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, 2019

OR

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

For the transition period from to

Commission file number 001-36714

JAGUAR HEALTH, INC.
(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)	**46-2956775** (I.R.S. Employer Identification No.)

201 Mission Street, Suite 2375
San Francisco, California 94105
(Address of principal executive offices, zip code)

(415) 371-8300
(Registrant's telephone number, including area code)

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

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

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

Title of each class:	Trading Symbol(s)	Name of each exchange on which registered:
Common Stock, Par Value $0.0001 Per Share	JAGX	The NASDAQ Capital Market

As of August 2, 2019 there were 6,062,958 shares of voting common stock, par value $0.0001 per share, outstanding, 40,301,237 shares of non-voting common stock, par value $0.0001 per share, outstanding (convertible into 38,382 shares of voting common stock), 5,524,926 shares of Series A convertible preferred stock, par value $0.0001 per share, outstanding (convertible into 473,565 shares of voting common stock, subject to certain voting restrictions as provided in the Certificate of Designation for the convertible preferred stock), and 8,636 shares of Series B convertible preferred stock, par value $0.0001 per share, outstanding (convertible into 4,318,000 shares of voting common stock, subject to certain voting restrictions as provided in the Certificate of Designation for the convertible preferred stock).

PART I. — FINANCIAL INFORMATION

Item 1. Condensed Consolidated Financial Statements

JAGUAR HEALTH, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS

	June 30, 2019	December 31, 2018
Assets	**(Unaudited)**	
Current assets:		
Cash	$ 1,606,627	$ 2,568,191
Accounts receivable	2,097,213	995,683
Other receivable	92,744	6,118
Inventory	2,393,233	3,342,177
Deferred offering costs	335,768	—
Prepaid expenses and other current assets	822,796	1,237,772
Total current assets	7,348,381	8,149,941
Property and equipment, net	737,317	760,617
Operating lease - right-of-use asset	905,711	—
Intangible assets, net	26,867,222	31,710,556
Other assets	208,316	420,831
Total assets	$ 36,066,947	$ 41,041,945
Liabilities, convertible preferred stock and stockholders' equity/(deficit)		
Current liabilities:		
Accounts payable	$ 6,390,289	$ 5,414,260
Accrued liabilities	5,273,615	4,939,441
Warrant liability	5,182,273	220,376
Convertible debt - current, net of discount	—	11,239,170
Operating lease liability - current	425,755	—
Notes payable, net of discount	3,563,068	4,845,575
Total current liabilities	20,835,000	26,658,822
Notes payable long term, net of discount	7,759,642	—
Operating lease liability - long-term	116,328	—
Total liabilities	28,710,970	26,658,822
Commitments and contingencies (See Note 6)		
Series A convertible preferred stock: $0.0001 par value, 10,000,000 shares authorized at June 30, 2019 and December 31, 2018; 5,524,926 shares issued and outstanding at June 30, 2019 and December 31, 2018; (redemption value and liquidation preference of $12,738,822 and $9,199,002 at June 30, 2019 and December 31, 2018, respectively)	9,000,002	9,000,002
Stockholders' equity/(deficit):		
Common stock - voting: $0.0001 par value, 150,000,000 shares authorized at June 30, 2019 and December 31, 2018, respectively; 1,799,381 and 351,472 shares issued and outstanding at June 30, 2019 and December 31, 2018, respectively	180	35
Common stock - non-voting: $0.0001 par value, 50,000,000 shares authorized at June 30, 2019 and December 31, 2018; 40,301,237 shares issued and outstanding at June 30, 2019 and December 31, 2018	4,030	4,030
Additional paid-in capital	117,927,532	99,929,835
Accumulated deficit	(119,575,767)	(94,550,779)
Total stockholders' equity/(Deficit)	(1,644,025)	5,383,121
Total liabilities, convertible preferred stock and stockholders' equity/(deficit)	$ 36,066,947	$ 41,041,945

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

JAGUAR HEALTH, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Product revenue	$ 1,705,694	$ 883,846	$ 3,295,427	$ 1,510,813
Collaboration revenue	—	—	—	177,389
Total revenue	1,705,694	883,846	3,295,427	1,688,202
Operating expenses				
Cost of product revenue	1,260,362	608,024	2,125,305	1,072,185
Research and development	1,697,653	1,604,886	3,119,013	2,362,752
Sales and marketing	2,173,071	2,690,262	3,738,195	4,402,452
General and administrative	3,196,861	3,059,748	6,710,275	6,058,148
Impairment of indefinite-lived intangible assets	4,000,000	—	4,000,000	—
Total operating expenses	12,327,947	7,962,920	19,692,788	13,895,537
Loss from operations	(10,622,253)	(7,079,074)	(16,397,361)	(12,207,335)
Interest expense	(3,656,978)	(711,802)	(4,204,108)	(1,313,824)
Other income, net	14,224	15,204	20,608	312,704
Change in fair value of warrants, derivative liability and conversion option liability	207,088	118,489	161,031	(145,365)
Loss on extinguishment of debt	(2,663,198)	—	(4,605,158)	—
Net loss	(16,721,117)	(7,657,183)	(25,024,988)	(13,353,820)
Deemed dividend attributable to preferred stock	—	(995,000)	—	(995,000)
Net loss attributable to common shareholders	$(16,721,117)	$(8,652,183)	$(25,024,988)	$(14,348,820)
Net loss per share, basic and diluted	$ (15.11)	$ (53.24)	$ (31.22)	$ (100.33)
Weighted-average common shares outstanding, basic and diluted	1,106,374	162,506	801,482	143,012

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

JAGUAR HEALTH, INC.
CONDENSED CONSOLIDATED STATEMENT OF CHANGES IN CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY/(DEFICIT)

(Unaudited)

	Series A Preferred Stock		Common stock - voting		Common stock - non-voting		Additional	Accumulated	Total Stockholders'
	Shares	Amount	Shares	Amount	Shares	Amount	paid-in capital	deficit	Equity
Beginning Balance March 31, 2018	5,524,926	$ 9,000,002	122,602	$ 12	42,617,893	$ 4,262	$ 89,104,730	$ (68,101,359)	$ 21,007,645
Conversion of non-voting common stock to voting common stock	—	—	2,206	—	(2,316,656)	(232)	232	—	—
Issuance of common stock in exchange for redemption of convertible debt	—	—	—	—	—	—	203,408	—	203,408
Fractional common stock shares repurchased	—	—	—	—	—	—	(30)	—	(30)
Stock-based compensation	—	—	—	—	—	—	464,454	—	464,454
Net loss	—	—	—	—	—	—	—	(7,657,183)	(7,657,183)
Three Months Ended June 30, 2018	5,524,926	$ 9,000,002	124,808	$ 12	40,301,237	$ 4,030	$ 89,772,794	$ (75,758,542)	$ 14,018,294

	Series A Preferred Stock		Common stock - voting		Common stock - non-voting		Additional	Accumulated	Total Stockholders'
	Shares	Amount	Shares	Amount	Shares	Amount	paid-in capital	deficit	Equity
Beginning Balance March 31, 2019	5,524,926	$ 9,000,002	848,785	$ 85	40,301,237	$ 4,030	$ 109,646,413	$ (102,854,650)	$ 6,795,878
Issuance of common stock to Oasis, put exercise	—	—	4,843	—	—	—	99,967	—	99,967
Issuance of common stock in exchange of CVP Notes	—	—	127,904	13	—	—	2,151,037	—	2,151,050
Issuance of common stock in exchange of CVP Exchange Notes	—	—	817,863	82	—	—	5,583,747	—	5,583,829
Fractional common stock shares repurchased	—	—	(14)	—	—	—	—	—	—
Stock-based compensation	—	—	—	—	—	—	446,368	—	446,368
Net loss	—	—	—	—	—	—	—	(16,721,117)	(16,721,117)
Three Months Ended June 30, 2019	5,524,926	$ 9,000,002	1,799,381	$ 180	40,301,237	$ 4,030	$ 117,927,532	$ (119,575,767)	$ (1,644,025)

	Series A Preferred Stock		Common stock - voting		Common stock - non-voting		Additional	Accumulated	Total Stockholders'
	Shares	Amount	Shares	Amount	Shares	Amount	paid-in capital	deficit	Equity
Beginning Balance January 1, 2018	—	$ —	59,721	$ 6	42,617,893	$ 4,262	$ 79,661,456	$ (62,404,722)	$ 17,261,002
Issuance of preferred stock and common stock	5,524,926	9,000,002	28,011	3	—	—	4,999,997	—	5,000,000
Beneficial conversion feature of the series A convertible preferred stock	—	(995,000)	—	—	—	—	995,000	—	995,000
Deemed dividend on the series A convertible preferred stock	—	995,000	—	—	—	—	(995,000)	—	(995,000)
Issuance of common stock	—	—	17,075	2	—	—	2,259,280	—	2,259,282
Issuance of common stock in exchange for redemption of convertible debt	—	—	13,665	1	—	—	1,404,012	—	1,404,013
Issuance of common stock in exchange for services	—	—	48	—	—	—	6,425	—	6,425
Issuance of common stock in exchange for payment of interest expense	—	—	4,082	—	—	—	704,725	—	704,725
Conversion of non-voting common stock to voting common stock	—	—	2,206	—	(2,316,656)	(232)	232	—	-
Fractional common stock shares repurchased	—	—	—	—	—	—	(30)	—	(30)
Stock-based compensation	—	—	—	—	—	—	736,697	—	736,697
Net loss	—	—	—	—	—	—	—	(13,353,820)	(13,353,820)
Six Months Ended June 30, 2018	5,524,926	$ 9,000,002	124,808	$ 12	40,301,237	$ 4,030	$ 89,772,794	$ (75,758,542)	$ 14,018,294

	Series A Preferred Stock		Common stock - voting		Common stock - non-voting		Additional paid-in capital	Accumulated deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount	Shares	Amount			
Balances - January 1, 2019	5,524,926	$ 9,000,002	351,472	$ 35	40,301,237	$ 4,030	$ 99,929,835	$ (94,550,779)	$ 5,383,121
Issuance of common stock to Oasis, put exercise	—	—	195,319	20	—	—	2,602,876	—	2,602,896
Issuance of common stock, registered offering	—	—	19,019	2	—	—	266,264	—	266,266
Issuance of common stock in exchange of CVP Notes	—	—	395,970	40	—	—	8,224,884	—	8,224,923
Issuance of common stock to Kingdon in lieu of interest	—	—	19,752	2	—	—	446,727	—	446,729
Issuance of common stock in exchange of CVP Exchange Notes	—	—	817,863	81	—	—	5,584,070	—	5,584,152
Fractional common stock shares repurchased	—	—	(14)	—	—	—	—	—	—
Stock-based compensation	—	—	—	—	—	—	872,876	—	872,876
Net loss	—	—	—	—	—	—	—	(25,024,988)	(25,024,988)
Six Months Ended June 30, 2019	5,524,926	$ 9,000,002	1,799,381	$ 180	40,301,237	$ 4,030	$ 117,927,532	$ (119,575,767)	$ (1,644,025)

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

JAGUAR HEALTH, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	Six Months Ended	
	June 30, 2019	June 30, 2018
Cash flows from operating activities		
Net loss	$ (25,024,988)	$ (13,353,820)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization expense	873,142	659,230
Impairment of indefinite-lived intangible assets	4,000,000	—
Interest paid on the conversion of debt to equity	—	59,737
Common stock issued in exchange for services rendered	—	6,425
Loss on extinguishment of debt	4,605,158	—
Amortization of operating lease right-of-use-assets	362,884	—
Stock-based compensation	872,876	736,697
Amortization of debt issuance costs and debt discount	3,879,353	817,927
Change in fair value of warrants, conversion option and derivative liability	(161,031)	(141,230)
Change in fair value of derivative liability	—	(3,000)
Changes in assets and liabilities		
Accounts receivable	(1,101,530)	(115,954)
Other receivable	(86,626)	(69,075)
Inventory	948,945	(771,688)
Prepaid expenses and other current assets	247,628	(785,711)
Deferred collaboration revenue	—	(177,389)
Operating lease liabilities	(230,351)	—
Accounts payable	976,027	(2,354,183)
Accrued expenses	1,067,296	473,521
Total cash used in operating activities	(8,771,217)	(15,018,513)
Cash flows from investing activities		
Purchase of equipment	(6,508)	(6,527)
Total cash used in investing activities	(6,508)	(6,527)
Cash flows from financing activities		
Proceeds from issuance of short-term notes payable	5,050,000	—
Proceeds from issuance of long-term debt	—	2,310,000
Repayment of notes payable	(100,000)	(1,689,200)
Proceeds from issuance of common stock through a stock purchase agreement with a private investor	—	1,305,774
Proceeds from the issuance of common stock in a private investment in public entities with existing investors	—	750,100
Proceeds from the issuance of common stock, March 2018	—	5,000,000
Proceeds from the issuance of convertible preferred stock, March 2018	—	9,000,002
Proceeds from the issuance of common stock, January to April 2019	2,602,895	—
Proceeds from the issuance of common stock, March 2019	266,266	—
Fractional common shares repurchased	—	(30)
Payment of offering costs for July 2019 registered offering	(3,000)	—
Total cash provided by financing activities	7,816,161	16,676,646
Net increase (decrease) in cash	(961,564)	1,651,606
Cash at beginning of period	2,568,191	759,867
Cash at end of period	$ 1,606,627	$ 2,411,473

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

JAGUAR HEALTH, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (continued)
(Unaudited)

	Six Months Ended	
	June 30, 2019	June 30, 2018
Supplemental schedule of non-cash financing and investing activities		
Interest paid on long-term debt	$ -	$ 19,344
Common stock issued as redemption of notes payable and related interest	$ -	$ 1,153,408
Common stock issued as redemption of notes payable and related interest	$ -	$ 1,158,738
Deemed dividend attributable to preferred stock	$ -	$ 995,000
Common stock exchanged for CVP Exchange Note 1 and related interest	$ 5,584,153	$ -
Repayment of accrued interest on Kingdon notes payable by issuance of common stock	$ 446,729	$ -
Repayment of CVP Note Payable principal and interest by issuance of common stock	$ 8,224,924	$ -
Issuance of March 2019 letter of credit warrant	$ 116,297	$
Issuance of warrants with short-term Notes Payable	$ 5,005,739	$ -
Unpaid offering costs for July 2019 registered offering	$ 332,768	$ -

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

JAGUAR HEALTH, INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Business

Jaguar Health, Inc. (“Jaguar”, “we” or the “Company”), formerly known as Jaguar Animal Health, Inc., was incorporated on June 6, 2013 (inception) in Delaware. The Company was a majority-owned subsidiary of Napo Pharmaceuticals, Inc. (“Napo” or the “Former Parent”) until the close of the Company's initial public offering on May 18, 2015. The Company was formed to develop and commercialize first-in-class gastrointestinal products for companion and production animals and horses. The Company's first commercial product, Neonorm Calf, was launched in 2014 and Neonorm Foal was launched in the first quarter of 2016. The Company's activities are subject to significant risks and uncertainties, including failing to secure additional funding in order to timely complete the development and commercialization of products.

On July 31, 2017, Jaguar completed a merger with Napo pursuant to the Agreement and Plan of Merger dated March 31, 2017 by and among Jaguar, Napo, Napo Acquisition Corporation (“Merger Sub”), and Napo's representative (the “Merger Agreement”). In accordance with the terms of the Merger Agreement, upon the completion of the merger, Merger Sub merged with and into Napo, with Napo surviving as our wholly-owned subsidiary (the “Merger” or “Napo Merger”). Immediately following the Merger, Jaguar changed its name from “Jaguar Animal Health, Inc.” to “Jaguar Health, Inc.” Napo now operates as a wholly-owned subsidiary of Jaguar focused on human health and the ongoing commercialization of Mytesi, a Napo drug product approved by the U.S. FDA for the symptomatic relief of noninfectious diarrhea in adults with HIV/AIDS on antiretroviral therapy.

The Company manages its operations through two segments—human health and animal health and is headquartered in San Francisco, California.

Nasdaq Communication and Compliance

On May 13, 2019, the Company received written notice from the Staff of the Listing Qualifications Department (the “Staff”) of The Nasdaq Stock Market LLC (“Nasdaq”) indicating that, based upon the Company’s continued non-compliance with the minimum $1.00 bid price requirement for continued listing on The Nasdaq Capital Market, as set forth in Nasdaq Listing Rule 5550(a)(2) (the “Rule”), as of May 8, 2019, and notwithstanding the Company’s compliance with the quantitative criteria necessary to obtain a second 180-day period within which to evidence compliance with the Rule, as set forth in Nasdaq Listing Rule 5810(c)(3)(A), the Staff had determined to delist the Company’s securities from Nasdaq unless the Company timely requests a hearing before the Nasdaq Hearings Panel (the “Panel”).

On June 21, 2019, the Company received a letter from The Nasdaq Stock Market that the Company has regained compliance with Listing Rule 5450(a)(1), which requires the Company’s common stock to maintain a minimum bid price of $1.00 per share. The notification letter confirmed that the minimum bid price deficiency had been cured and that the Company was in compliance with all applicable listing standards. Nasdaq had previously notified the Company of its non-compliance with Listing Rule 5450(a)(1) on November 14, 2018, following 30 consecutive business days for which the closing bid price of the Company’s common stock did not meet the $1.00 per share minimum requirement.

Reverse stock-splits

On May 29, 2018, the Company filed the Certificate of Second Amendment to its Third Amended and Restated Certificate of Incorporation with the Secretary of State of the State of Delaware to effect a 1-for-15 reverse stock split of the Company’s issued and outstanding shares of voting common stock, effective June 1, 2018. The reverse split has been retrospectively reflected in all voting common stock, warrants, and common stock option shares disclosed in these condensed consolidated financial statements. The non-voting common stock and the convertible preferred stock were excluded from the reverse split.

