relate to Licensed Products, including but not limited to the Federal Patent Policy; the Food, Drug and Cosmetic Act of 1941, as amended, and the regulations promulgated thereunder; the Export Administration Act of 1979, as amended, and the regulations promulgated thereunder and to the extent applicable, the Bayh-Dole Act and the regulations promulgated thereunder.

(f) Licensee shall substantially manufacture Licensed Products in the United States when such units of Licensed Products will be sold in the United States, except to the extent Licensee is granted a waiver by the United States government. If the Licensee seeks a waiver to any United States manufacturing requirements, then WSU agrees that it will cooperate in good faith with Licensee's attempt to obtain such waiver and reasonably assist Licensee in providing any reasonably requested information that WSU may have and Licensee may require for such waiver. Any seeking of a waiver by Licensee shall be at its sole cost and expense.

2.5. Academic Use. WSU shall retain the right to make, have made and use the Licensed Patents and Licensed Technology for its internal research, academic collaborative, teaching and educational purposes and not for any commercial purposes.

2.6. Diligence. Licensee shall use commercially reasonable efforts to bring one or more Licensed Products to market through a program for exploiting the Licensed Patents and to continue active and commercially reasonable marketing efforts throughout the life of this Agreement. Licensee has the responsibility to do all that is necessary to obtain and retain any governmental approvals to manufacture and/or sell Licensed Products for all relevant activities of Licensee and sublicensee.

As part of the diligence required by Section 2.6, Licensee agrees to reach the following commercialization and research and development milestones for the Licensed Products (the "Milestones") by the following dates:

(a) providing to WSU a draft of a three (3) year development plan respecting exploitation of the Licensed Patents within one hundred and twenty (120) days of the Effective Date and a final development plan within one hundred and eighty days (180) days of the Effective Date;

(b) providing, within forty five (45) days following the end of each calendar year, a written annual report to WSU for the preceding calendar year and such report shall include sufficient information to enable WSU to satisfy any reporting requirement to federal and state funding agencies and to ascertain progress of Licensee towards commercialization and meeting diligence requirements;

(c) developing a formulation of a Licensed Product for use in a Phase I clinical trial within thirty six (36) months after the development plan becomes due under Section 2.6(a);

(d) filing of an IND for the Licensed Product within forty eight (48) months after the development plan becomes due under Section 2.6(a); and

(e) using reasonable commercial efforts to bring Licensed Product into the market within twelve (12) months following receipt of all necessary marketing approvals from the FDA and other appropriate regulatory agencies.

WSU shall take into account the normal course of such commercial development programs conducted with sound and reasonable business practices and judgment and the annual development reports submitted by the Licensee under subsection 2.6(b) prior to invoking termination or modification of this Agreement under this Section 2.6, WSU shall give written notice to the Licensee providing the Licensee specific notice of, and a ninety (90) day opportunity to respond to, WSU's concerns as to the items referenced in this Section 2.6. If the Licensee fails to reasonably alleviate WSU's concerns as to the items referenced in this Section 2.6, or fails to initiate corrective action to WSU's satisfaction, WSU may terminate this Agreement. In the event of any dispute, claim or controversy arising out of Section 2.6, the same shall be referred to mediation in accordance with Section 10.14 hereof.

2.7. Conflict of Interest. Pursuant to the WSU Intellectual Property Policy, any technology developed by a WSU employee who is also an employee, shareholder or officer of Licensee will be owned by WSU. To the extent WSU is able to do so, Licensee will be provided with an exclusive option to an exclusive, royalty bearing license with the right to grant sublicenses to WSU's interest in any technology that is dominated by the claims of the Licensed Patents (an "Improvement"). Within sixty (60) days of the filing of a disclosure of an Improvement with WSU's technology transfer office, WSU shall provide Licensee with a written notification of the Improvement and Licensee shall have sixty (60) days to provide WSU with written notice of its exercise of said option. Upon WSU's receipt of written notice, said Improvement shall be automatically included, in the Licensed Patents and/or the Licensed Technology and the terms and conditions of this Agreement shall apply thereto. In the event Licensee does not exercise its option to a particular Improvement within the aforesaid sixty (60) day period, the option shall terminate and WSU shall have no further obligation to Licensee with respect to such particular Improvement.

2.8. Mandatory Sublicensing.

(a) If WSU discovers or if a third party discovers and notifies WSU that the Licensed Patents or Licensed Technology is useful for an application covered by the Licensed Field but for which Licensed Products have not been developed or are not currently under development by Licensee, then WSU shall give written notice to the Licensee, except for: (i) information that is subject to restrictions of confidentiality with third parties, and (ii) information which originates with WSU personnel who do not assent to its disclosure to Licensee. Within sixty (60) days following WSU's written notice under subsection (a) above to Licensee, Licensee shall give WSU written notice stating whether or not Licensee elects to actively engage in evaluation of development of a Licensed Product(s) for such new application ("Written Notice of Election"). If Licensee provides Written Notice of Election electing to actively engage in evaluation of development of a Licensed Product for such new application, Licensee shall have an additional one hundred and twenty (120) days after the date of such Written Notice of Election to inform WSU in writing of Licensee's decision to develop and commercialize a Licensed Product(s) for such new application or to forgo such development and commercialization ("Development and Commercialization Decision"). The Development and Commercialization Decision shall be made in Licensee's sole and absolute discretion.

(b) If Licensee elects to develop and commercialize the proposed Licensed Product(s) for such new application, such new application will be subject to the terms of this Agreement with the development status of the Licensed Product for the new application being included in the annual progress reports contemplated in Sections 2.6(b) above.

(c) If Licensee elects not to develop and commercialize Licensed Product(s) for such new application and has not timely made a determination pursuant to Section 2.8(d), WSU may seek third party(ies) to develop and commercialize the proposed Licensed Product(s) for the new application. If WSU identifies a third party, it shall refer such third party to Licensee. If the third party requests a sublicense under this Agreement, then the Licensee shall report the request to WSU within thirty (30) days from the date of such written request. If the Licensee refuses to grant a sublicense to the third party for such proposed new application on the terms proposed by the third party, then within thirty (30) days after such refusal the Licensee shall submit to WSU a report specifying the license terms proposed by the third party and a written justification for the Licensee's refusal to grant the proposed sublicense. If WSU, at its sole discretion, determines that the terms of the sublicense proposed by the third party for such proposed new application are reasonable under the totality of the circumstances, taking into account Licensee's Licensed Products in development, then WSU shall notify Licensee of such determination, and unless Licensee notifies WSU within 10 business days after receiving such notice from WSU that Licensee is willing to grant a sublicense on such terms, WSU will have the right to grant to the third party a license to make, have made, use, sell, offer for sale and import Licensed Products solely for such proposed new application for use in the Licensed Field, at substantially the same terms last proposed to Licensee by the third party providing royalty rates are at least equal to those paid by Licensee.

(d) Within six (6) months following Licensee's election to actively evaluate or at the time Licensee foregoes such election, if Licensee has determined in its reasonable discretion that the intended use of the Licensed Product is for an indication, application or use that is competitive with any uses for which the Licensee is developing or commercializing a Licensed Product, then Licensee may notify WSU in writing and WSU shall have no right to sublicense for such intended use.

(e) If Licensee does not timely provide to WSU a Written Notice of Election or, if applicable, a Development and Commercialization Decision, in accordance with Section 2.8(a), then Licensee shall be deemed to have elected not to actively engage in evaluation of development of a Licensed Product(s) for such new application or shall be deemed to forgo an election to develop and commercialize a Licensed Product(s) for such new application, as applicable.

3. FEES; ROYALTIES; RECORD KEEPING; REPORTING.

3.1. Fees. Licensee shall pay WSU the indicated amounts for the following milestone events. These payments are not creditable against royalties or other payments due WSU under this Agreement and relate solely to these milestone events. Payments will be made by delivery of a check and are due thirty (30) days following the date Licensee or its Sublicensee meets the specific milestone.

(a) [***].

(b) [***].

(c) [***].

(d) [***].

(e) [***].

(f) [***].

(g) [***].

(h) [***]

3.2. Royalties.

(a) Not later than forty-five (45) days following the close of a Royalty Period, Licensee shall pay to WSU royalties in respect of the most recent Royalty Period then ended equal to: (i) for U.S.-based points of sale of Licensed Products: [***]; and (ii) for non-U.S.-based points of sale of Licensed Products: [***]; in each of the foregoing cases under this Section 3.2(a), solely in respect of Licensed Products covered by, or the method of use, manufacture or production of which embodies any aspect of any claim of any Licensed Patents. Payments due under this Section 3.2(a) shall be due until the expiration of the term of the last to expire Licensed Patent of the Licensed Patents.

(b) [Intentionally Omitted.]

(c) Within forty five (45) days following the end of each calendar year, Licensee shall pay an annual license maintenance fee according to the following schedule:

Year	Annual Maintenance Fee
2020-2022	$[***]
2023-2025	$[***]
2026 and thereafter	$[***]

until such time as the regulatory approval of the first Licensed Product, at which time the annual license maintenance fee shall be $[***], less the amount paid in annual cumulative royalties for the corresponding year.

3.3. Sublicense Fees. Prior to the initiation of Phase II for each of the Licensed Products, Licensee shall pay WSU an amount equal to the following for any fee or consideration Licensee receives from Sublicensees in respect of such Licensed Product, Licensed Technology and Licensed Patents, ("Sublicensee Consideration"): (i) [***] of Sublicensee Consideration derived under each Sublicense where such Sublicensee is a U.S.-based entity and / or such Sublicensee Consideration is derived from points of sale in the United States and/or such Sublicensee Consideration is derived from a Sublicense wherein license rights to the Licensed Patents and/or Licensed Technology, to research, develop, practice, make, have made manufacture, have manufactured, use, lease, have leased, distribute, import, have imported, offer for sale, sell and / or have sold in or into the U.S. are granted ("U.S. Sublicensee Consideration"), and (ii) [***] of Sublicensee Consideration that is not U.S. Sublicensee Consideration ("Non-U.S. Sublicensee Consideration"). For clarity, Sublicensee Consideration excludes royalties; fees paid to Licensee for research performed by Licensee after the Effective Date that is directly related to the development of Licensed Products; fees paid to Licensee by a Sublicensee as patent expense reimbursement; and amounts received by Licensee that are bona-fide equity investments that are made at fair market value. Subsequent to the commencement of Phase II, sublicense fees due to WSU shall be reduced to (i) [***] of U.S. Sublicensee Consideration, and (ii) [***] of Non-U.S. Sublicensee Consideration. Such payments shall be due and payable on the same date on which the report and royalty payment are due for the Royalty Period in which such fees are received by Licensee, in accordance with the provisions of Section 3.4.

3.4. Remittance; Foreign Exchange.

(a) Licensee shall make payments required under this Agreement by check or wire transfer of immediately available funds delivered to WSU at the address set forth below. All payments shall be stated and paid in U.S. Dollars. Net Sales received in currencies other than U.S. Dollars shall be converted into U.S. Dollars at the New York Foreign Exchange Selling Rate as of the last business day of the Royalty Period in which such Net Sales is received (as published in *The Wall Street Journal*).

(b) In the event that any payment due WSU under this Agreement is not made when due, the payment shall accrue interest beginning on the first day following the final date on which such payment was due calculated at the annual rate equal to two percent (2%) plus the prime interest rate quoted by Chase Bank on the date said payment is due, or on the date the payment is made, whichever is higher, the interest being compounded on the last day of each Royalty Period; provided that in no event shall said annual rate exceed the maximum legal interest rate under Michigan law. Such royalty payment when made shall be accompanied by all interest so accrued. Said interest and the payment and acceptance thereof shall not negate or waive the right of WSU to any other remedy, legal or equitable, to which it may be entitled because of the delinquency of the payment.

3 . 5 . Records. Licensee shall maintain true and accurate records, prepared in a consistent manner on a year to year basis and in a method and format readily understandable to a Certified Public Accountant, with all information and details sufficient to determine Net Sales and payments due under this Agreement during the Term (as defined in Section 6.1) and for a period of at least five (5) years following any termination or expiration. Within forty-five (45) days following each Royalty Period during the Term, Licensee shall provide WSU with a report showing Net Sales for the quarter, certified by the Chief Financial Officer of Licensee as accurate. Such reports shall be submitted to WSU whether or not any Net Sales has been received during such period. Such report shall include the following information, segregated by Licensed Product:

(a) the quantities of each Licensed Product that Licensee, and its Sublicensees including Affiliates) have sold in each country in which such Licensed Product is sold;

(b) the billings thereon that comprise Net Sales;

(c) the calculation of royalties thereon;

(d) the total royalties so computed and due WSU;

(e) the details of payments received by Licensee from sublicenses to which WSU is entitled a share as specified in Section 3.3;

(f) the calculation of fees due to WSU from Licensee as a share of sublicensing payments as specified in Section 3.3; and

(g) the amounts so computed and due WSU.

Upon the delivery of each report, Licensee shall pay to WSU the amount of royalties and other fees required under this Agreement, if any, due for the period of such report. Upon delivery of the report due for the Royalty Period ending December 31 of each year, Licensee shall also report to WSU the aggregate royalties and other fees due WSU for the preceding year.

3.6. Audits. Not more than one (1) time per calendar year, WSU shall have the right to have Licensee's books and records audited by an independent accountant of WSU's choosing and reasonably acceptable to Licensee, such acceptance to not be unreasonably withheld or delayed, to ascertain the accuracy of Licensee's reports. Such audits shall be scheduled within fifteen (15) business days following delivery of notice by WSU to Licensee during Licensee's normal business hours and shall be conducted in a manner that does not interfere unreasonably with Licensee's business. In the event that any audit determines that the reported Net Sales or payments due WSU was less than ninety-five percent (95%) of actual Net Sales or payments due WSU for the period in question, the reasonable cost of such audit shall be borne by Licensee and the underpaid amount shall be immediately due and payable to WSU. In all other events, the cost of such audit shall be borne by WSU. Information gained in such an audit shall be treated as Confidential Information in accordance with Section 9.

