

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 **June 30, 2016**

☐ 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: **001-37772**

PhaseRx, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction
of incorporation or organization)

20-4690620

(I.R.S. Employer Identification No.)

**410 W. Harrison Street, Suite 300
Seattle, Washington**

(Address of principal executive offices)

98119

(Zip Code)

Registrant's telephone number, including area code: **(206) 805-6300**

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

Large accelerated filer ☐

Accelerated filer ☐

Non-accelerated filer ☐ (Do not check if a smaller reporting company)

Smaller reporting company ☒

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 August 1, 2016, the registrant had 11,690,329 shares of common stock outstanding.

PHASERX, INC.

FORM 10-Q

FOR THE QUARTERLY PERIOD ENDED JUNE 30, 2016

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PART I – FINANCIAL INFORMATION

Item 1. Financial Statements.

PhaseRx, Inc. Balance Sheets (in thousands, except share and per share amounts)

	June 30, 2016 (unaudited)	December 31, 2015
Assets		
Current assets		
Cash and cash equivalents	\$ 15,198	\$ 3,290
Marketable securities	5,993	-
Prepays and other current assets	505	388
Total current assets	21,696	3,678
Property and equipment, net	301	236
Total assets	<u>\$ 21,997</u>	<u>\$ 3,914</u>
Liabilities, Redeemable Convertible Preferred Stock and Stockholders' Equity (Deficit)		
Current liabilities		
Accounts payable	\$ 542	\$ 396
Accrued liabilities	522	445
Accrued interest	37	3,199
Convertible notes, net of debt discount	-	19,841
Deferred rent	20	47
Total current liabilities	1,121	23,928
Term loan payable, net of debt discount	5,519	-
Preferred stock warrant liability	-	3,163
Total liabilities	<u>6,640</u>	<u>27,091</u>
Commitments and contingencies (Note 7)		
Redeemable convertible preferred stock		
Series A, \$0.0001 par value, no shares and 45,100,000 shares authorized at June 30, 2016 and December 31, 2015, respectively; no shares and 20,216,583 shares issued and outstanding at June 30, 2016 and December 31, 2015, respectively; aggregate liquidation preference of \$20,217 at December 31, 2015	-	20,212
Series A-1, \$0.0001 par value, no shares and 10,500,000 shares authorized at June 30, 2016 and December 31, 2015, respectively; no shares and 5,500,000 shares issued and outstanding at June 30, 2016 and December 31, 2015, respectively; aggregate liquidation preference of \$5,500 at December 31, 2015	-	5,500
Stockholders' equity (deficit)		
Preferred stock, \$0.0001 par value, 5,000,000 shares authorized at June 30, 2016	-	-
Common stock; \$0.0001 par value; 50,000,000 shares and 65,600,000 shares authorized at June 30, 2016 and December 31, 2015, respectively; 11,690,329 and 532,885 shares issued and outstanding at June 30, 2016 and December 31, 2015, respectively	1	1
Additional paid-in capital	78,002	453
Accumulated other comprehensive income	14	-
Accumulated deficit	(62,660)	(49,343)
Total stockholders' equity (deficit)	15,357	(48,889)
Total liabilities, redeemable convertible preferred stock and stockholders' equity (deficit)	<u>\$ 21,997</u>	<u>\$ 3,914</u>

See Notes to Financial Statements

PhaseRx, Inc.
Statements of Operations
(in thousands, except per share amounts)
(unaudited)

	Three Months Ended June 30		Six Months Ended June 30	
	2016	2015	2016	2015
Revenue	\$ -	\$ -	\$ -	\$ 375
Operating expenses				
Research and development	1,416	1,160	2,850	2,442
General and administrative	880	283	1,559	567
Noncash financial advising fees	7,515	-	7,515	-
Total operating expenses	9,811	1,443	11,924	3,009
Loss from operations	(9,811)	(1,443)	(11,924)	(2,634)
Interest expense	(1,383)	(320)	(1,583)	(570)
Other income, net	110	16	190	37
Total other income (expense)	(1,273)	(304)	(1,393)	(533)
Net loss	\$ (11,084)	\$ (1,747)	\$ (13,317)	\$ (3,167)
Basic and diluted net loss per share	\$ (1.84)	\$ (3.29)	\$ (4.05)	\$ (6.27)
Shares used in computation of basic and diluted net loss per share	6,013	531	3,288	505

See Notes to Financial Statements

PhaseRx, Inc.
Statements of Comprehensive Loss
(In thousands)
(Unaudited)

	Three Months Ended June 30		Six Months Ended June 30	
	2016	2015	2016	2015
Net loss	\$ (11,084)	\$ (1,747)	\$ (13,317)	\$ (3,167)
Other comprehensive income:				
Unrealized gain (loss) on marketable securities	-	-	14	-
Comprehensive loss	<u>\$ (11,084)</u>	<u>\$ (1,747)</u>	<u>\$ (13,303)</u>	<u>\$ (3,167)</u>

See Notes to Financial Statements

PhaseRx, Inc.
Statement of Stockholders' Equity (Deficit)
(in thousands, except share amounts)
(Unaudited)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Stockholders' Equity (Deficit)
	Shares	Amount				
Balance, December 31, 2015	532,885	\$ 1	\$ 453	\$ -	\$ (49,343)	\$ (48,889)
Debt discount for beneficial conversion feature on bridge loan	-	-	1,021	-	-	1,021
Issuance of stock in initial public offering, net of \$2,025 in offering costs	3,700,000	-	16,475	-	-	16,475
Issuance of common stock to financial advisor, noncash	112,000	-	560	-	-	560
Conversion of preferred stock	3,229,975	-	25,716	-	-	25,716
Conversion of notes payable and related accrued interest	2,788,880	-	19,404	-	-	19,404
Conversion of bridge loan and related accrued interest	1,021,525	-	4,086	-	-	4,086
Cashless exercise of warrants	303,096	-	2,440	-	-	2,440
Exercise of options	1,968	-	-	-	-	-
Noncash financial advising fees	-	-	6,955	-	-	6,955
Warrant liability reclassified to equity upon expiration	-	-	535	-	-	535
Debt discount for warrant issued with term loan payable	-	-	205	-	-	205
Stock-based compensation	-	-	156	-	-	156
Accretion of Series A preferred stock	-	-	(4)	-	-	(4)
Unrealized gain on marketable securities	-	-	-	14	-	14
Net loss	-	-	-	-	(13,317)	(13,317)
Balance, June 30, 2016	<u>11,690,329</u>	<u>\$ 1</u>	<u>\$ 78,002</u>	<u>\$ 14</u>	<u>\$ (62,660)</u>	<u>\$ 15,357</u>

See Notes to Financial Statements

PhaseRx, Inc.
Statements of Cash Flows
(in thousands)
(unaudited)

	Six Months Ended June 30	
	2016	2015
Operating activities		
Net loss	\$ (13,317)	\$ (3,167)
Adjustments to reconcile net loss to net cash used in operating activities:		
Noncash financial advising fees	7,515	-
Amortization of debt discount	1,426	56
Depreciation and amortization	92	225
Stock-based compensation	156	11
Noncash interest expense	115	514
Deferred contract revenue	-	(375)
Preferred stock warrant liability	(190)	209
Changes in operating assets and liabilities		
Prepays and other current assets	(117)	17
Accounts payable	146	(28)
Accrued liabilities	77	(198)
Deferred rent	(27)	(90)
Net cash used in operating activities	(4,124)	(2,826)
Investing activities		
Purchases of marketable securities	(5,979)	-
Purchases of property and equipment	(157)	(10)
Net cash used in investing activities	(6,136)	(10)
Financing activities		
Proceeds from issuance of common stock, net of issuance costs	16,475	-
Proceeds from issuance of term loan, net of issuance costs	5,693	-
Proceeds from issuance of convertible note, net of issuance costs	-	1,382
Proceeds from exercise of common stock warrants	-	10
Proceeds from issuance of original issue discount promissory note	400	-
Payment of original issue discount promissory note	(400)	-
Net cash provided by financing activities	22,168	1,392
Net increase (decrease) in cash and cash equivalents	11,908	(1,444)
Cash and cash equivalents		
Beginning of period	3,290	2,031
End of period	<u>\$ 15,198</u>	<u>\$ 587</u>
Noncash investing and financing activities:		
Accretion of Series A preferred stock	\$ 4	\$ 4
Conversion of preferred stock into common stock	25,716	-
Conversion of notes payable into common stock	19,404	-
Conversion of bridge loan into common stock	4,086	-
Debt discount for beneficial conversion feature on bridge loan	1,021	-
Warrant liability reclassified to equity upon expiration	535	-
Debt discount for warrant issued in connection with term loan payable	205	-

See Notes to Financial Statements

Notes to Unaudited Financial Statements

1. Business and Basis of Presentation

PhaseRx, Inc. (referred to as the “Company,” “we,” “us,” or “our”) was incorporated in the State of Delaware on March 9, 2006 and is located in Seattle, Washington. We are a biopharmaceutical company developing a portfolio of products for the treatment of inherited enzyme deficiencies in the liver using intracellular enzyme replacement therapy, or i-ERT. Our i-ERT approach is enabled by our proprietary Hybrid messenger RNA, or mRNA, Technology platform, which allows synthesis of the missing enzyme inside the cell. Our initial product portfolio targets the three urea cycle disorders ornithine transcarbamylase deficiency, or OTCD, argininosuccinate lyase deficiency, or ASL deficiency, and argininosuccinate synthetase deficiency, or ASS1 deficiency. In June 2016, we selected PRX-OTC as our lead product candidate for treatment of OTCD and demonstrated preclinical proof of concept for a second product candidate PRX-ASL, for the treatment of ASL deficiency. We expect to obtain human clinical safety and efficacy data in OTCD patients for our first program in 2018.

Our activities since inception have consisted principally of performing research and development activities and raising capital. Our activities are subject to significant risks and uncertainties, including possible failure of preclinical testing and failing to secure additional funding before we achieve sustainable revenue and profit from operations. As of June 30, 2016, we had an accumulated deficit of \$62.7 million.

Initial Public Offering

In May 2016, we completed our initial public offering (“IPO”) and sold 3,700,000 shares of common stock at a price of \$5.00 per share to the public. The shares began trading on The NASDAQ Capital Market on May 18, 2016. The aggregate net proceeds received by us from the IPO, net of underwriting discounts and commissions and offering expenses, was \$16.5 million. Immediately prior to the pricing of the IPO, all then outstanding shares of our convertible preferred stock, convertible notes and loans were converted into 7,040,380 shares of common stock and warrants were exercised by cashless exercise to purchase 303,096 shares of common stock. The related carrying value of shares of preferred stock, notes and warrants in the aggregate amount of \$51.6 million was reclassified as common stock and additional paid-in capital. Additionally, we amended and restated our certificate of incorporation, effective May 17, 2016 to, among other things, change the authorized number of shares of common stock to 50,000,000 and the authorized number of shares of preferred stock to 5,000,000.

Prior to the IPO, our recurring operating losses raised substantial doubt about our ability to continue as a going concern. During the quarter ended June 30, 2016, we successfully completed the IPO and secured a term loan with Hercules Capital, Inc. (see detailed disclosure in note 4). We believe we have sufficient cash to fund our operations for the next 12 months.

Conversion Price Amendment

On May 17, 2016, we amended our third amended and restated certificate of incorporation to reduce the conversion price of our preferred stock to \$0.747165 per share.

Reverse Stock Split

On May 17, 2016, following the effectiveness of the conversion price amendment, we effected a reverse stock split at a ratio of 1-for-10.656096 of our issued and outstanding shares of common stock. Issued and outstanding stock options were split on the same basis and exercise prices were adjusted accordingly.

All information presented in these financial statements and related notes reflect the 1-for-10.656096 reverse stock split of our outstanding shares of common stock, stock options and warrants and the revision to the conversion price of our preferred stock.

Basis of Presentation

The accompanying interim balance sheet as of June 30, 2016, the statements of operations for the three and six months ended June 30, 2016 and 2015, the statements of comprehensive loss for the three and six months ended June 30, 2016 and 2015, the statement of stockholders’ equity (deficit) for the six months ended June 30, 2016 and the statements of cash flows for the six months ended June 30, 2016 and 2015 and the related footnote disclosures are unaudited. The accompanying unaudited financial statements reflect, in the opinion of our management, all adjustments, consisting of only normal recurring adjustments, necessary for a fair presentation of financial position, results of operations, comprehensive loss and cash flows for each period presented in accordance with United States generally accepted accounting principles (“GAAP”) for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, certain information and disclosures normally included in financial statements prepared in accordance with GAAP have been condensed or omitted from the accompanying statements. These interim financial statements should be read in conjunction with the audited financial statements and related notes thereto included in our final prospectus dated May 17, 2016, filed with the Securities and Exchange Commission (“SEC”) pursuant to Rule 424(b)(4) under the Securities Act of 1933, as amended (the “Securities Act”) on May 18, 2016. The accompanying financial information as of December 31, 2015 has been derived from the audited 2015 financial statements included in the final prospectus. Operating results for the three and six months ended June 30, 2016 are not necessarily indicative of results that may be expected for the year ending December 31, 2016, or any other future period.

2. Summary of Significant Accounting Policies

Use of estimates

The preparation of financial statements in conformity with GAAP requires our management to make estimates and assumptions that affect the reported amount of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

In preparing these financial statements, management has made its best estimates and judgments of certain amounts included in the financial statements, giving due consideration to materiality. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, fair value measurements, financing activities, accruals and other contingencies.

Cash Equivalents and Marketable Securities

We invest our excess cash in investment grade short- to intermediate-term fixed income securities. Such investments are included in cash and cash equivalents, marketable securities, or long-term marketable securities on the balance sheets, classified as available-for-sale and reported at fair value with unrealized gains and losses included in accumulated other comprehensive income (loss). Realized gains and losses on the sale of these securities are recognized in net income or loss. We consider all highly liquid investments with original maturities at purchase of 90 days or less to be cash equivalents, an investment with a maturity greater than twelve months from the balance sheet date as long-term marketable securities and a maturity less than twelve months as short-term at the balance sheet date. Our cash equivalents and marketable securities consist principally of commercial paper and money market securities.

Interest earned on securities is included in interest income. Gains are recognized when realized in our statements of operations. Losses are recognized when realized or when we have determined that an other-than-temporary decline in fair value has occurred. The cost of securities sold is based on the specific identification method.

We periodically evaluate whether declines in fair values of our investments below their cost are other-than-temporary. This evaluation consists of several qualitative and quantitative factors regarding the severity and duration of the unrealized loss as well as our ability and intent to hold the investment until a forecasted recovery occurs. Factors considered include quoted market prices, recent financial results and operating trends, credit quality of debt instrument issuers, other publicly available information that may affect the value of our investments, duration and severity of the decline in value, and our strategy and intentions for holding the investment. Additionally, we assess whether it is more likely than not we will be required to sell any investment before recovery of its amortized cost basis.

Fair Value of Financial Instruments

We establish the fair value of our assets and liabilities using 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. We established a fair value hierarchy based on the inputs used to measure fair value. The three levels of the fair value hierarchy are as follows:

Level 1: Quoted prices in active markets for identical assets or liabilities.

Level 2: Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly.

Level 3: Unobservable inputs in which little or no market data exists, therefore determined using estimates and assumptions developed by us, which reflect those that a market participant would use.

We measure and report at fair value our cash equivalents and marketable securities. The carrying value of accounts payable and accrued liabilities approximate their respective fair values due to their relative short maturities. The carrying value of our Hercules term loan approximates fair value because the interest rate is reflective of the rate we could obtain on debt with similar terms and conditions. We estimated the fair value of the preferred stock warrant liability using Level 3 inputs.

We may apply the fair value option to any eligible financial assets or liabilities, which permits an instrument by instrument irrevocable election to account for selected financial assets and liabilities at fair value. To date, we have not applied this election.

Derivative Financial Instruments

We evaluate our financial instruments such as convertible preferred stock and convertible notes to determine if such instruments are derivatives or contain features that qualify as embedded derivatives. For derivative financial instruments that are accounted for as liabilities, the derivative instrument is initially recorded at its fair value and is then revalued at each reporting date, with changes in the fair value reported in the statements of operations. The classification of derivative instruments, including whether such instruments should be recorded as liabilities or as equity, is evaluated at the end of each reporting period. Derivative instrument liabilities are classified in the balance sheet as current or non-current based on whether or not net-cash settlement of the derivative instrument could be required within 12 months of the balance sheet date. At each reporting date, we review our convertible securities to determine their classification is appropriate.

Deferred Financing Costs

We defer costs related to the issuance of debt and include them on the accompanying balance sheets as a deduction from the debt liability. Deferred financing costs are amortized over the term of the related loan using the effective interest method and are included as a component of interest expense on the accompanying statements of operations.

Revenue Recognition

Non-refundable, upfront payments received in connection with collaborative research and development agreements are deferred and recognized on a straight-line basis, unless evidence suggests that the revenue is earned or obligations are fulfilled in a different pattern, over the contractual term of the arrangement or the expected period during which those specified services will be performed, whichever is longer.

Research and Development Costs

Research and development costs are expensed as incurred. Research and development costs include salaries and personnel-related costs, consulting fees, fees paid for contract research services, the costs of laboratory supplies, equipment and facilities, license fees and other external costs. Non-refundable advance payments for goods or services to be received in the future for use in research and development activities are deferred and capitalized. The capitalized amounts are expensed as the related goods are delivered or the services are performed.

Stock-Based Compensation

We expense the cost of employee services received in exchange for an award of equity instruments based on the grant date fair value of such instruments. We use the Black-Scholes option pricing model to calculate the fair value of any equity instruments on the grant date. We recognize stock-based compensation, net of estimated forfeitures, on the graded-vesting method as expense over the requisite service period. The use of the Black-Scholes option pricing model requires management to make assumptions with respect to volatility, expected option term and fair value of our common stock. Measurement of stock-based compensation for options granted to nonemployees is subject to periodic adjustment as the underlying equity instruments vest.