On June 3, 2019, the Company filed the Certificate of Fifth Amendment to its Third Amended and Restated Certificate of Incorporation with the Secretary of State of the State of Delaware to effect a 1-for-70 reverse stock split of the Company's issued and outstanding shares of voting common stock, effective June 7, 2019. The reverse split has been retrospectively reflected in all voting common stock, warrants, and common stock option shares disclosed in these condensed consolidated financial statements. The non-voting common stock and the convertible preferred stock were excluded from the reverse split.

Liquidity and Going Concern

The accompanying condensed consolidated financial statements have been prepared assuming the Company will continue as a going concern. The Company has incurred recurring operating losses since inception and has an accumulated deficit of $119.6 million as of June 30, 2019. The net loss for the six months ended June 30, 2019 was $25.0 million. The Company expects to incur substantial losses in future periods. Further, the Company's future operations are dependent on the success of the Company's ongoing development and commercialization efforts, as well as securing additional financing. There is no assurance that profitable operations, if ever achieved, could be sustained on a continuing basis.

The Company plans to finance its operations and capital funding needs through equity and/or debt financing, collaboration arrangements with other entities, as well as revenue from future product sales. We do not believe our current capital, supplemented by our recent financing of $14.3 million net proceeds, is sufficient to fund our operating plan through one year from August 14, 2019. There can be no assurance that additional funding will be available to the Company on acceptable terms on a timely basis, if at all, or that the Company will generate sufficient cash from operations to adequately fund operating needs or ultimately achieve profitability. If the Company is unable to obtain an adequate level of financing needed for the long-term development and commercialization of its products, the Company will need to curtail planned activities and reduce costs. Doing so will likely have an adverse effect on the Company's ability to execute on its business plan. These matters raise substantial doubt about the ability of the Company to continue in existence as a going concern within one year after the issuance date of the condensed consolidated financial statements. The accompanying condensed consolidated financial statements do not include any adjustments that might result from the outcome of these uncertainties.

Transactions with Oasis Capital

On January 7, 2019, Jaguar entered into a common stock purchase agreement with Oasis Capital, relating to an offering of an aggregate of up to 76,190 shares of common stock via an equity line of credit. Under the terms of the purchase agreement, the Company has the right to "put," or sell, up to 76,190 shares of common stock to Oasis Capital for an amount equal to the product of (i) the number of shares set forth on the applicable put notice (minus the deposit and clearing fees associated with such purchase) and (ii) a fixed price of $52.50 per share or such other price agreed upon between the Company and Oasis Capital. Jaguar had the option to increase the equity line of credit by an additional 114,285 shares of common stock by notifying Oasis Capital at any time after the effective date of the purchase agreement. In March 2019, Jaguar exercised this option. As of March 31, 2019, the Company had sold all of the 76,190 shares of common stock of the equity line and all 114,286 shares of common stock from the option to Oasis Capital.

In March 2019, Jaguar entered into a securities purchase agreement with Oasis Capital pursuant to which Jaguar agreed to issue and sell, in a registered public offering by Jaguar directly to Oasis, an aggregate of 19,019 shares of common stock at an offering price of $14.00 for gross proceeds of approximately $266,266.

On April 1, 2019, the Company entered into another common stock purchase agreement (the "April CSPA") with Oasis Capital relating to an offering (the "April Equity Line Offering") of an aggregate of up to 285,714 shares (the "April Purchase Shares") of the Company's common stock, all of which are being offered in a primary offering consisting of an equity line of credit. Under the terms of the April CSPA, the Company has the right to "put," or sell, the April Purchase Shares to Oasis Capital for an amount equal to the product of (i) the number of April Purchase Shares set forth in the applicable put notice (minus the deposit and clearing fees associated with such purchase) and (ii) a fixed price of $19.60 per share or such other price agreed upon between the Company and Oasis Capital. The Company had the option to increase the equity line of credit by an additional 285,714 shares of Common Stock by notifying Oasis Capital at any time after the effective date of the April CSPA.

Effective June 14, 2019, we halted all future offers and sales of our voting common stock, par value $0.0001 per share under the April CSPA and terminated the April CSPA. Between April 1, 2019, the date of the April CSPA, and June 14, 2019, we sold an aggregate of 4,843 shares of Common Stock pursuant to the CSPA for aggregate gross proceeds of approximately $100,000.

Kingdon Debt Refinancing

On May 28, 2019, Jaguar entered into a guaranty and suretyship agreement, pursuant to which it guaranteed payment and performance of all obligations of Napo, arising under and in connection with approximately $10.5 million outstanding aggregate amount of convertible promissory notes issued by Napo pursuant to the Amended and Restated Note Purchase Agreement, dated March 31, 2017, by and between Napo, Kingdon Associates, M. Kingdon Offshore Master Fund L.P., Kingdon Family Partnership, L.P., and Kingdon Credit Master Fund L.P. (collectively, the “Existing Notes”). The Existing Notes bear interest at a rate of 10% per annum and mature on December 31, 2019.

On May 28, 2019, Jaguar and Napo (collectively, the “Borrower”) entered into an exchange agreement with Chicago Venture Partners, L.P. (“CVP”), the holder of the Existing Notes, pursuant to which CVP exchanged the Existing Notes for a secured promissory note in the original principal amount of $10,535,900 (“Exchange Note 1”) and a secured promissory note in the original principal amount of $2,296,926 (“Exchange Note 2” and together with Exchange Note 1, the “Exchange Notes”). The Exchange Notes bear interest at the rate of 10% per annum and mature on December 31, 2020. The outstanding balance of Exchange Note 2 is equal to the exchange fee that Jaguar agreed to pay CVP in consideration of certain accommodations granted to Jaguar and Napo, including but not limited to the extension of the maturity dates of the Existing Notes and the legal and other fees incurred by CVP in connection with the effectuation of the transactions contemplated under the Exchange Agreement. Through June 30, 2019, Jaguar has issued 817,863 shares of Common Stock to CVP in exchange for a reduction of approximately $5.1 million of the Exchange Notes. The shares of Common Stock that were exchanged for portions of the Exchange Notes were issued in reliance on the exemption from registration provided under Section 3(a)(9) of the Securities Act.

CVP also entered into security agreements with Jaguar (the “Jaguar Security Agreement”) and Napo (the “Napo Security Agreement”, and together with the Jaguar Security Agreement, the “Security Agreements”), pursuant to which CVP will receive (i) a security interest in substantially all of the Company’s assets as security for the Company’s obligations under Exchange Note 2 and (ii) a security interest in substantially all of Napo’s assets as security for Napo’s obligations under Exchange Note 1 and Exchange Note 2. Notwithstanding the foregoing, (a) the amount owing under Exchange Note 2 will not be considered part of the obligations secured by the Napo Security Agreement until such time as Jaguar receives permission from a third party and (b) the security interest granted under the Jaguar Security Agreement will be automatically terminated and released upon Jaguar’s receipt of a waiver from such third party.

Exchange of CVP Notes for Common Stock

Between January and June 30, 2019, Jaguar entered into exchange agreements with CVP pursuant to which the Company issued 395,970 shares of Common Stock to CVP in exchange for a reduction of $6.4 million in principal and related accrued interest of the CVP Notes (collectively, the June 2017 CVP Note, The December 2017 CVP Note, the February 2018 Note and the March 2018 Note). As of June 30, 2019, all four of the CVP Notes had been entirely extinguished.

2019 Bridge Notes and Warrants

Between March and June 30, 2019, Jaguar entered into securities purchase agreements (“the Bridge Notes”) with selected accredited investors, pursuant to which the Company issued $5.1 million in principal amount of short-term promissory notes to such Investors. As an inducement for entering into the Securities Purchase Agreement, each investor also received warrants exercisable into shares of the Company’s common stock. As of June 30, 2019, the net carrying value of the 2019 Bridge Notes was $3,563,068, or principal of $5,050,000 offset by a discount of $1,486,932.

2019 PoC Capital Note and Integrium Contract

On June 25, 2019, the Company entered into a securities purchase agreement with a California-based investment group, PoC Capital, LLC. pursuant to which we sold a promissory note as part of the Bridge Notes. Refer to Note 1 *Organization and Business* under Notes and Warrants Issuance about Bridge Notes. The proceeds of $775,000 was received by the Company subsequent to the signing of the agreement. On June 26, 2019, Jaguar and PoC Capital signed an agreement with Integrium, LLC, a clinical research organization, in support of a study to evaluate the effect of Mytesi on the gastrointestinal microbiome in people living with HIV. The study is being funded by the proceeds the Company received from PoC Capital underlying the Bridge Note. In July 2019, the Company paid Integrium $750,000 as a prepayment for their services and expenses starting on July 1, 2019 through April 16, 2020. The contract is comprised of services fees in the amount of $332,033, investigator grants or site expenses for $162,619, pass-through expenses $239,573 and $15,775 of other expenses. The Company will receive monthly progress reports to validate the expenses against the prepayment. We did not record any expenses related to this transaction during the three and six months ended June 30, 2019.

2. Summary of Significant Accounting Policies

Basis of Presentation

The condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") for interim financial information and on a basis consistent with the annual consolidated financial statements, and in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for a fair presentation of the periods presented. These interim financial results are not necessarily indicative of the results to be expected for the year ending December 31, 2019, or for any other future annual or interim period. These unaudited condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and notes thereto contained in our Annual Report on Form 10-K for the year ended December 31, 2018.

There has been a material change to the Company's significant accounting policies during the three months ended June 30, 2019, as compared to the significant accounting policies described in Note 2 of the "Notes to Condensed Consolidated Financial Statements" in the Company's Annual Report on Form 10-K for the year ended December 31, 2018. The Company adopted ASC 842 "Leases" and implemented a new policy to account for modifications of preferred stock using the model in ASC 470-50.

Principals of Consolidation

The condensed consolidated financial statements have been prepared in accordance with US GAAP and applicable rules and regulations of the Securities and Exchange Commission ("SEC") and include the accounts of the Company and its wholly owned subsidiary. All inter-company transactions and balances have been eliminated in consolidation.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires the Company's management to make judgments, assumptions and estimates that affect the amounts reported in its consolidated financial statements and the accompanying notes. The accounting policies that reflect the Company's more significant estimates and judgments and that the Company believes are the most critical to aid in fully understanding and evaluating its reported financial results are valuation of stock options; valuation of warrant liabilities; valuation of derivative liability, impairment testing of goodwill, acquired in-process research and development ("IPR&D"), and long lived assets; useful lives for depreciation and amortization; valuation adjustments for excess and obsolete inventory; allowance for doubtful accounts; deferred taxes and valuation allowances on deferred tax assets; evaluation and measurement of contingencies; and recognition of revenue, including estimates for product returns. Those estimates could change, and as a result, actual results could differ materially from those estimates.

Deferred Offering Costs

Deferred offering costs are costs incurred in filings of registration statements with the Securities and Exchange Commission. These deferred offering costs are offset against proceeds received upon the closing of the offerings. Deferred costs of $335,768 as of June 30, 2019, include legal, accounting, printer and filing fees associated with the Company's registration issued in July 2019.

Concentrations

Cash is the financial instrument that potentially subjects the Company to a concentration of credit risk as cash is deposited with a bank and cash balances are generally in excess of Federal Deposit Insurance Corporation insurance limits. The carrying value of cash approximates fair value at June 30, 2019 and December 31, 2018.

For the three and six months ended June 30, 2019 and 2018, substantially all of the Company's revenue has been derived from the sale of Mytesi. For the three months and six months ended June 30, 2019, the Company earned Mytesi revenue primarily from one pharmaceutical distributor in the United States. For the three and six months ended June 30, 2018, the Company earned Mytesi revenue primarily from three pharmaceutical distributors in the United States, each of whom amounted to a percentage of total net revenue of at least 10%. Revenue earned from each as a percentage of total net revenue is as follows:

Consolidated (percentage of total net sales)	**Three Months Ended June 30,**		**Six Months Ended June 30,**	
	2019	**2018**	**2019**	**2018**
Customer 1	100 %	34 %	89 %	33 %
Customer 2	— %	29 %	— %	30 %
Customer 3	— %	27 %	— %	28 %

The Company is subject to credit risk from its accounts receivable related to its sales. The Company generally does not perform evaluations of customers' financial condition and generally does not require collateral. The Company's significant pharmaceutical distributors and their related accounts receivable balance as a percentage of total accounts receivable were as follows:

	As of June 30, 2019	**As of June 30, 2018**
Customer 1	99.6 %	* %
Customer 2	* %	* %
Customer 3	* %	* %

* Less than 10%

No other customer represented more than 10% of the Company's accounts receivable balances as of those dates.

The Company is subject to credit risk from its inventory suppliers. The Company sources drug substance from a single supplier and drug product from a single supplier.

Fair Values

The Company's financial instruments include, cash, accounts receivable, accounts payable, warrant liabilities, derivative liability, debt conversion option liability, and debt. The recorded carrying amount of accounts receivable, accounts payable and accrued expenses reflect their fair value due to their short-term nature. The carrying value of the interest-bearing debt approximates fair value based upon the borrowing rates currently available to the Company for bank loans with similar terms and maturities. See Note 3 for the fair value measurements.

Inventories

Inventories are stated at the lower of cost or net realizable value. The Company calculates inventory valuation adjustments when conditions indicate that net realizable value is less than cost due to physical deterioration, usage, obsolescence, reductions in estimated future demand or reduction in selling price. Inventory write-downs are measured as the difference between the cost of inventory and net realizable value.

Land, Property and Equipment

Land is stated at cost, reflecting fair value of the property at July 31, 2017, the date of the Napo merger. Equipment is stated at cost, less accumulated depreciation. Equipment begins to be depreciated when it is placed into service. Depreciation is calculated using the straight-line method over the estimated useful lives of 3 to 10 years.

Expenditures for repairs and maintenance of assets are charged to expense as incurred. Costs of major additions and betterments are capitalized and depreciated on a straight-line basis over their estimated useful lives. Upon retirement or sale, the cost and related accumulated depreciation of assets disposed of are removed from the accounts and any resulting gain or loss is included in the statements of operations and comprehensive loss.

Long-Lived Assets

The Company regularly reviews the carrying value and estimated lives of all of its long-lived assets, including property and equipment to determine whether indicators of impairment may exist that warrant adjustments to carrying values or estimated useful lives. The determinants used for this evaluation include management’s estimate of the asset’s ability to generate positive income from operations and positive cash flow in future periods as well as the strategic significance of the assets to the Company’s business objectives.

Definite-lived intangible assets are amortized on a straight-line basis over the estimated periods benefited, and are reviewed when appropriate for possible impairment.

Goodwill and Indefinite-lived Intangible Assets

Goodwill is tested for impairment on an annual basis and in between annual tests if events or circumstances indicate that an impairment loss may have occurred. The test is based on a comparison of the reporting unit's book value to its estimated fair value. The Company performs the annual impairment test during the fourth quarter of each fiscal year using the opening consolidated balance sheet as of the first day of the fourth quarter, with any resulting impairment recorded in the fourth quarter of the fiscal year. The Company did not record an impairment of goodwill during the three and six months ended June 30, 2019 and 2018.

Acquired in-process research and development (IPR&D) are intangible assets initially recognized at fair value and classified as indefinite-lived assets until the successful completion or abandonment of the associated research and development efforts. During the development period, these assets will not be amortized as charges to earnings; instead these assets will be tested for impairment on an annual basis or more frequently if impairment indicators are identified. In connection with each annual impairment assessment and any interim impairment assessment in which indicators of impairment have been identified, we compare the fair value of the asset as of the date of the assessment with the carrying value of the asset on the condensed consolidated balance sheet. If impairment is indicated by this test, the intangible asset is written down by the amount by which the discounted cash flows expected from the intangible asset exceeds its carrying value. Fair value determinations require considerable judgement and are sensitive to changes in underlying assumptions, estimates regarding our future plans, as well as industry and economic conditions. These assumptions and estimates include projected revenues and income growth rates, terminal growth rates, competitive and consumer trends, market-based discount rates, and other factors. If current expectations of growth rates are not met or market factors outside of our control, such as discount rates, change significantly, this may lead to a further impairment in the future. Acquired in-process research and development (“IPR&D”) are intangible assets initially recognized at fair value and classified as indefinite-lived assets until the successful completion or abandonment of the associated research and development efforts. During the development period, these assets will not be amortized as charges to earnings; instead these assets will be tested for impairment on an annual basis or more frequently if impairment indicators are identified. We recorded an impairment of $4,000,000 in the three and six months ended June 30, 2019. There were no impairment charges recorded in the three and six months ended June 30, 2018. The impairment loss is measured based on the excess of the carrying amount over the asset's fair value. Definite-lived intangible assets are amortized on a straight-line basis over the estimated periods benefited and are reviewed when appropriate for possible impairment.

Leases

ASC 842, Leases, requires lessees to recognize right-of-use assets and lease liabilities for all leases with a term of greater than 12 months regardless of their classification on the balance sheet and to provide expanded disclosures about leasing arrangements. The Company adopted ASC 842 effective January 1, 2019 using the optional transition method and did not restate comparative periods. There was no effect on accumulated deficit at adoption.

The Company has elected the package of practical expedients to (i) not reassess whether expired or existing contracts are or contain leases, (ii) not reassess the lease classification for any expired or existing leases and (iii) not reassess the accounting for initial direct costs.