3.7. Taxes.

3.7.1 U.S. Taxes: Each party to this Agreement shall be responsible for all taxes and charges which may be imposed on or levied against such party by any government taxing authority in the United States on the amounts paid by Licensee to WSU under this Agreement ("U.S. Taxes"). In the event Licensee is required to withhold U.S. Taxes that are chargeable to WSU as income from the amounts paid to WSU hereunder and to pay the taxes or charges for the account of WSU, Licensee shall: (i) deduct such amount(s) paid by Licensee from payments due WSU under the Agreement, and (ii) deliver to WSU copies of the receipts or returns covering each such payment.

3.7.2 Non-US Taxes: All taxes and charges which may be imposed on or levied against a party by any government taxing authority outside the United States on the amounts paid by Licensee to WSU under this Agreement ("Non-US Taxes") shall be assumed by Licensee except to the extent chargeable to WSU as income. In the event Licensee is required to withhold such taxes or charges from the amounts paid to WSU hereunder and to pay the taxes or charges for the account of WSU, Licensee shall: (i) in the case of such taxes that are chargeable to WSU as income, deduct such amount(s) paid by Licensee from payments due WSU under the Agreement, and (ii) in each case where Licensee is required to withhold and pay Non-US Taxes, deliver to WSU copies of the receipts or returns covering each such payment.

In the event a waiver is available for the payment of any tax as a result of WSU's status as a non-profit organization, WSU agrees to consider, in its sole discretion, any reasonable request by Licensee to cooperate in any efforts initiated by Licensee to obtain such a waiver. Licensee agrees to reimburse WSU for WSU's reasonable out of pocket costs and expenses incurred in considering such requests and cooperating with such waiver process, including outside counsel fees, if any.

3.8. First Commercial Sale. Licensee shall report to WSU in writing upon the First Commercial Sale of each Licensed Product, whether by Licensee, an Affiliate or a Sublicensee. Such report shall include, for each Licensed Product, the product name, product number and Licensed Patent(s) marked pursuant to Section 2.3.

3.9. Anti-Stacking. If it is necessary for Licensee to take any license(s), in a given country, under valid third party patents, which would be infringed by the sale, manufacture, use or import of Licensed Products in that country, then Licensee can deduct up to fifty percent (50%) of the royalties otherwise due and payable in each Royalty Period under Section 3.2 (a) above for Net Sales in that country, until such time as Licensee has recovered an amount equal to fifty percent (50%) of the royalty paid to such third parties restricted to that given quarter; provided that in no event shall the royalty thus payable by Licensee be reduced below the Minimum Amount. This paragraph is not intended to imply an obligation upon WSU to reimburse Licensee for the above-described third-party royalties. Licensee shall make an accounting to WSU of all such third-party royalties, and all resulting deductions from royalties otherwise due and payable to WSU, as part of its reporting obligations under Section 3.5.

3.10. Intentionally Omitted.

4. REPRESENTATIONS AND WARRANTIES.

4.1. Corporate Matters. WSU hereby represents and warrants to Licensee that: (a) it is a non-profit Michigan educational institution, and has all requisite power and authority to execute, deliver and perform this Agreement and to consummate the transactions contemplated hereby and (b) this Agreement has been duly authorized, executed and delivered by WSU, constitutes the legal, valid and binding obligation of WSU and is enforceable against WSU in accordance with its terms, except to the extent such enforceability may be limited by bankruptcy, reorganization, insolvency or similar laws of general applicability governing the enforcement of the rights of creditors or by the general principles of equity (regardless of whether considered in a proceeding at law or in equity).

4.2. Licensed Patents; Licensed Technology

4.2.1 WSU REPRESENTS TO LICENSEE THAT (i) TO THE BEST OF WSU'S KNOWLEDGE AND WITHOUT INDEPENDENT INVESTIGATION, WSU IS THE SOLE AND EXCLUSIVE OWNER OF THE PATENT RIGHTS IN THE LICENSED PATENTS AND LICENSED TECHNOLOGY AND HAS THE RIGHT TO GRANT THE LICENSES GRANTED TO LICENSEE UNDER THIS AGREEMENT, (ii) WSU HAS NOT GRANTED ANY LICENSE(S) TO THE PATENT RIGHTS TO THIRD PARTY(IES) EXCEPT FOR ANY NONEXCLUSIVE RIGHTS HELD BY THE U.S. GOVERNMENT AND / OR THE STATE OF MICHIGAN AND THE ORIGINAL LICENSE GRANTED TO TRIMARAN (WHICH ORIGINAL LICENSE IS TO BE ASSIGNED TO LICENSEE AND SUPERSEDED BY THIS AGREEMENT); AND (iii) TO THE BEST OF WSU'S KNOWLEDGE AND WITHOUT INDEPENDENT INVESTIGATION, ANY PATENTS ISSUED IN RESPECT OF THE LICENSED PATENTS AND LICENSED TECHNOLOGY WILL, WHEN ISSUED, BE FREE OF ANY RESTRICTIONS EXCEPT FOR ANY NONEXCLUSIVE RIGHTS HELD BY THE U.S. GOVERNMENT UNDER THE FEDERAL PATENT POLICY OR THE STATE OF MICHIGAN AS A RESULT OF PREVIOUS OR PRESENT SPONSORSHIP.

4.2.2 WSU MAKES NO EXPRESS OR IMPLIED WARRANTY INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO LICENSED PATENTS OR LICENSED TECHNOLOGY AND HEREBY DISCLAIMS THE SAME.

4.2.3 WSU MAKES NO EXPRESS OR IMPLIED WARRANTY THAT THE USE OR SALE OF PRODUCTS EMBODYING LICENSED PATENTS OR LICENSED TECHNOLOGY WILL NOT INFRINGE PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES AND HEREBY DISCLAIMS THE SAME

4.3. Licensee Matters. Licensee hereby represents and warrants to WSU that: (a) Licensee is a corporation duly organized and validly existing under the laws of Delaware, and has all requisite power and authority to execute, deliver and perform this Agreement and to consummate the transactions contemplated hereby and (b) this Agreement has been duly authorized, executed and delivered by Licensee, constitutes the legal, valid and binding obligation of Licensee and is enforceable against Licensee in accordance with its terms, except to the extent such enforceability may be limited by bankruptcy, reorganization, insolvency or similar laws of general applicability governing the enforcement of the rights of creditors or by the general principles of equity (regardless of whether considered in a proceeding at law or in equity).

5. PATENTS AND INFRINGEMENT.

5.1. Patent Prosecution; Expenses. WSU shall manage the preparation, filing, prosecution and maintenance of United States and foreign patent applications and the maintenance of U.S. and foreign patents on Licensed Patents. WSU shall request that patent counsel provide Licensee with copies of all information received by WSU relating to the preparation, filing, prosecution and maintenance of Licensed Patents in sufficient time to allow, where possible, Licensee to review and comment upon same; however, WSU shall control all aspects of such preparation, filing, prosecution and maintenance.

During the Term, Licensee shall be solely responsible for providing WSU with the appropriate contact information for Licensee's receipt of all patent correspondence, including invoices for reimbursement of patent expenses, and Licensee shall notify WSU if Licensee believes it is not appropriately receiving such correspondence. Notwithstanding the above, WSU shall not be obligated to pursue foreign nationalization filings of Licensed Patents unless and until: (i) Licensee expressly requests such filing(s) in writing and (ii) Licensee prepays estimated expenses associated with each requested foreign filing.

5.1.1 Licensee shall be responsible for all reasonable expenses associated with the preparation, filing, prosecution and maintenance of Licensed Patents, including interferences and any prepayments as provided in Section 5.1 (a) above. Such expenses are not creditable against payments due to WSU under Section 3. WSU will provide Licensee with invoices for such expenses, with the exception of any required prepayments for foreign filings, and Licensee shall pay such invoices within thirty (30) days following receipt of same. In the event Licensee does not timely pay any such fees WSU may in its sole discretion decline to advance funds for any patent-related expenses, and such action on WSU's part shall not be considered to be a breach of any obligation imposed by this Agreement.

5.1.2 On the Effective Date of this Agreement, Licensee shall owe WSU the amount necessary to cover patent costs and expenses in respect of the Licensed Patents that exist on the Effective Date. As of the Effective Date, the known reimbursable amount for which WSU has been invoiced is approximately [***] and Licensee shall reimburse such costs and expenses up to a maximum of[***]. Licensee shall make payments on the amount owed according to the following schedule: [***] will be paid by the earlier date of thirty (30) days following the Effective Date; the balance will be paid on or prior to the one (1) year anniversary of the Effective Date.

5.1.3 WSU does not provide any warranty whatsoever related to the services, actions or omissions of patent counsel, agents or law firms engaged to perform patent-related activities. Licensee expressly acknowledges that WSU cannot control whether a particular patent will issue in any specific country.

5.2. Infringement. Each of Licensee and WSU shall promptly inform the other in writing of any infringement of Licensed Patents by a third party of which it has knowledge and shall provide the other with any available information relating to such infringement.

5.3. Enforcement.

5.3.1 Licensee shall, with WSU's consent (which consent shall not be unreasonably withheld or delayed), have the first option to pursue any enforcement or defense of the Licensed Patents; provided that Licensee pays all costs and expenses related to the same, keeps WSU informed of its progress, and provides WSU with reasonable notice of all proceedings relating to same. At WSU's request, Licensee shall name WSU as a co-party in any such action and shall furnish WSU with copies of any documents related to such proceedings. Licensee's costs in prosecuting such matters shall be subject to reimbursement in accordance with Section 5.3.3. Licensee shall notify WSU of its decision to exercise its right to enforce Licensed Patents within thirty (30) days following its discovery or receipt of notice of the alleged infringement.

5.3.2 If Licensee does not: (i) exercise its option to enforce or defend any Licensed Patent or (ii) within ninety (90) days of commencing to prosecute any enforcement or defense action: (1) has not persuaded the alleged infringer to desist, (2) is not diligently pursuing an infringement action or diligently defending the validity or enforceability of the Licensed Patent at issue as determined by WSU in its reasonable discretion or (3) has not provided WSU with evidence of bona fide negotiations of an acceptable sublicense agreement with the alleged infringer, then WSU shall have the right to pursue the alleged infringer or take control of any action initiated by Licensee at WSU's own expense, and to collect for its own use all damages, profits, settlements and awards of whatever nature recoverable from such infringement, and Licensee shall not be entitled to any recovery pursuant to Section 5.3.3. WSU may use the name of Licensee as party plaintiff for purposes of pursuing any alleged infringer.

5.3.3 In the event that Licensee undertakes the enforcement or defense of the Licensed Patents by litigation or settlement action, from the date of Licensee's filing of a litigation pleading, notice of appearance or other litigation initiating document, Licensee may withhold up to fifty percent (50%) of the royalties otherwise thereafter due WSU under Section 3.2 and apply the same toward reimbursement of its expenses, including reasonable attorney's fees in connection therewith. Any recovery of damages by Licensee in any such suit shall be applied first in satisfaction of any unreimbursed expenses and legal fees of Licensee relating to the suit or settlement thereof, and next toward reimbursement of WSU for any royalties withheld and applied pursuant to the first sentence of this Section 5.3(c). Any remaining recoveries shall be used to reimburse Licensee for lost sales and WSU for lost royalties on account of such lost sales. The balance thereafter remaining from such recovery shall be divided among Licensee and WSU, with [***] payable to Licensee and [***]payable to WSU. No settlement, or consent judgment or other voluntary final disposition of the suit may be entered into without the consent of WSU, which consent shall not be unreasonably withheld.

5.3.4 Notwithstanding the provisions of Section 5.3.1, in the event that a declaratory judgment action alleging invalidity or non-infringement of any of the Licensed Patents is filed against Licensee or WSU, WSU, at its option, shall have the right, within thirty (30) days after notification of same, to intervene and assume sole defense of the action at WSU's expense. In the event that WSU exercises its rights under this Section 5.3(d), WSU may collect for its own use all damages, profits, settlements and awards of whatever nature recoverable from such action, and Licensee shall not be entitled to any recovery pursuant to Section 5.3.3.

5.3.5 In any infringement suit as either party may institute to enforce the Licensed Patents or in any declaratory judgment action alleging invalidity or non-infringement of any Licensed Patent brought against WSU or Licensee, the other party shall, at the request and expense of the party initiating or defending the suit or action, cooperate in all reasonable respects and make reasonable requests to have its employees testify when requested and make available relevant records, papers, information, specimens and the like.

6. TERM; TERMINATION.

6.1. Term. Unless sooner terminated in accordance with Section 6.2, this Agreement shall remain in effect until the expiration of the term of the last to expire of the Licensed Patents ("Term"). Upon expiration of the Term and unless terminated under Section 6.2, the license granted in Section 2.1 shall be converted automatically to a non-exclusive, fully-paid up, royalty-free, perpetual, irrevocable, transferable, sublicensable license to the Licensed Technology in the Licensed Field throughout the Territory, provided Licensee has satisfied all outstanding reporting and payment obligations under this Agreement.

6.2. Termination.

6.2.1 Upon any material breach by Licensee of this Agreement, WSU shall have the right to terminate this Agreement and the rights and license granted hereunder with thirty (30) days' prior written notice to Licensee unless Licensee cures such breach prior to the expiration of said thirty (30) day period. Licensee's "material obligations" under this Agreement shall include its obligations under Sections 2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 5.1, 7, 8 and 9.