We have granted stock options with performance conditions to certain executive officers and directors. At each reporting date, we evaluate whether the achievement of the performance conditions is probable. Compensation expense is recorded over the appropriate service period based upon our assessment of achievement of each performance condition or the occurrence of the event which will trigger the options to vest.

Comprehensive Loss

Comprehensive loss is comprised of net loss and other comprehensive income or loss. Other comprehensive income or loss consists of unrealized gains and losses on marketable securities.

Net Loss Per Share

The computation of basic and diluted net loss per share is calculated by dividing net loss by the weighted average shares outstanding during the period and excludes all outstanding stock options, warrants, preferred stock, as well as shares issuable upon conversion of all outstanding convertible notes and term loans from the calculation of diluted net loss per common share, as all such securities are anti-dilutive to the computation for all the periods presented. For the three months and six months ended June 30, 2016, the computation of diluted net loss per share excluded 1,222,289 shares. For the three months and six months ended June 30, 2015, the computation of diluted net loss per share excluded 6,198,474 shares.

The following table presents the calculation of basic and diluted net loss per share:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2016	2015	2016	2015
(In thousands, except per share amounts)				
Net loss	\$ (11,084)	\$ (1,747)	\$ (13,317)	\$ (3,167)
Weighted average shares used in computation of basic and diluted net loss per share	6,013	531	3,288	505
Basic and diluted net loss per share	<u>\$ (1.84)</u>	<u>\$ (3.29)</u>	<u>\$ (4.05)</u>	<u>\$ (6.27)</u>

Concentration of Risk

We maintain our cash, cash equivalents and investments with high quality, accredited financial institutions. These amounts at times may exceed federally insured limits. We have not experienced any credit losses in such accounts and do not believe we are exposed to significant risk on these funds. Our cash, cash equivalents and marketable securities balances of \$20.9 million and \$3.0 million as of June 30, 2016 and December 31, 2015 were uninsured.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board, or FASB, issued Accounting Standard Update, or ASU, No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, which supersedes the revenue recognition requirements in ASC 605, *Revenue Recognition*. This ASU is based on the principle that revenue is recognized to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The ASU also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. The ASU is effective for public entities for annual periods beginning after December 15, 2017. In June 2015, the FASB deferred for one year the effective date of the new revenue guidance, with an option that would permit companies to adopt the guidance as early as the original effective date. Early adoption prior to the original effective date is not permitted. We are evaluating the impact this guidance may have on our revenue recognition, but do not expect that the adoption will have a material impact on our financial statements.

In April 2015, the FASB issued ASU 2015-03 *Simplifying the Presentation of Debt Issuance Costs* guidance to simplify the presentation of debt issuance costs. Debt issuance costs related to a recognized debt liability will be presented on the balance sheet as a direct deduction for the debt liability as opposed to recorded as a separate asset, except when incurred before receipt of the funding from the associated debt liability. This is similar to the presentation of debt discounts or premiums. This ASU requires retrospective application which is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2015. We have adopted this guidance. The adoption of this guidance did not have a material impact on our financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The ASU is intended to provide more transparent and economically neutral information about the assets and liabilities that arise from leases than previous guidance. The ASU is effective for public entities for annual periods beginning on or after December 15, 2018. Early adoption is permitted, and adoption must be applied on a modified retrospective basis. We are evaluating the impact of this guidance but do not expect that the adoption will have a material impact on our financial statements.

In March 2016, the FASB issued ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting* which amends ASC 718, *Compensation — Stock Compensation*. The ASU includes provisions intended to simplify various provisions related to how share-based payments are accounted for and presented in the financial statements. The ASU is effective for public entities for annual periods beginning on or after December 15, 2016 and interim periods within that reporting period. Early adoption is permitted in any interim or annual period. We are evaluating the impact of this guidance but do not expect that the adoption will have a material impact on our financial statements.

3. Cash Equivalents and Marketable Securities

We did not have any available-for-sale security holdings in 2015. Securities available-for-sale at cost and fair market value by contractual maturity as of June 30, 2016 were as follows:

	Cost or Amortized Cost	Fair Value
	(In thousands)	
Due in one year or less	\$ 5,979	\$ 5,993
Due after one year through two years	-	-
	<u>\$ 5,979</u>	<u>\$ 5,993</u>

We did not incur any realized gains and losses on sales of available-for-sale securities for the three and six months ended June 30, 2016. None of the securities have been in a continuous unrealized loss position for more than 12 months as of June 30, 2016.

Marketable securities available-for-sale consisted of the following as of June 30, 2016:

	Cost or Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(In thousands)			
Commercial paper	\$ 5,979	\$ 14	\$ -	\$ 5,993
	<u>\$ 5,979</u>	<u>\$ 14</u>	<u>\$ -</u>	<u>\$ 5,993</u>

Fair values were determined for each individual security in the investment portfolio. We utilize third-party pricing services for all security valuations. We review the pricing methodology, including the collection of market information, used by the third-party pricing services. On a periodic basis, we also review and validate the pricing information received from the third-party providers.

4. Term Loan, Convertible Notes Payable and Other Debt

Hercules Term Loan and Warrants

On June 7, 2016, we entered into a Loan and Security Agreement (the “Loan Agreement”) by and among us, the several banks and other financial institutions or entities from time to time parties to the Loan Agreement (the “Lenders”) and Hercules Capital, Inc. (“Hercules”), in its capacity as administrative agent for itself and the Lenders, pursuant to which the Lenders agreed to make a term loan available to us for working capital and general business purposes, in a principal amount of up to \$8 million (the “Term Loan”). On June 7, 2016, the Lenders funded \$6 million of the Term Loan. An additional \$2 million of the Term Loan may be requested by us during the period commencing upon us entering into an arms-length strategic corporate development transaction that is validating in the agent’s and Lenders’ sole discretion (the “Milestone Event”) and ending upon the earlier to occur of (a) December 15, 2016, (b) the date which is 45 days after the consummation of the Milestone Event and (c) the occurrence of an event of default under the Loan Agreement. The Term Loan is secured by substantially all of our assets other than our intellectual property.

The Term Loan bears interest at a floating annual rate equal to the greater of (i) 9.25% and (ii) the sum of (a) 9.25%, plus (b) the prime rate as reported by The Wall Street Journal minus 3.50%. We are required to make interest payments in cash on the first business day of each month, beginning on July 1, 2016. The Term Loan will begin amortizing on July 3, 2017, in equal monthly installments of principal and interest, with such payments beginning on July 3, 2017, and continuing on the first business day of each month thereafter until the Term Loan is repaid. The final maturity date of the Term Loan is December 2, 2019. Upon repayment of the term loan, we are required to pay an end of term charge to the Lenders equal to 5.85% of the aggregate original principal amount of all Term Loan advances extended by the Lenders to us.

At our option, we may prepay all or any portion of the outstanding principal balance and all accrued and unpaid interest with respect to the principal balance being prepaid of the Term Loan, subject to a prepayment fee of 3% of the amount prepaid if the prepayment occurs on or prior to June 7, 2017, 2% of the amount prepaid if the prepayment occurs after June 7, 2017 but on or prior to June 7, 2018, or 1% of the amount prepaid if the prepayment occurs after June 7, 2018.

In connection with the Loan Agreement, we also issued to Hercules Technology III, L.P., as the sole Lender on June 7, 2016, a warrant to purchase up to 63,000 shares of common stock at an exercise price of \$5.00 per share. In the event that any additional Term Loans are made to us, the warrant will be exercisable for up to an additional number of shares of common stock equal to (i) \$105,000 divided by (ii) the volume-weighted average daily price for a share of common stock for the 30 consecutive trading days ending on the trading day immediately preceding the date on which the warrant becomes exercisable for such additional shares (the “Additional Shares Exercise Price”), at the Additional Shares Exercise Price. The warrant may be exercised either for cash or on a cashless “net exercise” basis. The warrant is immediately exercisable and expires on June 7, 2021.

The warrant issued met the requirements to be accounted for as equity. The \$212,000 fair value of the warrant was determined using the Black-Scholes option model with the following assumptions: no dividend yield; expected life of 5 years; risk-free interest rate of 1.23%; and volatility rate of 81.6%. The proceeds from the Term Loan were allocated between the debt and warrant based on their relative fair values. The relative fair value of the warrant amounted to \$205,000 and was recorded as an increase in the additional paid-in capital and debt discount.

The total debt discount, inclusive of the end of term charge and other fees, amounted to \$659,000 related to this Term Loan which will be amortized to interest expense over the term of the Term Loan.

Convertible Loan – Bridge Loan Financing

On December 21, 2015, we entered into a loan and security agreement with 17 investors, pursuant to which these investors made term loans to us in the aggregate principal amount of \$4.0 million. Interest accrued on the term loans at the rate of 5% per annum. The entire outstanding principal balance of \$4.0 million of the term loans together with all accrued and unpaid interest of \$86,000 were converted into 1,021,525 shares of our common stock upon the closing of our IPO, at a conversion price equal to 80% of the IPO offering price. The value of the beneficial conversion feature of \$1.0 million was recorded as a debt discount with an offsetting credit to additional paid in capital. The discount was fully amortized to interest expense on the conversion date.

Convertible Notes Payable

Prior to 2016 we issued to investors, including beneficial owners of more than 5% of our capital stock, convertible promissory notes, in the aggregate principal amount of \$16.2 million and seven-year warrants to purchase shares of the same class and series of capital stock into which the notes convert. The notes carried interest at a rate of 8% per annum. On December 11, 2015, the noteholders agreed that for purposes of calculating the number of conversion shares, the notes ceased accruing interest as of December 31, 2015. The accrued interest payable on convertible notes payable totaled \$3.2 million as of December 31, 2015. Immediately prior to the consummation of the IPO, the convertible notes and unpaid accrued interest thereon were converted into 2,788,880 shares of our common stock and the seven-year warrants to purchase 2,452,242 shares of preferred stock with an exercise price of \$0.01 were exercised on a cashless basis resulting in the issuance of 303,096 shares of our common stock.

The fair value of the warrants was recorded as debt discount and warrant liabilities upon issuance of the convertible notes on the balance sheets because the warrants were exercisable into redeemable Series A preferred stock. The debt discount was amortized to interest expense over the term of the notes. The fair value of the warrant liabilities was re-measured at each reporting period using the Black-Scholes option pricing model. Any increase in fair value was recorded as expense and any decrease in the fair value was recorded as income in the statement of operations.

Warrants to purchase 1,049,999 shares of preferred stock with an exercise price of \$1.00 expired upon the IPO. The balance of the warrant liability for the expired warrants of \$535,000 was reclassified as additional paid-in capital during the quarter ended June 30, 2016.

The related warrant liabilities were zero and \$3.2 million as of June 30, 2016 and December 31, 2015, respectively.

Promissory Note

On May 2, 2016, we issued an original issue discount promissory note in the aggregate amount of \$440,000 payable to a lender in exchange for a \$400,000 loan. The note was repaid after the closing of the IPO.

Interest expense

We recognized total interest expense of \$1.4 million and \$320,000 during the three months ended June 30, 2016 and 2015, respectively. We recognized total interest expense of \$1.6 million and \$570,000 during the six months ended June 30, 2016 and 2015, respectively.

5. Fair Value Measurements

The following table sets forth the fair value of our assets and liabilities measured at fair value at June 30, 2016 and December 31, 2015:

Description	June 30, 2016			
	Balance	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
(In thousands)				
Financial Assets:				
Money market	\$ 6,144	\$ 6,144	\$ -	\$ -
Commercial paper	14,491	-	14,491	-
Total financial assets	<u>\$ 20,635</u>	<u>\$ 6,144</u>	<u>\$ 14,491</u>	<u>\$ -</u>
Add Cash:	556			
Total cash, cash equivalents and marketable securities	<u>\$ 21,191</u>			
Financial Liabilities:				
Preferred stock warrant liability	\$ -	\$ -	\$ -	\$ -
Total financial liabilities	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Description	December 31, 2015			
	Balance	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
(In thousands)				
Financial Assets:				
Money market	\$ -	\$ -	\$ -	\$ -
Commercial paper				
Total financial assets	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Add Cash:	\$ 3,290			
Total cash, cash equivalents and marketable securities	<u>\$ 3,290</u>			
Financial Liabilities:				
Preferred stock warrant liability	\$ 3,163	\$ -	\$ -	\$ 3,163
Total financial liabilities	<u>\$ 3,163</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 3,163</u>

The warrants exercisable into Series A preferred stock were issued in connection with the issuance of convertible notes. We determined the fair value of warrants using the Black-Scholes option pricing model with the following assumptions (level 3 inputs): no dividend yield; expected life ranging from 3.1 to 7.0 years; risk-free interest rates ranging from 1.3% to 2.1%; and volatility rates ranging from 84.0% to 97.7%. The value of our underlying preferred stock was assumed to be equal to Series A preferred stock liquidation preference value of \$1.00 per share.

The changes in the balances of the Level 3 preferred stock warrant liability measured at fair value for the three and six months ended June 30, 2016 and 2015 were as follows (in thousands):

	2016	2015
Balance as of January 1,	\$ 3,163	\$ 2,695
Change in fair value	(81)	(23)
Balance as of March 31,	3,082	2,672
Additional preferred stock warrants issued	-	246
Change in fair value	(109)	(15)
Warrants exercised	(2,438)	-
Warrants expired	(535)	-
Balance as of June 30,	\$ -	\$ 2,903

6. Stockholders' Equity (Deficit)

Convertible Preferred Stock

We had 20,216,583 shares of Series A preferred stock, held of record by 15 stockholders and 5,500,000 shares of Series A-1 preferred stock, held of record by one stockholder, outstanding as of December 31, 2015, all of which converted into an aggregate of 3,229,975 shares of common stock immediately prior to the pricing of our IPO.

Pursuant to our fourth amended and restated certificate of incorporation, we are authorized to issue 5,000,000 shares of preferred stock. Our fourth amended and restated certificate of incorporation authorizes our board, without any further stockholder action or approval, to issue these shares in one or more classes or series, to establish from time to time the number of shares to be included in each class or series and to fix the rights, preferences and privileges of the shares of each wholly unissued class or series and any of its qualifications, limitations or restrictions. There was no preferred stock issued or outstanding at June 30, 2016.

Warrants

As of June 30, 2016, other than the warrant to purchase 63,000 shares of our common stock at \$5.00 per shares issued to Hercules in connection with the Term Loan, we also had a warrant issued to a former lender to purchase 14,133 shares of common stock at an exercise price of \$7.96 that expires on December 1, 2020.

Common Stock

In December 2015, we engaged Palladium Capital Advisors, LLC ("Palladium") to serve as a non-exclusive agent in connection with a bridge loan financing and as a non-exclusive advisor in connection with our IPO and for the provision of general capital markets advice.

Prior to the consummation of the bridge loan financing, we determined, following discussions with Palladium, to request certain of our stockholders to transfer an aggregate of 1,393,880 shares of our common stock to Titan Multi-Strategy Fund I, LTD ("Titan") and certain of its third-party designees at a nominal purchase price in order to induce Titan to serve as the initial committed investor in the bridge financing and also in expectation of receiving other support from Titan, Palladium and their respective contacts in connection with our proposed IPO, including introductions to certain prospective underwriters.

As a result of this request, some of our existing investors, who collectively beneficially owned the majority of our common stock, entered into stock purchase agreements with Titan and certain of its third-party designees, pursuant to which, concurrently with the closing of the IPO, sold an aggregate of 1,393,880 shares of our common stock to Titan and certain of its third-party designees at a nominal purchase price. We recorded the fair value of this stock amounting to \$7.0 million, based on the IPO price of \$5.00, as a noncash financial advising fee in our statement of operations to reflect the economic benefits that we received from our principal stockholders.

We have also issued to Palladium, as consideration for serving as a non-exclusive advisor, 112,000 shares of our common stock in June 2016. We valued the stock based on the IPO price of \$5.00 per share. The \$560,000 fair value of the stock was recorded as a noncash financial advising fee during the three months ended June 30, 2016.

Stock Option Plans

2016 Long-Term Incentive Plan

On February 8, 2016, our board of directors approved the 2016 Long-Term Incentive Plan, which we refer to as the 2016 Plan. The 2016 Plan provides for the granting of incentive stock options, within the meaning of Section 422 of the Internal Revenue Code of 1986, as amended, to our employees and for the granting of nonqualified stock options, restricted stock, stock appreciation rights, restricted stock units, performance awards, dividend equivalent rights, and other awards to our employees, directors and consultants.

The 2016 Plan became effective immediately prior to the IPO. We have reserved a total of 1,532,299 shares of our common stock for awards under the 2016 Plan, provided that, such aggregate number of shares reserved for awards will automatically increase on January 1, of each year, in an amount equal to 5% of the total number of shares of common stock outstanding on December 31, of the preceding calendar year. Unless terminated earlier by the board of directors, the 2016 Plan will expire on the tenth anniversary of its effective date.

2006 Stock Plan

The PhaseRx, Inc. 2006 Stock Plan, as amended and restated on June 13, 2014, and as subsequently amended, or the 2006 Stock Plan, was adopted by our board of directors and approved by our stockholders in March 2006. Our 2006 Stock Plan provides for the grant of incentive stock options, within the meaning of Section 422 of the Internal Revenue Code of 1986, as amended, to our employees, and for the grant of non-statutory stock options and stock purchase rights to our employees, directors and consultants. Immediately prior to the IPO, the 2006 Stock Plan ceased to be available for future issuances of awards, and we will not grant any additional awards under the 2006 Stock Plan but will grant awards under the 2016 Plan instead. However, our 2006 Stock Plan will continue to govern the terms and conditions of outstanding awards granted thereunder.