The adoption of the new leases standard resulted in the following adjustments to the consolidated balance sheet as of January 1, 2019:

	December 31, 2018	Adoption Impact (unaudited)	January 1, 2019
Operating lease right-of-use assets	$ —	$ 1,111,214	$ 1,111,214
Operating leases liabilities, current portion	—	336,647	336,647
Operating leases liabilities, long term	—	394,703	394,703
Deferred rent	379,864	(379,864)	—

At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present. Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of lease payments over the expected lease term. The interest rate implicit in lease contracts is typically not readily determinable. As such, the Company utilizes its incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term, an amount equal to the lease payments in a similar economic environment. Certain adjustments to the right-of-use asset may be required for items such as initial direct costs paid or incentives received.

Operating Lease

The Company has a non-cancelable operating lease with CA-Mission Street Limited Partnership for its offices in San Francisco, California through September 1, 2020. The lease agreement calls for monthly base rents between $38,391 and $40,730 over the term of the lease.

Prior to the Company's adoption of ASC 842 on January 1, 2019, the Company recorded lease expense for its operating leases in accordance with ASC 840.

Research and Development Expense

Research and development expense consists of expenses incurred in performing research and development activities including related salaries, clinical trial and related drug and non-drug product costs, contract services and other outside service expenses. Research and development expense is charged to operating expense in the period incurred.

Revenue Recognition

The Company recognizes revenue in accordance with ASC Topic 606, *Revenue from Contracts with Customers* ("ASC 606"), which was adopted on January 1, 2018, using the modified retrospective method, which was elected to apply to all active contracts as of the adoption date. Application of the modified retrospective method did not impact amounts previously reported by the Company, nor did it require a cumulative effect adjustment upon adoption, as the Company's method of recognizing revenue under ASC 606 yielded similar results to the method utilized immediately prior to adoption. Accordingly, there was no effect to each financial statement line item as a result of applying the new revenue standard.

Practical Expedients, Elections, and Exemptions

The Company recognizes revenue in accordance with the core principle of ASC 606 or when there is a transfer of control of promised goods or services to customers in an amount that reflects the consideration that the Company expects to be entitled to in exchange for those goods or services.

The Company elected a practical expedient available under ASC 606-10-65-1(f)4 that permits it to consider the aggregate effect of all contract modifications that occurred before the beginning of the earliest period presented when identifying satisfied and unsatisfied performance obligations, transaction price, and allocating the transaction price to the satisfied and unsatisfied performance obligations.

The Company also elected a practical expedient available under ASC 606-10-32-18 that permits it to not adjust the amount of consideration for the effects of a significant financing component if, at contract inception, the expected period between the transfer of promised goods or services and customer payment is one year or less.

The Company has elected to treat shipping and handling activities as fulfillment costs.

Additionally, the Company elected to record revenue net of sales and other similar taxes.

Contracts

Effective January 16, 2019, Napo Pharmaceuticals, Inc. engaged Cardinal Health as its exclusive third party logistics distribution agent for commercial sales for the Company’s Mytesi product and to perform certain other services which include, without limitation, storage, distribution, returns, customer support, financial support, EDI and system access support (the “Exclusive Distribution Agreement”) .

In addition to the terms and conditions of the Exclusive Distribution Agreement, Cardinal Health’s purchase of products, and assumption of title therein, is set forth in the Title Model Addendum. The Title Model Addendum states that upon receipt of product at the 3PL Facility (Cardinal Health in La Vergne, Tennessee) from the Company, title and risk of loss for the Mytesi product purchased by Cardinal Health (excluding consigned inventory) shall pass to Cardinal Health, and title and risk of loss for consigned inventory shall remain with the Company until purchased by Cardinal Health in accordance with the Title Model Addendum. Napo Pharmaceuticals, Inc. considers Cardinal Health the Company’s exclusive customer for Mytesi products per the Exclusive Distribution Agreement.

Jaguar's Neonorm and botanical extract products are primarily sold to distributors, who then sell the products to the end customers. Since 2014, the Company has entered into several distribution agreements with established distributors such as Animart, Vedco, VPI, RJ Matthews, Henry Schein, and Stockmen Supply to distribute the Company's products in the United States, Japan, and China. The distribution agreements and the related purchase order together meet the contract existence criteria under ASC 606-10-25-1. Jaguar sells directly to its customers without the use of an agent.

Performance obligations

For animal products sold by Jaguar Health, the single performance obligation identified above is the Company’s promise to transfer the Company’s animal products to distributors based on specified payment and shipping terms in the arrangement. Product warranties are assurance type warranties that do not represent a performance obligation. For the Company’s human product, Mytesi, which is sold by Napo Pharmaceuticals Inc., the single performance obligation identified above is the Company’s promise to transfer Mytesi to Cardinal Health, the Company’s exclusive distributor for the product, based on specified payment and shipping terms as outlined in the Exclusive Distribution Agreement. The product warranties are assurance type warranties that do not represent a performance obligation.

Transaction price

For both Jaguar and Napo, the transaction price is the amount of consideration to which the Company expects to collect in exchange for transferring promised goods or services to a customer. The transaction price of Mytesi and Neonorm is the Wholesaler Acquisition Cost ("WAC"), net of discounts, returns, and price adjustments.

Allocate transaction price

For both Napo and Jaguar, the entire transaction price is allocated to the single performance obligation contained in each contract.

Point in time recognition

For both Napo and Jaguar, a single performance obligation is satisfied at a point in time, upon the free on board ("FOB") terms of each contract when control, including title and all risks, has transferred to the customer.

Disaggregation of Product Revenue

Human

Sales of Mytesi are recognized as revenue when the products are delivered to the wholesaler. Revenues from the sale of Mytesi were $1,684,732 and $854,170 for the three months ended June 30, 2019 and 2018, respectively. Revenues from the sale of Mytesi were $3,227,853 and $1,437,439 for the six months ended June 30, 2019 and 2018, respectively. The increase in sales of Mytesi is due to the more streamlined distribution channel and increased sales presence.

Animal

The Company recognized Neonorm revenues of $20,962 and $29,676 for the three months ended June 30, 2019 and 2018, respectively. Revenues from the sale of Neonorm were $67,574 and $73,374 for the six months ended June 30, 2019 and 2018, respectively. Revenues are recognized upon shipment which is when title and control is transferred to the buyer. Sales of Neonorm Calf and Foal to distributors are made under agreements that may provide distributor price adjustments and rights of return under certain circumstances.

Collaboration Revenue

On January 27, 2017, the Company entered into a licensing, development, co-promotion and commercialization agreement with Elanco US Inc. ("Elanco") to license, develop and commercialize Canalevia, the Company's drug product candidate under investigation for treatment of acute and chemotherapy-induced diarrhea in dogs, and other drug product formulations of crofelemer for treatment of gastrointestinal diseases, conditions and symptoms in cats and other companion animals. On November 1, 2017, the Company received a letter from Elanco serving as formal notice of their decision to terminate the agreement by giving the Company 90 days written notice. According to the agreement, termination became effective on January 30, 2018. Under the terms of the agreement, the Company received revenue of $0 and $177,389 in the six months ended June 30, 2019 and 2018, respectively. There was no revenue recognized in the three months ended June 30, 2019 and 2018.

On September 24, 2018, the Company entered into a Distribution, License and Supply Agreement ("License Agreement") with Knight Therapeutics, Inc. ("Knight"). The License Agreement has a term of 15 years (with automatic renewals) and provides Knight with an exclusive right to commercialize current and future Jaguar human health products (including Crofelemer, Lechlemer, and any product containing a proanthocyanidin or with an anti-secretory mechanism) in Canada and Israel. In addition, Knight was granted a right of first negotiation for expansion to Latin America. Under the License Agreement, Knight is responsible for applying for and obtaining necessary regulatory approvals in the territory of Canada and Israel, as well as marketing, sales and distribution of the licensed products. Knight will pay a transfer price for all licensed products, and upon achievement of certain regulatory and sales milestones, Jaguar may receive payments from Knight in an aggregate amount of up to approximately $18 million payable throughout the initial 15-year term of the agreement. The Company did not have any license revenues in the three months and six months ended June 30, 2019 and 2018.

Comprehensive Income (Loss)

For all periods presented, the comprehensive income (loss) was equal to the net income (loss); therefore, a separate statement of comprehensive income (loss) is not included in the accompanying condensed consolidated financial statements.

Recent Accounting Pronouncements

Except as described in Note 2 – *Basis of Presentation*, there have been no other new accounting pronouncements adopted by the Company besides the adoption of ASC 842 “Leases” and implementation of a new policy to account for modifications of preferred stock using the model in ASC 470-50 during the three months and six months ended June 30, 2019, that the Company believes are of significance or potential significance to the Company.

In June 2018, the FASB issued ASU 2018-07, *Compensation - Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*. This update expands the scope of Topic 718 to include share-based payment transactions for acquiring goods and services from nonemployees. The amendments specify that Topic 718 applies to all share-based payment transactions in which a grantor acquires goods or services to be used or consumed in a grantor’s own operations by issuing share-based payment awards. The amendments also clarify that Topic 718 does not apply to share-based payments used to effectively provide (1) financing to the issuer or (2) awards granted in conjunction with selling goods or services to customers as part of a contract accounted for under ASC 606. The amendments in ASU 2018-07 are effective for public business entities for fiscal years beginning after December 15, 2018, including interim periods within that fiscal year. Early adoption is permitted. The Company adopted this standard on January 1, 2019, and this standard did not have a material impact on the Company’s financial position, results of operations or disclosures. The Company is evaluating the impact of the adoption of ASU 2016-13 on its Condensed Consolidated Financial Statements.

In August 2018, the FASB issued ASU 2018-15, *Intangible - Goodwill and Other - Internal-Use Software (Subtopic 350-40)*, which aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. ASU2018-15 is effective for the Company in the first quarter of 2020. Early adoption is permitted. ASU2018-15 permits either a prospective or retrospective transition approach. The Company is currently evaluating ASU2018-15 to determine the impact to its condensed consolidated financial statements and related disclosures. The Company is evaluating the impact of the adoption of ASU 2016-13 on its Condensed Consolidated Financial Statements.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820)*. The new guidance modifies the disclosure requirements on fair value measurements. ASU 2018-13 is effective for the Company beginning in the first quarter of 2020 and must be adopted on a modified retrospective basis, with certain exceptions. Early adoption is permitted. The Company does not expect ASU 2018-13 to have a significant impact to its condensed consolidated financial statements and related disclosures.

3. Fair Value Measurements

ASC 820 “Fair Value Measurements,” defines fair value, establishes a framework for measuring fair value under generally accepted accounting principles and enhances disclosures about fair value measurements. Fair value is defined under ASC 820 as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value under ASC 820 must maximize the use of observable inputs and minimize the use of unobservable inputs. The standard describes a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value which are the following:

- Level 1— Observable inputs such as quoted prices (unadjusted) for identical instruments in active markets.
- Level 2— Observable inputs such as quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or model derived valuations whose significant inputs are observable.
- Level 3— Unobservable inputs that reflect the reporting entity's own assumptions.

The following tables set forth the fair value of the Company's financial instruments that were measured at fair value on a recurring basis as of June 30, 2019 and December 31, 2018.

	June 30, 2019 (unaudited)			
	Level 1	**Level 2**	**Level 3**	**Total**
Warrant liability	$ —	$ —	$5,182,273	$5,182,273
Total fair value	$ —	$ —	$5,182,273	$5,182,273

	December 31, 2018			
	Level 1	**Level 2**	**Level 3**	**Total**
Warrant liability	$ —	$ —	$220,376	$220,376
Total fair value	$ —	$ —	$220,376	$220,376

The change in the estimated fair value of Level 3 liabilities is summarized below:

	Six Months Ended June 30, 2019 Warrant Liability (unaudited)
Beginning fair value of Level 3 liability	$ 220,376
Additions	5,122,928
Extinguishment	—
Change in fair value	(161,031)
Ending fair value of Level 3 liability	$ 5,182,273

Warrant Liability

The warrants associated with the Level 3 warrant liability were the November 2016 Series A Warrants, the October 2018 Underwriter Warrants, the LOC warrant and the 2019 Bridge Note warrants, which at June 30, 2019 were valued at $1,053, $52,265, $150,970, and $4,977,985, respectively in the Company's condensed consolidated balance sheet. At December 31, 2018, the warrants associated with the Level 3 warrant liability were the November 2016 Series A Warrants, the October 2018 Underwriter Warrants, which were valued at $7,388 and $212,988, respectively in the Company's consolidated balance sheet.

The Series A warrant valuation of $7,388 at December 31, 2018 was computed using the Black-Scholes-Merton pricing model using a stock price of $16.10, a strike price of $787.50 per share, an expected term of 3.41 years, volatility of 135.63% and a risk-free discount rate of 2.46%. The Series A warrant valuation of $1,053 at June 30, 2019 was computed using the Black-Scholes-Merton pricing model using a stock price of $4.70, a strike price of $787.50 per share, an expected term of 2.92 years, volatility of 145.60% and a risk-free discount rate of 1.71%. The net change in the fair value of the warrants of $9,941 was recorded as a net loss and $6,335 was recorded as a net gain for the three and six months ended June 30, 2019, respectively, in the change in fair value of warrants, derivative liability and conversion option liability in the condensed statements of operations.

The October 2018 Underwriter Warrants valuation of $212,988 at December 31, 2018 was computed using the Black-Scholes-Merton pricing model using a stock price of $16.10, a strike price of $52.50 per share, an expected term of 4.76 years, volatility of 135.63% and a risk free discount rate of 2.51%. The October 2018 Underwriter Warrants valuation of $52,265 at June 30, 2019 was computed using the Black-Scholes-Merton pricing model using a stock price of $4.70, a strike price of $52.50 per share, an expected term of 4.26 years, volatility of 145.60% and a risk-free discount rate of 1.76%. The net change in the fair value of the warrants of $221,753 and $160,723 for the three and six months ended June 30, 2019, respectively, is recorded as a net gain to in the change in fair value of warrants, derivative liability and conversion option liability in the condensed statements of operations

The LOC Warrants were issued on March 29, 2019 with a valuation at issuance and at March 31, 2019 of $116,297, computed using the Black-Scholes-Merton pricing model using a stock price of $19.60, a strike price of $17.50 per share, an expected term of 5.0 years, volatility of 145.72% and a risk-free discount rate of 2.23%. The LOC Warrants valuation of $150,970 at June 30, 2019 was computed using the Black-Scholes-Merton pricing model using a stock price of $4.70, a strike price of $4.70 per share, an expected term of 4.75 years, volatility of 145.60% and a risk-free discount rate of 1.76%. The net change in the fair value of the warrants of $34,673 for the three and six months ended June 30, 2019 was recorded as a loss in the change in fair value of warrants, derivative liability and conversion option liability in the consolidated statements of operations.

The 2019 Bridge Warrants were issued between March and June 2019, concurrent to the Company entering into Promissory Notes of $5,050,000. The Company issued (i) fourteen Notes with a principal balance of $3,550,000 and warrant coverage at 125% of principal, and (ii) seven Notes with a principal balance of $1,500,000 and warrant coverage at 75% of principal. The exercise price of the warrants is either (i) the price the Company issues common shares in its next public offering subject to a registration statement or (ii) if no such offering is consummated by the four-month maturity date of the Notes, then the exercise price is equal to the closing price of the Company's common stock on the Notes four-month maturity date. The warrants for all twenty-one Bridge Notes had a collective fair value of $4,977,985 at June 30, 2019, computed using the Black-Scholes-Merton pricing model using a stock price of $4.70, a strike price of $4.70 per share, an expected term of 4.77 years, volatility of 145.60% and a risk-free discount rate of 1.76%. The warrants for all twenty-one Bridge Notes had a collective issuance date fair value of $5,005,742, computed using the Black-Scholes-Merton pricing model using a range of stock prices between $4.84 and $32.90, a range of strike prices between $4.84 and $32.90 per share, an expected term of 5.0 years, a range of volatilities between 145.60% and 145.72%, and a range of risk-free discount rates between 1.76% and 2.23%. The net change in fair value of the warrants of $27,754 for the three and six months ended June 30, 2019 was recorded as a gain in the change in fair value of warrants, derivative liability and conversion option liability in the consolidated statements of operations.

4. Balance Sheet Components

Goodwill

The change in the carrying amount of goodwill at June 30, 2019 and December 31, 2018 was as follows:

	June 30, 2019 (unaudited)	December 31, 2018
Beginning balance	$ —	$ 5,210,821
Impairment	—	(5,210,821)
Ending balance	$ —	$ —

Intangible assets

Intangible assets at June 30, 2019 and December 31, 2018 consisted of the following:

	June 30, 2019 (unaudited)	December 31, 2018
Developed technology	$25,000,000	$25,000,000
Accumulated developed technology amortization	(3,194,445)	(2,361,111)
Developed technology, net	21,805,555	22,638,889
In-process research and development	8,800,000	8,800,000
Impairment	(4,000,000)	—
In process research and development, net	4,800,000	8,800,000
Trademarks	300,000	300,000
Accumulated trademark amortization	(38,333)	(28,333)
Trademarks, net	261,667	271,667
Total intangible assets, net	$26,867,222	$31,710,556

In June 2019 the Company determined that In-process research and development was impaired and recorded an impairment loss of $4.0 million in the statements of operations for the three and six months ended June 30, 2019. Amortization expense was $421,667 and $843,334 for the three and six months ended June 30, 2019 and 2018, respectively.

The following table summarizes the Company's estimated future amortization expense of intangible assets with finite lives as of June 30, 2019:

	Amounts
2019 (remaining)	$ 871,667
2020	1,743,334
2021	1,743,334
2022	1,736,670
2023	1,666,668
2024	1,666,668
Thereafter	12,638,881
	$ 22,067,222

5. Related Party Transactions

Management Services Agreement

In March 2018, concurrent with the issuance of the Company's Series A convertible participating preferred stock to Sagard Capital Partners, the Company entered into a Management Services Agreement with Sagard Capital Partners. Under the agreement, Sagard Partners will provide consulting and management advisory service to the Company from March 2018 through March 2021. These services include assistance with strategic planning regarding the Company's commercial strategy, research and due diligence regarding human resource activities, and strategic advice in financial matters. In consideration for such services, the Company will pay Sagard Capital Partners an annual fee of $450,000, with total fees over the term of the agreement not to exceed $1,350,000.