6.2.2 Licensee shall have the right to terminate this Agreement and the license granted it hereunder for any reason, or no reason, with one hundred twenty (120) days' prior written notice to WSU. Upon such notice of intent to terminate, WSU may, subject to Article 6.3.1 hereof, elect to immediately terminate this Agreement upon written notice.

6.2.3 If Licensee dissolves or ceases to carry on its business, this Agreement shall terminate immediately upon written notice by WSU attempted to be delivered to the address for notices provided in Section 10.3.

6.2.4 If Licensee shall become insolvent, shall make an assignment for the benefit of creditors, or shall have a petition in bankruptcy filed for or against it and such petition is not dismissed within sixty (60) days, this Agreement shall terminate immediately upon written notice by WSU attempted to be delivered to the address for notices provided in Section 10.3.

6.2.5 If Licensee (or its Sublicensee) brings or assists in a patent challenge against the Licensed Patents (except as required under a court order or subpoena) and unless dismissed with thirty (30) days, WSU may elect to immediately terminate this Agreement upon written notice.

6.3. Effect of Termination.

6.3.1 Upon termination of this Agreement for any reason, nothing herein shall be construed to release either party of any obligation which matured prior to the effective date of such termination, and Licensee may, after the effective date of such termination, complete Licensed Products in the process of manufacture at the time of such termination and sell same together with Licensed Products in inventory for a period of six (6) months; provided that Licensee pays to WSU royalties and submits reports as required by Section 3.

6.3.2 The provisions of this Section 6 and Sections 7 (solely with respect to claims made by third parties), 8 and 9 shall survive any termination of this Agreement.

6.4. Sublicenses. In the event the license granted to Licensee under Section 2 terminates for any reason, each of Licensee's Sublicensees at such time shall continue to have the rights and license set forth in their sublicense agreements; provided the terms of such sublicense agreement have been consented to by WSU and such Sublicensee agrees in writing that WSU is entitled to enforce such provisions directly against such Sublicensee.

7. INDEMNIFICATION.

7 . 1 . Indemnification by Licensee. Licensee hereby agrees to indemnify, defend and hold WSU and its affiliates, trustees, officers, employees and agents (collectively, the "WSU Indemnitees") harmless from, against and in respect of any and all damages, deficiencies, actions, suits, proceedings, demands, assessments, judgments, claims, losses, costs, expenses, obligations and liabilities (including costs of collection and reasonable attorneys' fees and expenses) (herein called "Loss(es)") arising from or related to any: (a) use by Licensee, or by any party acting on behalf of or under authorization from Licensee, of Licensed Technology or Licensed Patents and (b) use, sale or other disposition by Licensee or by any party acting on behalf of or under authorization from Licensee, of Licensed Products except to the extent that such Losses arise from the gross negligence or willful misconduct of WSU.

7 . 2 . Sublicensee Indemnification. Licensee shall require its Sublicensees to indemnify, defend and hold harmless WSU Indemnitees under the same terms as stated in this Section 7.

7.3. Third Party Claims.

7.3.1 Promptly after the assertion by any third party of any claim against any WSU Indemnitees that, in the judgment of WSU, may result in the incurrence by any WSU Indemnitees of Losses for which such WSU Indemnitees would be entitled to indemnification hereunder, WSU shall deliver to Licensee written notice with respect to such claim, and Licensee may, at its option within thirty (30) days after receipt of such notice, but not in any event after the settlement or compromise of such claim, assume the defense (including settlement negotiations) of WSU Indemnitees against such claim (including the employment of counsel, who shall be satisfactory to WSU, and the payment of expenses). Notwithstanding the foregoing, if WSU determines that there is a reasonable probability that a claim may materially and adversely affect it, other than as a result of money payments required to be reimbursed by Licensee under this Section 7, WSU shall have the right to defend, compromise or settle such claim or suit; provided, further, that such settlement or compromise shall not, unless consented to in writing by Licensee, be relevant as to the liability of Licensee to WSU Indemnitees.

7.3.1 If Licensee participates in or assumes the defense of any claim asserted by a third party, the WSU Indemnitees, Licensee and its counsel shall cooperate in the defense against, or compromise of, such asserted liability. The WSU Indemnitees shall have the right to employ separate counsel in any such action or claim and to participate in the defense thereof, but the fees and expenses of such counsel shall not be an expense of the Licensee unless: (i) the Licensee shall have failed, within thirty (30) days after having been notified in writing by WSU of the existence of such claim, to assume the defense of such claim or (ii) the employment of such counsel has been specifically authorized by the Licensee. If there is a final judgment for the plaintiff in any such action, or if there is a settlement of any such action effected with the consent of Licensee, Licensee shall indemnify and hold harmless the WSU Indemnitees from and against any loss or liability by reason of judgment or settlement.

7.3.2 In the event that Licensee shall decline to participate in or assume the defense of a claim asserted by a third party, prior to paying or settling any claim against which Licensee is, or may be, obligated under this Section 7 to indemnify WSU Indemnitees, WSU shall first provide Licensee with a copy of a final court judgment or decree holding WSU Indemnitees liable on such claim or, failing such judgment or decree, the terms and conditions of the settlement or compromise of such claim. WSU's failure to supply such final court judgment or decree or the terms and conditions of a settlement or compromise shall not relieve Licensee of any of its indemnification obligations contained in this Section 7, except where, and solely to the extent that, such failure actually and materially prejudices the rights of Licensee.

8. INSURANCE.

8.1. Insurance Coverage.

8.1.1 Beginning at the time any Licensed Product is being clinically tested with human subjects or commercially distributed or sold, whichever comes first, by Licensee, an Affiliate or by a Sublicensee of Licensee, Licensee shall at its sole cost and expense, procure and maintain insurance under policies that shall name WSU as an additional insured.

8.1.2 Such insurance shall provide minimum comprehensive general liability (including product liability) coverage in amounts not less than two million dollars ($2,000,000) per incident and six million dollars ($6,000,000) annual aggregate. Such comprehensive general liability insurance shall provide: (i) product liability coverage and (ii) broad form contractual liability coverage for Licensee's indemnification obligations under Section 7 of this Agreement.

8.1.3 Licensee shall provide WSU with written evidence of such insurance upon request of WSU. Licensee shall provide WSU with written notice at least fifteen (15) days prior to the cancellation, non-renewal or material change in such insurance; if Licensee does not obtain replacement insurance providing comparable coverage within such fifteen (15) day period, WSU shall have the right to terminate this Agreement effective at the end of such fifteen (15) day period without notice or any additional waiting periods.

8.1.4 Licensee shall maintain such insurance beyond the expiration or termination of this Agreement during the period that any Licensed Product is being commercially distributed by Licensee, an Affiliate or by a Sublicensee. If such insurance is canceled, not renewed or otherwise terminated, Licensee shall purchase a retroactive reporting endorsement.

8.1.5 Notwithstanding the foregoing, no insurance limitation or deficiency in coverage shall operate to relieve Licensee of any indemnification obligations set forth in Section 7 of this Agreement.

9. CONFIDENTIALITY.

9.1. Confidential Information. "Confidential Information" shall mean any and all technical, scientific, financial or business information furnished by one party hereto (the "Disclosing Party") to the other party (the "Receiving Party") in connection with this Agreement. Receiving Party hereby agrees to use Confidential Information solely for purposes contemplated hereunder and hereby agrees to provide access to Confidential Information to its employees on a "need to know" basis. Receiving Party shall use best efforts to protect Confidential Information. Confidential Information shall not include information that: (a) is generally available in the public domain or thereafter becomes available to the public through no act of the Receiving Party; or (b) was discovered independently by the Receiving Party who had no access to the information supplied by the Disclosing Party under this Agreement; or (c) was made available to the Receiving Party as a matter of lawful right by a third party who had no obligations of confidentiality to the Disclosing Party; or (d) is required to be disclosed under law or court order. The obligations of confidentiality of this Section 9.1 shall survive the termination or expiration of this Agreement for a period of three (3) years. The existence of this Agreement and the general terms and conditions of this Agreement (including but not limited to the identity of the Licensee) shall not be considered Confidential Information. For the avoidance of doubt, nothing in this Section 9.1 shall limit the rights of Licensee and any Sublicensees under the license granted by WSU under this Agreement.

9.2. Publication. Licensee recognizes that under WSU policy, the results of WSU research involving Licensed Patents and Licensed Technology must be available for publication and agrees that WSU researchers shall be permitted to present at symposia and professional meetings, and to publish in journals, theses or dissertations, or otherwise of their own choosing, research methods and results; provided, however, that Licensee shall have been furnished copies of any proposed publication or presentation reporting research results utilizing Licensed Technology or Licensed Patents for review by Licensee at least thirty (30) days in advance of the presentation or delivery or the submission of such proposed publication or presentation to a journal, editor, or other third party. Licensee shall have thirty (30) days after receipt of said copies, to object to such proposed presentation or proposed publication because Licensee Confidential Information is disclosed pursuant to Paragraph 9.1, above, is contained therein. In the event Licensee makes such objection based on disclosure of Licensee Confidential Information, WSU will comply with Licensee's request to delete or modify Licensee Confidential Information.

10. MISCELLANEOUS.

10.1. Relationship of Parties. For the purposes of this Agreement, each party shall be, and shall be deemed to be, an independent contractor and not an agent or employee of the other party. Neither party shall have authority to make any statements, representations or commitments of any kind, or to take any action which shall be binding on the other party, except as may be explicitly provided for herein or authorized in writing.

10.2. Publicity. Licensee and WSU shall consult with each other before issuing any press release or otherwise making any public statements with respect to this Agreement and the transactions contemplated hereby and shall not issue any such press release or make any such public statement except as they may mutually agree and except as required under Federal securities laws or other laws applicable to Licensee or WSU. Licensee shall not use the name of WSU nor that of any WSU staff member, employee or student, or any adaptation thereof in any advertising, promotional or sales literature, or in any other form of publicity without prior written consent obtained from WSU in each case, and from the individual staff member, employee or student if such individual's name is so used.

10.3. Notices. Unless otherwise provided herein, any notice, report, payment or document to be given by one party to the other shall be in writing and shall be deemed given when delivered personally or mailed by certified or registered mail, postage prepaid (such mailed notice to be effective on the date which is three (3) business days after the date of mailing), or sent by telefax (such notice sent by telefax to be effective when sent, if confirmed by certified or registered mail as aforesaid) as follows:

If to WSU, addressed to:

Wayne State University
Technology Commercialization
Attention: IP & Contracts (AGR-270)
5057 Woodward Ave, Suite 6400
Detroit, MI. 48202
Telephone No.: (313) 577-5655
Telefax No.: (313) 577-5650

If to Licensee, addressed to:

Tonix Pharmaceuticals, Inc.
509 Madison Avenue
New York, NY 10022
Attention: Chief Executive Officer
Telephone No.: (212) 980-9156
E-Mail: seth.lederman@tonixpharma.com

With a copy, which shall not constitute notice, to:

Lowenstein Sandler, LLP
One Lowenstein Drive
Roseland, NJ 07068
Attention: Michael J. Lerner, Esq.
Telephone No.: (973) 597-6394
E-Mail: mlerner@lowenstein.com

or to such other place as any party may designate as to itself by written notice to the other party.

10.4. Entire Agreement; Amendments. This Agreement constitutes the entire agreement among the parties pertaining to the subject matter hereof and supersedes and replaces all prior agreements including the Original License, understandings, negotiations and discussions, whether oral or written, of the parties. No supplement, modification, amendment or waiver of this Agreement shall be binding unless executed in writing by the party to be bound thereby.

10.5. Waivers. The waiver by Licensee or WSU of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provision hereof (whether or not similar), nor shall such waiver constitute a continuing waiver unless otherwise expressly provided.

10.6. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Agreement may be signed by facsimile signatures or other electronic delivery of an image file reflecting the execution hereof, and, if so signed: (a) may be relied on by each party as if the document was a manually signed original and (b) will be binding on each party for all purposes.

10.7. Severability. In the event that any one or more of the provisions contained in this Agreement or in any other agreement or instrument referred to herein, shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Agreement or any other such agreement or instrument and such invalid or unenforceable provision shall be construed by limiting it so as to be valid and enforceable to the maximum extent compatible with, and possible under, applicable law.

10.8. Transfer, Assignment of Original License, etc.

10.8.1 Neither party may assign this Agreement or any of such party's rights and obligations hereunder to any third party without the prior written consent of the other party, which consent shall not be unreasonably withheld or delayed. Notwithstanding the foregoing, the Licensee may assign this Agreement, and its rights and obligations hereunder, to any third party that purchases all or substantially all of the Licensee's stock or assets relating to that portion of Licensee's business that is related to the subject of this Agreement or through a merger, consolidation, acquisition or otherwise without the consent of WSU. Except as noted in the previous sentence, any attempted assignment, delegation or transfer in contravention of this Agreement shall be null and void.

10.8.2 Tonix shall inform WSU in writing no later than five (5) business days after the date of any assignment to, and assumption by, Tonix of the Original License (the "Assignment Date"), notifying and confirming to WSU that the Original License was assigned to and assumed by Tonix as of the Assignment Date. Effective as of the Assignment Date, Tonix shall be responsible for all of the rights, duties, and obligations of Trimaran under the Original License (as superseded by this Agreement), including any and all acts and omissions on the part of Trimaran under the Original License (as superseded by this Agreement). Such rights, duties, and obligations shall be enforceable by and between WSU and Tonix, with the following limited exceptions: WSU hereby waives and releases any claim that has arisen directly from the acts or omissions of Trimaran solely with respect to: (1) diligence obligations arising under Sections 2.6(a)-(g) in the Original License and (2) fees and stock obligations arising under Sections 3.1(b)-(c) in the Original License. Nothing in this Agreement shall constitute or be interpreted to constitute a waiver or release by WSU of any other claims pertaining to the Original License (as superseded by this Agreement). WSU, to the best of its knowledge and belief, and without waiving its right to seek remedies for any breach(es) that become known to it, is not aware of any other breach of the Original License as of the Execution Date.