Stock-Based Compensation

We granted incentive stock options to employees and members of the board of directors for their services on the board of directors and nonqualified stock options to nonemployee consultants for their consulting services. Options, in general, either vest in 48 equal monthly installments or 25% on the first year anniversary and 1/48th of the granted options monthly thereafter, such that options are fully vested on the four-year anniversary of the date of grant.

	Number of Stock Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life	Average Intrinsic Value (in thousands)
Outstanding as of December 31, 2015	449,410	\$ 0.9861	6.28	\$ 1,435
Options granted	697,714	3.9332	9.81	579
Option exercised	(1,968)	0.0407	-	-
Outstanding at June 30, 2016	<u>1,145,156</u>	<u>\$ 2.7833</u>	<u>8.44</u>	<u>\$ 2,018</u>
Exercisable at June 30, 2016	<u>316,048</u>	<u>\$ 1.3975</u>	<u>5.65</u>	<u>\$ 887</u>

At June 30, 2016 we had unrecognized compensation cost of \$1.7 million and will be recognized over the weighted-average remaining service period of approximately 3.9 years.

Stock-based compensation expense has been included in the Statement of Operations as follows (in thousands):

	Three months ended June 30		Six months ended June 30	
	2016	2015	2016	2015
Research and development	\$ 21	\$ 4	\$ 30	\$ 9
General and administrative	117	1	126	2
	<u>\$ 138</u>	<u>\$ 5</u>	<u>\$ 156</u>	<u>\$ 11</u>

The fair value of the stock options was estimated at the date of grant using the Black-Scholes option-pricing model with the following weighted average assumptions during the six months ended June 30, 2016 and 2015:

	Six Months Ended June 30, 2016	Six Month Ended June 30, 2015
Weighted average estimated fair value per share	\$ 2.71	\$ 0.11
Weighted average assumptions:		
Dividend yields	-	-
Expected term (years)	6.0	6.1
Risk free interest rate	1.5%	1.5%
Volatility	80.3%	89.6%

The risk-free interest rates used in the Black-Scholes option pricing model are based on the implied yield currently available in United States Treasury securities at maturity with an equivalent term. We have limited stock option exercise information. Accordingly, the expected term of stock options granted was calculated using the simplified method, which represents the average of the contractual term of the stock option and the weighted-average vesting period of the stock option. We have not declared or paid any dividends and do not currently expect to do so in the foreseeable future. The value of our underlying common stock was determined by the board of directors, which relied in part upon the report of third party valuation specialists and input from our management prior to the IPO. The fair value of our option after the IPO is based on the volume weighted average selling price per share of our common stock on the Nasdaq Capital Market during the ten trading day period immediately prior to the date of grant. Expected volatility is based on an average volatility of stock prices for a group of similar publicly traded companies. The fair value of each stock option award is estimated on the date of grant using the Black-Scholes option pricing model.

7. Commitments and Contingencies

In February 2010, we entered into two lease agreements for approximately 14,200 square feet of office, research and development facilities, which became effective in May 2010. The landlord of the facilities is one of our investors. Each lease was for a 65 month term, with a five-year renewal option. Both of the lease agreements included reduced rental payments in the initial years of the 65 month term. In September 2015, we entered agreements to extend the leases to August 2016. We calculated the total rent due over the lease term and are recording equal monthly rent expense over the term. Differences between the recorded rent expense and actual rent paid each month result in an increase or decrease to deferred rent. We also received incentives from the landlord totaling \$605,000 to fund certain tenant improvements. These improvements were capitalized as leasehold improvements, with a corresponding credit recorded to deferred rent. The deferred rent balance is being reduced in equal monthly installments over the lease term as a reduction to rent expense. On February 23, 2016, we entered into agreements to extend the terms of the leases to November 30, 2016. We also extended the renewal option date to May 31, 2016. We elected our five-year renewal option in May 2016. We are in the process of negotiating the terms of a new lease.

Rent expense for the three months ended June 30, 2016 and 2015 was \$206,000 and \$166,000, respectively. Rent expense for the six months ended June 30, 2016 and 2015 was \$412,000 and \$320,000, respectively.

Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion and analysis summarizes the significant factors affecting our operating results, financial condition, liquidity and cash flows as of and for the periods presented below. The following discussion and analysis should be read in conjunction with our unaudited interim financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q. Unless the context provides otherwise, all references in this Quarterly Report on Form 10-Q to “PhaseRx,” “we,” “us,” “our,” the “Company,” or similar terms, refer to PhaseRx, Inc. and its directly and indirectly owned subsidiaries on a consolidated basis.

Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q, including statements regarding our future results of operations and financial position, business strategy, prospective products, product approvals, timing and likelihood of success, plans and objectives of management for future operations, and future results of current and anticipated products are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this Quarterly Report on Form 10-Q are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this Quarterly Report on Form 10-Q and are subject to a number of risks, uncertainties and assumptions described under the sections in this Quarterly Report on Form 10-Q entitled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and in the sections entitled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in our final prospectus dated May 17, 2016, filed with the Securities and Exchange Commission, or the SEC, pursuant to Rule 424(b)(4) under the Securities Act of 1933, as amended, or the Securities Act, on May 18, 2016. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond our control, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for us to predict all risk factors and uncertainties. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

Overview

We are a biopharmaceutical company developing a portfolio of products for the treatment of inherited enzyme deficiencies in the liver using intracellular enzyme replacement therapy, or i-ERT, and expect to generate clinical safety and efficacy data in 2018. We are not aware of any other enzyme replacement therapies for intracellular enzyme deficiencies currently being marketed for inherited enzyme deficiencies in the liver, and believe that the commercial potential for i-ERT is completely untapped and similar to the large and growing \$4 billion worldwide market for conventional enzyme replacement therapy, or ERT, which includes drugs such as Cerezyme®. Our i-ERT approach is enabled by our proprietary Hybrid messenger RNA, or Hybrid mRNA Technology™ platform, which allows synthesis of the missing enzyme inside the cell. Our initial product portfolio targets the three urea cycle disorders ornithine transcarbamylase deficiency, or OTCD, argininosuccinate lyase deficiency, or ASL deficiency, and argininosuccinate synthetase deficiency, or ASS1 deficiency. We have preclinical proofs of concept in two mouse models of the urea cycle disorders showing significant reductions in the level of blood ammonia, which we believe is an approvable endpoint by the Food and Drug Administration, or the FDA, for the demonstration of efficacy in human clinical trials of the urea cycle disorders. To our knowledge, there are no ERT products on the market to treat these diseases, because the urea cycle reaction occurs inside the cell and is inaccessible to the administered enzyme. In contrast, we expect delivery of the missing enzyme using i-ERT with our Hybrid mRNA Technology to be a promising approach to treat these patients. Beyond the urea cycle disorders, we believe there are a significant number of inherited disorders of metabolism in the liver that are candidates for our therapeutic approach and that our Hybrid mRNA Technology can be adapted to develop mRNA therapeutics for the treatment of other inherited liver disorders using our platform.

Our i-ERT approach is accomplished by delivering normal copies of the mRNA that make the missing enzyme inside the liver cell, thereby enabling proper physiological function and correcting the disease. A key challenge with mRNA therapeutics historically has been their satisfactory delivery into the patients' cells. We believe that our Hybrid mRNA Technology addresses these difficulties and enables synthesis of the desired protein in the hepatocyte, which is the chief functional cell type in the liver harboring the metabolic cycles that need to be corrected in metabolic liver diseases. We believe our technology is superior to alternative technologies because, based upon peer-reviewed journal articles and presentations of our competitors and our internal preclinical studies, it results in high-level synthesis of the desired protein in the hepatocyte, has better tolerability and can be repeat-dosed without loss of effectiveness, thus enabling treatment of chronic conditions.

We are focused on inherited, single-gene disorders of metabolism in the liver that result in deficiency of an intracellular enzyme and thus have been unable to be treated with conventional ERT. Some inherited orphan liver diseases, such as the lysosomal storage disorders, can be successfully treated with conventional ERT. However, this approach does not work for many of the inherited orphan liver diseases, including the urea cycle disorders, because the missing enzyme is inside the cell, and the administered enzyme is unable to get inside the target cell where it is needed to be therapeutically active. Our approach is to deliver mRNA encoding the missing enzyme into the cell using our Hybrid mRNA Technology, such that the mRNA makes the missing enzyme inside the cell, restores the intracellular enzyme function and corrects the disease.

As noted above, our initial focus is on urea cycle disorders, which are a group of rare genetic diseases generally characterized by the body's inability to remove ammonia from the blood. The urea cycle consists of several enzymes, including OTC, ASL and ASS1. Since the urea cycle reactions occur inside the cell, conventional ERT does not work as a treatment for these disorders. Urea cycle disorders are caused by a genetic mutation that results in a deficiency of one of the enzymes of the urea cycle that is responsible for removing ammonia from the bloodstream, causing elevated levels of ammonia in the blood. The elevated ammonia then reaches the brain through the circulation, where it causes cumulative and irreversible neurological damage, and can result in coma and death. While currently marketed ammonia scavengers such as Ravicti[®] (glycerol phenylbutyrate) and Buphenyl[®] (sodium phenylbutyrate) provide palliative care of the symptoms, liver transplant is the only currently available cure for urea cycle disorders. Our goal is to treat the urea cycle disorders by intravenous delivery of mRNA that makes the relevant missing urea cycle enzyme inside the cell, thus reinstating control of blood ammonia. We believe that anticipated improvements in newborn screening and the availability of corrective therapy will lead to improved diagnosis and survival rates among patients with urea cycle disorders.

We have three therapeutic urea cycle disorder programs under development: PRX-OTC to treat OTCD, PRX-ASL to treat ASL deficiency and PRX-ASS1 to treat ASS1 deficiency. Preclinical efficacy has been established for PRX-OTC with two biological measures, including normalization of the level of ammonia in the blood. In June 2016, we selected PRX-OTC as our lead product candidate and demonstrated preclinical proof of concept for the treatment of a second product candidate, PRX-ASL. We plan to scale up the manufacturing of PRX-OTC and to test the safety and efficacy of the Hybrid mRNA Technology in large animals by the end of 2016. We intend to initiate Investigational New Drug-enabling, or IND-enabling, studies in the first half of 2017 and plan to start manufacturing clinical supplies of the lead urea cycle disorder product candidate consistent with current good manufacturing practices, or cGMP, in the third quarter of 2017. We expect to file an IND application with the FDA in the fourth quarter of 2017 for this candidate and to conduct Phase 2a/2b single- and repeat-dose clinical proof of concept studies in OTCD patients that are expected to generate Phase 2a safety and efficacy data in the first half of 2018 and Phase 2b safety and efficacy data in the second half of 2018, including measurement of reduction in blood ammonia.

Financial Overview

Our operations have been funded, to date, primarily through the sale of our common stock in the initial public offering, or the IPO, debt financing, a series of private placements of convertible preferred stock and issuance of convertible notes and warrants. From our inception through June 30, 2016, we have raised an aggregate of approximately \$69.6 million to fund our operations, of which approximately \$16.5 million, net of \$2.0 million in costs, was from our IPO in May 2016, \$25.7 million was from the issuance of preferred stock and approximately \$20.2 million was from the issuance of convertible notes and warrants and \$5.7 million, net of \$307,000 in costs, from a secured term loan from Hercules Capital, Inc., or Hercules. In addition, we received a \$1.5 million upfront fee from Synageva BioPharma Corp., or Synageva, in 2014 pursuant to a collaboration and development agreement with Synageva.

Recent Developments

On May 23, 2016, we completed our IPO and sold 3,700,000 shares of common stock at a price of \$5.00 per share to the public. The aggregate net proceeds received by us from the IPO, net of underwriting discounts and commissions and offering expenses, were \$16.5 million.

Operating Losses

Since our inception, we have incurred significant operating losses. Our net losses were \$11.1 million and \$1.7 million for the three months ended June 30, 2016 and 2015, respectively. Our net losses were \$13.3 million and \$3.2 million for the six months ended June 30, 2016 and 2015, respectively. As of June 30, 2016, we had an accumulated deficit of \$62.7 million. We expect to continue to incur significant expenses and operating losses over the next several years. Our net losses may fluctuate significantly from quarter to quarter and from year to year. We anticipate that our expenses will increase significantly as we plan to conduct our preclinical studies, scale up the manufacturing process, advance our research programs into clinical trials, continue to discover, validate and develop additional product candidates, expand and protect our intellectual property portfolio, and hire additional development and scientific personnel. In addition, we expect to incur additional costs associated with operating as a public company.

Revenue

We currently do not have any products approved for sale in any jurisdiction and have not generated any revenue from product sales.

Research and Development Expenses

Our research and development expenses consist primarily of costs incurred for our research activities, including our drug discovery efforts, and the development of our product candidates, which include the following:

- employee-related expenses, including salaries, benefits, travel and stock-based compensation;
- external research and development expenses incurred under arrangements with third parties, such as consulting fees, research testing and preclinical studies of our product candidates;
- laboratory supplies, and acquiring, developing and manufacturing preclinical study materials;
- license fees; and
- costs of facilities, depreciation and other expenses.

Research and development costs are expensed as incurred. In certain circumstances, we will make non-refundable advance payments to purchase goods and services for future use pursuant to contractual arrangements. In those instances, we defer and recognize an expense in the period that we receive or consume the goods or services.

At any point in time, we typically have various early stage research and drug discovery projects ongoing. Our internal resources, employees and infrastructure are not directly tied to any one research or drug discovery project and are typically deployed across multiple projects. As such, we do not maintain information regarding the costs incurred for these early stage research and drug discovery programs on a project-specific basis.

The nature and efforts required to complete a prospective research and development project are typically indeterminable at very early stages when research is primarily conceptual and may have multiple applications. Once a focus towards developing a specific product candidate has been developed, we obtain more visibility into the efforts that may be required to reach conclusion of the development phase. However, there are inherent risks and uncertainties in developing novel biologics in a rapidly-changing industry environment. To obtain approval of a product candidate from the FDA, we must, among other requirements, submit data supporting safety and efficacy as well as detailed information on the manufacture and composition of the product candidate. In most cases, this entails extensive laboratory tests and preclinical and clinical trials. The collection of this data, as well as the preparation of applications for review by the FDA, is costly in time and effort, and may require significant capital investment.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related benefits, including stock-based compensation, related to our executive, finance and support functions and not otherwise included in research and development expenses. Other general and administrative expenses include allocated facility related costs not otherwise included in research and development expenses, professional fees for auditing, tax, investor relations, legal services and travel expenses. We expect that general and administrative expenses will increase in the future as we expand our operating activities and incur additional costs associated with being a publicly-traded company. These increases will include legal fees, accounting fees, directors' and officers' liability insurance premiums and fees associated with investor relations.

Interest Expense

Interest expense consists primarily of cash and non-cash interest related to our convertible notes and term loans.

On June 7, 2016, we entered into a loan and security agreement by and among us, the several banks and other financial institutions or entities from time to time parties to the loan and security agreement and Hercules, in its capacity as administrative agent for itself and the lenders, pursuant to which the lenders agreed to make a term loan available to us for working capital and general business purposes, in a principal amount of up to \$8 million, or the Hercules Loan. On June 7, 2016, the lenders funded \$6 million of the term loan, and we received \$5.7 million, net of issuance costs. An additional \$2 million may be requested by us during the draw period as set forth in the loan and security agreement commencing upon us entering into an arms-length strategic corporate development transaction.

The Hercules Loan bears interest at a floating annual rate equal to the greater of (i) 9.25% and (ii) the sum of (a) 9.25%, plus (b) the prime rate as reported by The Wall Street Journal minus 3.50%. We are required to make interest payments in cash on the first business day of each month, beginning on July 1, 2016. The Term Loan will begin amortizing on July 3, 2017, in equal monthly installments of principal and interest, with such payments beginning on July 3, 2017, and continuing on the first business day of each month thereafter until the Term Loan is repaid. The final maturity date of the Term Loan is December 2, 2019. Upon repayment of the term loan, we also require to pay an end of term charge to the Lenders equal to 5.85% of the aggregate original principal amount of all Term Loan advances extended by the Lenders to us.

On December 21, 2015, we entered into a loan and security agreement with 17 investors, pursuant to which these investors made term loans to us in the aggregate principal amount of \$4.0 million. Interest accrued on the term loans at the rate of 5% per annum. The entire outstanding principal balance of \$4.0 million of the term loans together with all accrued and unpaid interest of \$86,000 were converted into 1,021,525 shares of our common stock upon the closing of our IPO, at a conversion price equal to 80% of the IPO offering price. The value of the beneficial conversion feature of \$1.0 million was recorded as a discount with an offsetting credit to additional paid-in capital. The discount was fully amortized to interest expense on the conversion date.

On May 2, 2016, we issued an original issue discount promissory note in the aggregate amount of \$440,000 payable to a lender in exchange for a \$400,000 loan. The note was repaid after the closing of the IPO.

Critical Accounting Policies and Estimates

Our management's discussion and analysis of our financial condition and results of operations are based on our audited and unaudited financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, and expenses and the disclosure of contingent assets and liabilities in our financial statements. On an ongoing basis, we evaluate our estimates and judgments, including those related to accrued expenses and stock-based compensation. We base our estimates on historical experience, known trends and events, and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in the notes to our audited financial statements included in our final prospectus dated May 17, 2016, filed with the SEC pursuant to Rule 424(b)(4) under the Securities Act on May 18, 2016, we believe the following accounting policies to be most critical to the judgments and estimates used in the preparation of our financial statements.