Letter of Credit

To satisfy the letter of credit requirement in the Company's new office lease agreement, Pacific Capital Management, LLC, one of the Company's existing shareholders, caused its financial institution to issue a letter of credit in the amount of $475,000 on behalf of the Company, dated August 28, 2018. In consideration of the letter of credit, in August 2018 the Company issued to Capital Management, LLC a warrant to purchase 9,580 shares of the Company's voting common stock. The warrant is exercisable on or after March 28, 2019 at an exercise price of $49.00 per common share and has a five year term. The $493,688 fair value of the Warrant was classified in stockholders' equity (see Note 6).

2019 Bridge Notes

Between March 18, 2019 and June 26, 2019 the Company entered into short-term Promissory Note Purchase Agreements with certain accredited investors under which the Company issued (i) fourteen Notes with a principal balance of $3,550,000 and warrant coverage at 125% of principal, and (ii) seven Notes with a principal balance of $1,500,000 and warrant coverage at 75% of principal. Collectively, cash proceeds from the twenty-one Promissory Notes (the "Note") was $5,050,000. The Notes are not convertible and bear interest at 12% with a maturity date of July 18, 2019, at which date all principal and accrued interest are due (see Note 7).

Three members of the Board of Directors of the Company had entered into short-term Promissory Note Purchase Agreements with the Company: (i) Lisa Conte, the Company's CEO & President, (ii) James Bochnowski, and (iii) Jonathan Siegel DBA JBS Healthcare Ventures. As of June 30, 2019, Lisa Conte held a Promissory Note of $100,000 and a warrant exercisable into 15,957 shares of the Company's common stock; James Bochnowski held a Promissory Note of $350,000 and a warrant exercisable into 93,085 shares of the Company's common stock; and Jonathan Siegel held Promissory Notes of $75,000 and warrants exercisable into 14,628 shares of the Company's common stock. In addition, Sagard Capital Partners held a Promissory Note of $500,000 and a warrant exercisable into 79,787 shares of the Company's common stock; and Jonathan Glaser held a held a Promissory Note of $500,000 and a warrant exercisable into 106,383 shares of the Company's common stock. In July 2019, Mr. Bochnowski, JBG Ventures, and JBS Healthcare exchanged their outstanding principal and related accrued interest for common stock of the Company.

6. Commitments and Contingencies

On August 28, 2018, the Company entered into an office lease extension agreement for approximately 6,311 square feet of office space in San Francisco, CA. The term of the Lease began on September 1, 2018 and will expire on September 30, 2020, unless earlier terminated in accordance therewith. The monthly base rent under the Lease is as follows: $38,392 for the first twelve months, $39,544 for the subsequent twelve months, and $40,730 for the final month. The Company will also pay an additional monthly amount for the Company's proportionate share of the building's operating charges. An existing shareholder provided a standby letter of credit in the amount of $475,000 to the Lessor as collateral for the full performance by the Company of all of its obligations under the Lease. In consideration of the Letter of Credit, the Company issued the existing shareholder a five-year warrant to purchase 9,580 shares of the Company's voting common stock (see Note 5). The Warrant is exercisable on or after March 28, 2019 at an exercise price of $49.00 per share. The fair value of the warrant was determined to be $493,688 using the Black-Scholes-Merton model with the following criteria: stock price of $58.80 per share, expected life of 5 years, volatility of 132%, risk-free rate of 2.77% and dividend rate of 0%. The $493,688 fair value of the Warrant was classified in stockholders' equity with an offset to Operating lease – right-of-use asset. Each month, $19,748 of this rent will be recognized as non-cash lease expense.

In December 2018, the Company did not meet a covenant per the terms of the $475,000 Letter of Credit, the result of which required the Company to issue a Letter of Credit of $122,000 to the shareholder who issued the original $475,000 letter of credit. In March 2019, the Company canceled the $122,000 letter of credit in lieu of issuing the shareholder a promissory note for that amount in April 2019, as well as issuing the shareholder a warrant (see Note 7).

The Company recognizes lease expense on a straight-line basis over the non-cancelable lease period. Lease expense was $191,133 and $362,884 for the three and six months ended June 30, 2019, and $90,278 and $180,556 for the three and six months ended June 30, 2018. Lease expense is included in general and administrative expense in the statements of operations.

Asset transfer and transition commitment update

On September 25, 2017, Napo entered into the Termination, Asset Transfer and Transition Agreement dated September 22, 2017 with Glenmark Pharmaceuticals Ltd. ("Glenmark"). As a result of the agreement, Napo now controls commercial rights for Mytesi® for all indications, territories and patient populations globally, and also holds commercial rights to the existing regulatory approvals for crofelemer in Brazil, Ecuador, Zimbabwe and Botswana. In exchange, Napo agrees to pay Glenmark 25% of any payment it receives from a third party to whom Napo grants a license or sublicense or with whom Napo partners in respect of, or sells or otherwise transfers any of the transferred assets, subject to certain exclusions, until Glenmark has received a total of $7.0 million. No payments have been made to date.

Revenue sharing commitment update

On December 14, 2017, the Company announced its entry into a collaboration agreement with Seed Mena Businessmen Services LLC ("SEED") for Equilevia™, the Company's non-prescription, personalized, premium product for total gut health in equine athletes. According to the terms of the Agreement, the Company will pay SEED 15% of total revenue generated from any clients or partners introduced to the Company by SEED in the form of fees, commissions, payments or revenue received by the Company or its business associates or partners, and the agreed-upon revenue percentage increases to 20% after the first million dollars of revenue. In return, SEED will provide the Company access to its existing UAE ("United Arab Emirates") network and contacts and assist the Company with any legal or financial requirements. The agreement became effective on December 13, 2017 and will continue indefinitely until terminated by either party pursuant to the terms of the Agreement. Upon termination for any reason, the Company remains obligated to make Revenue Sharing Payments to SEED until the end of 2018. No payments have been made to date.

Purchase Commitment

As of June 30, 2019, the Company had no material purchase orders to vendors.

Legal Proceedings

On July 20, 2017, a putative class action complaint was filed in the United States District Court, Northern District of California, Civil Action No. 3:17-cv-04102, by Tony Plant (the "Plaintiff") on behalf of shareholders of the Company who held shares on April 12, 2017 and were entitled to vote at the 2017 Special Shareholders Meeting, against the Company and certain individuals who were directors as of the date of the vote (collectively, the "Defendants"), in a matter captioned Tony Plant v. Jaguar Animal Health, Inc., et al., making claims arising under Section 14(a) and Section 20(a) of the Exchange Act and Rule 14a-9, 17 C.F.R. § 240.14a-9, promulgated thereunder by the SEC. The claims alleged false and misleading information provided to investors in the Joint Proxy Statement/Prospectus on

Form S-4 (File No. 333-217364) declared effective by the Commission on July 6, 2017 related to the solicitation of votes from shareholders to approve the merger and certain transactions related thereto. The Company accepted service of the complaint and summons on behalf of itself and the United States-based director Defendants on November 1, 2017. The Company has not accepted service on behalf of, and Plaintiff has not yet served, the non-U.S.-based director Defendants.

On October 3, 2017, Plaintiff filed a motion seeking appointment as lead plaintiff and appointment of Monteverde & Associates PC as lead counsel. That motion was granted. Plaintiff filed an amended complaint against the Company and the United States-based director Defendants on January 10, 2018. The Defendants filed a motion to dismiss on March 12, 2018, for which oral arguments were held on June 14, 2018. The court dismissed the amended complaint on September 20, 2018 but gave Plaintiff leave to amend the complaint within 20 days from the date of dismissal. On October 10, 2018, Plaintiff amended the complaint to focus on the Company's commercial strategy in support of Equilevia and the related disclosure statements in the Form S-4 described above. On November 6, 2018, the Defendants moved to dismiss the second amended complaint. The Defendants argued in their motion that the second amended complaint fails to state a claim upon which relief can be granted because the omissions and misrepresentations alleged in the complaint are immaterial as a matter of law. The court denied the Defendants' motion to dismiss on June 28, 2019. The defendants answered the second amended complaint on August 2, 2019. Discovery will now proceed. If the Plaintiff were able to prove his allegations in this matter and to establish the damages he asserts, then an adverse ruling could have a material impact on the Company.

Other than as described above, there are currently no claims or actions pending against us, the ultimate disposition of which could have a material adverse effect on our results of operations, financial condition or cash flows.

Contingencies

From time to time, the Company may be involved in legal proceedings (other than those noted above) arising in the ordinary course of business. The Company believes there is no litigation pending that could have, individually or in the aggregate, a material adverse effect on the financial position, results of operations or cash flows.

7. Debt and Warrants

Convertible Notes

Convertible notes at June 30, 2019 and December 31, 2018 consist of the following:

	June 30, 2019 (unaudited)	December 31, 2018
June 2017 convertible debt	$ —	$ 740,882
Napo convertible debt	—	10,553,888
	—	11,294,770
Less: unamortized debt discount and debt issuance costs	—	(55,600)
Net convertible debt obligation	$ —	$ 11,239,170
Convertible debt - non-current, net of discount	—	—
Convertible debt - current, net of discount	$ —	$ 11,239,170

February 2015 Convertible Note

In February 2015, the Company issued a convertible promissory note to an accredited investor in the aggregate principal amount of $150,000. This note was issued pursuant to the convertible note purchase agreement dated December 23, 2014. In March 2018, the debtor agreed to accept 1,937 shares of the Company's common stock as payment for all outstanding principal and interest in the amount of $203,408.

June 2017 Convertible Note

On June 29, 2017, the Company issued a secured convertible promissory note to CVP in the aggregate principal amount of $2,155,000 less an original issue discount of $425,000 and less $30,000 to cover the lender's legal fees for net cash proceeds of $1,700,000 (the “June 2017 Note”). Interest on the outstanding balance will be paid 8% per annum from the purchase price date until the balance is paid in full.

The Note provides for two separate features that result in a derivative liability:

1. Repayment of mandatory default amount upon an event of default—upon the occurrence of any event of default, the lender may accelerate the Note resulting in the outstanding balance becoming immediately due and payable in cash; and

2. Automatic increase in the interest rate on and during an event of default—during an event of default, the interest rate will increase to the lesser of 17% per annum or the maximum rate permitted under applicable law.

The Company computed fair values at the date of issuance of $15,000 and $5,000 for the repayment and the interest rate increase feature, respectively, using the Binomial Lattice Model, which was based on the generalized binomial option pricing formula. The $20,000 combined fair value was carved out and was included as a derivative liability on the Balance Sheet. At September 30, 2018, the derivatives were determined to have a de-minimis fair value and were written-off.

On August 2, 2018, the Company and CVP agreed to an amendment extending the maturity date to August 26, 2019, and limiting the aggregate amount that CVP is permitted to redeem on a monthly basis to $500,000, which is the maximum aggregate redemption amount for all notes outstanding with CVP. This amendment resulted in the Company accounting for the transaction as a troubled debt restructuring, under which the carrying amount of the note payable remained unchanged but interest expense is computed using a new effective rate that equates the present value of the future cash payments specified by the new terms with the carrying amount of the note.

Between October 2018 and December 2018, the Company and CVP renegotiated the terms of the June 2017 Note agreement such that CVP agreed not to make any redemptions of the June 2017 Note until March 2019. In consideration of this standstill arrangement, the Company paid CVP a total standstill fee of $499,403 for all four CVP Notes. The standstill fee allocated to the June 2017 Note was $63,296, of which $37,296 increased the principal balance and $26,000 was paid in cash. These restructurings in whole represented four separate restructurings of the June 2017 Convertible Note agreement, resulting in two troubled debt restructurings accounted for under ASC 470-60 and two modifications accounted for under ASC 470-50. For the two modifications resulting in troubled debt restructurings, the changes were accounted for prospectively and a new effective interest rate was determined that equated the present value of the future cash payments specified by the new terms with the carrying amount of the June 2017 Note. For the two modifications that resulted in modification accounting, a new effective rate was determined at the date of modification that equated the revised cash flows to the carrying amount of the Note.

In May 2019, the Company and CVP amended the June 2017 Note agreement such that the Company made three separate exchanges of principal and related accrued interest for shares of the Company’s common stock. The first two exchanges of principal and accrued interest for common stock were not considered a substantial change to the June 2017 Note and therefore resulted in modification accounting and the determination of a new effective interest rate; the third exchange on May 29, 2019 resulted in the extinguishment of the entire June 2017 Note with a corresponding extinguishment loss of $27,176 for the three months ended June 30, 2019. At June 30, 2019 and December 31, 2018, the net carrying value of the June 2017 Note was zero and $685,282, respectively.

Napo Convertible Notes

March 2017 Convertible Notes

In March 2017, Napo entered into an exchangeable Note Purchase Agreement with two lenders for the funding of face amount of $1,312,500 in two $525,000 tranches of face amount $656,250. The notes bear interest at 3% and mature on December 1, 2017. The Company assumed the notes at fair value of $1,312,500 as part of the Napo Merger.

First Amendment to Note Purchase Agreement and Notes

In December 2017, Napo amended the exchangeable note purchase agreement to extend the maturity of the first tranche and second tranche of notes to February 15, 2018 and April 1, 2018, respectively, increase the principal amount by 12%, and reduce the conversion price from $39.20 per share to $14.00 per share. The Company also issued 35,601 shares of common stock to the lenders in connection with this amendment to partially redeem $299,050 from the first tranche of the notes. The amended face value of the notes was $1,170,950. This amendment resulted in the Company treating the notes as having been extinguished and replaced with new notes for accounting purposes due to meeting the 10% cash flow test. The conversion option in the notes was bifurcated and accounted for as a conversion option liability at its fair value.

Second Amendment to Note Purchase Agreement and Notes

On February 16, 2018, Napo amended the exchangeable note purchase agreement to extend the maturity date of the Second Tranche Notes from April 1, 2018 to May 1, 2018. In addition, the Company also issued 54,049 shares of common stock to the Purchasers as repayment of the remaining $435,950 aggregate principal amount and $18,063 in accrued and unpaid interest thereon. On March 23, 2018, the Company paid off the remaining $735,000 of principal and $20,699 in interest due on the second tranche debt in cash with proceeds from the March 23, 2018 equity financing. The fair value of the conversion option liability was again revalued at March 23, 2018 using the Black-Scholes-Merton model using the following criteria: stock price of $14.70 per share, expected life of 0.11 years, volatility of 288.16%, risk free rate of 1.69% and dividend rate of 0%, resulting in an increase of $174,754 to the fair value of the conversion option liability and included in the change in fair value of warrants and conversion option liability in the statements of operations. The underlying debt was paid off in March of 2018 and the $286,595 conversion option liability was written off to other income in the statements of operations.

December 2016 Convertible Notes

In December 2016, Napo entered into a note purchase agreement which provided for the sale of up to $12,500,000 face amount of notes and issued convertible promissory notes (the Napo December 2016 Notes) in the aggregate face amount of $2,500,000 to three lenders and received proceeds of $2,000,000 which resulted in $500,000 of original issue discount. In July 2017, Napo issued convertible promissory notes (the Napo July 2017 Notes) in the aggregate face amount of $7,500,000 to four lenders and received proceeds of $6,000,000 which resulted in $1,500,000 of original issue discount. The Napo December 2016 Notes and the Napo July 2017 Notes mature on December 30, 2019 and bear interest at 10% with interest due each six-month period after December 30, 2016. On June 30, 2017, the accrued interest of $125,338 was added to principal of the Napo December Notes, and the new principal balance became $2,625,338. Interest may be paid in cash or in the stock of Jaguar per terms of the note purchase agreement. In each one year period beginning December 30, 2016, up to one-third of the principal and accrued interest on the notes may be converted into the common stock of the merged entity at a conversion price of $64.75 per share. The Company assumed these convertible notes at fair value of $11,161,000 as part of the Napo Merger. The $1,035,661 difference between the fair value of the notes and the principal balance was being amortized over the twenty-nine (29) month period from July 31, 2017 to December 31, 2019. Interest expense is paid every nine months through the issuance of common stock. On March 16, 2018, $534,775 of interest accrued through January 31, 2018 and $169,950 of certain legal expenses were paid through the issuance of 4,081 shares of the Company's common stock. In August 2018, the Company paid $479,808 of accrued interest through July 31, 2018 with the issuance of 4,582 shares of the Company’s common stock. In January 2019, $446,729 of accrued interest was paid through the issuance of 19,751 shares of the Company's common stock.

Extinguishment and Exchange of the Napo Convertible Notes

In May 2019, in a restructuring of the Notes, Chicago Venture Partners ("CVP") acquired the Napo December 2016 and Napo July 2017 Notes, as well as all rights thereof, and immediately extinguished the two Notes; in their place, the Company issued to CVP a new note ("Exchange Note 1"). The collective carrying amount of the Napo December 2016 and Napo July 2017 Note immediately before the exchange was $10,375,326, or principal of $10,125,339 and unamortized premium of $249,987. The new Exchange Note 1 had an opening principal balance of $10,535,900, consisting of the $10,125,339 principal balance of the extinguished notes plus $410,562 in accrued but unpaid interest from the Napo December 2016 and Napo July 2017 Notes. At June 30, 2019 and December 31, 2018, the balance of the Napo December 2016 and Napo July 2017 Notes was zero and $10,553,888, respectively.