10.8.3 As of the Assignment Date, Trimaran's rights, duties and obligations under the Original Agreement shall immediately terminate, and the rights, duties, and obligations under the Original Agreement (as superseded by this Agreement) shall be assigned and transferred to Tonix, shall merge into this Agreement between WSU and Tonix with respect thereto. Accordingly, Tonix agrees that WSU shall be entitled to enforce the applicable terms of this Agreement exclusively against Tonix. For the avoidance of doubt, Tonix has no obligation with respect to any provision of the Original Agreement that is not also contained in this Agreement.

10.9. Binding Effect, Benefits. This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and permitted assigns; nothing in this Agreement, expressed or implied, is intended to confer on any person other than the parties hereto or, as applicable, their respective successors and permitted assigns, any rights, remedies, obligations or liabilities under or by reason of this Agreement.

10.10. Headings. The Section headings are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

10.11. Choice of Law. This Agreement shall be governed by and construed in accordance with domestic substantive laws of The State of Michigan, without regard for any choice or conflict of laws rule or principle that would result in the application of the domestic substantive law of any other jurisdiction. With respect to patents, the law of the country that grants the patent determines questions affecting the instruction and effect of such patent.

10.12. Jurisdiction and Forum. The parties hereby consent to the jurisdiction of the courts of the State of Michigan over any dispute concerning this Agreement or the relationship between the parties. Should Licensee bring any claim, demand or other action against WSU, its trustees, officers, employees or agents, arising out of this Agreement or the relationship between the parties, Licensee agrees to bring said action only in the Michigan Court of Claims.

10.13. Rules of Construction. The following rules of construction shall be applicable for all purposes of this Agreement, unless the context otherwise requires: (a) the terms "hereby", "herein", "hereof", "hereto", "hereunder" and any similar terms shall refer to this Agreement, and the term "hereafter" shall mean after the Effective Date; (b) words importing the singular number shall mean and include the plural number and vice versa; and (c) the terms "include", "including" and similar terms shall be construed as if followed by the phrase "without being limited to", and the term "or" shall be construed in the inclusive sense.

10.14. Mediation. The parties will attempt to settle any dispute through informal good faith negotiations. If the dispute is unresolved within forty-five (45) days of a party providing a written notice of dispute (or any other mutually agreed upon timeframe), the parties will undertake non-binding mediation prior to seeking any legal or equitable remedies. The foregoing shall not apply in the case that any dispute, breach, or the like is a time-sensitive matter in the reasonable opinion of the party raising the issue. The mediator shall be jointly selected by the parties and the mediation will be held in person, in Detroit, Michigan, unless the mediator, on his or her own initiative, wishes to conduct any mediation proceeding by other means of communication.

[Signature page follows]

IN WITNESS WHEREOF, WSU and Licensee have caused this Agreement to be duly executed on their behalf by their respective representatives as of the Effective Date.

WAYNE STATE UNIVERSITY

By: /s/ Joan Dunbar

Name: Joan Dunbar, Ph.D.

Title: Associate Vice President,
Technology Commercialization

Date:_____, 2019

TONIX PHARMACEUTICALS, INC.

By: /s/ Seth Lederman

Name: Seth Lederman

Title: Chief Executive Officer

Date:_____, 2019

Exhibit A
Certain Licensed Patents

[***]Application Type / Country	Serial No	Filing Date	Title	Patent Number	Issue Date	Status
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]

[***]

Application Type / Country	Serial No	Filing Date	Title	Patent Number	Issue Date	Status
[***]	[***]	[***]	[***]	[***]	[***]	[***]

Exhibit 10.03

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED. THE OMISSIONS HAVE BEEN INDICATED BY "[***]."

EXCLUSIVE LICENSE AGREEMENT

This **Agreement** is dated September 19, 2019 (the "**Effective Date**"), and is between THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK, a New York corporation ("**Columbia**"), and TONIX PHARMACEUTICALS, INC., a Delaware corporation ("**Company**" or "**Tonix**"). Columbia and Company agree as follows:

1. **Definitions. In this Agreement, the following definitions apply:**

a. "**Affiliate**" means any corporation or other entity that directly or indirectly controls, is controlled by, or is under common control with, another corporation or entity. Control means direct or indirect ownership of, or other beneficial interest in, fifty percent (50%) or more of the voting stock, other voting interest, or income of a corporation or other entity.

b. "**Cover**" or "**Covered By**" means (i) infringes, in the case of a claim in an issued patent, or (ii) would infringe the claim if it existed in an issued patent, in the case of a claim in a pending application.

c. "**Designee**" means a corporation or other entity that is employed by, under contract to, or in partnership with (i) Company, (ii) a Sublicensee, (iii) an Affiliate of Company or (iv) an Affiliate of a Sublicensee, wherein such corporation or other entity is granted the right to make, use, sell, promote, distribute, market, import, or export Products.

d. "**FDA**" shall mean the U.S. Food and Drug Administration, or any successor entity there to performing similar functions.

e. "**Field**" means trefoil factors in all indications and uses in humans and/or animals.

f. "**Indication**" shall mean the diagnosis of a generally acknowledged disease or medical condition in humans as identified in an IND, NDA, or BLA for a Product. For clarity, the treatment of the same medical condition in variants of a single disease shall be deemed hereunder as one and the same.

g. "**License Year**" means the one-year period from the Effective Date of this Agreement or an anniversary thereof to the next anniversary of the Effective Date.

h. "**NDA or BLA**" means an application submitted to the FDA in the United States or the equivalent in any foreign country for marketing approval of a product, including (a) a New Drug Application, Product License Application, or Biologics License Application, and (b) all supplements and amendments that may be filed with respect to the foregoing.

i. "**Net Sales**" means the greater of the gross invoice or contract price charged to Third Party customers for the Product or the actual consideration paid by Third Party customers for the Product less the following deductions, in each case to the extent actually allowed and/or taken by such Third Party customer in connection with such Product ("**Permitted Deductions**"): (i) customary trade, quantity, or cash discounts and rebates to the extent actually taken or paid, as the case may be and administrative or other bona fide service fees related to a Product paid to any pharmacy benefit manager, group purchasing organization, distributor, wholesaler or other Third Party; (ii) amounts repaid or credited by reason of rejection or return; (iii) sales, use or value added taxes or any other taxes or other governmental charges levied on the production, sale, rental, lease or other transfer, transportation, delivery, performance or use of a Product which is paid by or on behalf of Company, Sublicensees, Designees, or any Affiliate of the foregoing; (iv) outbound transportation costs prepaid or allowed, costs of packing, and costs of insurance in transit; (v) amounts written off as bad debt consistent with the requirements of GAAP, IFRS or any other applicable accounting standard in a given country in the Territory. The intent of this definition of Net Sales is to allow Columbia to derive a royalty on the end sale of a Product to the first Third Party.

In the case of transfers of Products between any of Company, Sublicensees, Designees, and Affiliates of any of the foregoing, for subsequent sale, rental, lease or other transfer of such Products to Third Parties, Net Sales will be the greater of (i) the actual amount charged for the transfer of the Product between any of Company, Sublicensees, Designees, and Affiliates of any of the foregoing and (ii) the gross invoice or contract price charged to the Third Party customer for that Product in an arm's-length transaction, subject, in each case to the Permitted Deductions.

At Columbia's option, in the case of transfers of Products between any of Company, Sublicensees, Designees, and Affiliates of any of the foregoing, for use by Company, Sublicensees, Designees, and Affiliates of any of the foregoing such that the Product is consumed or used, and is not incorporated into a product or service subsequently sold to a Third Party customer, Net Sales means the greater of the following: (i) the actual amount charged for the transfer of the Product between any of Company, Sublicensees, Designees, and Affiliates of any of the foregoing, and (ii) what the fair market value of the Product would be in an arm's-length transaction as determined by reference to the then prevailing sales price to Third Parties, subject in each case to the Permitted Deductions.

j. "**Other Consideration**" means any and all consideration of any kind (e.g., cash or in-kind consideration) received by Company from Sublicensees, their Designees or their Affiliates as full or partial consideration for the grant of any sublicense (or any option or any right to negotiate for a sublicense) under Section 2b of this Agreement, including, without limitation, licensing fees, lump sums, development based or non-development based milestone payments, debt and/or equity securities or instruments purchased or obtained at a premium above fair market value, but excluding (i) any consideration received for royalties on Net Sales of Products by Sublicensee (for clarity, royalties on Net Sales of Products by Sublicensees will be subject to the pass through royalty set forth in Section 4(c)(i)), (ii) investments in Tonix equity to the extent such equity is purchased for fair market value; (iii) funds that are paid for direct research and development expenses on Products incurred by Tonix after the actual date of execution of the sublicense agreement and required to be incurred by Tonix under the sublicense; (iv) debt incurred by Tonix on arm's length terms; (v) fees payable to Tonix in connection with bona-fide services provided by Tonix to a Sublicensee, Designee or an Affiliate at fair market value and (v) reimbursement of out-of-pocket patent prosecution or maintenance expenses for the Patents. With respect to securities received by Tonix that would be considered "Other Consideration," the value of such securities will be set at the value of such securities on the date of the receipt by Tonix of the subject securities and Tonix has the option to pay Columbia in cash or transfer the value in the form of shares the securities.

k. "**Other Product**" means any product or service (or component thereof), other than a Patent Product, the discovery, development, manufacture, use, sale, offering for sale, importation, exportation, distribution, rental or lease of which involves the use of or incorporation, in whole or in part, of Technical Information.

l. "**Patent**" or "**Patents**" means the following: (i) the United States and foreign patents and/or patent applications listed in Exhibit A hereto; (ii) any non-provisional patent applications that claim priority to any provisional patent applications listed in Exhibit A hereto; (iii) any and all claims of continuation-in-part applications that claim priority to the United States patent applications and/or patents listed in Exhibit A, but only where such claims are directed to inventions disclosed in the manner provided in the first paragraph of 35 U.S.C. Section 112 in the United States patent applications listed in Exhibit A, and such claims in any patents issuing from such continuation-in-part applications; (iv) any and all foreign patent applications, foreign patents or related foreign patent documents that claim priority to the patents and/or patent applications listed in Exhibit A; (v) any and all divisionals, continuations, reissues, re-examinations, renewals, substitutions, and extensions, including Supplementary Protection Certificates, of the foregoing; and (vi) any and all patents issuing from the foregoing. Notwithstanding the preceding definition, Patent and Patents will not include any patent applications or issued patents based on research conducted after the Effective Date, except as otherwise agreed in a separate writing.

m. "**Patent Product**" means any product or service (or component thereof) the discovery, development, manufacture, use, sale, offering for sale, importation, exportation, distribution, rental or lease of which is Covered By a claim of a Patent.

n. [***]

o. [***]

p. [***]

q. "**Product**" or "**Products**" means a Patent Product and/or an Other Product.

r. [***]

s. "**Sublicensee**" means any third party to whom Company has granted a sublicense under this Agreement. An Affiliate of Company exercising rights hereunder shall not be considered a Sublicensee.

t. "**Technical Information**" means any know-how, technical information and data developed by Columbia by or under the direction of Dr. Timothy Wang and Dr. Jan Kitajewski before the Effective Date, which know-how, technical information and data are necessary or useful for the discovery, development, manufacture, use, sale, offering for sale, importation, exportation, distribution, rental or lease of a Product, including, without limitation, (i) any know-how, technical information and data disclosed in any Patent or (ii) any reports or disclosures concerning research or inventions provided or disclosed to, or otherwise received by Company. Technical Information will include, but is not limited to, the information in Exhibit B hereto.

u. "**Territory**" means worldwide.

v. "**Third Party**" means any entity or person other than Company, Sublicensees, Designees, or their Affiliates.