Research and Development Costs

Research and development costs are expensed as incurred. Research and development costs include salaries and personnel related costs, consulting fees, fees paid for contract research services, the costs of laboratory supplies, equipment and facilities, license fees and other external costs. Non-refundable advance payments for goods or services to be received in the future for use in research and development activities are deferred and capitalized. The capitalized amounts are expensed as the related goods are delivered or the services are performed.

Fair Value of Financial Instruments

We establish the fair value of our assets and liabilities using 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. We established a fair value hierarchy based on the inputs used to measure fair value. The three levels of the fair value hierarchy are as follows:

Level 1: Quoted prices in active markets for identical assets or liabilities.

Level 2: Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly.

Level 3: Unobservable inputs in which little or no market data exists, therefore determined using estimates and assumptions developed by us, which reflect those that a market participant would use.

We may apply the fair value option to any eligible financial assets or liabilities, which permits an instrument by instrument irrevocable election to account for selected financial assets and liabilities at fair value. To date, we have not applied this election.

Derivative Financial Instruments

We evaluate our financial instruments such as convertible preferred stock and convertible notes to determine if such instruments are derivatives or contain features that qualify as embedded derivatives. For derivative financial instruments that are accounted for as liabilities, the derivative instrument is initially recorded at its fair value and is then revalued at each reporting date, with changes in the fair value reported in the statements of operations. The classification of derivative instruments, including whether such instruments should be recorded as liabilities or as equity, is evaluated at the end of each reporting period. Derivative instrument liabilities are classified in the balance sheet as current or non-current based on whether or not net-cash settlement of the derivative instrument could be required within 12 months of the balance sheet date. At each reporting date, we review our convertible securities to determine their classification is appropriate.

Deferred Financing Costs

We defer costs related to the issuance of debt which are included on the accompanying balance sheets as a deduction from the debt liability. Deferred financing costs are amortized over the term of the related loan and are included as a component of interest expense on the accompanying statements of operations.

Stock-Based Compensation

We expense the cost of employee services received in exchange for an award of equity instruments based on the grant date fair value of such instruments. We use the Black-Scholes option pricing model to calculate the fair value of any equity instruments on the grant date. We recognize stock-based compensation, net of estimated forfeitures, on the graded-vesting method as expense over the requisite service period. The use of the Black-Scholes option pricing model requires management to make assumptions with respect to volatility, expected option term and fair value of our common stock. Measurement of stock-based compensation for options granted to non-employees is subject to periodic adjustment as the underlying equity instruments vest. We have granted options with performance conditions to certain executive officers and directors. At each reporting date, we evaluate whether the achievement of the performance conditions is probable. Compensation expense is recorded over the appropriate service period based upon our assessment of the achievement of each performance condition or the occurrence of the event which will trigger the options to vest.

We recorded stock-based compensation expense in the Statements of Operations as follows (in thousands):

	Three months ended June 30		Six months ended June 30	
	2016	2015	2016	2015
Research and development	\$ 21	\$ 4	\$ 30	\$ 9
General and administrative	117	1	126	2
	<u>\$ 138</u>	<u>\$ 5</u>	<u>\$ 156</u>	<u>\$ 11</u>

All stock options are granted at a price no less than the fair value per share of our common stock. Prior to the IPO, the fair value of our common stock underlying options granted was determined by the board of directors who relied, in part, upon independent third party valuation analyses and input from our management on each grant date. We used valuation techniques and methods that rely on recommendations by the American Institute of Certified Public Accountants, or AICPA, in its Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*, 2013, and conformed to generally accepted valuation practices.

JOBS Act

Section 107 of the Jumpstart Our Business Startups Act, or JOBS Act, provides that an “emerging growth company” can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. Thus, an “emerging growth company” can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other companies.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board, or FASB, issued Accounting Standard Update, or ASU, No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, which supersedes the revenue recognition requirements in ASC 605, *Revenue Recognition*. This ASU is based on the principle that revenue is recognized to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The ASU also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. The ASU is effective for public entities for annual periods beginning after December 15, 2017. In June 2015, the FASB deferred for one year the effective date of the new revenue guidance, with an option that would permit companies to adopt the standard as early as the original effective date. Early adoption prior to the original effective date is not permitted. We are evaluating the impact this guidance may have on our revenue recognition, but do not expect that the adoption will have a material impact on our financial statements.

In April 2015, the FASB issued ASU 2015-03 *Simplifying the Presentation of Debt Issuance Costs* guidance to simplify the presentation of debt issuance costs. Debt issuance costs related to a recognized debt liability will be presented on the balance sheet as a direct deduction for the debt liability as opposed to recorded as a separate asset, except when incurred before receipt of the funding from the associated debt liability. This is similar to the presentation of debt discounts or premiums. This ASU requires retrospective application which is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2015. We have adopted this guidance. The adoption of this guidance did not have a material impact on our financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The ASU is intended to provide more transparent and economically neutral information about the assets and liabilities that arise from leases than previous guidance. The ASU is effective for public entities for annual periods beginning on or after December 15, 2018. Early adoption is permitted, and adoption must be applied on a modified retrospective basis. We are evaluating the impact of this guidance but do not expect that the adoption will have a material impact on our financial statements.

In March 2016, the FASB issued ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting* which amends ASC 718, *Compensation — Stock Compensation*. The ASU includes provisions intended to simplify various provisions related to how share-based payments are accounted for and presented in the financial statements. The ASU is effective for public entities for annual periods beginning on or after December 15, 2016 and interim periods within that reporting period. Early adoption is permitted in any interim or annual period. We are evaluating the impact of this guidance but do not expect that the adoption will have a material impact on our financial statements.

Results of Operations

Comparison of Three and Six Months Ended June 30, 2016 and June 30, 2015

The following table sets forth information concerning our operating results for the three and six months ended June 30, 2016 and 2015:

	Three Months Ended June 30		Six Months Ended June 30	
	2016	2015	2016	2015
	(In thousands)			
Revenue	\$ -	\$ -	\$ -	\$ 375
Operating expenses				
Research and development	1,416	1,160	2,850	2,442
General and administrative	880	283	1,559	567
Noncash financial advising fees	7,515	-	7,515	-
Total operating expenses	9,811	1,443	11,924	3,009
Loss from operations	(9,811)	(1,443)	(11,924)	(2,634)
Interest expense	(1,383)	(320)	(1,583)	(570)
Other income, net	110	16	190	37
Total other expense	(1,273)	(304)	(1,393)	(533)
Net loss	<u>\$ (11,084)</u>	<u>\$ (1,747)</u>	<u>\$ (13,317)</u>	<u>\$ (3,167)</u>

Research and Development Expenses

Research and development expenses were \$1.4 million for the three months ended June 30, 2016, compared to \$1.2 million for the three months ended June 30, 2015, and \$2.9 million for the six months ended June 30, 2016, compared to \$2.4 million for the six months ended June 30, 2015.

The increase of \$256,000 in the three months ended June 30, 2016 and the increase of \$408,000 in the six months ended June 30, 2016 were primarily due to an increase in research activities as we continued to develop our portfolio of products for the treatment of inherited enzyme deficiencies in the liver. In June 2016, we announced product pipeline advancements including the selection of our lead product candidate, PRX-OTC, for treatment of OTCD and positive proof-of-concept data for a second product candidate, PRX-ASL, for treatment of ASL deficiency.

General and Administrative Expenses

General and administrative expenses were \$880,000 for the three months ended June 30, 2016, compared to \$283,000 for the three months ended June 30, 2015, and \$1.6 million for the six months ended June 30, 2016, compared to \$567,000 for the six months ended June 30, 2015.

The increase of \$597,000 in the three months ended June 30, 2016 was primarily due to an increase of \$314,000 due to costs associated with our IPO including legal, consulting, travel expenses, insurance and fees. Additionally, payroll costs increased by \$283,000 due to \$116,000 from increased headcount, \$115,000 in increased stock compensation expense and \$30,000 in bonus expense.

The increase of \$992,000 in the six months ended June 30, 2016 was primarily due to an increase of \$526,000 due to costs associated with our IPO including legal, consulting, travel expenses, insurance and fees. Additionally, payroll costs increased by \$472,000 due to \$264,000 from increased headcount, \$122,000 in increased stock compensation expense and \$86,000 in bonus expense.

Noncash Financial Advising Fees

In the three months ended June 30, 2016, we recorded \$7.5 million of noncash financial advising fees.

In December 2015, we engaged Palladium Capital Advisors, LLC, or Palladium, to serve as a non-exclusive agent in connection with a bridge loan financing and as a non-exclusive advisor in connection with our IPO and for the provision of general capital markets advice. Prior to the consummation of the bridge loan financing, we determined, following discussions with Palladium, to request certain of our stockholders to transfer an aggregate of 1,393,880 shares of our common stock to Titan Multi-Strategy Fund I, LTD, or Titan, and certain of its third-party designees at a nominal purchase price in order to induce Titan to serve as the initial committed investor in the bridge financing and also in expectation of receiving other support from Titan, Palladium and their respective contacts in connection with our proposed initial public offering, including introductions to certain prospective underwriters. The sales of shares were completed immediately prior to the IPO. We recorded the fair value of this stock amounting to \$7.0 million, based on the IPO price of \$5.00 per share, as a noncash financial advising fee to reflect the economic benefits that we received from the contributions by our principal stockholders.

We also issued Palladium, as consideration for serving as a non-exclusive advisor, 112,000 shares of our common stock in June 2016. We valued the stock based on the IPO price of \$5.00 per share as we determined that the fair market value of the stock was more readily determinable than the fair value of the services received. The \$560,000 fair value of the stock was recorded as a non cash financial advising fee during the three months ended June 30, 2016.

Interest Expense

Interest expense was \$1.4 million for the three months ended June 30, 2016, compared to \$320,000 for the three months ended June 30, 2015, and \$1.6 million for the six months ended June 30, 2016, compared to \$570,000 for the six months ended June 30, 2015.

The increase of \$1.1 million in the three and six months ended June 30, 2016 was primarily due to the amortization of the value of the beneficial conversion feature of the December 2015 convertible loan upon the closing of our IPO.

Liquidity and Capital Resources

From inception to June 30, 2016, we have incurred an accumulated deficit of \$62.7 million. We have financed our operations since inception primarily with the net proceeds of approximately \$16.5 million from the sale of our common stock in our IPO in May 2016, the net proceeds of \$5.7 million from Hercules, \$25.7 million from the sales of shares of our convertible preferred stock and \$20.2 million from the issuance of convertible notes and warrants. We also received a \$1.5 million upfront fee pursuant to a development agreement in 2014. At June 30, 2016, we had \$21.2 million of cash, cash equivalents and marketable securities. We anticipate that we will continue to incur losses, and that such losses will increase over the next several years due to development costs associated with our urea cycle disorder programs. We expect that our research and development and general and administrative expenses will continue to increase and, as a result, we will need additional capital to fund our operations, which we may raise through a combination of equity offerings, debt financings, other third-party funding and other collaborations and strategic alliances.

Initial Public Offering

On May 23, 2016, we closed our IPO and sold 3,700,000 shares of common stock at a price of \$5.00 per share to the public. The aggregate net proceeds received by us from the offering, net of underwriting discounts and commissions and offering expenses, were \$16.5 million.

Hercules Loan – June 2016 Loan and Security Agreement

On June 7, 2016, we entered into a loan and security agreement by and among us, the several banks and other financial institutions or entities from time to time parties to the loan and security agreement and Hercules, in its capacity as administrative agent for itself and the lenders, pursuant to which the lenders agreed to make a term loan available to us for working capital and general business purposes, in a principal amount of up to \$8 million. On June 7, 2016, the lenders funded \$6 million of the term loan, and we received \$5.7 million, net of related expenses. An additional \$2 million may be requested by us during the period commencing upon us entering into an arms-length strategic corporate development transaction that is validating in the agent's and lenders' sole discretion, or the Milestone Event, and ending upon the earlier to occur of (a) December 15, 2016, (b) the date which is 45 days after the consummation of the Milestone Event and (c) the occurrence of an event of default under the loan and security agreement. The Hercules Loan is secured by substantially all of our assets other than our intellectual property.

The Hercules Loan bears interest at a floating annual rate equal to the greater of (i) 9.25% and (ii) the sum of (a) 9.25%, plus (b) the prime rate as reported by The Wall Street Journal minus 3.50%. We are required to make interest payments in cash on the first business day of each month, beginning on July 1, 2016. The Hercules Loan will begin amortizing on July 3, 2017, in equal monthly installments of principal and interest, with such payments beginning on July 3, 2017, and continuing on the first business day of each month thereafter until the Hercules Loan is repaid. The final maturity date of the Hercules Loan is December 2, 2019. Upon repayment of the Hercules Loan, we are required to pay an end of term charge to the lenders equal to 5.85% of the aggregate original principal amount of all Hercules Loan advances extended by the lenders to us.

At our option, we may prepay all or any portion of the outstanding principal balance and all accrued and unpaid interest with respect to the principal balance being prepaid of the Hercules Loan, subject to a prepayment fee of 3.00% of the amount prepaid if the prepayment occurs on or prior to June 7, 2017, 2.00% of the amount prepaid if the prepayment occurs after June 7, 2017 but on or prior to June 7, 2018, or 1.00% of the amount prepaid if the prepayment occurs after June 7, 2018.

Convertible Loan- Bridge Loan Financing - December 2015 Loan and Security Agreement

On December 11, 2015, we issued a promissory note to Titan in exchange for \$500,000. On December 21, 2015, we entered into a loan and security agreement with 17 investors, which was subsequently amended on April 6, 2016, pursuant to which Titan converted its note and certain investors made new term loans to us in the aggregate principal amount of \$4.0 million. The term loans closed on December 21, 2015, and we received from the escrow agent net proceeds of approximately \$3.2 million, after deducting certain fees and expenses. Interest accrues on the term loans at the rate of 5% per annum. The entire outstanding principal amount of the term loans together with all accrued and unpaid interest thereon converted into shares of our common stock upon the closing of our IPO.

Convertible Notes

Prior to 2016 we issued to investors, including beneficial owners of more than 5% of our capital stock, convertible promissory notes, in the aggregate principal amount of \$16.2 million and seven-year warrants to purchase shares of the same class and series of capital stock into which the notes convert. The notes carried interest at a rate of 8% per annum. On December 11, 2015, the noteholders agreed that for purposes of calculating the number of conversion shares, the notes ceased accruing interest as of December 31, 2015. The accrued interest payable on convertible notes payable totaled \$3.2 million as of December 31, 2015. Immediately prior to the consummation of the IPO, the convertible notes and unpaid accrued interest thereon were converted into 2,788,880 shares of our common stock, and the seven-year warrants to purchase 2,452,242 shares of preferred stock with an exercise price of \$0.01 were exercised on a cashless basis to purchase 303,096 shares of our common stock. Warrants to purchase 1,049,999 shares of preferred stock with an exercise price of \$1.00 expired upon the IPO.

Promissory Note

On May 2, 2016, we issued an original issue discount promissory note in the aggregate amount of \$440,000 payable to a lender in exchange for a \$400,000 loan. The note was repaid after the closing of the IPO.

We believe that our existing cash, cash equivalents and marketable securities as of June 30, 2016 will be sufficient to meet our anticipated cash requirements for at least the next 12 months. In addition, we intend to pursue a combination of sales of additional equity securities and strategic partnerships to further finance our operations. However, our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary materially. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect.

Our primary uses of cash are to fund operating expenses, research and development expenditures and to pay interest and principle payments of our loan. Cash used to fund operating expenses is impacted by the timing of when we pay these expenses, as reflected in the change in our outstanding accounts payable and accrued expenses.

Our future capital requirements are difficult to forecast and will depend on many factors, including:

- the initiation, progress, timing, costs and completion of preclinical studies of our lead product and potential product candidates;

- the number and characteristics of product candidates that we pursue;
- the progress, costs and results of our clinical trials;
- the terms and timing of any other strategic alliance, licensing and other arrangements that we may establish;
- the outcome, timing and cost of regulatory approvals;
- delays that may be caused by changing regulatory requirements;
- the costs and timing of hiring new employees to support our continued growth;
- the costs required for operating a public company; and
- the extent to which we acquire or invest in businesses, products or technologies.

The following table shows a summary of our cash flows for the six months ended June 30, 2016 and 2015 (in thousands):

	Six Months Ended June 30	
	2016	2015
	(unaudited)	
Net cash provided by (used in)		
Operating activities	(4,124)	(2,826)
Investing activities	(6,136)	(10)
Financing activities	22,168	1,392
	<u>11,908</u>	<u>(1,444)</u>

Operating Activities

Net cash used in operating activities increased from \$2.8 million for the six months ended June 30, 2015 to \$4.1 million for the six months ended June 30, 2016. The increase in net cash used in the six months ended June 30, 2016 was primarily due to increased payroll costs of \$264,000 from increased headcount and \$526,000 in costs associated with IPO including legal, consulting, travel expenses and insurance. Research and development costs also increased due to an increase in research activities as we continued to develop our portfolio of products for the treatment of inherited enzyme deficiencies in the liver.

Investing Activities

Net cash used in investing activities increased from \$10,000 for the six months ended June 30, 2015 to \$6.1 million for the six months ended June 30, 2016. The increase in net cash used in the six months ended June 30, 2016 was primarily due to investing \$6.0 million of our excess cash in investment grade marketable securities.

Financing Activities

Net cash provided by financing activities increased from \$1.4 million for the six months ended June 30, 2015 to \$22.2 million for the six months ended June 30, 2016. The increase in net cash provided by financing activities in the six months ended June 30, 2016 was primarily due to the net proceeds of \$16.5 million from our IPO and the net proceeds of \$5.7 million from the Hercules Loan received in June 2016. Net cash provided by financing activities in the six months ended June 30, 2015 was \$1.4 million, which was the net proceeds from the issuance of convertible notes and warrants.