Notes Payable

Notes payable at June 30, 2019 and December 31, 2018 consist of the following:

	June 30, 2019 (unaudited)	December 31, 2018
December 2017 note payable	$ —	$1,673,237
February 2018 note payable	—	2,359,750
March 2018 note payable	—	1,147,870
March 2019 bridge note payable	5,050,000	—
2019 Exchange Note 1	5,462,716	—
2019 Exchange Note 2	2,296,926	—
	12,809,642	5,180,857
Less: unamortized discount and debt issuance costs	(1,486,932)	(335,282)
Note payable, net	$11,322,710	$4,845,575
Notes payable - non-current, net	$ 3,563,068	$ —
Notes payable - current, net	$ 7,759,642	$4,845,575

December 2017 Note

On December 8, 2017, the Company entered into a securities purchase agreement with CVP pursuant to which the Company issued a promissory note (the "December 2017 Note") in the aggregate principal amount of $1,587,500 for an aggregate purchase price of $1,100,000. The December 2017 Note carries an original issue discount of $462,500, and the initial principal balance also includes $25,000 to cover CVP's transaction expenses. The December 2017 Note bears interest at the rate of 8% per annum and matures on August 26, 2019.

On August 2, 2018, the Company and CVP amended the December 2017 Note agreement, extending the maturity date from September 8, 2018 to August 26, 2019, and limiting the aggregate amount that CVP is permitted to redeem on a monthly basis to $500,000, which amount is the maximum aggregate amount for the CVP Notes collectively. This amendment resulted in the Company accounting for the transaction as a troubled debt restructuring, under which the carrying amount of the note payable remained unchanged but interest expense is computed using a new effective rate that equates the present value of the future cash payments specified by the new terms with the carrying amount of the note. The principal balance of the December 2017 Note is included in notes payable in the current liabilities section of the condensed consolidated balance sheet.

Between October 2018 and December 2018, the Company and CVP renegotiated the terms of the December 2017 Note agreement such that CVP agreed not to make any redemptions of the December 2017 Note until March 2019. In consideration of this standstill arrangement, the Company paid CVP a total standstill fee of $499,403 for all four CVP Notes. The standstill fee allocated to the December 2017 Note was $141,737, of which $85,737 increased the principal balance and $56,000 was paid in cash. These modifications in whole represented four separate restructurings of the December 2017 Note agreement, resulting in two troubled debt restructurings accounted for under ASC 470-60 and two modifications accounted for under ASC 470-50. For the two restructurings resulting in troubled debt restructurings, the changes were accounted for prospectively and a new effective interest rate was determined that equated the present value of the future cash payments specified by the new terms with the carrying amount of the December 2017 Note. For the two modifications that resulted in modification accounting, a new effective rate was determined at the date of modification that equated the revised cash flows to the carrying amount of the December 2017Note.

In March 2019, the Company and CVP amended the December 2017 Note agreement such that the Company prepaid principal and accrued interest of $811,065 and $178,755, respectively, in shares of the Company's common stock. The exchange of debt for common stock was considered a substantial change to the December 2017 Note and therefore the exchange resulted in extinguishment accounting and a corresponding extinguishment loss of $243,419.

In April 2019, the Company and CVP amended the December 2017 Note agreement such that the Company made two separate exchanges of principal and related accrued interest for shares of the Company's common stock. The first exchange resulted in changes to cash flows that were considered substantial, resulting in extinguishment accounting with an extinguishment loss of $100,148; the second exchange on April 17, 2019 resulted in the extinguishment of the entire December 2017 Note with a corresponding extinguishment loss of $19,494. At June 30, 2019 and December 31, 2018, the net carrying value of the December 2017 Note was zero and $1,548,829, respectively.

February 2018 Note

On February 26, 2018, the Company entered into a securities purchase agreement with CVP, pursuant to which the Company issued to CVP a promissory note in the aggregate principal amount of $2,240,909 for an aggregate purchase price of $1,560,000 (the "February 2018 Note"). The February 2018 Note carries an original issue discount of $655,909, and the initial principal balance also includes $25,000 to cover CVP's transaction expenses. The February 2018 Note bears interest at the rate of 8% per annum and matures on August 26, 2019.

Between October 2018 and December 2018, the Company and CVP renegotiated the terms of the February 2018 Note agreement such that CVP agreed not to make any redemptions of the February 2018 Note until March 2019. In consideration of this standstill arrangement, the Company paid CVP a total standstill fee of $499,403 for all four CVP Notes. The standstill fee allocated to the February 2018 Note was $198,841, of which $118,841 increased the principal balance and $80,000 was paid in cash. These modifications in whole represented four separate restructurings of the February 2018 Note agreement, resulting in a debt extinguishment accounted for under ASC 470-50, two troubled debt restructurings accounted for under ASC 470-60 and a debt modification accounted for under ASC 470-50. For the debt extinguishment, the Company recorded an extinguishment loss of $102,296. For the two troubled debt restructurings, the changes were accounted for prospectively and a new effective interest rate was determined that equated the present value of the future cash payments specified by the new terms with the carrying amount of the February 2018 Note. For the modification that resulted in modification accounting, a new effective rate was determined at the date of modification that equated the revised cash flows to the carrying amount of the February 2018 Note.

In March 2019, the Company and CVP amended the February 2018 Note agreement such that the Company prepaid principal and accrued interest of $2,044,627 and $203,866, respectively, in shares of the Company's common stock. The exchange of debt for common stock was considered a substantial change to the February 2018 Note and therefore the exchange resulted in extinguishment accounting and a corresponding extinguishment loss of $487,865.

In April 2019, the Company and CVP amended the February 2018 Note agreement such that the Company made a single exchange of principal and related accrued interest for shares of the Company's common stock. The first exchange on April 16, 2019 resulted in the extinguishment of the entire February 2018 Note with a corresponding extinguishment loss of $37,740. At June 30, 2019 and December 31, 2018, the net carrying value of the February 2018 Note was zero and $2,290,865, respectively.

March 2018 Note

On March 21, 2018, the Company entered into a securities purchase agreement with CVP, pursuant to which the Company issued to CVP a promissory note in the aggregate principal amount of $1,090,341 for an aggregate purchase price of $750,000 (the "March 2018 Note" and together with the June 2017 Note, the December 2017 Note and the February 2018 Note, the "CVP Notes"). The March 2018 Note carries an original issue discount of $315,341, and the initial principal balance also includes $25,000 to cover CVP's transaction expenses. The March 2018 Note bears interest at the rate of 8% per annum and matures on September 21, 2019.

Between October 2018 and December 2018, the Company and CVP renegotiated the terms of the March 2018 Note agreement such that CVP agreed not to make any redemptions of the March 2018 Note until March 2019. In consideration of this standstill arrangement, the Company paid CVP a total standstill fee of $499,403 for all four CVP Notes. The standstill fee allocated to the March 2018 Note was $95,529, of which $57,529 increased the principal balance and $38,000 was paid in cash. These modifications in whole represented four separate restructurings of the March 2018 Note agreement, resulting in a debt extinguishment accounted for under ASC 470-50, two troubled debt restructurings accounted for under ASC 470-60, and a debt modification accounted for under ASC 470-50. For the debt extinguishment, the Company recorded an extinguishment loss of $223,824. For the two troubled debt restructurings, the changes were accounted for prospectively and a new effective interest rate was determined that equated the present value of the future cash payments specified by the new terms with the carrying amount of the March 2018 Note. For the modification that resulted in modification accounting, a new effective rate was determined at the date of modification that equated the revised cash flows to the carrying amount of the March 2018 Note.

Between January 2019 and March 2019, the Company and CVP amended the March 2018 Note agreement such that the Company prepaid principal and accrued interest of $1,050,114 and $85,681, respectively, in shares of the Company's common stock. These exchanges in whole represented four separate prepayments of principal and accrued interest, resulting in three debt extinguishments and one debt modification accounted. For the debt extinguishments, the Company recorded an aggregate extinguishment loss of $1,210,676. For the modification, a new effective rate was determined at the date of modification that equated the revised cash flows to the carrying amount of the March 2018 Note. At June 30, 2019, the March 2018 Note had been fully extinguished. At December 31, 2018, the net carrying value of the March 2018 Note was $1,005,880.

2019 Bridge Notes

Between March 18, 2019 and June 26, 2019 the Company entered into Promissory Note Purchase Agreements with certain accredited investors under which the Company issued (i) fourteen promissory notes with a principal balance of $3,550,000 and warrant coverage at 125% of principal, and (ii) seven promissory notes with a principal balance of $1,500,000 and warrant coverage at 75% of principal. Collectively, cash proceeds from the twenty-one promissory notes (collectively, the "Bridge Notes") was $5,050,000. The Bridge Notes are not convertible and bear interest at 12% with a maturity date of July 18, 2019, at which date all principal and accrued interest are due. The exercise price of the warrants is either (i) the price the Company issues common shares in its next public offering subject to a registration statement or (ii) if no such offering is consummated by the four-month maturity date of the Notes, then the exercise price is equal to the closing price of the Company's common stock on the Notes four-month maturity date. The warrants for all twenty-one Bridge Notes had an issuance date fair value of $5,005,739 (see Note 3). At June 30, 2019, the net carrying value of the 2019 Bridge Notes was $3,563,068, or principal of $5,050,000 offset by a discount of $1,486,932.

In July 2019, the maturity date of the Bridge Notes was extended from July 18, 2019 to July 31, 2019. On July 19, 2019, upon the Company's registered offering (see Note 13), the exercise price of the warrants became fixed at the offering price of $2.00. In addition, in July 2019, all the holders of the fourteen Bridge Notes with a principal balance of $3,550,000 and warrant coverage at 125% of principal exchanged their Bridge Notes for shares of the Company's common stock.

2019 Exchange Notes

In May 2019, the Company and CVP, entered into an Exchange Agreement whereby CVP purchased the two outstanding Napo convertible notes and all rights thereof from the current debt holders. Subject to the terms of the Exchange Agreement, CVP and the Company agreed to exchange the two Napo convertible notes for a single CVP Note ("CVP Exchange Note 1"). At the Exchange date, the principal balance of the two Napo convertible notes was $10,125,339, or $10,535,900 inclusive of accrued but unpaid interest of $410,562. The beginning principal balance of CVP Exchange Note 1 was $10,535,900, or equal to the principal balance of the two Napo convertible notes and accrued interest thereon. The maturity date of CVP Exchange Note 1 was December 31, 2020, with an interest rate of 10%. Per the terms of the Exchange Agreement, CVP agreed to extend the maturity date of CVP Exchange Note 1 from December 31, 2019 (the same maturity date carried over from the two Napo convertible notes) to December 31, 2020; in consideration of this extension, the Company issued CVP Exchange Note 2 with a principal balance of $2,296,926. The maturity date of CVP Exchange Note 2 was December 31, 2020, with an interest rate of 10%. The exchange of the two outstanding Napo convertible notes for Exchange Note 1 and Exchange Note 2 resulted in the recording of a $2,046,939 loss on extinguishment of debt for the three and six months ended June 30, 2019.

Between May 2019 and June 2019, the Company and CVP entered into note exchange agreements pursuant to which the Company, in lieu of making a cash payment to CVP, made a prepayment of principal and related accrued interest of $5,144,175 by issuing 817,863 shares of the Company's common stock to CVP. These exchanges of principal and related accrued interest resulted in a debt extinguishment accounted for under ASC 470-50, with the accompanying recording of a loss on extinguishment of $439,978. At June 30, 2019, the net carrying value of Exchange Note 1 and Exchange Note 2 was $7,759,642.

Warrants

A summary of the outstanding warrant shares exercisable into shares of the Company's common stock as of June 30, 2019 and December 31, 2018 is as follows:

	Six Months Ended June 30, 2019 (unaudited)	Year Ended December 31, 2018
Warrants outstanding, beginning balance	34,682	4,590
Issuances	1,203,740	30,951
Expirations and cancellations	(551)	(859)
Warrants outstanding, end of period	1,237,871	34,682

November 2016 Series A Warrants

In November 2016, the Company entered into a Securities Purchase Agreement with certain institutional investors pursuant to which the Company issued an aggregate of 1,587 shares of the Company's common stock. The investors also received warrants to purchase up to an aggregate of 1,587 shares of the Company's common stock, at an exercise price of $787.50 per share, and the Placement Agent received warrants to purchase 127 shares of our common stock in lieu of cash for service fees with the same terms as the investors. The Series A warrants and placement agent warrants were initially valued using the Black-Scholes warrant pricing model using the following assumptions: 1,587 warrant shares with a strike price of $787.50 per share and an expiration date of May 29, 2022; and 127 warrant shares to the placement agent with a strike price of $787.50 and an expiration date of May 29, 2022; the expected life was 5.5 years, the volatility was 71.92% and the risk free rate was 1.87%. The warrants had an issuance date fair value of $756,000 and were classified as a liability. As of June 30, 2019 and December 31, 2018, the warrant liability was valued at $1,053 and $7,388, respectively. The net change of $9,941 was recorded as a gain in the Company's statements of operations (see Note 3) for the three months ended June 30, 2019. The net change of $6,335 was recorded as a gain in the Company's statements of operations (see Note 3) for the six months ended June 30, 2019.

August 2018 Financing Warrants

In August 2018, in consideration of services provided, the Company issued a warrant to purchase 429 shares of common stock which were exercisable only in the event that the Company raised new financing of at least $3.0 million, and expired five years from the date of issuance. The warrants were valued at $17,582 using the Black-Scholes option pricing model as follows: exercise price of $74.20 per share, stock price of $74.20 per share, expected life of five years, volatility of 126%, and a risk-free rate of 3.83%. The warrants were classified in stockholders' equity. In October 2018, in a public offering, the Company met the $3.0 million new financing threshold and the warrants became exercisable.

August 2018 License Transaction Warrants

In August 2018, in consideration of services provided, the Company issued a warrant the exercise of which was contingent upon either (i) the Company consummating a Licensing Transaction within six months of August 2018, the occurrence of which would result in the warrant becoming immediately exercisable for 952 shares of common stock, or (ii) the Company consummating a Licensing Transaction after six months and within twelve months of August 2018, the occurrence of which would result in the warrant becoming immediately exercisable for 476 shares of common stock. The warrant was valued at $6,312 using the Black-Scholes option pricing model as follows: exercise price of $74.20 per share, stock price of $74.20 per share, expected life of five years, volatility of 126%, and a risk-free rate of 3.83%. The warrants were classified in stockholders' equity.

October 2018 Underwriter Warrants

In October 2018, in consideration of services provided leading up to the Company's October 2018 public offering, the Company issued warrants to various service providers to purchase an aggregate of 17,142 shares of common stock at an exercise price of $52.50 per common share. The warrants were valued at $611,286 using the Black- Scholes option pricing model as follows: exercise price of $52.50 per share, stock price of $41.30 per share, expected life of five years, volatility of 138%, and a risk-free rate of 2.51%. The warrants were classified as liabilities pursuant to ASC 815-40 as there was potential cash settlement. As of June 30, 2019 and December 31, 2018, the warrant liability was valued at $52,265 and $212,988, respectively. The net change of $160,723 was recorded as a gain in the Company's statements of operations.

March 2019 Ladenburg Warrants

In March 2019, in consideration of services provided in the Company's March 2019 public offering of 19,019 common shares, the Company issued to Ladenburg Thalmann & Co. warrants to purchase an aggregate of 746 shares of common stock at an exercise price of $17.50 per common share. The warrants were valued at $13,028 using the Black-Scholes option pricing model as follows: exercise price of $17.50 per share, stock price of $18.90 per share, expected life of five years, volatility of 146%, and a risk-free rate of 2.21%. The warrants were classified in stockholders' equity.

March 2019 LOC Warrants

In March 2019, in consideration of a letter of credit cancellation related to the Company's office lease, the Company issued a warrant to purchase warrant shares equal to 75% of the $122,000 principal amount of the Letter of Credit, divided by the exercise price. The exercise price is either (i) the price the Company issues common shares in its next public offering subject to a registration statement or (ii) if no such offering is consummated by the four-month maturity date of the warrant, then the exercise price is equal to the closing price of the Company's common stock on the warrants four-month anniversary date. The warrants were classified as liabilities pursuant to ASC 480-10 as at their issuance date settlement is in a variable number of the Company's common stock worth a fixed amount, a feature that does not represent a residual interest. The warrants were initially valued at $116,297 using the Black-Scholes option pricing model as follows: exercise price of $17.50 per share, stock price of $19.60 per share, expected life of five years, volatility of 146%, and a risk-free rate of 2.23%. As of June 30, 2019, the warrant had a fair value of $150,970. The net change in fair value of the warrants of $34,673 between their issuance date and June 30, 2019 was recorded as a loss in the Company's statements of operations.

On July 19, 2019, upon the Company's registered offering (see Note 13), the exercise price of the warrants became fixed at the offering price of $2.00.

2019 Bridge Note Warrants

Between March 18, 2019 and June 26, 2019, concurrent to the Company entering into Promissory Notes of $5,050,000, the Company issued (i) fourteen Notes with a principal balance of $3,550,000 and warrant coverage at 125% of principal, and (ii) seven Notes with a principal balance of $1,500,000 and warrant coverage at 75% of principal. The exercise price of the warrants is either (i) the price the Company issues common shares in its next public offering subject to a registration statement or (ii) if no such offering is consummated by the four-month maturity date of the Notes, then the exercise price is equal to the closing price of the Company's common stock on the Notes four-month maturity date. The warrants for all twenty-one Bridge Notes are liability classified, with a collective issuance date fair value of $5,005,739 (see Note 3) computed using the Black-Scholes-Merton pricing model using assumptions derived between the issuance dates of March through June 2019. As of June 30, 2019, the warrants had a fair value of $4,977,985. At March 31, 2019, the warrants had a fair value of $892,713. The net change in fair value of the warrants of $4,085,269 for the three and six months ended March 31, 2019 and June 30, 2019 was due to the addition of new warrants with a fair value of $4,113,026 offset by a $27,757 loss in the fair value of the warrants as measured on June 30, 2019. The gain of $27,757 was recorded in the Company's statements of operations.