2. License Grant.

a. **Grant.** Columbia grants Company and each Affiliate thereof, upon and subject to all the terms of this Agreement (including Section 3), the following:

(i) an exclusive license under the Patents to discover, develop, manufacture, have made, use, sell, offer to sell, have sold, import, export, distribute, rent or lease Products in the Field and throughout the Territory; and

(ii) an exclusive license to use Technical Information to discover, develop, manufacture, have made, use, sell, offer to sell, have sold, import, export, distribute, rent or lease Products in the Field and throughout the Territory, until such time as Technical Information is published or otherwise publicly distributed and thereafter, the license granted hereunder for such Technical Information which is published or otherwise publicly distributed and thereafter shall automatically convert to a non-exclusive license, provided however, that Columbia and its faculty and employees shall have the right to publish, disseminate or otherwise disclose the Technical Information.

b. **Sublicense.** Columbia grants to Company the right to grant sublicenses on the following conditions: (i) the Sublicensee agrees to abide by and be subject to all the terms and provisions of this Agreement applicable to Company; (ii) the Sublicensee has no further right to grant sublicenses under this Agreement; (iii) if any Sublicensee (or any entity or person acting on its behalf) initiates any proceeding or otherwise asserts any claim challenging the validity or enforceability of any Patent in any court, administrative agency or other forum, Company shall, upon written request by Columbia and to the extent permitted by applicable law, forthwith terminate the sublicense agreement with such Sublicensee, and the sublicense agreement provides for such right of termination by Company; (iv) the sublicense agreement provides that, in the event of any inconsistency between the sublicense agreement and this Agreement, this Agreement controls; (v) the Sublicensee submits quarterly reports to Company consistent with the reporting provision of Section 5a herein; (vi) Company remains fully liable for the performance of its and its Sublicensee's obligations hereunder; (vii) Company notifies Columbia of any proposed grant of a sublicense and provides to Columbia, upon request, an unredacted copy of any proposed sublicense agreement at least seven (7) business days before execution of the sublicense in the form such sublicense agreement exists at such time, which for clarity, may be updated due to negotiation between Company and the relevant third party in the intervening period; (viii) no such sublicense or attempt to obtain a sublicensee relieves Company of its obligations under Section 6 to exercise its own commercially reasonable efforts, directly or through a sublicense, to discover, develop and market Products, nor relieve Company of its obligations to pay Columbia any and all license fees, royalties and other payments due under the Agreement, including but not limited to under Sections 4, 5 and 11 of the Agreement; (ix) Columbia is a third-party beneficiary of such sublicense, entitled to enforce it in accordance with its terms; and (x) Columbia has no liability of any kind or manner to such sublicensee except as may be set forth in Section 16(d).

c. **Government Rights.** All rights and licenses granted by Columbia to Company under this Agreement are subject to (i) any limitations imposed by the terms of any government grant, government contract or government cooperative agreement applicable to the technology that is the subject of this Agreement, and (ii) applicable requirements of 35 U.S.C. Sections 200 et seq., as amended, and implementing regulations and policies. Without limitation of the foregoing, Company agrees that, to the extent required under 35 U.S.C. Section 204, any Product used, sold, distributed, rented or leased by Company, Sublicensees, Designees, and their Affiliates in the United States will be manufactured substantially in the United States. In addition, Company agrees that, to the extent required under 35 U.S.C. Section 202(c)(4), the United States government is granted a non-exclusive, non-transferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any Patent throughout the world.

d. **Reservation.** All rights not granted to Tonix herein are reserved to Columbia. Except as expressly provided under this Section 2, no right or license (expressly or by implication or estoppel) is granted by Columbia to Company or its Affiliates or Sublicensees under any tangible or intellectual property, materials, patent, patent application, trademark, copyright, trade secret, know-how, technical information, data or other proprietary rights.

e. **Global Social Responsibility.** During the term of this Agreement, Columbia and Company agree to take into consideration the principle of "**Global Social Responsibility**" in performing the various activities contemplated under this Agreement. "Global Social Responsibility" means facilitating the availability of Products in "**Developing Countries**" at locally affordable prices, under reasonable circumstances and terms to improve access to such Products in such countries. "**Developing Countries**" means those countries listed by the World Bank as "**Low-Income Economies,**" as such list may change from time to time. Solely by way of example, the Parties may mutually agree to revise royalty rates, adjust the fair market value, consider non-monetary consideration, and/or develop patent strategies in support of each party's dedication to Global Social Responsibility.

f. **Technical Information.** Within ten (10) business days of the Effective Date, Columbia will transfer or cause to be transferred to Company the Technical Information.

3. **Reservation of Rights for Research Purposes; Freedom of Publication.**

a. **Research Purposes.** Columbia reserves the right to practice the Patents, to the extent Patents are exclusively licensed hereunder, for academic research and educational purposes in the Field and to permit other entities or individuals to practice and use such Patents for academic research and educational purposes in the Field. Columbia shall obtain from all entities or individuals who are given permission to practice and use such Patents an agreement in writing to limit such use to academic research and educational purposes. Nothing in this Agreement will be interpreted to limit in any way the right of Columbia and its faculty or employees to practice and use such Patents for any purpose outside the Field or to license or permit such use outside the Field by Third Parties.

b. **Publication.** Company acknowledges that Columbia is dedicated to the free scholarly exchange and to public dissemination of the results of its scholarly activities. Columbia and its faculty and employees may publish, disseminate or otherwise disclose any information relating to its research activities, including Technical Information.

c. **Improvements.** Columbia will use reasonable efforts to promptly notify the Company of any Improvements to the Patents in the Field reported to Columbia Technology Ventures by Dr. Timothy Wang and Dr. Jan Kitajewski, or those working under their direction, within 2 years of the Effective Date and agrees to enter into good faith discussions with Company about the possibility of exclusively licensing such Improvements subject to the following: (i) any commitments or obligations to any third party undertaken by Columbia, whether undertaken before or after the Effective Date; (ii) any limitations imposed by law, rule or regulation or by the terms of any government grant, contract or cooperative agreement; (iii) 35 U.S.C Section 200 et seq. and implementing regulations and policies; (iv) any limitations imposed by rules, negotiations, policies, statues or charters of Columbia or other relevant institution; (v) the consent of all investigators of such Improvements, unless Columbia in its sole discretion chooses to waive this subclause (v); and (vi) any requirements imposed on Columbia to maintain any particular tax status, standing or exemption. For purposes of this Section 3(c), "Improvements" means any discovery, development, invention, enhancement or modification that is patentable over the Patents, includes all of the same inventors listed on the Patents, and whose manufacture, use, or sale would infringe a claim of a Patent.

4. Fees, Royalties, and Payment.

a. **Importance of Technical Information.** Company has requested, and Columbia has agreed, to grant certain rights to Technical Information. Company requires these rights to develop and commercialize the technology licensed hereunder. Because of the importance of Technical Information, Company has agreed to pay certain royalties to Columbia on Other Products, as specified below, even if such Other Product is not Covered By a Patent, to obtain rights to Technical Information. Company has agreed to these payments because of the commercial value of Technical Information, separate and distinct from the commercial value of the Patents. Company acknowledges that it would not have entered into this Agreement without receiving the rights to the Technical Information specified in Section 2. Company further acknowledges that licenses to Technical Information and each patent and application within the definition of Patents were separately available from a license to the Patents and that, for convenience and because of the preference of Company, the parties executed a combined license to the Patents and Technical Information.

b. **Consideration.** In consideration of the licenses granted under Section 2a of this Agreement, Company shall pay to Columbia as follows:

(i) **License Fee:** A nonrefundable, non-recoverable and non-creditable license fee in the sum of $[***], payable thirty (30) days after receipt of an invoice concurrently with or after the execution of this Agreement; and

(ii) **Royalties:**

(A) With respect to sales of Products by Company, its Designees or their Affiliates (but not Sublicensees or their Designees, which are contemplated by (c) below), in the Territory, a nonrefundable and non-recoverable royalty of the following:

(1) [***]% of Net Sales of Patent Products; and

(2) [***]% of Net Sales of Other Products.

(B) In the event Company or its Affiliate enters into a license agreement with a Third Party for intellectual property rights which are necessary for the practice of the intellectual property licensed to Tonix hereunder, including but not limited to, in connection with the manufacture or sale of Products (the "Third Party Licensed Rights"), then Company may deduct from the royalties due to Columbia on Products, fifty percent (50%) of royalties actually paid to such Third Parties during a given calendar quarter as consideration solely for any such Third Party Licensed Rights, provided that in no event shall the royalties for Products due to Columbia for a given calendar quarter be reduced to less than [***]% of Net Sales on Patent Products and 0.5% of Net Sales on Other Products.

c. **Sublicense Consideration.** In consideration of Company's right to sublicense Third Parties granted under Section 2b of this Agreement, Company shall pay to Columbia the following nonrefundable, non-recoverable and non-creditable amounts:

(i) **Royalties:** With respect to sales of Products by Sublicensees, their Designees or their Affiliates, in the Territory, a nonrefundable and non-recoverable royalty of (A) [***]% on Net Sales of Patent Products and (B) [***]% on Net Sales of Other Products.

(ii) **Other Payments:** [***]% of Other Consideration.

d. **Development Milestone Payments.** If Company, Sublicensees, or their Affiliates (collectively "Developer") develops a Product for potential commercial sale in the Territory, Company shall pay Columbia within forty-five days of the occurrence of any of the following events the following nonrefundable, non-recoverable and non-creditable milestone payments with respect to each and every such Product as follows:

(1) [***]

(2) [***]

(3) [***]

(4) [***]; and

(5) [***].

Each milestone above shall be payable only once upon the first achievement of the relevant Product milestone. For clarity, milestones will only be payable in connection with the first and, to the extent specifically provided above, the second Indication for humans (as opposed to animals).

e. **Duration of Other Product Royalties.** Royalties on each particular Other Product are payable on a country-by-country and product-by-product basis until fifteen (15) years after the first bona fide commercial sale of such particular Other Product in such country.

f. **Highest Royalty Due.** If a Product is covered by both the definition of Patent Product and Other Product, Company shall pay Columbia the Patent Product royalty rate on the Product. Company will not be obligated to pay Columbia more than one royalty payment on the same Product sale under Section 4. To the extent that a Product ceases being a Patent Product but is still an Other Product, Company shall pay Columbia the Other Product royalty rate on the Product, but only for such time as specified in Section 4e. By way of example, but not by way of limitation, if the manufacture of a Product is Covered by the claim of a Patent, and the manufacture of that Product also incorporates in part Technical Information, Company must pay the royalty specified in Section 4b(ii)(A)(1). If, after some period of time (for example, five years) of paying the royalties specified in Section 4b(ii)(A)(1) on the Product, the Product ceases to be a Patent Product, Company shall continue to pay royalties on the Product under Section 4b(ii)(A)(2) for the duration specified in Section 4e measured from the first bona fide commercial sale of the Patent Product on a country-by-country and product-by-product basis.

g. **No Non-Monetary Consideration.** Without Columbia's prior written consent, Company, Sublicensees, Designees, and Affiliates of the foregoing, shall not solicit or accept any consideration for the sale of any Product other than as will be accurately reflected in Net Sales. Furthermore, Company shall not enter into any transaction with any Affiliate that would circumvent its monetary or other obligations under this Agreement.

h. **Rate Adjustment on Challenge; Payment of Costs and Expenses.**

(i) If Company (or any entity or person acting on its behalf or at its direction) initiates any proceeding or otherwise asserts any claim challenging the validity or enforceability of any Patent in any court, administrative agency or other forum ("**Challenge**"), all royalty rates, minimum royalties, and other payment rates in Sections 4b(iii) and 4c are automatically doubled on and after the date of such challenge for the remaining term of this Agreement.

(ii) Company shall pay all costs and expenses incurred by Columbia (including actual attorneys' fees) in connection with defending a Challenge. Columbia may bill Company on a quarterly basis with respect to such costs and expenses, and Company shall make payment no later than thirty (30) days after receiving an invoice from Columbia.

(iii) If at least one claim of a Patent that is subject to a Challenge survives the Challenge by not being found invalid or unenforceable, regardless of whether the claim is amended as part of the Challenge, all royalty rates, minimum royalties, and other payment rates in Sections 4b(iii) and 4c are automatically trebled on and after the date of such finding for the remaining term of this Agreement.

Company acknowledges and agrees that the provisions in this Section 4h reasonably reflect the value derived from the Agreement by Company in the event of a Challenge. In addition, Company acknowledges and agrees that any payments made under this Section 4h are nonrefundable and non-recoverable for any reason whatsoever.

i. **Sale Below Fair Market Value.** If Company, Sublicensees, Designees or their Affiliates sell Product to a Third Party to whom it also sells other products, Company shall not sell the Product such that Net Sales is below fair market value with the intent of increasing market share for other products sold by Company, Sublicensees, Designees or their Affiliates to such Third Party for the purpose of reducing the amount of royalties payable on the Net Sales of Product. If the sale of Product under such circumstances results in Net Sales below the fair market value of Product, then the Net Sales of Product in such transaction is deemed to be the fair market value (as determined in accordance with the last paragraph of the definition of "Net Sales") for purposes of calculating payments owed to Columbia under this Agreement.

5. Reports and Payments.

a. **Reports.** No later than thirty (30) days after the first business day of each calendar quarter of each License Year of this Agreement after the first commercial sale of a Patent Product and/or Other Product, as applicable Company shall submit to Columbia a written report with respect to the preceding calendar quarter (the "**Payment Report**") that includes the following:

(i) Gross and Net Sales of Products by Company, Sublicensees, Designees and their Affiliates during such quarter, together with detailed information sufficient to permit Columbia to verify the accuracy of reported Net Sales, including Product names, country where manufactured, country where sold, actual selling price, units sold, an identification of all Patent claims that any Patent Product is Covered By, and an identification of Technical Information used or incorporated in the discovery, development, manufacture, use, sale, offering for sale, importation, exportation, distribution, rental or lease of any Other Product;

(ii) Amounts accruing to, and amounts received by, Company from its Sublicensees during such quarter together with the respective payment reports received by Company from any Sublicensees;

(iii) A calculation under Section 4 of the amounts due to Columbia, making reference to the applicable subsection thereof;

(iv) The exact date of the first commercial sale of a Product in the first Payment Report for such Product; and

(v) An unredacted copy of each report any Sublicensee has sent to Company that is pertinent to any royalties or other sums owing to Company for the preceding quarter.

b. **Payments.** Simultaneously with the submission of each Payment Report, Company shall make payments to Columbia of the amounts due for the calendar quarter covered by the Payment Report. Company shall pay by check payable to The Trustees of Columbia University in the City of New York and sent to the following address:

The Trustees of Columbia University in the City of New York
Columbia Technology Ventures
P.O. Box 1394
New York, NY 10008-1394

or to such other address as Columbia may specify by notice hereunder, or if requested by Columbia, by wire transfer of immediately available funds by Company to:

Wells Fargo
375 Park Avenue, 6th Floor
MAC J0127-063
New York, NY 10152
(This is the bank's address, not Columbia University's.
Do not use this address for correspondence to Columbia University.)
Routing #: [***]
Swift #: WFBIUS6S
Columbia Account #: [***]
Beneficiary: Columbia University FBO Tech Ventures, Finance
Other identifying info: include invoice #, contract #

or to such other bank and account identified by notice to Company by Columbia. Company shall pay for all bank charges for the wire transfer of funds for payments to Columbia and shall not the deduct bank charges from the total amount due to Columbia. Company shall send the quarterly royalty statement whether or not royalty payments are due.