Off Balance Sheet Arrangements

We have not engaged in any off-balance sheet financing arrangements through special purpose entities.

Emerging Growth Company Status

Section 107 of the JOBS Act provides that an “emerging growth company” can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. In other words, an “emerging growth company” can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to “opt out” of such extended transition period, and as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies. Section 107 of the JOBS Act provides that our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

We have elected to avail ourselves of the following provisions of the JOBS Act:

- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act;
- reduced disclosure obligations regarding executive compensation in our periodic reports, proxy statements and registration statements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

As a smaller reporting company, we have elected scaled disclosure obligations and therefore are not required to provide this information.

Item 4. Controls and Procedures.

(a) *Evaluation of Disclosure Controls and Procedures.* Our principal executive officer and principal financial officer, after evaluating the effectiveness of our disclosure controls and procedures (as defined in Securities Exchange Act of 1934, as amended (the “Exchange Act”) Rules 13a-15(e) and 15d-15(e)) as of the end of the period covered by this Form 10-Q, have concluded that, based on such evaluation, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms, and is accumulated and communicated to our management, including our principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

In designing and evaluating our disclosure controls and procedures, our 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, and our management necessarily is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

(b) *Changes in Internal Controls.* There were no changes in our internal control over financial reporting, identified in connection with the evaluation of such internal control that occurred during the quarter ended June 30, 2016 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.

From time to time, we may be involved in litigation relating to claims arising out of our operations in the normal course of business. We are not currently a party to any legal proceedings, the adverse outcome of which, in our management's opinion, individually or in the aggregate, would have a material adverse effect on the results of our operations or financial position. There are no material proceedings in which any of our directors, officers or affiliates or any registered or beneficial stockholder of more than 5% of our common stock is an adverse party or has a material interest adverse to our interest.

Item 1A. Risk Factors.

The Risk Factors included in our final prospectus dated May 17, 2016, filed with the SEC pursuant to Rule 424(b)(4) under the Securities Act on May 18, 2016, have not materially changed.

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

(a) Unregistered Sales of Equity Securities

None.

(b) Use of Proceeds

On May 17, 2016, the Registration Statement on Form S-1 (File No. 333-210811) for our IPO of common stock was declared effective by the SEC, pursuant to which we sold an aggregate 3,700,000 shares of common stock at a public offering price of \$5.00 per share for an aggregate offering price of \$18.5 million. Laidlaw & Company (UK) Ltd. and Roth Capital Partners, LLC acted as joint book-running managers, and Laidlaw & Company (UK) Ltd. acted as the representative of the underwriters. We received net proceeds from the IPO of approximately \$16.5 million, after deducting approximately \$2.0 million of underwriting discounts, commissions and offering expenses. None of these expenses consisted of payments made by us to directors, officers or persons owning 10% or more of our common stock or to their associates, or to our affiliates.

As of June 30, 2016, approximately \$1.3 million of the \$16.5 million of net proceeds from our IPO had been used, of which approximately \$440,000 was used to pay off the original issue discount promissory note, \$184,000 was used to achieve preclinical proof of concept for the treatment of a second urea cycle disorder and approximately \$426,000 was used to select a urea cycle disorder product candidate for further development and \$282,000 was used in general and administrative expenses. None of these payments consisted of payments made by us to directors, officers or persons owning 10% or more of our common stock or to their associates, or to our affiliates.

We expect to use the proceeds from our IPO in connection with our ongoing activities as described in our final prospectus dated May 17, 2016, filed with the SEC pursuant to Rule 424(b)(4) under the Securities Act on May 18, 2016, as we:

- scale up the manufacturing of the lead urea cycle disorder product candidate;
- complete GMP-manufacturing and GLP-compliant toxicology studies; and
- file an IND application with the FDA for this product candidate.

We have broad discretion in the use of the net proceeds from our IPO. We may find it necessary or advisable to use the net proceeds from this offering for other purposes than those described in our final prospectus.

The Registration Statement on Form S-1 included a prospectus to be used in connection with the potential resale by certain selling stockholders of up to an aggregate of 1,021,525 shares of our common stock issuable upon mandatory conversion of certain of our outstanding loans upon completion of the IPO. We did not receive any proceeds from the sale by selling stockholders of shares of common stock registered on the Registration Statement on Form S-1.

(c) Issuer Purchases of Equity Securities

We did not repurchase any of our equity securities during the quarter ended June 30, 2016.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

None.

Item 6. Exhibits.

See Index to Exhibits.

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.

PHASERX, INC.

Date: August 2, 2016

By: /s/ Robert Overell
Robert W. Overell
Chief Executive Officer
(Principal Executive Officer and Principal Financial Officer)

Date: August 2, 2016

By: /s/ Shing-Yin Tsui
Shing-Yin (Helen) Tsui
Senior Vice President, Finance and Secretary
(Principal Accounting Officer)

EXHIBIT INDEX

Exhibit No.	Description
3.1	Fourth amended and Restated Certificate of Incorporation, as amended, as presently in effect (incorporated by reference to Exhibit 3.1 to Current Report on Form 8-K filed with the Securities and Exchange Commission on May 23, 2016)
3.2	Amended and Restated Bylaws, as presently in effect (incorporated by reference to Exhibit 3.2 to Current Report on Form 8-K filed with the Securities and Exchange Commission on May 23, 2016)
10.1+	PhaseRx, Inc. 2016 Long-Term Incentive Plan (incorporated by reference to Exhibit 10.1 to Current Report on Form 8-K filed with the Securities and Exchange Commission on May 23, 2016)
10.2	Loan and Security Agreement, dated June 7, 2016, by and among PhaseRx, Inc. and each of its qualified subsidiaries, the several banks and other financial institutions or entities from time to time parties thereto, and Hercules Capital, Inc. in its capacity as administrative agent for itself and the lenders (incorporated by reference to Exhibit 10.1 to Current Report on Form 8-K filed with the Securities and Exchange Commission on June 9, 2016)
10.3	Warrant Agreement, dated June 7, 2016 (incorporated by reference to Exhibit 10.2 to Current Report on Form 8-K filed with the Securities and Exchange Commission on June 9, 2016)
10.4*+	Form of Amendment to Incentive Stock Option Agreement under the PhaseRx, Inc. 2016 Long-Term Incentive Plan, for grants made prior to June 30, 2016
10.5*+	Form of Amendment to Director Nonqualified Stock Option Agreement under the PhaseRx, Inc. 2016 Long-Term Incentive Plan, for grants made prior to June 30, 2016
10.6*+	Form of Amendment to Employee Nonqualified Stock Option Agreement under the PhaseRx, Inc. 2016 Long-Term Incentive Plan, for grants made prior to June 30, 2016
10.7*+	Form of Incentive Stock Option Agreement under the PhaseRx, Inc. 2016 Long-Term Incentive Plan, effective as of June 30, 2016
10.8*+	Form of Employee Nonqualified Stock Option Agreement under the PhaseRx, Inc. 2016 Long-Term Incentive Plan effective as of June 30, 2016
10.9*+	Form of Director Nonqualified Stock Option Agreement under the PhaseRx, Inc. 2016 Long-Term Incentive Plan effective as of June 30, 2016
10.10*+	Amendment No. 3 to Consulting Agreement dated June 30, 2016, between PhaseRx, Inc. and Paul H. Johnson, Ph. D.
31.1*	Certification of the Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of the Principal Accounting Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32*	Certification of Principal Executive Officer and Principal Accounting Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101*	The following materials from the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016, formatted in XBRL (eXtensible Business Reporting Language): (i) Condensed Balance Sheets as of June 30, 2016 (unaudited) and December 31, 2015, (ii) Unaudited Condensed Statements of Operations for the three and six months ended June 30, 2016 and 2015, (iii) Unaudited Condensed Statement of Changes in Stockholders' Deficit for the six months ended June 30, 2016, (iv) Unaudited Condensed Statements of Cash Flows for the six months ended June 30, 2016 and 2015, and (v) Notes to Unaudited Condensed Financial Statements

* Filed herewith.

+ Management contract or compensatory plan or arrangement.

AMENDMENT TO INCENTIVE STOCK OPTION AGREEMENT

This **AMENDMENT TO INCENTIVE STOCK OPTION AGREEMENT** (this “*Amendment*”), dated as of _____, 2016, is made and entered into by and between PhaseRx, Inc., a Delaware corporation (the “*Company*”), and _____ (the “*Participant*”). Terms used in this Amendment with initial capital letters that are not otherwise defined herein shall have the meanings ascribed to such terms in the Incentive Stock Option Agreement by and between the Company and the Participant, dated _____, 2016 (the “*Option Agreement*”), and in the PhaseRx 2016 Long-Term Incentive Plan.

WHEREAS, pursuant to the Option Agreement, the Company granted an option (the “*Option*”) to the Participant to purchase a total of _____ (_____) full shares of Common Stock of the Company at an Option Price equal to \$ _____ per share; and

WHEREAS, Section 24 of the Option Agreement provides that the Option Agreement can be amended by a writing signed by the parties thereto, and the Company and the Participant now desire to amend the Option Agreement to revise the vesting provisions that would apply in connection with a Change in Control.

NOW, THEREFORE, in accordance with the terms of the Option Agreement, and for good and valuable consideration, the sufficiency of which is hereby acknowledged, the Company and the Participant agree as follows:

1. Section 3 of the Option Agreement is amended by deleting the last paragraph of said Section and replacing it with the following new paragraph as follows:

In the event that a Change in Control occurs, (i) fifty percent (50%) of the total Optioned Shares not previously vested shall become vested and exercisable upon the effective date of the Change in Control and (ii) any remaining Optioned Shares not previously vested shall become fully vested and exercisable on the date of the Participant’s Termination of Service by the Company without Cause (as defined herein) if such Termination of Service occurs on or before the first anniversary of the Change in Control’s effective date.

2. Section 4(b) of the Option Agreement is amended by deleting said Section in its entirety and replacing it with the following new Section 4(b) as follows:

b. For purposes of this Agreement, “*Cause*” means the Participant’s Termination of Service by the Company because of: (i) the Participant’s conviction of, or plea of nolo contendere to, a felony or crime involving moral turpitude or (ii) the Participant’s breach of fiduciary duty which involves personal profit. Notwithstanding the foregoing, in the case of any Participant who has entered into an employment agreement with the Company or any Subsidiary that contains the definition of “cause” (or any similar definition), then during the term of such employment agreement the definition contained in such employment agreement shall be the applicable definition of “cause” under the Agreement as to such Participant if such employment agreement expressly so provides.

3. The Option Agreement, except as modified by this Amendment, shall remain in full force and effect.

IN WITNESS WHEREOF , the Company and the Participant have executed, or caused to be executed, this Amendment effective as of the day and year first written above.

PHASERX, INC.

By: _____
Name:
Title:

THE PARTICIPANT

[**Name**]

AMENDMENT TO NONQUALIFIED STOCK OPTION AGREEMENT

This **AMENDMENT TO NONQUALIFIED STOCK OPTION AGREEMENT** (this “*Amendment*”), dated as of June __, 2016, is made and entered into by and between PhaseRx, Inc., a Delaware corporation (the “*Company*”), and _____ (the “*Participant*”). Terms used in this Amendment with initial capital letters that are not otherwise defined herein shall have the meanings ascribed to such terms in the Nonqualified Stock Option Agreement by and between the Company and the Participant, dated June 1, 2016 (the “*Option Agreement*”), and in the PhaseRx 2016 Long-Term Incentive Plan.

WHEREAS, pursuant to the Option Agreement, the Company granted an option (the “*Option*”) to the Participant to purchase a total of _____ (_____) full shares of Common Stock of the Company at an Option Price equal to \$5.08 per share; and

WHEREAS, Section 23 of the Option Agreement provides that the Option Agreement can be amended by a writing signed by the parties thereto, and the Company and the Participant now desire to amend the Option Agreement to revise the vesting provisions that would apply in connection with a Change in Control.

NOW, THEREFORE, in accordance with the terms of the Option Agreement, and for good and valuable consideration, the sufficiency of which is hereby acknowledged, the Company and the Participant agree as follows:

1. Section 3 of the Option Agreement is amended by deleting the last paragraph of said Section and replacing it with the following new paragraph as follows:

In the event that a Change in Control occurs and either (i) this Agreement is not assumed by the surviving corporation or its parent, or the surviving corporation or its parent does not substitute its own option for this Stock Option or (ii) the Participant incurs a Termination of Service without Cause (as defined herein) in connection with or within twelve (12) months following the Change in Control, then the total Optioned Shares not previously vested shall become fully vested and exercisable upon the effective date of the Change in Control or the date of the Participant’s Termination of Service, as applicable. For purposes of this Agreement, a Termination of Service without Cause shall include the failure to reelect a Participant as an Outside Director if such Participant was an Outside Director immediately prior to the Change in Control.

2. Section 4(b) of the Option Agreement is amended by deleting said Section in its entirety and replacing it with the following new Section 4(b) as follows:

b. For purposes of this Agreement, “*Cause*” means the Participant’s Termination of Service by the Company because of: (i) the Participant’s conviction of, or plea of nolo contendere to, a felony or crime involving moral turpitude or (ii) the Participant’s breach of fiduciary duty which involves personal profit. Notwithstanding the foregoing, in the case of any Participant who has entered into an agreement with the Company or any Subsidiary that contains the definition of “cause” (or any similar definition), then during the term of such agreement the definition contained in such agreement shall be the applicable definition of “cause” under the Agreement as to such Participant if such agreement expressly so provides.

3. The Option Agreement, except as modified by this Amendment, shall remain in full force and effect.

IN WITNESS WHEREOF , the Company and the Participant have executed, or caused to be executed, this Amendment effective as of the day and year first written above.

PHASERX, INC.

By: _____
Name:
Title:

THE PARTICIPANT

[**Name**]

AMENDMENT TO NONQUALIFIED STOCK OPTION AGREEMENT

This **AMENDMENT TO NONQUALIFIED STOCK OPTION AGREEMENT** (this “*Amendment*”), dated as of _____, 2016, is made and entered into by and between PhaseRx, Inc., a Delaware corporation (the “*Company*”), and _____ (the “*Participant*”). Terms used in this Amendment with initial capital letters that are not otherwise defined herein shall have the meanings ascribed to such terms in the Nonqualified Stock Option Agreement by and between the Company and the Participant, dated _____, 2016 (the “*Option Agreement*”), and in the PhaseRx 2016 Long-Term Incentive Plan.

WHEREAS, pursuant to the Option Agreement, the Company granted an option (the “*Option*”) to the Participant to purchase a total of _____ (_____) full shares of Common Stock of the Company at an Option Price equal to \$ _____ per share; and

WHEREAS, Section 23 of the Option Agreement provides that the Option Agreement can be amended by a writing signed by the parties thereto, and the Company and the Participant now desire to amend the Option Agreement to revise the vesting provisions that would apply in connection with a Change in Control.

NOW, THEREFORE, in accordance with the terms of the Option Agreement, and for good and valuable consideration, the sufficiency of which is hereby acknowledged, the Company and the Participant agree as follows:

1. Section 3 of the Option Agreement is amended by deleting the last paragraph of said Section and replacing it with the following new paragraph as follows:

In the event that a Change in Control occurs, (i) fifty percent (50%) of the total Optioned Shares not previously vested shall become vested and exercisable upon the effective date of the Change in Control and (ii) any remaining Optioned Shares not previously vested shall become fully vested and exercisable on the date of the Participant’s Termination of Service by the Company without Cause (as defined herein) if such Termination of Service occurs on or before the first anniversary of the Change in Control’s effective date.

2. Section 4(b) of the Option Agreement is amended by deleting said Section in its entirety and replacing it with the following new Section 4(b) as follows:

b. For purposes of this Agreement, “*Cause*” means the Participant’s Termination of Service by the Company because of: (i) the Participant’s conviction of, or plea of nolo contendere to, a felony or crime involving moral turpitude or (ii) the Participant’s breach of fiduciary duty which involves personal profit. Notwithstanding the foregoing, in the case of any Participant who has entered into an employment agreement with the Company or any Subsidiary that contains the definition of “cause” (or any similar definition), then during the term of such employment agreement the definition contained in such employment agreement shall be the applicable definition of “cause” under the Agreement as to such Participant if such employment agreement expressly so provides.

3. The Option Agreement, except as modified by this Amendment, shall remain in full force and effect.

IN WITNESS WHEREOF , the Company and the Participant have executed, or caused to be executed, this Amendment effective as of the day and year first written above.

PHASERX, INC.

By: _____
Name: _____
Title: _____

THE PARTICIPANT

[**Name**]

INCENTIVE STOCK OPTION AGREEMENT

PHASERX, INC.

2016 LONG-TERM INCENTIVE PLAN

1. Grant of Option. Pursuant to the PhaseRx, Inc. 2016 Long-Term Incentive Plan (the “**Plan**”), as adopted by PhaseRx, Inc., a Delaware corporation (the “**Company**”), the Company grants to

(the “**Participant**”)

who is an Employee of the Company, an option (the “**Option**” or “**Stock Option**”) to purchase a total of _____ (_____) full shares of Common Stock of the Company (the “**Optioned Shares**”) at an “**Option Price**” equal to \$_____ per share (being the Fair Market Value per share of the Common Stock on the Date of Grant or 110% of such Fair Market Value, in the case of a ten percent (10%) or more stockholder as provided in Section 422 of the Code), in the amounts, during the periods and upon the terms and conditions set forth in this Incentive Stock Option Agreement (the “**Agreement**”).