On July 19, 2019, upon the Company's registered offering (see Note 13), the exercise price of the warrants became fixed at the offering price of $2.00.

8. Convertible Preferred Stock

In March 2018, the Company entered into a stock purchase agreement with Sagard Capital Partners, L.P. pursuant to which the Company, in a private placement, agreed to issue and sell to Sagard 5,524,926 shares of the Company's Series A convertible participating preferred stock, $0.0001 par value per share, for gross proceeds of $9,199,002, or $9,000,002 net of issuance costs. The preferred stock is convertible into approximately 473,565 shares of common stock at the option of the holder at an effective conversion price of $19.425 per share, provided that, at any time prior to the time the Company obtains stockholder approval, as required pursuant to Nasdaq Rule 5635(b) any conversion of Preferred Stock by a holder into shares of the common stock would be prohibited if, as a result of such conversion, the holder, together with such holder's attribution parties, would beneficially own more than 19.99% of the total number of shares of the common stock issued and outstanding after giving effect to such conversion. Subject to certain limited exceptions, the shares of Preferred Stock cannot be offered, pledged or sold by Sagard for one year from the date of issuance. The conversion price is subject to certain adjustments in the event of any stock dividend, stock split, reverse stock split, combination or other similar recapitalization.

Holders of the Series A shares are entitled to participate equally and ratably with the holders of common stock shares in all dividends paid and distributions made to the holders of the common stock as if, immediately prior to each record date of the common stock, the shares of Series A then outstanding were converted into shares of common stock.

In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company or deemed liquidation event, the holders of Series A shares then outstanding shall be entitled to be paid in cash out of the assets of the Company before any payment shall be made to the holders of common stock or shares of any series or class of preferred or other capital stock then outstanding that by its terms is junior to the Series A in respect of the preferences as to distributions and payments upon such liquidation event by reason of their ownership, an amount per share of Series A equal to one times the Series A original issue price.

The redemption and liquidation value of the Series A preferred stock is $12,738,822 and $9,199,002, respectively, as of June 30, 2019 and December 31, 2018. If a Redemption Event occurs as of the Measurement Date (the later of April 30, 2021 and the date on which the Company files its Form 10-Q for the three months ending March 31, 2021, but in no event later than September 30, 2021), the holders of at least a majority of the shares of Series A preferred stock then outstanding may require the Company to redeem all Series A shares at a per share purchase price equal to $2.3057; any one of the following conditions can result in a Redemption Event that is not solely within the Company's control: Revenues attributable to the Mytesi product for the six-month period ended March 31, 2021 are less than $22.0 million or the daily volume weighted average price ("VWAP") of the Company's common stock on Nasdaq for the 30 days prior to a Measurement Date is less than $105.00.

On the March 23, 2018 issuance date, the effective conversion price per share was less than the fair value of the underlying common stock. As a result, the Company determined that there was a Beneficial Conversion Feature ("BCF") of approximately $995,000. Because the Company's Series A Preferred Stock does not have a stated conversion date and was immediately convertible at the issuance date, the Company recorded a deemed dividend charge of $995,000 for the accretion of the discount on the Series A Preferred Stock. The deemed dividend was a non-cash transaction and is reflected below net loss to arrive at net loss available to common stockholders on the Company's condensed consolidated statements of operations for the three and six months ended June 30, 2018.

In March 2019, the Company and Sagard Capital Partners, L.P. amended certain terms of the agreement, such that the effective conversion price was adjusted to $19.425 per share. The Company determined that the amendment represented an immaterial modification.

The preferred stock has been classified outside of stockholders' equity/(deficit) in accordance with authoritative guidance for the classification and measurement of potentially redeemable securities.

9. Stockholders' Equity/(Deficit)

Common Stock

On May 18, 2018, the stockholders of Jaguar approved at the 2018 Annual Meeting of Stockholders of the Company and the Board approved, in accordance with the authority granted by the Company's stockholders at the Annual Meeting, a 1-for-15 reverse stock split of the Company’s issued and outstanding shares of common stock. On May 29, 2018, the Company filed the Certificate of Second Amendment to its Third Amended and Restated Certificate of Incorporation with the Secretary of State of the State of Delaware to effect the reverse stock split, effective June 1, 2018. The reverse split has been retrospectively reflected in all voting common stock, warrants, and common stock option shares disclosed in these condensed consolidated financial statements. The non-voting common stock and the convertible preferred stock were excluded from the reverse split.

On May 18, 2018, the stockholders of the Company approved at the Annual Meeting a proposal to decrease the number of authorized shares of common stock to 150,000,000 shares, contingent upon the approval of the 2018 Reverse Stock Split. On June 1, 2018, the Company filed a certificate of third amendment (the “Third Amendment”) to its certificate of incorporation, (“COI”), with the Secretary of State of the State of Delaware to decrease the total number of authorized shares of common stock so that the total number of the shares that the Company has authority to issue is 210,000,000 shares, of which 150,000,000 shares are common stock, 50,000,000 are non-voting common stock and 10,000,000 shares are “blank check” preferred stock.

On June 3, 2019, the Company filed the Certificate of Fifth Amendment to its Third Amended and Restated Certificate of Incorporation with the Secretary of State of the State of Delaware to effect a 1-for-70 reverse split of the Company’s voting common stock, effective June 7, 2019. The reverse split has been retrospectively reflected in all voting common stock, warrants, and common stock option shares disclosed in these condensed consolidated financial statements. The non-voting common stock and the convertible preferred stock were excluded from the reverse split.

As of June 30, 2019 and December 31, 2018, the Company had reserved shares of common stock for issuance as follows:

	June 30, 2019	December 31, 2018
	(unaudited)	
Options issued and outstanding	39,481	42,979
Inducement options issued and outstanding	906	2,985
Options available for grant under stock option plans	13,622	2,327
RSU awards issued and outstanding	5,613	5,613
Warrants issued and outstanding	1,237,871	34,682
Convertible notes	—	10,849
Preferred Convertible Stock	473,565	47,357
Total	1,771,058	146,792

10. Stock Incentive Plans

2013 Equity Incentive Plan

Effective November 1, 2013, the Company's board of directors and sole stockholder adopted the Jaguar Health, Inc. 2013 Equity Incentive Plan (the “2013 Plan”). The 2013 Plan allows the Company's board of directors to grant stock options, restricted stock awards and restricted stock unit awards to employees, officers, directors and consultants of the Company. Following the effective date of the IPO and after effectiveness of any grants under the 2013 Plan that were contingent on the IPO, no additional stock awards will be granted under the 2013 Plan. Outstanding grants continue to be exercisable, however any unissued shares under the plan and any forfeitures of outstanding options do not rollover to the 2014 Stock Incentive Plan. As of June 30, 2019, there were 5,613 options outstanding.

2014 Stock Incentive Plan

In May 2015, the Company adopted the Jaguar Health, Inc. 2014 Stock Incentive Plan (“2014 Plan”). The 2014 Plan provides for the grant of options, restricted stock and restricted stock units to eligible employees, directors and consultants to purchase the Company's common stock. The 2014 Plan provides for automatic share increases on the first day of each fiscal year in the amount of 2% of the outstanding number of shares of the Company's common stock on last day of the preceding calendar year. The final 2% increase under the terms of the 2014 Plan was on January 1, 2019, at which time 7,797 additional available shares were added to the 2014 Plan. In February 2019, the Company shareholders approved a 5-year extension of the annual 2% automatic increase, from January 1, 2020 through January 1, 2024. The 2014 Plan replaced the 2013 Plan except that all outstanding options under the 2013 Plan remain outstanding until exercised, cancelled or expiration. As of June 30, 2019, there were 39,481 options outstanding and 13,622 options available for grant.

Stock Options and Restricted Stock Units (“RSUs”)

The following table summarizes incentive plan activity for the six months ended June 30, 2019 (*unaudited*):

	Shares Available for Grant	Stock Options Outstanding	RSUs Outstanding	Weighted Average Stock Option Exercise Price	Weighted Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value*
Outstanding at December 31, 2018	2,327	42,979	5,613	$ 406.36	9.24	$ —
Additional shares authorized	7,797	—	—	—	—	
Options granted	(69)	69	—	17.24	—	—
Options cancelled	3,567	(3,567)	—	122.50	—	—
Outstanding at June 30, 2019	13,622	39,481	5,613	$ 431.51	8.74	$ —
Exercisable at June 30, 2019		18,073		$ 597.95	8.59	$ —
Vested and expected to vest at June 30, 2019		38,753		$ 431.51	8.74	$ —

* Fair market value of JAGX common stock on June 30, 2019 was $4.70 per share.

The intrinsic value is calculated as the difference between the exercise price of the underlying options and the fair market value of the Company's common stock for options that were in-the-money.

No options were exercised in the six months ended June 30, 2019 and 2018.

The weighted average grant date fair value of stock options granted was $17.05 and $119.00 per share during the six months ended June 30, 2019 and 2018, respectively.

The number of options that vested in the six months ended June 30, 2019 and 2018 was 10,598 and 5,648, respectively. The grant date weighted average fair value of options that vested in the six months ended June 30, 2019 and 2018 was $2,388,019 and $177,862, respectively.

The Company granted 2,993 inducement options in fiscal year 2018 to new employees. The weighted average grant-date fair value of the options was $93.80 per share.

Stock-Based Compensation

The following table summarizes stock-based compensation expense related to stock options, inducement stock options and RSUs for the three and six months ended June 30, 2019 and 2018, and are included in the condensed consolidated statements of operations as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
	(unaudited)		(unaudited)	
Research and development expense	$148,844	$145,035	$215,948	$224,749
Sales and marketing expense	12,251	18,167	46,093	20,552
General and administrative expense	285,273	301,252	610,835	491,396
Total	$446,368	$464,454	$872,876	$736,697

As of June 30, 2019, the Company had $1,817,839 of unrecognized stock-based compensation expense for options, inducement options and restricted stock units outstanding, which is expected to be recognized over a weighted-average period of 1.56 years.

The estimated grant-date fair value of stock option grants for the six months ended June 30, 2019 and 2018 was calculated using the Black-Scholes - Merton option-pricing model using the following weighted-average assumptions:

	Six Months Ended June 30,	
	2019	2018
	(unaudited)	
Weighted-average volatility	108.3 - 108.5 %	87.4 - 95.3 %
Weighted-average expected term (years)	5.81	5.1 - 5.8
Risk-free interest rate	2.5 - 2.6 %	2.6 - 2.9 %
Expected dividend yield	—	—

401(k) Plan

The Company sponsors a 401(k) defined contribution plan covering all employees. There were no employer contributions to the plan from plan inception through June 30, 2019.

11. Net Loss Per Share Attributable to Common Stockholders

The following table presents the calculation of basic and diluted net income (loss) per share of common stock for the periods indicated:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
	(unaudited)		(unaudited)	
Net loss attributable to common shareholders (basic and diluted)	$(16,721,117)	$(8,652,183)	$(25,024,988)	$(14,348,820)
Shares used to compute net loss per common share, basic and diluted	1,106,374	162,506	801,482	143,012
Net loss per share attributable to common shareholders, basic and diluted	$ (15.11)	$ (53.24)	$ (31.22)	$ (100.33)

Basic net loss per share is calculated by dividing net loss by the weighted-average number of common shares outstanding during the period. Diluted net loss per share is computed by dividing net loss by the weighted-average number of common shares and common share equivalents outstanding for the period. Common stock equivalents are only included when their effect is dilutive. The Company's potentially dilutive securities which include stock options, convertible preferred stock and common stock warrants have been excluded from the computation of diluted net loss per share as they would be anti-dilutive. For all periods presented, there is no difference in the number of shares used to compute basic and diluted shares outstanding due to the Company's net loss position.

The following outstanding common stock equivalents have been excluded from diluted net loss per common share for the six months ended June 30, 2019 and 2018 because their inclusion would be anti-dilutive.

	June 30, 2019	June 30, 2018
	(unaudited)	
Options issued and outstanding	39,481	38,638
Inducement options issued and outstanding	906	2,993
Warrants to purchase common stock	1,237,871	38,582
Restricted stock units	5,613	5,613
Convertible preferred stock	473,565	3,314,956
Convertible debt	—	11,277
Total	1,757,436	3,412,059

12. Segment Information

Prior to the merger with Napo, the Company managed its operations as a single segment for the purposes of assessing performance and making operating decisions. The Company reorganized its segments to reflect the change in the organizational structure resulting from the merger with Napo. Post-merger, the Company manages its operations through two reportable segments—human health and animal health. The human health segment is focused on developing and commercializing human products and the ongoing commercialization of Mytesi™, which is approved by the U.S. FDA for the symptomatic relief of noninfectious diarrhea in adults with HIV/AIDS on antiretroviral therapy. The animal health segment is focused on developing and commercializing prescription and non-prescription products for companion and production animals.

The Company's reportable segments net revenues and net loss for the three and six months ended June 30, 2019 and 2018 consisted of:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
	(unaudited)		(unaudited)	
Revenue from external customers				
Human Health	$ 1,684,732	$ 854,170	$ 3,227,853	$ 1,437,439
Animal Health	20,962	29,676	67,574	250,763
Consolidated Totals	$ 1,705,694	$ 883,846	$ 3,295,427	$ 1,688,202
Segment profit (loss)				
Human Health	$ (9,838,061)	$(4,474,324)	$(12,630,840)	$ (7,373,630)
Animal Health	(6,883,056)	(3,182,859)	(12,394,148)	(5,980,190)
Consolidated Totals	$(16,721,117)	$(7,657,183)	$(25,024,988)	$(13,353,820)

The Company's reportable segments assets consisted of the following:

	June 30, 2019	December 31, 2018
Segment assets		
Human Health	$ 32,764,376	$ 37,985,935
Animal Health	60,015,816	54,893,593
Total	$ 92,780,192	$ 92,879,528

The reconciliation of segments assets to the consolidated assets is as follows:

	June 30, 2019	December 31, 2018
Total assets for reportable segments	92,780,192	92,879,528
Less: Investment in subsidiary	(29,240,965)	(29,240,965)
Less: Intercompany loan	(27,472,280)	(22,596,618)
Consolidated Totals	$ 36,066,947	$ 41,041,945

13. Subsequent Events

Underwritten Public Offering

On July 19, 2019, the Company announced the pricing of a registered public offering by the Company. On July 23, 2019, we closed an underwritten public offering of units for gross proceeds of $16.56 million, which includes the full exercise of the underwriter's over-allotment option to purchase additional shares and warrants, prior to deducting underwriting discounts and commissions and offering expenses payable by the Company. Proceeds from the offering will be used to fund advancement of the Company’s pipeline and business development activities, repay outstanding debt and for working capital and other general corporate purposes.

The offering was comprised of (1) 2,886,500 Class A Units, priced at a public offering price of $2.00 per unit, with each unit consisting of (i) one share of the Company’s voting common stock (the “Common Stock”), (ii) one Series 1 warrant to purchase one share of Common Stock that expires on the earlier of (a) 5 years from the date of issuance and (b) 30 calendar days following the public announcement of Positive Interim Results (as defined in the Registration Statement) related to the diarrhea results from the HALT-D investigator initiated trial, if and only if certain trading benchmarks are achieved during such 30 calendar day period (the “Series 1 Warrants”), and (iii) one Series 2 warrant to purchase one share of Common Stock that expires on the first date on the earlier of (a) 5 years from the date of issuance and (b) 30 calendar days following the public announcement by the Company that a pivotal phase 3 clinical trial using crofelemer (Mytesi®, or the same or similar product with a different name) for the treatment of cancer therapy-related diarrhea in humans has met its primary endpoint in accordance with the protocol, if and only if certain trading benchmarks are achieved during such 30 calendar day period (the "Series 2 Warrants"), and (2) 10,787 Class B Units, priced at a public offering price of $1,000 per unit, with each unit consisting of (i) one share of Series B convertible preferred stock, convertible into 500 shares of Common Stock (the "Series B preferred stock"), (ii) 500 Series 1 Warrants and (iii) 500 Series 2 Warrants.

The Series 1 Warrants and Series 2 Warrants (together, the "warrants") have an exercise price of $2.00 and will be exercisable upon issuance for a period of five years unless terminated earlier as provided above. The aggregate number of shares of Common Stock issued pursuant to the Class A Units and issuable upon conversion of all the Series B preferred stock is 8,280,000. The aggregate number of warrants issued in the offering is 16,560,000.

The conversion price of the Series B preferred stock issued in the transaction as well as the exercise price of the warrants are fixed and do not contain any variable pricing features or any price-based anti-dilutive features. The preferred stock issued in the transaction includes a beneficial ownership blocker and has no dividend rights (except to the extent that dividends are also paid on the Common Stock) or liquidation preference, and, subject to limited exceptions, has no voting rights. The securities comprising the units were immediately separable and issued separately.

A total of 2,886,500 shares of common stock, 10,787 shares of Series B convertible preferred stock, Series 1 warrants to purchase up to 8,280,000 shares of common stock and Series 2 warrants to purchase up to 8,280,000 shares of common stock were issued in the offering, including the full exercise of the over-allotment option.

Series B Convertible Preferred Stock

On July 22, 2019, the Company filed the Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock (the "Series B Certificate of Designation") with the Secretary of State of the State of Delaware creating a new series of authorized preferred stock of the Company, par value $0.0001 per share, designated as the "Series B Convertible Preferred Stock" (the "Series B Preferred Stock"). The shares of Series B Preferred Stock rank on par with the shares of the Common Stock, in each case, as to dividend rights and distributions of assets upon liquidation, dissolution or winding up of the Company.