c. **Final Payment.** No later than ninety (90) days after the date of termination or expiration of this Agreement, Company shall pay Columbia any and all amounts that are due under this Agreement as of the date of such termination or expiration, together with a Payment Report for such payment in accordance with this Section 5, except that such Payment Report will cover the period from the end of the last calendar quarter before termination or expiration to the date of termination or expiration. Nothing in the foregoing is deemed to satisfy any of Company's other obligations under this Agreement upon termination or expiration.

d. **Intentionally Omitted.**

e. **Foreign Revenue.** With respect to revenues obtained by Company in foreign countries, Company shall make royalty payments to Columbia in the United States in United States Dollars. For royalty payments for transactions outside the United States, Company shall first determine the royalties in the currency of the country in which they are earned, and then converted that currency to United States dollars using the buying rates of exchange quoted by The Wall Street Journal (or its successor) in New York, New York for the last business day of the calendar quarter in which the royalties were earned. Company shall pay any and all loss of exchange value, taxes, or other expenses incurred in the transfer or conversion of foreign currency into U.S. dollars, and any income, remittance, or other taxes on such royalties required to be withheld at the source, and shall not decrease the amount of royalties due to Columbia thereby. Royalty statements will show sales both in the local currency and US dollars, with the exchange rate used clearly stated.

f. **Records.** Company shall maintain at its principal office usual books of account and records showing its actions under this Agreement, and sufficient to determine Company's compliance with its obligations hereunder. Upon reasonable notice, but not more than once per calendar year during regular business hours, Columbia may have a certified public accountant or auditor, and an attorney (each as to whom Company has no reasonable objection and each of which has executed a non-disclosure agreement in a form reasonably acceptable to Company) inspect and copy such books and records for purposes of verifying the accuracy of the amounts paid under this Agreement. The review may cover a period of not more than three (3) years before the first day of the calendar quarter in which the review is requested. Any year that has been audited under this Section cannot subsequently be re-audited. If such a review shows Company has underpaid by five percent (5%) or more concerning any calendar quarter then Company shall pay, no later than ten days after a demand by Columbia, the reasonable and documented costs and expenses of such review (including the reasonable and documented fees charged by Columbia's accountant and attorney involved in the review), in addition to the amount of any underpayment and any interest thereon. Company agrees to reasonably cooperate with Columbia's accountant or auditor and attorney in connection with any such review. During the review, Company shall provide Columbia's accountant or auditor and attorney with all information reasonably requested to allow the accountant or auditor and attorney to audit and test for compliance with Company's obligations, including without limitation, information relating to sales, inventory, manufacturing, purchasing, transfer records, customer lists, invoices, purchase orders, sales orders, shipping documentation, third-party royalty reports, cost information, pricing policies, and agreements with third parties (including to the extent in Company's possession and control, the Sublicensees, the Designees, the Affiliates of Company, the Sublicensees and the Designees, and the customers). Notwithstanding anything to the contrary in this Agreement (including Section 15b), and without limiting any of Columbia's rights and remedies hereunder, if any payment required hereunder that is made late (including unpaid portions of amounts due), it bears interest, compounded monthly, either at the rate of 6% per year, or in Columbia's sole discretion, at the U.S. prime rate plus 2% as published by the Wall Street Journal on the last day of the applicable billing period. If any interest charged or paid in excess of the maximum rate permitted by applicable New York State Law, the excess is hereby deemed the result of a mistake and Columbia shall credit or refund (at Company's option) to Company the interest paid in excess of the maximum rate.

g. **Late Payment.** Notwithstanding anything to the contrary in this Agreement (including Section 15b), and without limiting any of Columbia's rights and remedies in this Agreement, if any payment required in this Agreement is not made within five (5) business days of Company's receipt of a written notice of late payment, Company shall pay interest at the rate of 5% per year,. If any interest is charged or paid in excess of the maximum rate permitted by New York State Law, the excess is hereby deemed the result of a mistake and Columbia shall credit or refund (at Company's option) to Company the interest paid in excess of the maximum rate.

h. **Collection Costs.** Company shall reimburse Columbia for any costs and expenses incurred in connection with collecting on any arrears of Company with respect to its payment and reimbursement obligations under this Agreement (such as Section 11b of this Agreement), including the costs of engaging any collection agency for such purpose.

i. **Forecast.** Company shall submit to Columbia annual non-binding forecasts on the first business day following January 1 for annual sales of Products by Company, Sublicensees, Designees and their Affiliates to Columbia for its internal budget purposes.

6. **Diligence.**

a. **Diligence.** Company shall use its Commercially Reasonable Efforts to research, discover, develop and market Products for commercial sale and distribution in the Territory. Company shall be deemed to meet such "**Commercially Reasonable Efforts**" in the event it achieves all of the due diligence milestones set forth in this Article 6. Company shall achieve the following due diligence milestones ("**Milestones**") by the dates (**Achievement Dates**") as set forth below:

(to be negotiated)

(i) Due Diligence Milestones.

Milestone	Achievement Date
[***]	[***]
[***]	[***]
[***]	[***]

For purposes of this Agreement, "IND" shall mean an Investigational New Drug Application (as described in 21 C.F.R. § 312) that is filed with the FDA to initiate the conduct of human clinical trials with a drug/biologic (or an equivalent filing in a jurisdiction outside of the United States filed with the appropriate regulatory agency).

(ii) The applicable Achievement Date for each Milestone set forth above will be tolled in the event that, despite Company's commercially reasonable efforts to achieve such Milestone by the applicable Achievement Date, there is a regulatory, scientific or other technical delay in achieving such Milestone that is beyond the reasonable control of Company (a "**Tolling Event**"); provided that, Company will provide Columbia with notice of any such anticipated delay as soon as reasonably practicable after becoming aware that such a delay is likely and that Company uses its commercially reasonable efforts to overcome such delay during its pendency. Company will not be deemed to have failed to meet a required Achievement Date during the pendency of any delay contemplated by the prior sentence. Following resolution of any Tolling Event or in the event a Tolling Event does not occur, if Licensee believes that it will be unable to achieve a particular Milestone by the relevant Achievement Date, Licensee may extend such Achievement Date by a period of up to twelve (12) months upon the payment of a fee (the "**Extension Fee**") equal to $10,000, which extension Company must exercise no later than thirty (30) days before such Achievement Date. Licensee may extend each Milestone as set forth above only once. For clarity, in the event that the FDA requires Company to redo development work on the Product that was previously performed by a third party due to a change in formulation or for any other reason, such requirement will be deemed to be a Tolling Event and Company's obligation to meet the requirements of this Section 6 will be adjusted accordingly.

(iii) For purposes of this Agreement, "**Commercially Reasonable Efforts**" means, with respect to the efforts to be expended by Tonix with respect to any objective, the level of reasonable, diligent, good faith efforts that similarly situated Pharmaceutical Companies typically devote to products owned by them that are at a similar stage in their development or product life and are of similar market potential taking into account efficacy, safety, approved labeling, the competitiveness of alternative products in the marketplace, the patent and other proprietary position of the product, the likelihood of regulatory approval, the profitability of the product, and other relevant factors. As used in this definition, "**Pharmaceutical Companies**" means companies in the pharmaceutical industry of a size and stage of development similar to that of Tonix, including having human pharmaceutical product candidates or products in a similar stage of development to the Products and having access to similar funding.

Commercially Reasonable Efforts will be determined on a market-by-market and Product-by-Product basis, and it is anticipated that the level of effort will be different for different markets, and will change over time, reflecting changes in the status of the Product and the market(s) involved.

Notwithstanding any other provisions of this Agreement, if Company fails to comply with its obligations as required by this Section 6, Columbia may terminate all of the licenses granted under Section 2 in accordance with Section 16 of this Agreement, or Columbia may convert any or all of such exclusive licenses to non-exclusive licenses with no further right to sublicense and no right to initiate legal proceedings under Section 11.

b. **Reports.** No less often than every twelve (12) months after the Effective Date of this Agreement, Company shall report in writing to Columbia on progress made toward the diligence objectives set forth above, using Exhibit C to this Agreement or an equivalent to Exhibit C to make the report.

7. **Confidentiality.**

a. Except in accordance with Section 7c or 7d or to the extent reasonably necessary or beneficial to discover, develop, manufacture, use, sell, have sold, distribute, rent or lease Products in the Field, Company shall treat as confidential the Patents and Technical Information disclosed hereunder, and shall not disclose or distribute them to any third party without Columbia's written permission. Except in accordance with Section 7c and 7d, Columbia will keep confidential all information related to the development, manufacturing, commercialization or other exploitation of Products received from Company or from anyone providing information on behalf of Company, including, but not limited to, in accordance with Company's reporting obligations and/or Columbia's audit rights under this Agreement.

b. The Parties shall keep confidential the business terms of this Agreement and any financial information disclosed by one Party to the other under this Agreement ("**Confidential Financial Information**").

c. Notwithstanding the above, the following are exceptions to keeping information confidential:

i) Company may disclose confidential information (including, but not limited to this Agreement, or the terms of this Agreement) to actual or potential investors, partners, acquirers (of the Product or Company), sublicensees, in connection with regulatory requirements of agencies like the FDA and SEC or the rules of any exchange on which Company's shares are traded, and to the extent reasonably necessary to meet its obligations under this Agreement, to its Affiliates, agents, representatives and employees;

ii) Columbia may disclose Confidential Financial Information to regulatory agencies such as the NIH and to U.S. or foreign courts or administrative tribunals, and to recipients that share in the license revenue generated under this Agreement, and, to the extent the following parties have an obligation to maintain the confidentiality of the subject information substantially in accordance with the terms hereof, to (A) third-party supporters of the research that led to the development of the intellectual property licensed hereunder to Company, and (B) to potential investors in the equity or royalty stream due to Columbia under this Agreement, and

iii) Columbia may publicly disclose Confidential Financial Information on the condition that such disclosure is done in a manner so that a third party would not be able to attribute such Confidential Financial Information to Company or this Agreement.

d. The obligations of confidentiality under this Section 7 do not apply to any Patents or Technical Information that Company can demonstrate to be the following:

(i) was known to Company before receipt thereof from Columbia;

(ii) was or becomes a matter of public information or publicly available through no act or failure to act on the part of Company;

(iii) is acquired by Company from a third party entitled to disclose it to Company;

(iv) is required or requested by a court, agency or other governmental authority (but solely with respect to disclosure to such authority); or

(v) Company discovers, develops independently without reference to or use of such Patents or Technical Information, as evidenced by contemporaneous written records.

e. **Defend Trade Secrets Act.** Notwithstanding the foregoing, under 18 U.S.C. §1833(b), "An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that (A) is made (i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal." Nothing in this Agreement or any Columbia policy is intended to conflict with this statutory protection, and no Columbia trustee, director, officer, or member of management has the authority to impose any practice to the contrary.

8. **Disclaimer of Warranty; Limitations of Liability.**

a. To the actual knowledge of the officers of Columbia's office of Technology Ventures, as of the Effective Date, Columbia hereby represents and warrants to Company that: (i) all of the named inventors on the Patents filed with any patent office have assigned or have an obligation to assign all of their right, title and interest in and to such inventions claimed in the Patents to Columbia; (ii) it has the power and authority to grant the licenses provided for herein to Company; (iii) Columbia is not in receipt of written notification of any claim, action, case, suit, litigation, arbitration, inquiry or proceeding pending or threatened by any Third Party, that seeks to challenge Columbia's ownership of Patents or the ability of Columbia to grant the licenses hereunder; and (iv) it has not entered into any agreement, and will not knowingly enter into any agreement, that materially conflicts with the rights granted to Company herein.

b. **Disclaimer. Except as specifically set forth in this Agreement, Columbia is licensing the Patents, Technical Information, and the subject of any other license under this Agreement, on an "as is" basis. Columbia makes no warranties either express or implied of any kind, and hereby expressly disclaims any warranties, representations or guarantees of any kind as to the Patents, Technical Information, Products and/or anything discovered, developed, manufactured, used, sold, offered for sale, imported, exported, distributed, rented, leased or otherwise disposed of under any license granted hereunder, including but not limited to the following: any warranties of merchantability, title, fitness, adequacy or suitability for a particular purpose, use or result; any warranties as to the validity of any patent; and any warranties of freedom from infringement of any domestic or foreign patents, copyrights, trade secrets or other proprietary rights of any party.**

c. **Limits of Liability.** In no event will Columbia, or its trustees, officers, faculty members, students, employees and agents, have any liability to Company, Sublicensees, Designees, or Affiliates of the foregoing, or any Third Party arising out of the use, operation or application of the Patents, Technical Information, Products, or anything discovered, developed, manufactured, used, sold, offered for sale, imported, exported, distributed, rented, leased or otherwise disposed of under any license granted hereunder by Company, Sublicensees, Designees or Affiliates of the foregoing, or any Third Party for any reason, including but not limited to, the unmerchantability, inadequacy or unsuitability of the Patents, Technical Information, Products and/or anything discovered, developed, manufactured, used, sold, offered for sale, imported, exported, distributed, rented, leased or otherwise disposed of under any license granted hereunder for any particular purpose or to produce any particular result, or for any latent defects therein.

d. **Damages.** Except in connection with Company's indemnification obligations under Section 12a, in no event will (i) Columbia, Institutions, or their trustees, officers, faculty members, students, employees and agents, be liable to Company, Sublicensees, Designees or Affiliates of the foregoing, or any Third Party, or (ii) will Company, its Affiliates, Designees, Sublicensees, employees, agents or representatives be liable to Columbia or Institutions, or their trustees, officers, faculty members, students, employees and agents, for any consequential, incidental, special or indirect damages (including, but not limited to, from any destruction to property or from any loss of use, revenue, profit, time or goodwill) based on activity arising out of or related to this Agreement, whether in accordance with a claim for breach of contract or any other claim of any type.

e. **Liability Limit.** In no event will Columbia's liability to Company exceed the payments made to Columbia by Company under this Agreement.

f. **Essentiality.** The parties hereto acknowledge that the limitations and exclusions of liability and disclaimers of warranty in this Agreement form an essential basis of the bargain between the parties.