The “**Date of Grant**” of this Stock Option is _____ 20____. The “**Option Period**” shall commence on the Date of Grant and shall expire on the date immediately preceding the tenth (10th) anniversary of the Date of Grant (or the date immediately preceding the fifth (5th) anniversary of the Date of Grant, in the case of a ten percent (10%) or more stockholder as provided in Section 422 of the Code) unless terminated earlier in accordance with Section 4 below. The Stock Option is intended to be an Incentive Stock Option.

2. Subject to Plan. The Stock Option and its exercise are subject to the terms and conditions of the Plan, and the terms of the Plan shall control to the extent not otherwise inconsistent with the provisions of this Agreement. The capitalized terms used herein that are defined in the Plan shall have the same meanings assigned to them in the Plan. The Stock Option is subject to any rules promulgated pursuant to the Plan by the Board or the Committee and communicated to the Participant in writing. In addition, if the Plan previously has not been approved by the Company’s stockholders, the Stock Option is granted subject to such stockholder approval.

3. Vesting; Time of Exercise. Except as specifically provided in this Agreement and subject to certain restrictions and conditions set forth in the Plan, the Optioned Shares shall be vested and the Stock Option shall be exercisable as follows:

a. One forty-eighth (1/48) of the total Optioned Shares shall vest on the one-month anniversary of the Date of Grant, provided the Participant is employed by the Company or a Subsidiary on that date.

b. An additional one forty-eighth (1/48) of the total Optioned Shares shall vest on each monthly anniversary of the Date of Grant thereafter, provided the Participant is employed by the Company or a Subsidiary on that date.

In the event that a Change in Control occurs, (i) fifty percent (50%) of the total Optioned Shares not previously vested shall become vested and exercisable upon the effective date of the Change in Control and (ii) any remaining Optioned Shares not previously vested shall become fully vested and exercisable on the date of the Participant’s Termination of Service by the Company without Cause (as defined herein) if such Termination of Service occurs on or before the first anniversary of the Change in Control’s effective date.

4. Term; Forfeiture.

a. Except as otherwise provided in this Agreement, to the extent the unexercised portion of the Stock Option relates to Optioned Shares which are not vested on the date of the Participant's Termination of Service, the Stock Option will be terminated on that date. The unexercised portion of the Stock Option that relates to Optioned Shares which are vested will terminate at the first of the following to occur:

- i. 5 p.m. on the date the Option Period terminates;
- ii. 5 p.m. on the date which is twelve (12) months following the date of the Participant's Termination of Service due to death or Total and Permanent Disability;
- iii. immediately upon the Participant's Termination of Service by the Company for Cause;
- iv. 5 p.m. on the date which is three (3) months following the date of the Participant's Termination of Service for any reason not otherwise specified in this Section 4.a.; and
- v. 5 p.m. on the date the Company causes any portion of the Stock Option to be forfeited pursuant to Section 7 hereof.

b. For purposes of this Agreement, "**Cause**" means the Participant's Termination of Service by the Company because of: (i) the Participant's conviction of, or plea of nolo contendere to, a felony or crime involving moral turpitude or (ii) the Participant's breach of fiduciary duty which involves personal profit. Notwithstanding the foregoing, in the case of any Participant who has entered into an employment agreement with the Company or any Subsidiary that contains the definition of "cause" (or any similar definition), then during the term of such employment agreement the definition contained in such employment agreement shall be the applicable definition of "cause" under the Agreement as to such Participant if such employment agreement expressly so provides.

5. Who May Exercise. Subject to the terms and conditions set forth in Sections 3 and 4 above, during the lifetime of the Participant, the Stock Option may be exercised only by the Participant, or by the Participant's guardian or personal or legal representative. If the Participant's Termination of Service is due to his death prior to the dates specified in Section 4.a. hereof, and the Participant has not exercised the Stock Option as to the maximum number of vested Optioned Shares as set forth in Section 3 hereof as of the date of death, the following persons may exercise the exercisable portion of the Stock Option on behalf of the Participant at any time prior to the earliest of the dates specified in Section 4.a. hereof: the personal representative of his estate, or the person who acquired the right to exercise the Stock Option by bequest or inheritance or by reason of the death of the Participant; provided that the Stock Option shall remain subject to the other terms of this Agreement, the Plan, and Applicable Laws, rules, and regulations.

6. No Fractional Shares. The Stock Option may be exercised only with respect to full shares, and no fractional share of stock shall be issued.

7. Manner of Exercise. Subject to such administrative regulations as the Committee may from time to time adopt, the Stock Option may be exercised by the delivery of written notice to the Committee (the “**Exercise Notice**”) setting forth the number of shares of Common Stock with respect to which the Stock Option is to be exercised, the date of exercise thereof (the “**Exercise Date**”), and whether the Optioned Shares to be exercised will be considered as deemed granted under an Incentive Stock Option as provided in Section 11. On the Exercise Date, the Participant shall deliver to the Company consideration with a value equal to the total Option Price of the shares to be purchased, payable as follows: (a) cash, check, bank draft, or money order payable to the order of the Company, (b) if the Company, in its sole discretion, so consents in writing, Common Stock (including Restricted Stock) owned by the Participant on the Exercise Date, valued at its Fair Market Value on the Exercise Date, (c) if the Company, in its sole discretion, so consents in writing, by delivery (including by FAX) to the Company or its designated agent of an executed irrevocable option exercise form together with irrevocable instructions from the Participant to a broker or dealer, reasonably acceptable to the Company, to sell certain of the shares of Common Stock purchased upon exercise of the Stock Option or to pledge such shares as collateral for a loan and promptly deliver to the Company the amount of sale or loan proceeds necessary to pay such purchase price, and/or (d) in any other form of valid consideration that is acceptable to the Committee in its sole discretion. In the event that shares of Restricted Stock are tendered as consideration for the exercise of a Stock Option, a number of shares of Common Stock issued upon the exercise of the Stock Option equal to the number of shares of Restricted Stock used as consideration therefor shall be subject to the same restrictions and provisions as the Restricted Stock so tendered.

Upon payment of all amounts due from the Participant, the Company shall cause the Common Stock then being purchased to be registered in the Participant’s name (or the person exercising the Participant’s Stock Option in the event of his death), but shall not issue certificates for such Common Stock unless the Participant or such other person requests delivery of certificates for such Common Stock in accordance with Section 8.3(c) of the Plan. The obligation of the Company to register shares of Common Stock shall, however, be subject to the condition that, if at any time the Company shall determine in its discretion that the listing, registration, or qualification of the Stock Option or the Common Stock upon any securities exchange or inter-dealer quotation system or under any state or federal law, or the consent or approval of any governmental regulatory body, is necessary as a condition of, or in connection with, the Stock Option or the issuance or purchase of shares of Common Stock thereunder, then the Stock Option may not be exercised in whole or in part unless such listing, registration, qualification, consent, or approval shall have been effected or obtained free of any conditions not reasonably acceptable to the Committee.

If the Participant fails to pay for any of the Optioned Shares specified in such notice within three (3) business days of the date in the Exercise Notice or fails to accept delivery thereof, then the Exercise Notice shall be null and void and the Company will have no obligation to deliver any shares of Common Stock to the Participant in connection with such Exercise Notice.

8. Nonassignability. The Stock Option is not assignable or transferable by the Participant except by will or by the laws of descent and distribution.

9. Rights as Stockholder. The Participant will have no rights as a stockholder with respect to any of the Optioned Shares until the registration of such shares in the Participant's name. The Optioned Shares shall be subject to the terms and conditions of this Agreement. Except as otherwise provided in Section 10 hereof, no adjustment shall be made for dividends or other rights for which the record date is prior to the issuance of such certificate or certificates. The Participant, by his or her execution of this Agreement, agrees to execute any documents requested by the Company in connection with the issuance of the shares of Common Stock.

10. Adjustment of Number of Optioned Shares and Related Matters. The number of shares of Common Stock covered by the Stock Option, and the Option Prices thereof, shall be subject to adjustment in accordance with Articles 11 – 13 of the Plan.

11. Incentive Stock Option. Subject to the provisions of the Plan, the Stock Option is intended to be an Incentive Stock Option. To the extent the number of Optioned Shares exceeds the limit set forth in Section 6.3 of the Plan, such Optioned Shares shall be deemed granted pursuant to a Nonqualified Stock Option. Unless otherwise indicated by the Participant in the notice of exercise pursuant to Section 7, upon any exercise of this Stock Option, the number of exercised Optioned Shares that shall be deemed to be exercised pursuant to an Incentive Stock Option shall equal the total number of Optioned Shares so exercised multiplied by a fraction, (i) the numerator of which is the number of unexercised Optioned Shares that could then be exercised pursuant to an Incentive Stock Option, and (ii) the denominator of which is the then total number of unexercised Optioned Shares.

12. Disqualifying Disposition. In the event that Common Stock acquired upon exercise of this Stock Option is disposed of by the Participant in a "Disqualifying Disposition," such Participant shall notify the Company in writing within thirty (30) days after such disposition of the date and terms of such disposition. For purposes hereof, "**Disqualifying Disposition**" shall mean a disposition of Common Stock that is acquired upon the exercise of this Stock Option (and that is not deemed granted pursuant to a Nonqualified Stock Option under Section 11) prior to the expiration of either two (2) years from the Date of Grant of this Stock Option or one (1) year from the transfer of shares to the Participant pursuant to the exercise of the Stock Option.

13. Voting. The Participant, as record holder of some or all of the Optioned Shares following exercise of this Stock Option, has the exclusive right to vote, or consent with respect to, such Optioned Shares until such time as the Optioned Shares are transferred in accordance with this Agreement; provided, however, that this Section shall not create any voting right where the holders of such Optioned Shares otherwise have no such right.

14. Specific Performance. The parties acknowledge that remedies at law will be inadequate remedies for breach of this Agreement and consequently agree that this Agreement shall be enforceable by specific performance. The remedy of specific performance shall be cumulative of all of the rights and remedies at law or in equity of the parties under this Agreement.

15. Participant's Representations. Notwithstanding any of the provisions hereof, the Participant hereby agrees that he will not exercise the Stock Option granted hereby, and that the Company will not be obligated to issue any shares to the Participant hereunder, if the exercise thereof or the issuance of such shares shall constitute a violation by the Participant or the Company of any provision of any law or regulation of any governmental authority. Any determination in this connection by the Company shall be final, binding, and conclusive. The obligations of the Company and the rights of the Participant are subject to all Applicable Laws, rules, and regulations. The Participant agrees and covenants not to sue any Person other than the Company over any Claims.

16. Investment Representation. Unless the shares of Common Stock are issued to the Participant in a transaction registered under applicable federal and state securities laws, by his execution hereof, the Participant represents and warrants to the Company that all Common Stock which may be purchased hereunder will be acquired by the Participant for investment purposes for his own account and not with any intent for resale or distribution in violation of federal or state securities laws. Unless the Common Stock is issued to him in a transaction registered under the applicable federal and state securities laws, all certificates issued with respect to the Common Stock shall bear an appropriate restrictive investment legend and shall be held indefinitely, unless they are subsequently registered under the applicable federal and state securities laws or the Participant obtains an opinion of counsel, in form and substance satisfactory to the Company and its counsel, that such registration is not required.

17. Participant's Acknowledgments. The Participant acknowledges that a copy of the Plan has been made available for his or her review by the Company, and represents that he or she is familiar with the terms and provisions thereof, and hereby accepts this Stock Option subject to all the terms and provisions thereof. The Participant hereby agrees to accept as binding, conclusive, and final all decisions or interpretations of the Committee or the Board, as appropriate, upon any questions arising under the Plan or this Agreement.

18. Law Governing. This Agreement shall be governed by, construed, and enforced in accordance with the laws of the State of Delaware (excluding any conflict of laws rule or principle of Delaware law that might refer the governance, construction, or interpretation of this Agreement to the laws of another state).

19. No Right to Continue Employment. Nothing herein shall be construed to confer upon the Participant the right to continue in the employment of the Company or interfere with or restrict in any way the right of the Company to discharge the Participant at any time (subject to any contract rights of the Participant).

20. Legal Construction. In the event that any one or more of the terms, provisions, or agreements that are contained in this Agreement shall be held by a court of competent jurisdiction to be invalid, illegal, or unenforceable in any respect for any reason, the invalid, illegal, or unenforceable term, provision, or agreement shall not affect any other term, provision, or agreement that is contained in this Agreement and this Agreement shall be construed in all respects as if the invalid, illegal, or unenforceable term, provision, or agreement had never been contained herein.

21. Covenants and Agreements as Independent Agreements. Each of the covenants and agreements that is set forth in this Agreement shall be construed as a covenant and agreement independent of any other provision of this Agreement. The existence of any claim or cause of action of the Participant against the Company, whether predicated on this Agreement or otherwise, shall not constitute a defense to the enforcement by the Company of the covenants and agreements that are set forth in this Agreement.

22. Entire Agreement. This Agreement together with the Plan supersede any and all other prior understandings and agreements, either oral or in writing, between the parties with respect to the subject matter hereof and constitute the sole and only agreements between the parties with respect to the said subject matter. All prior negotiations and agreements between the parties with respect to the subject matter hereof are merged into this Agreement. Each party to this Agreement acknowledges that no representations, inducements, promises, or agreements, orally or otherwise, have been made by any party or by anyone acting on behalf of any party, which are not embodied in this Agreement or the Plan and that any agreement, statement or promise that is not contained in this Agreement or the Plan shall not be valid or binding or of any force or effect.

23. Parties Bound. The terms, provisions, and agreements that are contained in this Agreement shall apply to, be binding upon, and inure to the benefit of the parties and their respective heirs, executors, administrators, legal representatives, and permitted successors and assigns, subject to the limitation on assignment expressly set forth herein.

24. Modification. No change or modification of this Agreement shall be valid or binding upon the parties unless the change or modification is in writing and signed by the parties. Notwithstanding the preceding sentence, the Company may amend the Plan to the extent permitted by the Plan.

25. Headings. The headings that are used in this Agreement are used for reference and convenience purposes only and do not constitute substantive matters to be considered in construing the terms and provisions of this Agreement.

26. Gender and Number. Words of any gender used in this Agreement shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

27. Notice. Any notice required or permitted to be delivered hereunder shall be deemed to be delivered only when actually received by the Company or by the Participant, as the case may be, at the addresses set forth below, or at such other addresses as they have theretofore specified by written notice delivered in accordance herewith:

a. Notice to the Company shall be addressed and delivered as follows:

PhaseRx, Inc.
410 W. Harrison Street, Suite 300
Seattle, WA 98119
Attn: _____
Facsimile: _____

b. Notice to the Participant shall be addressed and delivered as set forth on the signature page.

28. Tax Requirements. The Participant is hereby advised to consult immediately with his or her own tax advisor regarding the tax consequences of this Agreement. The Company or, if applicable, any Subsidiary (for purposes of this Section 28, the term “**Company**” shall be deemed to include any applicable Subsidiary), shall have the right to deduct from all amounts paid in cash or other form in connection with the Plan, any federal, state, local, or other taxes required by law to be withheld in connection with this Award. The Company may, in its sole discretion, also require the Participant receiving shares of Common Stock issued under the Plan to pay the Company the amount of any taxes that the Company is required to withhold in connection with the Participant’s income arising with respect to this Award. Such payments shall be required to be made when requested by the Company and may be required to be made prior to the delivery of any certificate representing shares of Common Stock. Such payment may be made by (i) the delivery of cash to the Company in an amount that equals or exceeds (to avoid the issuance of fractional shares under (iii) below) the required tax withholding obligations of the Company; (ii) if the Company, in its sole discretion, so consents in writing, the actual delivery by the exercising Participant to the Company of shares of Common Stock, which shares so delivered have an aggregate Fair Market Value that equals or exceeds (to avoid the issuance of fractional shares under (iii) below) the required tax withholding payment; (iii) if the Company, in its sole discretion, so consents in writing, the Company’s withholding of a number of shares to be delivered upon the exercise of the Stock Option, which shares so withheld have an aggregate Fair Market Value that equals (but does not exceed) the required tax withholding payment; or (iv) any combination of (i), (ii), or (iii). The Company may, in its sole discretion, withhold any such taxes from any other cash remuneration otherwise paid by the Company to the Participant.

29. Clawback. The Participant acknowledges and agrees that any compensation paid to the Participant by the Company, pursuant to this Agreement or otherwise, shall be subject to recovery by the Company in accordance with the Company's clawback policy applicable to employees of the Company, if any, as amended from time to time.

* * * * *

*[Remainder of Page Intentionally Left Blank
Signature Page Follows .]*

IN WITNESS WHEREOF, the Company has caused this Agreement to be executed by its duly authorized officer, and the Participant, to evidence his consent and approval of all the terms hereof, has duly executed this Agreement, as of the date specified in Section 1 hereof.

PHASERX:

By: _____
Name: _____
Title: _____

PARTICIPANT:

Signature

Name: _____
Address: _____

NONQUALIFIED STOCK OPTION AGREEMENT

PHASERX, INC.
2016 LONG-TERM INCENTIVE PLAN

1. Grant of Option. Pursuant to the PhaseRx, Inc. 2016 Long-Term Incentive Plan (the “**Plan**”) for key Employees, key Contractors, and Outside Directors of PhaseRx, Inc., a Delaware corporation (the “**Company**”), the Company grants to

(the “**Participant**”),

an option (the “**Option**” or “**Stock Option**”) to purchase a total of _____ (_____) full shares of Common Stock of the Company (the “**Optioned Shares**”) at an “**Option Price**” equal to \$_____ per share (being the Fair Market Value per share of the Common Stock on the Date of Grant).

The “**Date of Grant**” of this Stock Option is _____, 20____. The “**Option Period**” shall commence on the Date of Grant and shall expire on the date immediately preceding the tenth (10th) anniversary of the Date of Grant, unless terminated earlier in accordance with Section 4 below. The Stock Option is a Nonqualified Stock Option. This Stock Option is intended to comply with the provisions governing nonqualified stock options under the final Treasury Regulations issued on April 17, 2007, in order to exempt this Stock Option from application of Section 409A of the Code.