With certain exceptions, as described in the Series B Certificate of Designation, the shares of Series B Preferred Stock have no voting rights. However, as long as any shares of Series B Preferred Stock remain outstanding, the Series B Certificate of Designation provides that the Company shall not, without the affirmative vote of holders of a majority of the then outstanding shares of Series B Preferred Stock, (a) alter or change adversely the powers, preferences or rights given to the Series B Preferred Stock or alter or amend the Series B Certificate of Designation or (b) enter into any agreement with respect to any of the foregoing.

Each share of Series B Preferred Stock is convertible at any time at the holder's option into 500 shares of Common Stock, which conversion ratio will be subject to adjustment for stock splits, stock dividends, distributions, subdivisions and combinations and other similar transactions as specified in the Series B Certificate of Designation. Notwithstanding the foregoing, the Series B Certificate of Designation further provides that the Company shall not effect any conversion of the shares of Series B Preferred Stock, with certain exceptions, to the extent that, after giving effect to an attempted conversion, the holder of shares of Series B Preferred Stock (together with such holder's affiliates and any persons acting as a group together with such holder or any of such holder's affiliates) would beneficially own a number of shares of Common Stock in excess of 4.99% (or 9.99% at the election of the holder prior to the date of issuance of Series B Preferred Stock) of the shares of Common Stock then outstanding. At the holder's option, upon notice to the Company, the holder may increase or decrease this beneficial ownership limitation not to exceed 9.99% of the shares of Common Stock then outstanding, with any such increase becoming effective upon 61 days' prior notice to the Company.

Amendment of 2014 Stock Incentive Plan

At the Company's annual meeting of stockholders held on May 24, 2019, the Company's stockholders approved an amendment to the Company's 2014 Stock Incentive Plan to increase the number of shares of the Company's common stock authorized for issuance under the 2014 Plan such that the aggregate authorized but unissued shares available for issuance under the 2014 Plan would be equal to 12.5% of the issued and outstanding shares of Common Stock on a fully diluted basis including for purposes of this calculation as if such shares available under the 2014 Plan were included in the denominator (and assuming conversion or exercise, as applicable, of all outstanding convertible securities, including but not limited to conversion of the Company's Series A Convertible Participating Preferred Stock and Series B Convertible Preferred Stock into shares of Common Stock, all issued and outstanding warrants, RSUs and stock options (whether issued under or outside the 2014 Plan and the like)), calculated as of the earlier of (i) the day immediately after the consummation of the Company's next underwritten public equity offering with gross proceeds of $5 million or more or (ii) July 31, 2019 (collectively, the "Calculation Date"). The Calculation Date occurred on July 24, 2019. On the Calculation date, the total number of issued and outstanding shares of Common Stock on a fully diluted basis was 30,404,653 shares. Accordingly, the total number of shares of Common Stock approved for issuance under the 2014 Plan was 4,330,400 shares.

Sales force reduction

In August 2019, we had a reduction in force of up to 10 sales representatives, constituting half of the Company's sales force. It is part of an overall plan to consolidate sales territories and expenses in line with revenues, drive efficiencies, cost savings throughout the Company, and organize the Company's top priorities. The Company plans to reinvest in research and development activities and foster partnerships to drive growth. The separation agreements include severance payments of approximately $120,000 in aggregate.

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

The following discussion and analysis of financial condition and results of operations should be read together with the condensed consolidated financial statements and the related notes included in Item 1 of Part I of this Quarterly Report on Form 10-Q, and with our audited consolidated financial statements and the related notes included in our Annual Report on Form 10-K for the year ended December 31, 2018.

The discussion and analysis below includes certain forward-looking statements related to our research and development and commercialization of our products in the U.S., our future financial condition and results of operations and potential for profitability, the sufficiency of our cash resources, our ability to obtain additional equity or debt financing, if needed, possible partnering or other strategic opportunities for the development of our products, as well as other statements related to the progress and timing of product development, present or future licensing, collaborative or financing arrangements or that otherwise relate to future periods, which are all forward-looking statements as defined by the Private Securities Litigation Reform Act of 1995. These statements represent, among other things, the expectations, beliefs, plans and objectives of management and/or assumptions underlying or judgments concerning the future financial performance and other matters discussed in this document. The words "may," "will," "should," "plan," "believe," "estimate," "intend," "anticipate," "project," and "expect" and similar expressions are intended to connote forward-looking statements. All forward-looking statements involve certain risks, uncertainties and other factors described in our Annual Report on Form 10-K, that could cause our actual commercialization efforts, financial condition and results of operations, and business prospects and opportunities to differ materially from these expressed in, or implied by, those forward-looking statements. We caution investors not to place significant reliance on the forward-looking statements contained in this report. These statements, like all statements in this report, speak only as of the date of this report (unless another date is indicated), and we undertake no obligation to update or revise forward-looking statements.

Overview

We are a commercial stage pharmaceuticals company focused on developing novel, sustainably derived gastrointestinal products on a global basis. Our wholly-owned subsidiary, Napo Pharmaceuticals, Inc. ("Napo"), focuses on developing and commercializing proprietary human gastrointestinal pharmaceuticals for the global marketplace from plants used traditionally in rainforest areas. Our Mytesi (crofelemer) product is approved by the U.S. Food and Drug Administration ("FDA") for the symptomatic relief of noninfectious diarrhea in adults with HIV/AIDS on antiretroviral therapy. In the field of animal health, we are focused on developing and commercializing first-in-class gastrointestinal products for companion and production animals, foals, and high value horses.

Jaguar was founded in San Francisco, California as a Delaware corporation on June 6, 2013. Napo formed Jaguar to develop and commercialize animal health products. Effective as of December 31, 2013, Jaguar was a wholly-owned subsidiary of Napo, and Jaguar was a majority-owned subsidiary of Napo until the close of the Company's initial public offering on May 18, 2015. On July 31, 2017, the merger of Jaguar Animal Health, Inc. and Napo became effective, at which point Jaguar Animal Health's name changed to Jaguar Health, Inc. and Napo began operating as a wholly-owned subsidiary of Jaguar focused on human health and the ongoing commercialization of, and development of follow-on indications for, Mytesi.

We believe Jaguar is poised to realize a number of synergistic, value adding benefits—and an expanded pipeline of potential blockbuster human follow-on indications, a second-generation anti-secretory agent, as well as a pipeline of important animal indications for crofelemer, upon which to build global partnerships. As previously announced, Jaguar, through Napo, now controls commercial rights for Mytesi for all indications, territories and patient populations globally, and crofelemer manufacturing is being conducted at a multimillion-dollar commercial manufacturing facility that has been FDA-inspected and approved. Additionally, several of the drug product candidates in Jaguar's Mytesi pipeline are backed by strong Phase 2 evidence from completed Phase 2 trials.

Mytesi is a novel, first-in-class anti-secretory agent which has a basic normalizing effect locally on the gut, and this mechanism of action has the potential to benefit multiple disorders. Mytesi is in development for multiple possible follow-on indications, including cancer therapy-related diarrhea; orphan-drug indications for infants and children with congenital diarrheal disorders and short bowel syndrome (SBS); supportive care for inflammatory bowel disease (IBD); irritable bowel syndrome (IBS); and as a second-generation anti-secretory agent for use in cholera patients. Mytesi has received orphan-drug designation for SBS.

Financial Operations Overview

On a consolidated basis, we have not yet generated enough revenue to date to achieve break even or positive cash flow, and we expect to continue to incur significant research and development and other expenses. Our net loss was $16.7 million and $7.7 million for the three months ended June 30, 2019 and 2018, respectively. The increase of $9.0 million in net loss was largely due to the increased interest expense of $2.9 million related to the debt with Oasis, Kingdon, CVP, and the Bridge Notes, $2.7 million loss on extinguishment of debt with Kingdon, the $4.0 million recorded on the impairment of our indefinite-lived intangible assets, and increased revenue of $0.8 million. Our net loss was $25.0 million and $13.4 million for the six months ended June 30, 2019 and 2018, respectively. The increased loss of $11.6 million was largely from the increased interest expense of $2.9 million, $4.6 million loss on extinguishment of debt, the $4.0 million recorded on the impairment of our indefinite-lived intangible assets, and increased revenue of $1.6 million. As of June 30, 2019, we had a total stockholders' deficit of $1.6 million, an accumulated deficit of $119.6 million, and cash of $1.6 million. We expect to continue to incur losses and experience increased expenditures for the foreseeable future as we expand our product development activities, seek necessary approvals for our product candidates, conduct species-specific formulation studies for our non-prescription products, establish API manufacturing capabilities and begin additional commercialization activities.

Refer to Note 1 *Organization and Business* discussing the various notes held by us with Oasis, Kingdon, CVP, the bridge investors, and various equity transactions that occurred in the three and six months ended June 30, 2019.

On July 19, 2019, the Company announced the pricing of a registered public offering by the Company. On July 23, 2019, we closed an underwritten public offering of units for gross proceeds of $16.6 million, which includes the full exercise of the underwriter's over-allotment option to purchase additional shares and warrants, prior to deducting underwriting discounts and commissions and offering expenses payable by the Company. Proceeds from the offering will be used to fund advancement of the Company’s pipeline and business development activities, repay outstanding debt and for working capital and other general corporate purposes. Refer to Note 13 *Subsequent Events* for detailed discussions about the public offering.

Revenues

Our product and collaboration revenue consist of the following:

- Revenues from the sale of our human drug Mytesi, which is sold through distributors and wholesalers.

- Revenues from the sale of our animal products branded as Neonorm Calf and Neonorm Foal. Our Neonorm and Botanical extract products are primarily sold to distributors, who then sell the products to the end customers.

- Revenues from our collaborative agreement with Elanco to license, develop and commercialize Canalevia. This agreement was terminated in January 2018.

See “Results of Operations” below for more detailed discussion on revenues

Cost of Revenue

Cost of revenue consists of direct drug substance and drug product materials expense, direct labor, distribution fees, royalties and other related expenses associated with the sale of our products.

Research and Development Expense

Research and development expenses consist primarily of clinical and contract manufacturing expense, personnel and related benefit expense, stock-based compensation expense, employee travel expense, and reforestation expenses. Clinical and contract manufacturing expense consists primarily of costs to conduct stability, safety and efficacy studies, and manufacturing startup at an outsourced API provider in Italy. It also includes expenses with a third-party provider for the transfer of the Mytesi manufacturing process, and the related feasibility and validation activities.

We typically use our employee and infrastructure resources across multiple development programs. We track outsourced development costs by prescription drug product candidate and non-prescription product and we track personnel or other internal costs related to development to specific programs or development compounds.

The timing and amount of our research and development expenses will depend largely upon the outcomes of current and future trials for our prescription drug product candidates as well as the related regulatory requirements, the outcomes of current and future species-specific formulation studies for our non-prescription products, manufacturing costs and any costs associated with the advancement of our line extension programs. We cannot determine with certainty the duration and completion costs of the current or future development activities.

The duration, costs and timing of trials, formulation studies and development of our prescription drug and non-prescription products will depend on a variety of factors, including:

- the scope, rate of progress, and expense of our ongoing, as well as any additional clinical trials, formulation studies and other research and development activities;
- future clinical trial and formulation study results;
- potential changes in government regulations; and
- the timing and receipt of any regulatory approvals.

A change in the outcome of any of these variables with respect to the development of a prescription drug product candidate or non-prescription product could mean a significant change in the costs and timing associated with our development activities.

We expect research and development expense to increase significantly as we add personnel, commence additional clinical studies and other activities to develop our prescription drug product candidates and non-prescription products.

Sales and Marketing Expense

Sales and marketing expenses consist of personnel and related benefit expense, stock-based compensation expense, direct sales and marketing expense, employee travel expense, and management consulting expense. We currently incur sales and marketing expenses to promote Mytesi. We do not currently have any marketing or promotional expenses related to Neonorm Calf or Neonorm Foal in the three and six months ended June 30, 2019.

We expect sales and marketing expense to decrease going forward as we consolidate Mytesi sales territories for HIV promotion, focus on commercial partnerships for the development of follow-on indications of Mytesi and Crofelemer.

General and Administrative Expense

General and administrative expenses consist of personnel and related benefit expense, stock-based compensation expense, employee travel expense, legal and accounting fees, rent and facilities expense, and management consulting expense.

In the near term, we expect general and administrative expense to remain the same as we consolidate sales territories and simultaneously focus on our pipeline development. This will include growing the business without adding headcount or increasing facilities.

Interest Expense

Interest expense consists primarily of non-cash and cash interest costs related to our borrowings.

Critical Accounting Policies and Significant Judgments and Estimates

The preparation of consolidated financial statements in conformity with U.S. generally accepted accounting principles, or U.S. GAAP, requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities, revenues and expenses, and related disclosures in the consolidated financial statements. Critical accounting policies are those accounting policies that may be material due to the levels of subjectivity and judgment necessary to account for highly uncertain matters or the susceptibility of such matters to change, and that have a material impact on financial condition or operating performance. While we base our estimates and judgments on our experience and on various other factors that we believe to be reasonable under the circumstances, actual results may differ from these estimates under different assumptions or conditions. We believe the following critical accounting policies used in the preparation of our consolidated financial statements require significant judgments and estimates. For additional information relating to these and other accounting policies, see Note 2 to our audited consolidated financial statements and the related notes included in our Annual Report on Form 10-K for the year ended December 31, 2018.

Revenue Recognition

The Company recognizes revenue in accordance with ASC Topic 606, *Revenue from Contracts with Customers* (“ASC 606”), which was adopted on January 1, 2018, using the modified retrospective method, which was elected to apply to all active contracts as of the adoption date. Application of the modified retrospective method did not impact amounts previously reported by the Company, nor did it require a cumulative effect adjustment upon adoption, as the Company's method of recognizing revenue under ASC 606 yielded similar results to the method utilized immediately prior to adoption. Accordingly, there was no effect to each financial statement line item as a result of applying the new revenue standard.

Practical Expedients, Elections, and Exemptions

We recognize revenue in accordance with the core principle of ASC 606 or when there is a transfer of control of promised goods or services to customers in an amount that reflects the consideration that we expect to be entitled to in exchange for those goods or services.

We used a practical expedient available under ASC 606-10-65-1(f)4 that permits us to consider the aggregate effect of all contract modifications that occurred before the beginning of the earliest period presented when identifying satisfied and unsatisfied performance obligations, transaction price, and allocating the transaction price to the satisfied and unsatisfied performance obligations.

We also used a practical expedient available under ASC 606-10-32-18 that permits us not to adjust the amount of consideration for the effects of a significant financing component if, at contract inception, the expected period between the transfer of promised goods or services and customer payment is one year or less.

We have elected to treat shipping and handling activities as fulfillment costs.

Additionally, we have elected to record revenue net of sales and other similar taxes.

Contracts

Effective January 16, 2019, Napo Pharmaceuticals, Inc. engaged Cardinal Health as its exclusive third party logistics distribution agent for commercial sales for the Company's Mytesi product and to perform certain other services which include, without limitation, storage, distribution, returns, customer support, financial support, EDI and system access support (Exclusive Distribution Agreement).

In addition to the terms and conditions of the Agreement, Cardinal Health's purchase of products, and assumption of title therein, is set forth in the Title Model Addendum. The Title Model Addendum states that upon receipt of product at the 3PL Facility (Cardinal Health in La Vergne, Tennessee) from the Company, title and risk of loss for the Mytesi product purchased by Cardinal Health (excluding consigned inventory) shall pass to Cardinal Health, and title and risk of loss for consigned inventory shall remain with Client until purchased by Cardinal Health in accordance with this Addendum. Napo Pharmaceuticals, Inc. considers Cardinal Health the Company's exclusive customer for Mytesi products per the Cardinal Health Exclusive Distribution agreement.

Our Neonorm and Botanical extract products are primarily sold to distributors, who then sell the products to the end customers. Since 2014, we entered into several distribution agreements with established distributors such as Animart, Vedco, VPI, RJ Matthews, Henry Schein, and Stockmen Supply to distribute the Company's products in the United States, Japan, and China. The distribution agreements and the related purchase order together meet the contract existence criteria under ASC 606-10-25-1. Jaguar sells directly to its customers without the use of an agent.

Performance obligations

For the products sold by each of Napo and Jaguar, the single performance obligation identified above is our promise to transfer our Mytesi product to Distributors based on specified payment and shipping terms in the arrangement. Product warranties are assurance type warranties that does not represent a performance obligation.

Transaction price

For both Jaguar and our Napo subsidiary, the transaction price is the amount of consideration to which we expect to collect in exchange for transferring promised goods or services to a customer. The transaction price of Mytesi and Neonorm is the Wholesaler Acquisition Cost ("WAC"), net of discounts, returns, and price adjustments.

Allocate transaction price

For both Jaguar and our Napo subsidiary, the entire transaction price is allocated to the single performance obligation contained in each contract.

Point in time recognition

For both Jaguar and our Napo subsidiary, a single performance obligation is satisfied at a point in time, upon the FOB terms of each contract when control, including title and all risks, has transferred to the customer.

Disaggregation of Product Revenue

Human

Sales of Mytesi are recognized as revenue when the products are delivered to the wholesaler. Revenues from the sale of Mytesi were $1,684,732 and $854,170 for the three months ended June 30, 2019 and 2018, respectively. Revenues from the sale of Mytesi were $3,227,853 and $1,437,439 for the six months ended June 30, 2019 and 2018, respectively. The increase in sales of Mytesi is due to the more streamlined distribution and increased sales presence. Deductions from revenue are derived from reserves for estimated product returns based on historical returns experience.

If actual returns differed from our historical experience, changes to the reserved could be required in future periods. Additional deductions are wholesaler fees which are based on our agreement with Cardinal Health, sales discounts, and Medicare rebates which are derived from data collected by Cardinal Health through various sources.