9. Prohibition Against Use of Columbia's Name.

Company shall not use the name, insignia, or symbols of Columbia, its faculties or departments, or any variation or combination thereof, or the name of any trustee, faculty member, any other employee, or student of Columbia for any purpose whatsoever without Columbia's prior written consent; provided that, Company may disclose Columbia's name in a factual manner only, without implication of endorsement or affiliation, to identify Columbia as the owner of the Patents and as licensor under this Agreement, in connection with any disclosure required by a regulatory agency, such as the FDA or the SEC or the rules of any exchange on which Company's shares are traded.

10. Compliance with Governmental Obligations.

a. **Regulations.** Notwithstanding any provision in this Agreement, Columbia disclaims any obligation or liability arising under the license provisions of this Agreement if Company or its Affiliates is charged in a governmental action for not complying with or fails to comply with governmental regulations in the course of taking steps to bring any Product to a point of practical application.

b. **Request.** Company and its Affiliates shall comply upon reasonable notice from Columbia with all governmental requests directed to either Columbia or Company or its Affiliates and provide all information and assistance necessary to comply with the governmental requests.

c. **Compliance.** Company and its Affiliates shall ensure that research, development, manufacturing and marketing under this Agreement complies with all government regulations in effect including, but not limited to, Federal, state, and municipal legislation.

11. Patent Prosecution and Maintenance; Litigation.

a. Prosecution. Columbia, by counsel it selects and which Company has approved, in consultation with Company and any counsel appointed by Company, shall prepare, file, prosecute and maintain all Patents in Columbia's name and in countries designated by Company, at its sole discretion. Columbia shall instruct its patent counsel (i) to copy Company on all correspondence related to Patents (including copies of each patent application, office action, response to office action, request for terminal disclaimer, and request for reissue or reexamination of any patent or patent application) and (ii) as requested by Company, to provide an update as to the current status of all Patents. The parties intend that consultation between the parties relating to the Patents under this Section 11 will be in accordance with a common interest in the validity, enforceability and scope of the Patents. Each party shall treat such consultation, along with any information disclosed by each party in connection therewith (including any information concerning patent expenses), on a confidential basis, and shall not disclose such consultation or information to any party without the other party's prior written consent. As part of Columbia and Company's mutual interest in consultation relating to the Patents, Columbia shall use reasonable efforts to provide Company with drafts of proposed responses no less than ten (10) business days before such response is due to the relevant patent office without penalty to allow the opportunity to review and provide comment regarding communications with any patent office. If Company seeks to challenge the validity, enforceability or scope of any Patent, Columbia's consultation obligation under this Section 11a terminates; any such termination will not affect Company's confidentiality and nondisclosure obligations with respect to consultation or disclosure of information before such termination, and will not affect any other provisions of this Agreement (including Company's reimbursement obligation under Section 11b).

b. **Reimbursement.** Company shall reimburse Columbia for patent expenses as follows:

(i) Company shall reimburse Columbia for the actual fees, costs, and expenses Columbia has incurred before, on and after the Effective Date in preparing, filing, prosecuting and maintaining the Patents (and those patents and patent applications to which Patents claim priority), including without limitation, attorneys' fees, the costs of any interference proceedings, oppositions, reexaminations, or any other ex parte or inter partes administrative proceeding before patent offices, taxes, annuities, issue fees, working fees, maintenance fees and renewal charges, plus a five percent processing fee (collectively "**Patent Expenses**").

(ii) Unreimbursed Patent Expenses that Columbia incurred before August 31, 2019, are "**Past Patent Expenses.**"

(iii) Columbia, using reasonable efforts, estimates that Past Patent Expenses incurred through August 31, 2019 are $[***] ("**Estimated Past Patent Expenses**"), and Company shall reimburse Columbia in full for the Estimated Past Patent Expenses no later than thirty (30) days of receipt of an invoice along with reasonable supporting documentation.

(iv) Company will pay any additional unreimbursed Past Patent Expenses within 30 days after receiving an invoice from Columbia for such additional Past Patent Expenses.

(v) Company will reimburse Columbia for unreimbursed Patent Expenses incurred by Columbia after the Past Patent Expenses (**Future Patent Expenses**") no later than thirty (30) days after receiving Columbia's invoice.

(vi) At Columbia's election, Columbia may require advance payment of a reasonable estimate of Future Patent Expenses ("**Estimated Future Patent Expense**"), and Columbia may require Company to make such payment up to three months before the date Columbia has chosen for the legal work to be completed. In any event, Columbia shall give at least 14 days' notice to Company before the date the advance payment is due. (Any unused balance, if any, will be credited towards future Patent Expenses, or upon Company's written request, returned to Company.) No later than thirty (30) days after receiving an invoice from Columbia for any Patent Expenses incurred in excess of the reasonable estimate, Company shall reimburse Columbia for such excess amount.

(vii) Upon failure of Company to pay Patenting Expenses for any Patent(s) as required by this Section 11b, Columbia may in its discretion and upon providing notice to Company take any of the following actions:

(A) abandon any or all Patent(s),

(B) convert the license for any or all Patent(s) to non-exclusive, or

(C) continue to prosecute any or all of the Patent(s) at its own expense, in which case Company will have no further rights to such patent(s) under this agreement.

c. **Litigation.** Subject to Sections 11d and 11f, Columbia may initiate, control, defend and settle any proceedings involving the validity, enforceability or infringement of any Patents when in its judgment such action may be necessary, proper, and justified. Columbia will use its reasonable efforts to coordinate such activities with Company and provide Company with updates as it reasonably requests.

d. Upon written notice to Columbia, Company may request that Columbia take steps to stop a third party who is selling a product that does or will compete with a Product sold or being developed by Company or any of its Affiliates (but not a Sublicensee, or Sublicensee Affiliate) ("**Third-Party Infringer**") from infringing an issued patent falling within the definition of Patents by providing Columbia with written evidence demonstrating prima facie infringement of specific claims of such Patent. Company may initiate legal proceedings against any such Third-Party Infringer in its own name and at Company's sole expense, unless Columbia, not later than ninety (90) days after receipt of such notice, either (i) causes such infringement to cease or (ii) initiates legal proceedings against the Third-Party Infringer. Company shall provide all assistance reasonably requested by Columbia and shall not make any admission or assert any position in any legal or administrative proceeding that is inconsistent with or adverse to any position asserted by Columbia in any proceedings against the Third-Party Infringer, without Columbia's prior written consent. Notwithstanding the foregoing, Columbia has no obligation to assert more than one Patent in one jurisdiction against the Third-Party Infringer. Any proposed disposition or settlement of a legal proceeding filed by Company to enforce any issued patent falling within the definition of Patents against any Third-Party Infringer is subject to Columbia's prior written approval, and Columbia shall not unreasonably withhold or delay its approval. Notwithstanding the foregoing, Company's rights under this Section 11d apply only to claims of Patents that are exclusively licensed to Company under this Agreement and only in the Field and Territory that are exclusively licensed to Company under this Agreement.

e. Under a legal proceeding initiated in accordance with Section 11d, the initiating party shall first use any recovery, whether by way of settlement or judgment, from a third party to reimburse itself for its actual fees, costs and expenses incurred in connection with such proceeding. The initiating party shall divide any remaining amounts from any such settlement or judgment as follows: (i) Columbia shall retain or receive, as applicable, the royalty that it would have received under Section 4b(ii) had such activities been performed by Company, and (ii) all other remaining amounts (including any punitive or exemplary damages) shall be divided 75% to the party who initiated or carried on the proceedings and 25% to the other party.

f. If a party initiates or defends a legal proceeding concerning any Patent under this Section 11, the other party shall cooperate fully with and supply all assistance reasonably requested by the party initiating such proceeding, including without limitation, joining the proceeding as a party if requested. The party that institutes any legal proceeding concerning any Patent under this Section 11 shall have sole control of that proceeding.

12. Indemnity and Insurance.

a. **Indemnity.** Company shall indemnify, defend, and hold harmless Columbia, its trustees, officers, faculty, employees, students and agents, from and against any and all actions, suits, claims, demands, prosecutions, liabilities, costs, expenses, damages, deficiencies, losses or obligations (including attorneys' fees) based on, arising out of, or relating to third party claims arising in connection with this Agreement to the extent arising out of: (i) the discovery, development, manufacture, packaging, use, sale, offering for sale, importation, exportation, distribution, rental or lease of Products, even if altered for use for a purpose not intended; (ii) the use of Patents or Technical Information by Company, Sublicensees, Designees, or their Affiliates or customers; (iii) any representation made or warranty given by Company, Sublicensees, Designees, or their Affiliates with respect to Products, Patents, or Technical Information; (iv) any infringement claims relating to Products, Patents, or Technical Information; and (v) any asserted violation of the Export Laws (as defined in Section 14) by Company, Sublicensees, Designees, or their Affiliates. Company shall reimburse Columbia for the actual fees, costs, and expenses (including reasonable and documented attorneys' fees) that it may incur in enforcing this provision. Notwithstanding the foregoing, Company shall have no obligation to indemnify, defend or hold harmless any person or entity, to the extent a subject claim or loss arises in connection with the negligence, fraud, or willful misconduct by Columbia or any person or entity acting (or failing to act) on its behalf, as determined by a court of competent jurisdiction.

b. **Insurance.** Company shall maintain commercial general liability insurance (including product liability and contractual liability insurance applicable to Company's indemnity obligations under Section 12a) with reputable and financially secure insurance carriers reasonably acceptable to Columbia to cover the activities of Company, Sublicensees, Designees, and their Affiliates, for minimum limits of $5,000,000 combined single limit for bodily injury and property damage per occurrence and in the aggregate. Company shall contract for such insurance to include the Columbia, its trustees, faculty, officers, employees and agents as additional insureds. Company shall furnish a certificate of insurance evidencing such coverage, with thirty days' written notice to Columbia of cancellation or material change in coverage. The minimum amounts of insurance coverage required herein are deemed not to be construed as creating any limitation on Company's indemnity obligation under Section 12a of this Agreement.

c. **Primacy.** Company's insurance is primary coverage; any insurance Columbia may purchase is excess and noncontributory. Company shall contract for its insurance to be written to cover claims incurred, discovered, manifested, or made during or after the expiration of this Agreement.

d. **Compliance.** Company shall comply with all statutory workers' compensation and employers' liability requirements covering its employees concerning activities performed under this Agreement.

13. Marking.

Before the issuance of patents falling within the definition of Patents, Company shall mark all Patent Products made, sold, offered for sale, imported, or otherwise disposed of by Company under the license granted in this Agreement with the words "Patent Pending," and following the issuance of one or more patents, with the numbers of such patents. Company shall cause its Affiliates, and its Sublicensees and Designees and their Affiliates, to comply with the marking requirements of this Section 13.

14. **Export Control Laws**.

a. **Compliance.** Company agrees to comply with U.S. export laws and regulations pertaining to the export of technical data, services and commodities, including the International Traffic in Arms Regulations (22 C.F.R. § 120 et seq.), the Export Administration Regulations (15 C.F.R. § 730 et seq.), the regulations administered by the Treasury Department's Office of Foreign Assets Control (31 C.F.R. § 500, et seq.), and the Anti-Boycott Regulations (15 C.F.R. § 760) (individually and collectively, "Export Laws"). The parties shall cooperate with each other to facilitate compliance with these laws and regulations.

b. **Non-U.S. Persons.** Company understands that sharing controlled technical data with non-U.S. persons is an export to that person's country of citizenship that is subject to U.S. export laws and regulations, even if the transfer occurs in the United States. Company shall obtain any necessary U.S. government license or other authorization required under the U.S. export control laws and regulations for the export or re-export of any commodity, service or technical data covered by this Agreement, including technical data acquired from Columbia under this Agreement and products created as a result of that data.

15. **Breach and Cure.**

a. **Breach.** Either party may terminate this Agreement upon written notice of a material breach that is not cured as contemplated by subsection (b) below. Company is deemed to be in material breach of this Agreement if it should commit any of the following: (i) failure to pay fully and promptly amounts due under Section 4 (including without limitation, any payments required under subsection h thereof) and payable under Section 5; (ii) failure of Company to meet any of its obligations under Section 6 of this Agreement; (iii) failure to comply with governmental requests directed to Columbia or Company under Section 10b; (iv) failure to reimburse Columbia for or pay fully and promptly the costs of prosecuting and maintaining Patents under Section 11; (v) failure to obtain and maintain insurance in the amount and of the type provided for in Section 12; and (vi) failure to comply with the Export Laws under Section 14.

b. **Cure.** Either party may cure its material breach. The right to cure shall expire if not effected within a reasonable period of time but in no event later than sixty (60) days after notice of any breach given by the non-breaching party.

c. In the event an allegedly breaching party, in good faith, disputes a breach, the dispute shall be discussed by the parties in good faith for a period of no less than thirty (30) days from the date of notification of breach. In the event such a dispute between the parties is not settled within thirty (30) days, the issue shall be escalated to the Executive Director of Columbia Technology Ventures, or his/her designee at Columbia and the Chief Executive Officer of Company, or his/her designee, to try to resolve such dispute in good faith. If the parties are unable to resolve the dispute within ninety (90) days of such escalation, then either party may initiate dispute resolution procedures pursuant to Section 25.