2. Subject to Plan. The Stock Option and its exercise are subject to the terms and conditions of the Plan, and the terms of the Plan shall control to the extent not otherwise inconsistent with the provisions of this Nonqualified Stock Option Agreement (the “**Agreement**”). The capitalized terms used herein that are defined in the Plan shall have the same meanings assigned to them in the Plan. The Stock Option is subject to any rules promulgated pursuant to the Plan by the Board or the Committee and communicated to the Participant in writing. In addition, if the Plan previously has not been approved by the Company’s stockholders, the Stock Option is granted subject to such stockholder approval.

3. Vesting; Time of Exercise. Except as specifically provided in this Agreement and subject to certain restrictions and conditions set forth in the Plan, the Optioned Shares shall be vested and the Stock Option shall be exercisable as follows:

- a. One forty-eighth (1/48) of the total Optioned Shares shall vest on the one-month anniversary of the Date of Grant, provided the Participant is employed by (or, if the Participant is a Contractor or an Outside Director, is providing services to) the Company or a Subsidiary on that date.
- b. An additional one forty-eighth (1/48) of the total Optioned Shares shall vest on each monthly anniversary of the Date of Grant thereafter, provided the Participant is employed by (or, if the Participant is a Contractor or an Outside Director, is providing services to) the Company or a Subsidiary on that date.

In the event that a Change in Control occurs, (i) fifty percent (50%) of the total Optioned Shares not previously vested shall become vested and exercisable upon the effective date of the Change in Control and (ii) any remaining Optioned Shares not previously vested shall become fully vested and exercisable on the date of the Participant’s Termination of Service by the Company without Cause (as defined herein) if such Termination of Service occurs on or before the first anniversary of the Change in Control’s effective date.

4. Term; Forfeiture.

a. Except as otherwise provided in this Agreement, to the extent the unexercised portion of the Stock Option relates to Optioned Shares which are not vested on the date of the Participant's Termination of Service, the Stock Option will be terminated on that date. The unexercised portion of the Stock Option that relates to Optioned Shares which are vested will terminate at the first of the following to occur:

- i. 5 p.m. on the date the Option Period terminates;
- ii. 5 p.m. on the date which is twelve (12) months following the date of the Participant's Termination of Service due to death, Retirement or Total and Permanent Disability;
- iii. immediately upon the Participant's Termination of Service by the Company for Cause (as defined herein);
- iv. 5 p.m. on the date which is three (3) months following the date of the Participant's Termination of Service for any reason not otherwise specified in this Section 4.a.; and
- v. 5 p.m. on the date the Company causes any portion of the Stock Option to be forfeited pursuant to Section 7 hereof.

b. For purposes of this Agreement, "**Cause**" means the Participant's Termination of Service by the Company because of: (i) the Participant's conviction of, or plea of nolo contendere to, a felony or crime involving moral turpitude or (ii) the Participant's breach of fiduciary duty which involves personal profit. Notwithstanding the foregoing, in the case of any Participant who has entered into an employment agreement with the Company or any Subsidiary that contains the definition of "cause" (or any similar definition), then during the term of such employment agreement the definition contained in such employment agreement shall be the applicable definition of "cause" under the Agreement as to such Participant if such employment agreement expressly so provides.

5. Who May Exercise. Subject to the terms and conditions set forth in Sections 3 and 4 above, during the lifetime of the Participant, the Stock Option may be exercised only by the Participant, or by the Participant's guardian or personal or legal representative. If the Participant's Termination of Service is due to his death prior to the dates specified in Section 4.a. hereof, and the Participant has not exercised the Stock Option as to the maximum number of vested Optioned Shares as set forth in Section 3 hereof as of the date of death, the following persons may exercise the exercisable portion of the Stock Option on behalf of the Participant at any time prior to the earliest of the dates specified in Section 4.a. hereof: the personal representative of his estate, or the person who acquired the right to exercise the Stock Option by bequest or inheritance or by reason of the death of the Participant; provided that the Stock Option shall remain subject to the other terms of this Agreement, the Plan, and Applicable Laws, rules, and regulations.

6. No Fractional Shares. The Stock Option may be exercised only with respect to full shares, and no fractional share of stock shall be issued.

7. Manner of Exercise. Subject to such administrative regulations as the Committee may from time to time adopt, the Stock Option may be exercised by the delivery of written notice to the Committee (the “**Exercise Notice**”) setting forth the number of shares of Common Stock with respect to which the Stock Option is to be exercised, the date of exercise thereof (the “**Exercise Date**”). On the Exercise Date, the Participant shall deliver to the Company consideration with a value equal to the total Option Price of the shares to be purchased, payable as follows: (a) cash, check, bank draft, or money order payable to the order of the Company, (b) if the Company, in its sole discretion, so consents in writing, Common Stock (including Restricted Stock) owned by the Participant on the Exercise Date, valued at its Fair Market Value on the Exercise Date, (c) if the Company, in its sole discretion, so consents in writing, by delivery (including by FAX) to the Company or its designated agent of an executed irrevocable option exercise form together with irrevocable instructions from the Participant to a broker or dealer, reasonably acceptable to the Company, to sell certain of the shares of Common Stock purchased upon exercise of the Stock Option or to pledge such shares as collateral for a loan and promptly deliver to the Company the amount of sale or loan proceeds necessary to pay such purchase price, and/or (d) in any other form of valid consideration that is acceptable to the Committee in its sole discretion. In the event that shares of Restricted Stock are tendered as consideration for the exercise of a Stock Option, a number of shares of Common Stock issued upon the exercise of the Stock Option equal to the number of shares of Restricted Stock used as consideration therefor shall be subject to the same restrictions and provisions as the Restricted Stock so tendered.

Upon payment of all amounts due from the Participant, the Company shall cause the Common Stock then being purchased to be registered in the Participant’s name (or the person exercising the Participant’s Stock Option in the event of his death), but shall not issue certificates for such Common Stock unless the Participant or such other person requests delivery of certificates for such Common Stock in accordance with Section 8.3(c) of the Plan. The obligation of the Company to register shares of Common Stock shall, however, be subject to the condition that, if at any time the Company shall determine in its discretion that the listing, registration, or qualification of the Stock Option or the Common Stock upon any securities exchange or inter-dealer quotation system or under any state or federal law, or the consent or approval of any governmental regulatory body, is necessary as a condition of, or in connection with, the Stock Option or the issuance or purchase of shares of Common Stock thereunder, then the Stock Option may not be exercised in whole or in part unless such listing, registration, qualification, consent, or approval shall have been effected or obtained free of any conditions not reasonably acceptable to the Committee.

If the Participant fails to pay for any of the Optioned Shares specified in such notice within three (3) business days of the date in the Exercise Notice or fails to accept delivery thereof, then the Exercise Notice shall be null and void and the Company will have no obligation to deliver any shares of Common Stock to the Participant in connection with such Exercise Notice.

8. Nonassignability. The Stock Option is not assignable or transferable by the Participant except by will or by the laws of descent and distribution.

9. Rights as Stockholder. The Participant will have no rights as a stockholder with respect to any of the Optioned Shares until the registration of such shares in the Participant’s name. The Optioned Shares shall be subject to the terms and conditions of this Agreement. Except as otherwise provided in Section 10 hereof, no adjustment shall be made for dividends or other rights for which the record date is prior to the issuance of such certificate or certificates. The Participant, by his or her execution of this Agreement, agrees to execute any documents requested by the Company in connection with the issuance of the shares of Common Stock.

10. Adjustment of Number of Optioned Shares and Related Matters. The number of shares of Common Stock covered by the Stock Option, and the Option Prices thereof, shall be subject to adjustment in accordance with Articles 11 - 13 of the Plan.
11. Nonqualified Stock Option. The Stock Option shall not be treated as an Incentive Stock Option.
12. Voting. The Participant, as record holder of some or all of the Optioned Shares following exercise of this Stock Option, has the exclusive right to vote, or consent with respect to, such Optioned Shares until such time as the Optioned Shares are transferred in accordance with this Agreement; provided, however, that this Section shall not create any voting right where the holders of such Optioned Shares otherwise have no such right.
13. Specific Performance. The parties acknowledge that remedies at law will be inadequate remedies for breach of this Agreement and consequently agree that this Agreement shall be enforceable by specific performance. The remedy of specific performance shall be cumulative of all of the rights and remedies at law or in equity of the parties under this Agreement.
14. Participant's Representations. Notwithstanding any of the provisions hereof, the Participant hereby agrees that he will not exercise the Stock Option granted hereby, and that the Company will not be obligated to issue any shares to the Participant hereunder, if the exercise thereof or the issuance of such shares shall constitute a violation by the Participant or the Company of any provision of any law or regulation of any governmental authority. Any determination in this connection by the Company shall be final, binding, and conclusive. The obligations of the Company and the rights of the Participant are subject to all Applicable Laws, rules, and regulations. The Participant agrees and covenants not to sue any Person other than the Company over any Claims.
15. Investment Representation. Unless the shares of Common Stock are issued to the Participant in a transaction registered under applicable federal and state securities laws, by his execution hereof, the Participant represents and warrants to the Company that all Common Stock which may be purchased hereunder will be acquired by the Participant for investment purposes for his own account and not with any intent for resale or distribution in violation of federal or state securities laws. Unless the Common Stock is issued to him in a transaction registered under the applicable federal and state securities laws, all certificates issued with respect to the Common Stock shall bear an appropriate restrictive investment legend and shall be held indefinitely, unless they are subsequently registered under the applicable federal and state securities laws or the Participant obtains an opinion of counsel, in form and substance satisfactory to the Company and its counsel, that such registration is not required.
16. Participant's Acknowledgments. The Participant acknowledges that a copy of the Plan has been made available for his or her review by the Company, and represents that he or she is familiar with the terms and provisions thereof, and hereby accepts this Stock Option subject to all the terms and provisions thereof. The Participant hereby agrees to accept as binding, conclusive, and final all decisions or interpretations of the Committee or the Board, as appropriate, upon any questions arising under the Plan or this Agreement.
17. Law Governing. This Agreement shall be governed by, construed, and enforced in accordance with the laws of the State of Delaware (excluding any conflict of laws rule or principle of Delaware law that might refer the governance, construction, or interpretation of this Agreement to the laws of another state).

18. No Right to Continue Service or Employment. Nothing herein shall be construed to confer upon the Participant the right to continue in the employ or to provide services to the Company or any Subsidiary, whether as an Employee or as a Contractor or as an Outside Director, or interfere with or restrict in any way the right of the Company or any Subsidiary to discharge the Participant as an Employee, Contractor or Outside Director at any time.

19. Legal Construction. In the event that any one or more of the terms, provisions, or agreements that are contained in this Agreement shall be held by a court of competent jurisdiction to be invalid, illegal, or unenforceable in any respect for any reason, the invalid, illegal, or unenforceable term, provision, or agreement shall not affect any other term, provision, or agreement that is contained in this Agreement and this Agreement shall be construed in all respects as if the invalid, illegal, or unenforceable term, provision, or agreement had never been contained herein.

20. Covenants and Agreements as Independent Agreements. Each of the covenants and agreements that is set forth in this Agreement shall be construed as a covenant and agreement independent of any other provision of this Agreement. The existence of any claim or cause of action of the Participant against the Company, whether predicated on this Agreement or otherwise, shall not constitute a defense to the enforcement by the Company of the covenants and agreements that are set forth in this Agreement.

21. Entire Agreement. This Agreement together with the Plan supersede any and all other prior understandings and agreements, either oral or in writing, between the parties with respect to the subject matter hereof and constitute the sole and only agreements between the parties with respect to the said subject matter. All prior negotiations and agreements between the parties with respect to the subject matter hereof are merged into this Agreement. Each party to this Agreement acknowledges that no representations, inducements, promises, or agreements, orally or otherwise, have been made by any party or by anyone acting on behalf of any party, which are not embodied in this Agreement or the Plan and that any agreement, statement or promise that is not contained in this Agreement or the Plan shall not be valid or binding or of any force or effect.

22. Parties Bound. The terms, provisions, and agreements that are contained in this Agreement shall apply to, be binding upon, and inure to the benefit of the parties and their respective heirs, executors, administrators, legal representatives, and permitted successors and assigns, subject to the limitation on assignment expressly set forth herein.

23. Modification. No change or modification of this Agreement shall be valid or binding upon the parties unless the change or modification is in writing and signed by the parties; provided, however, that the Company may change or modify this Agreement without the Participant's consent or signature if the Company determines, in its sole discretion, that such change or modification is necessary for purposes of compliance with or exemption from the requirements of Section 409A of the Code or any regulations or other guidance issued thereunder. Notwithstanding the preceding sentence, the Company may amend the Plan to the extent permitted by the Plan.

24. Headings. The headings that are used in this Agreement are used for reference and convenience purposes only and do not constitute substantive matters to be considered in construing the terms and provisions of this Agreement.

25. Gender and Number. Words of any gender used in this Agreement shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

26. Notice. Any notice required or permitted to be delivered hereunder shall be deemed to be delivered only when actually received by the Company or by the Participant, as the case may be, at the addresses set forth below, or at such other addresses as they have theretofore specified by written notice delivered in accordance herewith:

a. Notice to the Company shall be addressed and delivered as follows:

PhaseRx, Inc.
410 W. Harrison Street, Suite 300
Seattle, WA 98119
Attn: _____
Facsimile: _____

b. Notice to the Participant shall be addressed and delivered as set forth on the signature page.

27. Tax Requirements. The Participant is hereby advised to consult immediately with his or her own tax advisor regarding the tax consequences of this Agreement. The Company or, if applicable, any Subsidiary (for purposes of this Section 27, the term “*Company*” shall be deemed to include any applicable Subsidiary), shall have the right to deduct from all amounts paid in cash or other form in connection with the Plan, any federal, state, local, or other taxes required by law to be withheld in connection with this Award. The Company may, in its sole discretion, also require the Participant receiving shares of Common Stock issued under the Plan to pay the Company the amount of any taxes that the Company is required to withhold in connection with the Participant’s income arising with respect to this Award. Such payments shall be required to be made when requested by the Company and may be required to be made prior to the delivery of any certificate representing shares of Common Stock. Such payment may be made by (i) the delivery of cash to the Company in an amount that equals or exceeds (to avoid the issuance of fractional shares under (iii) below) the required tax withholding obligations of the Company; (ii) if the Company, in its sole discretion, so consents in writing, the actual delivery by the exercising Participant to the Company of shares of Common Stock, which shares so delivered have an aggregate Fair Market Value that equals or exceeds (to avoid the issuance of fractional shares under (iii) below) the required tax withholding payment; (iii) if the Company, in its sole discretion, so consents in writing, the Company’s withholding of a number of shares to be delivered upon the exercise of the Stock Option, which shares so withheld have an aggregate Fair Market Value that equals (but does not exceed) the required tax withholding payment; or (iv) any combination of (i), (ii), or (iii). The Company may, in its sole discretion, withhold any such taxes from any other cash remuneration otherwise paid by the Company to the Participant.

28. Clawback. The Participant acknowledges and agrees that any compensation paid to the Participant by the Company, pursuant to this Agreement or otherwise, shall be subject to recovery by the Company in accordance with the Company’s clawback policy applicable to employees of the Company, if any, as amended from time to time.

* * * * *

[*Remainder of Page Intentionally Left Blank*
Signature Page Follows.]

IN WITNESS WHEREOF, the Company has caused this Agreement to be executed by its duly authorized officer, and the Participant, to evidence his consent and approval of all the terms hereof, has duly executed this Agreement, as of the date specified in Section 1 hereof.

PHASERX:

By: _____
Name: _____
Title: _____

PARTICIPANT:

Signature

Name: _____
Address: _____

NONQUALIFIED STOCK OPTION AGREEMENT

PHASERX, INC.
2016 LONG-TERM INCENTIVE PLAN

1. Grant of Option. Pursuant to the PhaseRx, Inc. 2016 Long-Term Incentive Plan (the “**Plan**”) for key Employees, key Contractors, and Outside Directors of PhaseRx, Inc., a Delaware corporation (the “**Company**”), the Company grants to

(the “**Participant**”),

an option (the “**Option**” or “**Stock Option**”) to purchase a total of _____ (_____) full shares of Common Stock of the Company (the “**Optioned Shares**”) at an “**Option Price**” equal to \$_____ per share (being the Fair Market Value per share of the Common Stock on the Date of Grant).

The “**Date of Grant**” of this Stock Option is _____, 20____. The “**Option Period**” shall commence on the Date of Grant and shall expire on the date immediately preceding the tenth (10th) anniversary of the Date of Grant, unless terminated earlier in accordance with Section 4 below. The Stock Option is a Nonqualified Stock Option. This Stock Option is intended to comply with the provisions governing nonqualified stock options under the final Treasury Regulations issued on April 17, 2007, in order to exempt this Stock Option from application of Section 409A of the Code.

2. Subject to Plan. The Stock Option and its exercise are subject to the terms and conditions of the Plan, and the terms of the Plan shall control to the extent not otherwise inconsistent with the provisions of this Nonqualified Stock Option Agreement (the “**Agreement**”). The capitalized terms used herein that are defined in the Plan shall have the same meanings assigned to them in the Plan. The Stock Option is subject to any rules promulgated pursuant to the Plan by the Board or the Committee and communicated to the Participant in writing. In addition, if the Plan previously has not been approved by the Company’s stockholders, the Stock Option is granted subject to such stockholder approval.