16. Term of Agreement.

a. **Company Technical Information and Company Patents.** This Agreement is effective as of the Effective Date and continues in full effect until its expiration or termination in accordance with this Section 16. In addition, upon any termination of this Agreement under Section 16c(i) or 16(c)(ii), (i) Columbia will have the option, exercisable by written notice to Company within sixty (60) days of such termination, to enter into good faith negotiations for a worldwide, royalty-bearing license on commercially reasonable terms with respect to (i) all know-how, technical information and data developed by Company ("**Company Technical Information**") during the term of this Agreement, and before its termination, to the extent such Company Technical Information is related to Company's efforts to develop Products; (ii) all Company filed patent applications or Company obtained patents, solely and exclusively related to any addition, development, modification and/or improvement of Products ("**Company Patents**"); and (ii) Company transfer to Columbia of regulatory filings or other regulatory materials made by Company (including, for clarity, any NDA) with respect to Products during the term of this Agreement.

b. **Term.** Unless terminated earlier under any provision of this Agreement, the term of the licenses granted hereunder and the obligation to make royalty payments on Products extend on a country-by-country and Product-by-Product basis, until the latest of (i) the date of expiration of the last valid claim in the last to expire of the issued patents falling within the definition of Patents and (ii) fifteen (15) years after the first bona fide commercial sale of a Product in the country in question.

c. (i) **Termination by Columbia.** The licenses granted under this Agreement may be terminated by Columbia or, at Columbia's option, Columbia has the right to convert any or all of such exclusive licenses granted under this Agreement to non-exclusive licenses, with no further right to sublicense, and no right to initiate legal proceedings under Section 11, as follows: (A) thirty (30) days after Company's receipt of written notice of Company's breach if Columbia elects to terminate in accordance with Section 6a; (B) upon written notice to Company for Company's material breach of the Agreement and Company's failure to cure such material breach in accordance with Section 15b; (C) if Company files for bankruptcy protection; (D) if Company ceases to conduct business as a going concern; and (E) if Company (or any entity or person acting on its behalf) initiates any proceeding or otherwise asserts any claim challenging the validity or enforceability of any Patent in any court, administrative agency or other forum. Termination under (B) – (E) is effective upon the date the notice is sent under Section 17.

(ii) **Termination by Company.** Company has the right to terminate this Agreement on a country-by-country and a Product-by-Product basis as follows: (A) upon written notice to Columbia for Columbia's material breach of the Agreement and Columbia's failure to cure such material breach in accordance with Section 15b or (B) at its discretion, upon six (6) months' written notice to Columbia.

d. **Assignment of Sublicenses Upon Termination.** Upon any termination of this Agreement under Section 16c, all sublicenses granted by Company under it shall survive provided that such Sublicensee is not in breach of the sublicense, and Columbia may, in its sole discretion enter into a direct license with such Sublicensee, provided that Columbia's obligations under such sublicense are consistent with and not exceed Columbia's obligations to Company under this Agreement and on the condition that such sublicense agrees in a writing sent to Columbia to assume all obligations of this Agreement for the benefit of Columbia, including the obligations to make all payments due under this Agreement, including but not limited to those specified in Section 4b, 4c, 4d, 4h and 11b.

e. **Survival.** Sections 4h **(Challenge)**, 5c **(Final Payment)**, 5f (Records), 5g **(Late Payment)**, 5h **(Collection Costs)**, 7 **(Confidentiality)**, 8 **(Disclaimer)**, 9 **(Use of Name),** 10 **(Compliance),** 12 **(Indemnity and Insurance),** 14 **(Export Laws),** 16d **(Assignment),** 16e **(Survival),** 16f **(Accrued Rights and Obligations),** 16g **(Inventory),** 16h **(Manufactured),** 17 **(Notices),** 19 **(Remedies)**, 22 **(Entire Agreement)**, 23 **(Severability),** and 25 **(Governing Law)** will survive any termination or expiration of this Agreement.

f. **Accrued Rights and Obligations.** Any termination of this Agreement does not adversely affect any rights or obligations that may have accrued to either party before the date of termination, including without limitation, Company's obligation to pay all amounts due and payable under Sections 4 (including any payments required under subsection 4h), 5 and 11.

g. **Sales of Inventory.** Upon any termination of this Agreement for any reason other than the expiration of this Agreement under Section 16b or Company's failure to cure a material breach of this Agreement under Section 16c(ii), Company, Sublicensees, Designees, and their Affiliates have the right, for one year or such longer period as the parties may reasonably agree, to dispose of Products or substantially completed Products then on hand, and to complete orders for Products then on hand (the "Inventory"), and shall pay royalties to Columbia with respect to such Inventory as though this Agreement had not terminated. Within 30 days after termination, Company shall provide Columbia with an Inventory report. If this Agreement expires under Section 16b, then Company is free after that to use the Technical Information without any further obligation to Columbia. For clarity, in the event of an expiration of this Agreement under Section 16(b) and after application of Section 16(h), all licenses granted under this Agreement will be deemed fully paid-up and Company, Sublicensees, Designees, and their Affiliates may continue to sell Inventory without any obligation to pay royalties to Columbia, Institutions or any Third Party.

h. **Manufactured under Patent.** Notwithstanding anything to the contrary in the Agreement, to the extent the manufacture of a Product is Covered By an issued patent within the definition of Patents and occurs before the expiration of such issued patent, the sale of that Product after the expiration date of the issued patent still constitutes a royalty-bearing sale under Section 4.

17. **Notices.** Any notice required or permitted to be given under this Agreement is sufficient if in writing and is considered given (a) when mailed by certified mail (return receipt requested), postage prepaid, or (b) on the date of actual delivery by hand or overnight delivery, with receipt acknowledged, as follows:

if to Columbia, to:	Executive Director Columbia Technology Ventures Columbia University 80 Claremont Avenue, #4F, Mail Code 9606 New York, NY 10027-5712
copy to:	General Counsel Columbia University 412 Low Memorial Library 535 West 116th Street, Mail Code 4308 New York, New York 10027
if to Company, to:	Tonix Pharmaceuticals, Inc.. 509 Madison Avenue Suite 1608 New York, NY 10022 Attn: Seth Lederman

copy to (which shall not constitute notice):

Lowenstein Sandler LLP
One Lowenstein Drive
Roseland, New Jersey 07068
Attn: Michael J. Lerner, Esq.

provided, further, except for notices of breach, Columbia may send correspondence related to the Patents in accordance with Section 11 to the following email address:

jessica.morris@tonixpharma.com;

or to such other address as a party may specify by notice under this Agreement.

18. **Assignment.** This Agreement and all rights and obligations hereunder may not be assigned by either party without the written consent of the other party; provided that, Tonix may assign this Agreement to an Affiliate or in connection with a merger, consolidation, sale, or transfer of all or substantially all its assets or all or substantially all of its assets associated with its business related to the Product. Any permitted assignee will be required to assume all obligations under this Agreement in writing in connection with the permitted assignment. Company shall provide Columbia with written notice of any such assignment. Any attempt to assign without compliance with this provision will be void.

19. **Waiver and Election of Remedies.** The failure of any party to insist upon strict adherence to any term of this Agreement on any occasion will not be considered a waiver or deprive that party thereafter of the right to insist upon strict adherence to that term or any other term of this Agreement. All waivers must be in writing and signed by an authorized representative of the party against which such waiver is being sought. The pursuit by either party of any remedy to which it is entitled at any time or continuation of the Agreement despite a breach by the other will not be deemed an election of remedies or waiver of the right to pursue any other remedies to which it may be entitled.

20. **Binding on Successors.** This Agreement is binding upon and inures to the benefit of the parties and their respective successors and assigns to the extent assignment is permitted under this Agreement.

21. **Independent Contractors.** It is the express intention of the parties that the relationship between Columbia and Company is that of independent contractors and is not that of agents, partners, or joint venturers. Nothing in this Agreement is intended or will be construed to permit or authorize either party to incur or represent that it has the power to incur any obligation or liability on behalf of the other party.

22. **Entire Agreement; Amendment.** This Agreement, together with the Exhibits, sets forth the entire agreement between the parties concerning the subject matter hereof and supersedes all previous agreements, written or oral, concerning such subject matter. This Agreement may be amended only by a written agreement duly executed by the parties.

23. **Severability.** If any provision of this Agreement is held by a court of competent jurisdiction to be unenforceable because it is invalid, illegal or unenforceable, the validity of the remaining provisions will not be affected, and the rights and obligations of the parties will be construed and enforced as if the Agreement did not contain the particular provisions held to be unenforceable, unless such construction would materially alter the meaning of this Agreement. By way of example, but not by way of limitation, Sections 4h(i), 4h(ii) and 4h(iii) are intended by Company and Columbia to be severable from each other, such that if one clause is found to be unenforceable, the other clauses remain operative and in effect.

24. **No Third-Party Beneficiaries.** Except as expressly set forth herein, the parties hereto agree that there are no third-party beneficiaries of any kind to this Agreement.

25. **Governing Law.** This Agreement is be governed and construed in accordance with the internal substantive laws of the State of New York applicable to agreements made and wholly performed within the State of New York and without reference to the conflict or choice of laws principles of any jurisdiction. Unless otherwise separately agreed in writing, the parties agree that any and all claims arising under or related to this Agreement will be heard and determined only in either the United States District Court for the Southern District of New York or in the courts of the State of New York located in the City and County of New York, and the parties irrevocably agree to submit themselves to the exclusive and personal jurisdiction of those courts and irrevocably waive any and all rights that any such party may now or hereafter have to object to such jurisdiction or the convenience of the forum.

26. **Execution in Counterparts; Facsimile or Electronic Transmission.** This Agreement may be executed in counterparts, and by facsimile or electronic transmission. This Agreement is not binding on the parties until it has been signed below on behalf of each party.

IN WITNESS WHEREOF, Columbia and Company have caused this Agreement to be executed by their duly authorized representatives as of the day and year that is first written above.

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

By: /s/

Executive Director,
Columbia Technology Ventures

TTS#_54339

TONIX PHARMACEUTICALS, INC.

By: /s/ Seth Lederman

Title: Chief Executive Officer

EXHIBIT A

[***]

Exhibit B

Technical Information described in [***]

EXHIBIT C

Annual Commercialization Report

As per the terms of the License Agreement between Columbia University and [name of Company], Licensee is required to deliver an annual commercialization report. This report should be true and accurate, certified by an officer of the Licensee, and should describe Licensee's, Affiliates', and Sublicensees' efforts to diligently commercialize Products and Services during the past contract year and for the next contract year. For convenience, Columbia Technology Ventures (CTV) is providing the following outline to enable Licensee to report the required information.

Instructions:

- *For Yes/No questions, please place an "X" between the appropriate brackets.*

Licensee Name and Current Address:	
Name of Primary Contact:	
CTV Agreement Number:	
Effective Date of Original Agreement:	
Dates of any License Amendments:	
Report Period Beginning:	
Report Period Ending:	

1. **Sales:**

Is the Licensee currently marketing or selling one or more products which incorporated the licensed technology?

[_] NO – Please provide a progress report on commercialization efforts *(skip to Q:3).*
[_] YES – Please provide Company's most recent sales forecasts and/or commercialization plan for each product.

2. **Accounting Methodologies:**

Have you changed the accounting methodologies used in the sales reports you currently provide to Columbia in the last year?

[_] NO – Accounting methodologies have not changed.
[_] YES – Please explain:

3. **Affiliates and Sublicensees:**

Have there been any new Affiliates or Sublicensees not previously reported?

[_] NO – No new Affiliates or Sublicensees.
[_] YES – Please list names of all Affiliates/Sublicensees:

(Attach copies of Affiliate/Sublicensee agreements)

4. Contractual Diligence or Sales Milestones:

Please complete the table below (if not applicable, leave blank):

Milestone per agreement terms	**Contractual Deadline**	**Met? (Y/N)**	**Achievement Date**

Comments or notes relating to these milestones: _____

I certify that the information above is true and correct to the best of my knowledge.

By _____ Date _____
Signature of authorized representative

Printed Name:

Title:

CTV Contact Information:

Reporting:
(Electronic delivery is preferred) Stephen Lewis Business Manager, Accounts Receivable Columbia Technology Ventures 51 Audubon Avenue, 2nd Floor New York, NY 10035 Phone: 212-342-1176 E-mail: ctvfinance@columbia.edu

EXHIBIT 31.01

CERTIFICATION

I, Seth Lederman, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Tonix Pharmaceuticals Holding Corp.;

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 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 internal 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 in accordance 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 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 reasonable 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 controls over financial reporting.

Date: November 8, 2019

/s/ SETH LEDERMAN
Seth Lederman
Chief Executive Officer

EXHIBIT 31.02

CERTIFICATION

I, Bradley Saenger, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Tonix Pharmaceuticals Holding Corp.;

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 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 internal 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 in accordance 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 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 reasonable 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 controls over financial reporting.

Date: November 8, 2019

/s/ BRADLEY SAENGER
Bradley Saenger
Chief Financial Officer

Exhibit 32.01

CERTIFICATIONS OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Seth Lederman, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Quarterly Report of Tonix Pharmaceuticals Holding Corp. on Form 10-Q for the fiscal quarter ended September 30, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in this Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of Tonix Pharmaceuticals Holding Corp.

Date: November 8, 2019

By: /s/ SETH LEDERMAN
Name: Seth Lederman
Title: *Chief Executive Officer*

I, Bradley Saenger, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Quarterly Report of Tonix Pharmaceuticals Holding Corp. on Form 10-Q for the fiscal quarter ended September 30, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in this Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of Tonix Pharmaceuticals Holding Corp.

Date: November 8, 2019

By: /s/ BRADLEY SAENGER
Name: Bradley Saenger
Title: *Chief Financial Officer*