3. Vesting; Time of Exercise. Except as specifically provided in this Agreement and subject to certain restrictions and conditions set forth in the Plan, the Optioned Shares shall be vested and the Stock Option shall be exercisable as follows:

- a. One forty-eighth (1/48) of the total Optioned Shares shall vest on the one-month anniversary of the Date of Grant, provided the Participant is providing services to the Company or a Subsidiary on that date.
- b. An additional one forty-eighth (1/48) of the total Optioned Shares shall vest on each monthly anniversary of the Date of Grant thereafter, provided the Participant is providing services to the Company or a Subsidiary on that date.

In the event that a Change in Control occurs and either (i) this Agreement is not assumed by the surviving corporation or its parent, or the surviving corporation or its parent does not substitute its own option for this Stock Option or (ii) the Participant incurs a Termination of Service without Cause (as defined herein) in connection with or within twelve (12) months following the Change in Control, then the total Optioned Shares not previously vested shall become fully vested and exercisable upon the effective date of the Change in Control or the date of the Participant’s Termination of Service, as applicable. For purposes of this Agreement, a Termination of Service without Cause shall include the failure to reelect a Participant as an Outside Director if such Participant was an Outside Director immediately prior to the Change in Control.

4. Term; Forfeiture.

a. Except as otherwise provided in this Agreement, to the extent the unexercised portion of the Stock Option relates to Optioned Shares which are not vested on the date of the Participant's Termination of Service, the Stock Option will be terminated on that date. The unexercised portion of the Stock Option that relates to Optioned Shares which are vested will terminate at the first of the following to occur:

- i. 5 p.m. on the date the Option Period terminates;
- ii. 5 p.m. on the date which is twelve (12) months following the date of the Participant's Termination of Service due to death, Retirement or Total and Permanent Disability;
- iii. immediately upon the Participant's Termination of Service by the Company for Cause;
- iv. 5 p.m. on the date which is three (3) months following the date of the Participant's Termination of Service for any reason not otherwise specified in this Section 4.a.; and
- v. 5 p.m. on the date the Company causes any portion of the Stock Option to be forfeited pursuant to Section 7 hereof.

b. For purposes of this Agreement, "**Cause**" means the Participant's Termination of Service by the Company because of: (i) the Participant's conviction of, or plea of nolo contendere to, a felony or crime involving moral turpitude or (ii) the Participant's breach of fiduciary duty which involves personal profit. Notwithstanding the foregoing, in the case of any Participant who has entered into an agreement with the Company or any Subsidiary that contains the definition of "cause" (or any similar definition), then during the term of such agreement the definition contained in such agreement shall be the applicable definition of "cause" under the Agreement as to such Participant if such agreement expressly so provides.

5. Who May Exercise. Subject to the terms and conditions set forth in Sections 3 and 4 above, during the lifetime of the Participant, the Stock Option may be exercised only by the Participant, or by the Participant's guardian or personal or legal representative. If the Participant's Termination of Service is due to his death prior to the dates specified in Section 4.a. hereof, and the Participant has not exercised the Stock Option as to the maximum number of vested Optioned Shares as set forth in Section 3 hereof as of the date of death, the following persons may exercise the exercisable portion of the Stock Option on behalf of the Participant at any time prior to the earliest of the dates specified in Section 4.a. hereof: the personal representative of his estate, or the person who acquired the right to exercise the Stock Option by bequest or inheritance or by reason of the death of the Participant; provided that the Stock Option shall remain subject to the other terms of this Agreement, the Plan, and Applicable Laws, rules, and regulations.

6. No Fractional Shares. The Stock Option may be exercised only with respect to full shares, and no fractional share of stock shall be issued.

7. Manner of Exercise. Subject to such administrative regulations as the Committee may from time to time adopt, the Stock Option may be exercised by the delivery of written notice to the Committee (the “**Exercise Notice**”) setting forth the number of shares of Common Stock with respect to which the Stock Option is to be exercised, the date of exercise thereof (the “**Exercise Date**”). On the Exercise Date, the Participant shall deliver to the Company consideration with a value equal to the total Option Price of the shares to be purchased, payable as follows: (a) cash, check, bank draft, or money order payable to the order of the Company, (b) if the Company, in its sole discretion, so consents in writing, Common Stock (including Restricted Stock) owned by the Participant on the Exercise Date, valued at its Fair Market Value on the Exercise Date, (c) if the Company, in its sole discretion, so consents in writing, by delivery (including by FAX) to the Company or its designated agent of an executed irrevocable option exercise form together with irrevocable instructions from the Participant to a broker or dealer, reasonably acceptable to the Company, to sell certain of the shares of Common Stock purchased upon exercise of the Stock Option or to pledge such shares as collateral for a loan and promptly deliver to the Company the amount of sale or loan proceeds necessary to pay such purchase price, and/or (d) in any other form of valid consideration that is acceptable to the Committee in its sole discretion. In the event that shares of Restricted Stock are tendered as consideration for the exercise of a Stock Option, a number of shares of Common Stock issued upon the exercise of the Stock Option equal to the number of shares of Restricted Stock used as consideration therefor shall be subject to the same restrictions and provisions as the Restricted Stock so tendered.

Upon payment of all amounts due from the Participant, the Company shall cause the Common Stock then being purchased to be registered in the Participant’s name (or the person exercising the Participant’s Stock Option in the event of his death), but shall not issue certificates for such Common Stock unless the Participant or such other person requests delivery of certificates for such Common Stock in accordance with Section 8.3(c) of the Plan. The obligation of the Company to register shares of Common Stock shall, however, be subject to the condition that, if at any time the Company shall determine in its discretion that the listing, registration, or qualification of the Stock Option or the Common Stock upon any securities exchange or inter-dealer quotation system or under any state or federal law, or the consent or approval of any governmental regulatory body, is necessary as a condition of, or in connection with, the Stock Option or the issuance or purchase of shares of Common Stock thereunder, then the Stock Option may not be exercised in whole or in part unless such listing, registration, qualification, consent, or approval shall have been effected or obtained free of any conditions not reasonably acceptable to the Committee.

If the Participant fails to pay for any of the Optioned Shares specified in such notice within three (3) business days of the date in the Exercise Notice or fails to accept delivery thereof, then the Exercise Notice shall be null and void and the Company will have no obligation to deliver any shares of Common Stock to the Participant in connection with such Exercise Notice.

8. Nonassignability. The Stock Option is not assignable or transferable by the Participant except by will or by the laws of descent and distribution.

9. Rights as Stockholder. The Participant will have no rights as a stockholder with respect to any of the Optioned Shares until the registration of such shares in the Participant’s name. The Optioned Shares shall be subject to the terms and conditions of this Agreement. Except as otherwise provided in Section 10 hereof, no adjustment shall be made for dividends or other rights for which the record date is prior to the issuance of such certificate or certificates. The Participant, by his or her execution of this Agreement, agrees to execute any documents requested by the Company in connection with the issuance of the shares of Common Stock.

10. Adjustment of Number of Optioned Shares and Related Matters. The number of shares of Common Stock covered by the Stock Option, and the Option Prices thereof, shall be subject to adjustment in accordance with Articles 11 - 13 of the Plan.
11. Nonqualified Stock Option. The Stock Option shall not be treated as an Incentive Stock Option.
12. Voting. The Participant, as record holder of some or all of the Optioned Shares following exercise of this Stock Option, has the exclusive right to vote, or consent with respect to, such Optioned Shares until such time as the Optioned Shares are transferred in accordance with this Agreement; provided, however, that this Section shall not create any voting right where the holders of such Optioned Shares otherwise have no such right.
13. Specific Performance. The parties acknowledge that remedies at law will be inadequate remedies for breach of this Agreement and consequently agree that this Agreement shall be enforceable by specific performance. The remedy of specific performance shall be cumulative of all of the rights and remedies at law or in equity of the parties under this Agreement.
14. Participant's Representations. Notwithstanding any of the provisions hereof, the Participant hereby agrees that he will not exercise the Stock Option granted hereby, and that the Company will not be obligated to issue any shares to the Participant hereunder, if the exercise thereof or the issuance of such shares shall constitute a violation by the Participant or the Company of any provision of any law or regulation of any governmental authority. Any determination in this connection by the Company shall be final, binding, and conclusive. The obligations of the Company and the rights of the Participant are subject to all Applicable Laws, rules, and regulations. The Participant agrees and covenants not to sue any Person other than the Company over any Claims.
15. Investment Representation. Unless the shares of Common Stock are issued to the Participant in a transaction registered under applicable federal and state securities laws, by his execution hereof, the Participant represents and warrants to the Company that all Common Stock which may be purchased hereunder will be acquired by the Participant for investment purposes for his own account and not with any intent for resale or distribution in violation of federal or state securities laws. Unless the Common Stock is issued to him in a transaction registered under the applicable federal and state securities laws, all certificates issued with respect to the Common Stock shall bear an appropriate restrictive investment legend and shall be held indefinitely, unless they are subsequently registered under the applicable federal and state securities laws or the Participant obtains an opinion of counsel, in form and substance satisfactory to the Company and its counsel, that such registration is not required.
16. Participant's Acknowledgments. The Participant acknowledges that a copy of the Plan has been made available for his or her review by the Company, and represents that he or she is familiar with the terms and provisions thereof, and hereby accepts this Stock Option subject to all the terms and provisions thereof. The Participant hereby agrees to accept as binding, conclusive, and final all decisions or interpretations of the Committee or the Board, as appropriate, upon any questions arising under the Plan or this Agreement.
17. Law Governing. This Agreement shall be governed by, construed, and enforced in accordance with the laws of the State of Delaware (excluding any conflict of laws rule or principle of Delaware law that might refer the governance, construction, or interpretation of this Agreement to the laws of another state).

18. No Right to Continue Service. Nothing herein shall be construed to confer upon the Participant the right to continue to provide services to the Company or any Subsidiary, whether as an Employee or as a Contractor or as an Outside Director, or interfere with or restrict in any way the right of the Company or any Subsidiary to discharge the Participant as an Employee, Contractor or Outside Director at any time.

19. Legal Construction. In the event that any one or more of the terms, provisions, or agreements that are contained in this Agreement shall be held by a court of competent jurisdiction to be invalid, illegal, or unenforceable in any respect for any reason, the invalid, illegal, or unenforceable term, provision, or agreement shall not affect any other term, provision, or agreement that is contained in this Agreement and this Agreement shall be construed in all respects as if the invalid, illegal, or unenforceable term, provision, or agreement had never been contained herein.

20. Covenants and Agreements as Independent Agreements. Each of the covenants and agreements that is set forth in this Agreement shall be construed as a covenant and agreement independent of any other provision of this Agreement. The existence of any claim or cause of action of the Participant against the Company, whether predicated on this Agreement or otherwise, shall not constitute a defense to the enforcement by the Company of the covenants and agreements that are set forth in this Agreement.

21. Entire Agreement. This Agreement together with the Plan supersede any and all other prior understandings and agreements, either oral or in writing, between the parties with respect to the subject matter hereof and constitute the sole and only agreements between the parties with respect to the said subject matter. All prior negotiations and agreements between the parties with respect to the subject matter hereof are merged into this Agreement. Each party to this Agreement acknowledges that no representations, inducements, promises, or agreements, orally or otherwise, have been made by any party or by anyone acting on behalf of any party, which are not embodied in this Agreement or the Plan and that any agreement, statement or promise that is not contained in this Agreement or the Plan shall not be valid or binding or of any force or effect.

22. Parties Bound. The terms, provisions, and agreements that are contained in this Agreement shall apply to, be binding upon, and inure to the benefit of the parties and their respective heirs, executors, administrators, legal representatives, and permitted successors and assigns, subject to the limitation on assignment expressly set forth herein.

23. Modification. No change or modification of this Agreement shall be valid or binding upon the parties unless the change or modification is in writing and signed by the parties; provided, however, that the Company may change or modify this Agreement without the Participant's consent or signature if the Company determines, in its sole discretion, that such change or modification is necessary for purposes of compliance with or exemption from the requirements of Section 409A of the Code or any regulations or other guidance issued thereunder. Notwithstanding the preceding sentence, the Company may amend the Plan to the extent permitted by the Plan.

24. Headings. The headings that are used in this Agreement are used for reference and convenience purposes only and do not constitute substantive matters to be considered in construing the terms and provisions of this Agreement.

25. Gender and Number. Words of any gender used in this Agreement shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

26. Notice. Any notice required or permitted to be delivered hereunder shall be deemed to be delivered only when actually received by the Company or by the Participant, as the case may be, at the addresses set forth below, or at such other addresses as they have theretofore specified by written notice delivered in accordance herewith:

a. Notice to the Company shall be addressed and delivered as follows:

PhaseRx, Inc.
410 W. Harrison Street, Suite 300
Seattle, WA 98119
Attn: _____
Facsimile: _____

b. Notice to the Participant shall be addressed and delivered as set forth on the signature page.

27. Tax Requirements. The Participant is hereby advised to consult immediately with his or her own tax advisor regarding the tax consequences of this Agreement and the Option granted hereunder. As an Outside Director of the Company, the Participant acknowledges and agrees that he or she shall be solely responsible for withholding taxes and remitting any necessary payments to any federal, state, or local taxing authority required in connection with the exercise of the Option.

28. Clawback. The Participant acknowledges and agrees that any compensation paid to the Participant by the Company, pursuant to this Agreement or otherwise, shall be subject to recovery by the Company in accordance with the Company's clawback policy applicable to employees or other service providers of the Company, if any, as amended from time to time.

[*Remainder of Page Intentionally Left Blank*
Signature Page Follows.]

IN WITNESS WHEREOF, the Company has caused this Agreement to be executed by its duly authorized officer, and the Participant, to evidence his consent and approval of all the terms hereof, has duly executed this Agreement, as of the date specified in Section 1 hereof.

PHASERX:

By: _____
Name: _____
Title: _____

PARTICIPANT:

Signature
Name: _____
Address: _____

AMENDMENT NO.3 TO CONSULTING AGREEMENT

This Amendment No. 3 to Consulting Agreement (this “ **Amendment** ”), dated _June 30, _____, 2016, is entered into between PhaseRx, Inc., a Delaware corporation having a place of business at 410 West Harrison Street, Seattle, WA 98119 (the “ **Company** ”) and Paul H. Johnson, Ph.D., having a place of business at 12020 211th Place SE, Snohomish, Washington 98296 (the “ **Consultant** ”).

RECITALS

WHEREAS, the Consultant and the Company entered into a Consulting Agreement, effective as of July 2, 2013, as previously amended by that certain Amendment to the Consulting Agreement, effective as of January 2, 2014, and Amendment No.2 to Consulting Agreement, dated as of February 10, 2016 (as so amended, the “ **Agreement** ”);

WHEREAS, the Company and the Consultant desire to amend the Agreement to reduce the consultant fees set forth on Exhibit A attached thereto.

NOW, THEREFORE, in consideration of the mutual promises and covenants set forth herein, the parties hereto, intending legally to be bound, hereby agree as follows:

1. **Definitions**

Unless the context clearly requires otherwise, all capitalized terms as used herein shall have the same meanings as used in the Agreement.

2. **Amendment Date**

This Amendment shall be effective as of the date hereof.

3. **Amendments to Agreement**

The parties agree that the first bullet under “2. Compensation” on Exhibit A to the Agreement shall be deleted in its entirety and replaced with the following:

“• \$5,000 in cash per year, paid in equal quarterly installments in arrears.”

4. **No Other Waivers or Modifications; Applicability of this Agreement**

Except to the extent expressly modified by Section 3 of this Amendment, no other covenant, term, provision, condition or agreement of the parties set forth in the Agreement shall be deemed to be waived, modified or amended in any way by this Amendment. All of the recitals, covenants, terms, provisions, conditions and agreements of the parties set forth in the Agreement shall be deemed applicable to this Amendment.

5. **Entire Agreement**

The Agreement, as modified by this Amendment, constitute the entire agreement between the parties, and supersedes all prior or written agreements, commitments or understandings concerning the matters provided for herein.

6. **Counterparts**

This Amendment may be executed in any number of counterparts, all of which taken together shall constitute one and the same agreement, and any of the parties hereto may execute this Amendment by signing any such counterpart. Delivery of an executed counterpart of a signature page to this Amendment by telecopier or by electronic mail (in portable document format ("PDF")) shall be effective as delivery of a manually executed counterpart of this Amendment.

[Signature page follows]

IN WITNESS WHEREOF, the parties have executed this Amendment as of the date and year first written above.

COMPANY:

PHASERX, INC.

a Delaware corporation

By: /S/ Shing-Yin (Helen) Tsui

Name: Shing-Yin Tsui

Title: VP, Finance

CONSULTANT

/S/Paul Johnson

Paul H. Johnson, Ph.D.

CERTIFICATIONS UNDER SECTION 302

I, Robert W. Overell, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of PhaseRx, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) 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
 - c) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 2, 2016

/s/ Robert Overell

Robert W. Overell

Chief Executive Officer

(Principal Executive Officer and Principal Financial Officer)

CERTIFICATIONS UNDER SECTION 302

I, Shing-Yin (Helen) Tsui, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of PhaseRx, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) 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
 - c) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 2, 2016

/s/ Shing-Yin Tsui

Shing-Yin (Helen) Tsui

Senior Vice President, Finance and Secretary

(Principal Accounting Officer)

CERTIFICATIONS UNDER SECTION 906

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of PhaseRx, Inc., a Delaware corporation (the “Company”), does hereby certify, to such officer’s knowledge, that:

The Quarterly Report for the quarter ended June 30, 2016 (the “Form 10-Q”) of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 2, 2016

/s/ Robert Overell

Robert W. Overell
Chief Executive Officer
(Principal Executive Officer and Principal Financial Officer)

Dated: August 2, 2016

/s/ Shing-Yin Tsui

Shing-Yin (Helen) Tsui
Senior Vice President, Finance and Secretary
(Principal Accounting Officer)