Animal

The Company recognized Neonorm revenues of $20,962 and $29,676 for the three months ended June 30, 2019 and 2018, respectively. Revenues from the sale of Neonorm were $67,574 and $73,374 for the six months ended June 30, 2019 and 2018, respectively. Revenues are recognized upon shipment which is when title and control is transferred to the buyer. Sales of Neonorm Calf and Foal to distributors are made under agreements that may provide distributor price adjustments and rights of return under certain circumstances.

Goodwill and Indefinite-lived Intangible Assets

Goodwill

Goodwill is tested for impairment on an annual basis and in-between annual tests if events or circumstances indicate that an impairment loss may have occurred. The test is based on a comparison of the reporting unit's book value to its estimated fair market value. We perform the annual impairment test during the fourth quarter of each fiscal year using the opening condensed consolidated balance sheet as of the first day of the fourth quarter, with any resulting impairment recorded in the fourth quarter of the fiscal year. If the carrying value of a reporting unit's net assets exceeds its fair value, the goodwill would be considered impaired and would be reduced to its fair value.

Indefinite-lived Intangible Assets

Acquired in-process research and development (IPR&D) are intangible assets initially recognized at fair value and classified as indefinite-lived assets until the successful completion or abandonment of the associated research and development efforts. During the development period, these assets will not be amortized as charges to earnings; instead these assets will be tested for impairment on an annual basis or more frequently if impairment indicators are identified. In connection with each annual impairment assessment and any interim impairment assessment in which indicators of impairment have been identified, we compare the fair value of the asset as of the date of the assessment with the carrying value of the asset on the condensed consolidated balance sheet. If impairment is indicated by this test, the intangible asset is written down by the amount by which the discounted cash flows expected from the intangible asset exceeds its carrying value. Fair value determinations require considerable judgement and are sensitive to changes in underlying assumptions, estimates regarding our future plans, as well as industry and economic conditions. These assumptions and estimates include projected revenues and income growth rates, terminal growth rates, competitive and consumer trends, market-based discount rates, and other factors. If current expectations of growth rates are not met or market factors outside of our control, such as discount rates, change significantly, this may lead to a further impairment in the future. Acquired in-process research and development ("IPR&D") are intangible assets initially recognized at fair value and classified as indefinite-lived assets until the successful completion or abandonment of the associated research and development efforts. During the development period, these assets will not be amortized as charges to earnings; instead these assets will be tested for impairment on an annual basis or more frequently if impairment indicators are identified. We recorded an impairment of $4,000,000 in the three and six months ended June 30, 2019. There were no impairment charges recorded in the three and six months ended June 30, 2018. The impairment loss is measured based on the excess of the carrying amount over the asset's fair value. Definite-lived intangible assets are amortized on a straight-line basis over the estimated periods benefited and are reviewed when appropriate for possible impairment.

Accrued Research and Development Expenses

As part of the process of preparing our condensed consolidated financial statements, we are required to estimate accrued research and development expenses. Estimated accrued expenses include fees paid to vendors and clinical sites in connection with our clinical trials and studies. Clinical and contract manufacturing expense consists primarily of costs to conduct stability, safety and efficacy studies, and manufacturing startup at an outsourced API provider in Italy. It also includes expenses with a third-party provider for the transfer of the Mytesi manufacturing process, and the related feasibility and validation activities.

We review new and open contracts and communicate with applicable internal and vendor personnel to identify services that have been performed on our behalf and estimate the level of service performed and the associated costs incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost for accrued expenses. The majority of our service providers invoice us monthly in arrears for services performed or as milestones are achieved in relation to our contract manufacturers. We make estimates of our accrued expenses as of each reporting date.

We base our accrued expenses related to clinical trials and studies on our estimates of the services received and efforts expended pursuant to contracts with vendors, our internal resources, and payments to clinical sites based on enrollment projections. The financial terms of the vendor agreements are subject to negotiation, vary from contract to contract and may result in uneven payment flows. Payments under some of these contracts depend on factors such as the successful enrollment of animals and the completion of development milestones. We estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the related expense accrual accordingly on a prospective basis. If we do not identify costs that have been incurred or if we underestimate or overestimate the level of services performed or the costs of these services, our actual expenses could differ from our estimates. To date, we have not made any material adjustments to our estimates of accrued research and development expenses or the level of services performed in any reporting period presented.

The Company expenses the total cost of a certain long-term manufacturing development contract ratably over the estimated life of the contract, or the total amount paid if greater.

Results of Operations

Comparison of the Six Months ended June 30, 2019 and 2018

Revenue

Comparison of the six months ended June 30, 2019 and 2018

The following table summarizes the Company's results of operations with respect to the items set forth in such table for the six months ended June 30, 2019 and 2018 together with the change in such items in dollars and as a percentage.

	Six Months Ended June 30,			
	2019	2018	Variance	Variance %
Product revenue, net	$ 3,295,427	$ 1,510,813	$ 1,784,614	118.1 %
Collaboration revenue	—	177,389	(177,389)	(100.0)%
Total revenue	3,295,427	1,688,202	1,607,225	95.2 %
Operating Expenses				
Cost of product revenue	2,125,305	1,072,185	1,053,120	98.2 %
Research and development expense	3,119,013	2,362,752	756,261	32.0 %
Sales and marketing expense	3,738,195	4,402,452	(664,257)	(15.1)%
General and administrative expense	6,710,275	6,058,148	652,127	10.8 %
Impairment of long-lived intangible assets	4,000,000	—	4,000,000	100 %
Total operating expenses	19,692,788	13,895,537	5,797,251	41.7 %
Loss from operations	(16,397,361)	(12,207,335)	(4,190,026)	34.3 %
Interest expense	(4,204,108)	(1,313,824)	(2,890,284)	220.0 %
Other income, net	20,608	312,704	(292,096)	(93.4)%
Change in fair value of warrant, derivative liability and conversion option liability	161,031	(145,365)	306,396	(210.8)%
Loss on extinguishment of debt	(4,605,158)	—	(4,605,158)	(100.0)%
Net loss	(25,024,988)	(13,353,820)	(11,671,168)	87.4 %
Deemed dividend attributable to preferred stockholders	—	(995,000)	995,000	100 %
Net loss attributable to common stockholders	$(25,024,988)	$(14,348,820)	$(10,676,168)	74.4 %

Revenue

Sales and allowances

Due to the Company’s arrangements, including elements of variable consideration, gross product sales are reduced in order to reflect the expected consideration to arrive at net product sales. Deductions to reduce gross product sales to net product sales in the six months ended June 30, 2019 and 2018 were as follows:

	Six Months Ended June 30,			
	2019	2018	Variance	Variance %
Gross product sales				
Mytesi	$ 4,493,570	$ 1,958,927	$ 2,534,643	129.4 %
Neonorm	67,574	73,374	(5,800)	(7.9)%
Total gross product sales	4,561,144	2,032,301	2,528,843	124.4 %
Medicare rebates	(269,127)	(146,297)	(122,830)	84.0 %
Sales discounts - Mytesi	(736,850)	(172,793)	(564,057)	326.4 %
Sales returns - Mytesi	(57,935)	(45,649)	(12,286)	26.9 %
Wholesaler fee - Mytesi	(201,805)	(156,749)	(45,056)	28.7 %
Net product sales	$ 3,295,427	$ 1,510,813	$ 1,784,614	118.1 %

Product revenue

Our gross product revenues were $4,561,144 and $2,032,301 for the six months ended June 30, 2019 and 2018, respectively. These periods reflect revenue from the sale of our human drug Mytesi and our animal products branded as Neonorm Calf and Neonorm Foal.

Human

Sales of Mytesi are recognized as revenue when the products are delivered to the wholesalers. Our gross revenues from the sale of Mytesi were $4,493,570 and $1,958,927 in the six months ended June 30, 2019 and 2018, respectively. The increase in sales of Mytesi is due to the more streamlined distribution and increased sales presence.

Sales discounts were $736,850 and $172,793 for the six months ended June 30, 2019 and 2018, respectively, an increase of $564,057. Sales discounts include discounts for prompt payments from customers and an estimated allowance for chargebacks on sales. The increase in allowance is mostly due to the transition in distributors during 2019. Sales discounts of $736,850 for the six months ended June 30, 2019 consists of chargebacks of approximately 13% on Mytesi gross product sales.

Animal

Our Neonorm product revenues were $67,574 and $73,374 for the six months ended June 30, 2019 and 2018, respectively. Focus on sales and marketing for Neonorm products had decreased during 2019.

Collaboration Revenue

Collaboration revenue was derived from our January 2017 licensing, development, co-promotion and commercialization agreement with Elanco US Inc. to license, develop and commercialize Canalevia. Elanco terminated the arrangement in January 2018 and all remaining deferred revenue was recognized at that time. We recognized collaboration revenues of $0 and $177,389 for the six months ended June 30, 2019 and 2018, respectively.

Cost of Product Revenue

Comparison of the Six Months ended June 30, 2019 and 2018

	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018	Variance	Variance %
Cost of Product Revenue				
Material cost	$ 1,049,218	$ 476,156	$ 573,062	120.4 %
Direct labor	296,454	265,703	30,751	11.6 %
Distribution fees	155,349	163,118	(7,769)	(4.8)%
Royalties	103,756	43,223	60,533	140.0 %
Other	520,528	123,985	396,543	319.8 %
Total	$ 2,125,305	$ 1,072,185	$ 1,053,120	98.2 %

Cost of product revenue increased $1,053,120 from $1,072,185 in the six months ended June 30, 2018 to $2,125,305 for the same period in 2019. The increase in cost of product revenue year over year was due to increased sales of Mytesi, and other expenses which included the write-off of non-conforming inventory, and expense for equipment maintenance.

Research and Development Expense

Comparison of the Six Months ended June 30, 2019 and 2018

The following table presents the components of research and development expense for the six months ended June 30, 2018 and 2017 together with the change in such components in dollars and as a percentage:

	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018	Variance	Variance %
R&D:				
Personnel and related benefits	$ 971,104	$ 1,145,473	$ (174,369)	(15.2)%
Materials expense and tree planting	62,350	106,324	(43,974)	(41.4)%
Travel, other expenses	89,512	47,096	42,416	90.1 %
Clinical and contract manufacturing	1,378,776	619,426	759,350	122.6 %
Stock-based compensation	215,948	224,749	(8,801)	(3.9)%
Other	401,323	219,684	181,639	82.7 %
Total	$ 3,119,013	$ 2,362,752	$ 756,261	32.0 %

Research and development expense increased $756,261 from $2,362,752 in the six months ended June 30, 2018 to $3,119,013 for the six months ended June 30, 2019 due primarily to:

- Clinical and contract manufacturing expense increased $759,350 from $619,426 in the six months ended June 30, 2018 to $1,378,776 in the same period in 2019 primarily due to an increase in contract manufacturing costs for enhanced manufacturing process improvements the Company is developing to reduce the cost of revenue.

- Personnel and related benefits decreased $174,369 from $1,145,473 in the six months ended June 30, 2018 to $971,104 in the same period in 2019 due to changes in headcount and related salaries.

- Other expenses, consisting primarily of consulting, formulation and regulatory fees, increased $182,448 from $218,875 in the six months ended June 30, 2018 to $401,323 in the same period in 2019. Consulting expenses increased due to an increase in clinical trial consultants consistent with the temporary termination of clinical trials and an increase in R&D testing consultant work, net of an increase in Napo consulting expense. Formulation expenses were relatively constant in the comparative periods. Regulatory expenses decreased due to the Company receiving a waiver of fee payment from the FDA. Formulation expenses were relatively constant in the comparative periods.

Sales and Marketing Expense

Comparison of the Six Months ended June 30, 2019 and 2018

	Six Months Ended June 30,			
	2019	2018	Variance	Variance %
S&M:				
Personnel and related benefits	$2,511,891	$1,684,098	$ 827,793	49.2 %
Stock-based compensation	46,093	20,552	25,541	124.3 %
Direct Marketing Fees	939,454	2,201,051	(1,261,597)	(57.3)%
Other	240,757	496,751	(255,994)	(51.5)%
Total	$3,738,195	$4,402,452	$ (664,257)	(15.1)%

Sales and marketing expense decreased $664,257 from $4,402,452 in the six months ended June 30, 2018 to $3,738,195 in the same period in 2019 due primarily to:

- Direct marketing and sales expense decreased $1,261,597 from $2,201,051 in the six months ended June 30 31, 2018 to $939,454 for the same period in 2019 due to a decrease in marketing programs for Mytesi.

- Personnel and related benefits increased $827,793 from $1,684,098 in the six months ended June 30, 2018 to $2,511,891 in the same period in 2019 due to the expansion of our sales and marketing headcount in support of Mytesi. The increased sales representatives for the six months ended 2019 and the 'boots on ground' strategy was implemented to enhance the face-to-face presence with designated high decile prescribers; and at the same time supplementing efforts with marketing, medical education, and sales promotion.

- Other expenses decreased $255,994 from $496,751 in the six months ended June 30, 2018 to $240,757 in the same period in 2019 largely due to reduction in advertising costs of $474,214.

General and Administrative Expense

Comparison of the Six Months ended June 30, 2019 and 2018

	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018	Variance	Variance %
G&A:				
Personnel and related benefits	$ 897,989	$ 878,758	$ 19,231	2.2 %
Accounting fees	361,384	355,386	5,998	1.7 %
Third-party consulting fees	1,263,846	837,113	426,733	51.0 %
Legal fees	1,114,186	1,386,192	(272,006)	(19.6)%
Travel	99,481	153,132	(53,651)	(35.0)%
Stock-based compensation	610,835	491,396	119,439	24.3 %
Rent and lease expense	418,181	198,757	219,424	110.4 %
Public company expenses	430,300	386,431	43,869	11.4 %
Other	1,514,073	1,370,983	143,090	10.4 %
Total	$6,710,275	$6,058,148	$ 652,127	10.8 %

General and administrative expenses increased $652,127 from $6,058,148 in the six months ended June 30, 2018 to $6,710,275 for the same period in 2019 primarily due to increases in legal fees, rent expense and stock-based compensation expense:

- Other general and administrative expenses increased $143,090 from $1,370,983 in six months ended June 30, 2018 to $1,514,073 in the same period in 2019 largely due to $26,843 of Delaware state taxes, increased business insurance premiums of $55,327 for property and casualty, and $80,975 of directors and officers liability insurance (D&O).

- Consulting fees increased $426,733 from $837,113 in the six months ended June 30, 2018 to $1,263,846 in the same period in 2019. This was to supplement the technical accounting and Finance Planning and Analysis needs of the current staff. Human Resource and Information Technology consulting services have also been in place in lieu of a regular employees.

- Stock-based compensation expense increased $119,439 from $491,396 in the six months ended June 30, 2018 to $610,835 in the same period in 2019 due to an increase in the volume of option grants to new and existing employees.

- Legal fees decreased $272,006 from $1,386,192 in the six months ended June 30, 2018 to $1,114,186 in the same period in 2019. Except for capitalized legal costs related to financing, other corporate transactions requiring legal support declined.

- Accounting fees increased slightly by $5,998 from $355,386 in the six months ended June 30, 2018 to $361,384 in the same period in 2019.

- Rent and lease expense increased $219,424 from $198,757 in the six months ended June 30, 2018 to $418,181 in the same period in 2019 primarily due to contractual increases in rent on the Company’s office facilities and the additional increase in rent expense beginning in March 2019 due to the cost of the LOC warrant.

In the near term, we expect general and administrative expense to remain the same as we focus on other areas of operations. This will include growing the business without adding headcount or increasing facilities.

Impairment of Indefinite-lived Intangible Assets

Acquired in-process research and development ("IPR&D") are intangible assets initially recognized at fair value and classified as indefinite-lived assets until the successful completion or abandonment of the associated research and development efforts. During the development period, these assets will not be amortized as charges to earnings; instead these assets will be tested for impairment on an annual basis or more frequently if impairment indicators are identified. We recorded an impairment of $4,000,000 in the six months ended June 30, 2019. There were no impairment charges recorded in the six months ended June 30, 2018. The impairment loss is measured based on the excess of the carrying amount over the asset's fair value.

Comparison of the three months ended June 30, 2019 and 2018

The following table summarizes the Company's results of operations with respect to the items set forth in such table for the three months ended June 30, 2019 and 2018 together with the change in such items in dollars and as a percentage:

	Three Months Ended June 30,			
	2019	**2018**	**Variance**	**Variance %**
Product revenue	$ 1,705,694	$ 883,846	$ 821,848	93.0 %
Collaboration revenue	—	—	—	— %
Total revenue	1,705,694	883,846	821,848	93.0 %
Operating Expenses				
Cost of product revenue	1,260,362	608,024	652,338	107.3 %
Research and development expense	1,697,653	1,604,886	92,767	5.8 %
Sales and marketing expense	2,173,071	2,690,262	(517,191)	(19.2)%
General and administrative expense	3,196,861	3,059,748	137,113	4.5 %
Impairment of indefinite-lived intangible assets	4,000,000	—	4,000,000	100.0 %
Total operating expenses	12,327,947	7,962,920	4,365,027	54.8 %
Loss from operations	(10,622,253)	(7,079,074)	(3,543,179)	50.1 %
Interest expense, net	(3,656,978)	(711,802)	(2,945,176)	413.8 %
Other income (expense), net	14,224	15,204	(980)	(6.4)
Change in fair value of warrant, derivative liability and conversion option liability	207,088	118,489	88,599	74.8 %
Loss on extinguishment of debt	(2,663,198)	—	(2,663,198)	(100.0)
Net loss	(16,721,117)	(7,657,183)	(9,063,934)	118.4 %
Deemed dividend attributable to preferred stock	—	(995,000)	995,000	(100.0)
Net income (loss) attributable to common shareholders	$ (16,721,117)	$ (8,652,183)	(8,068,934)	93.3 %

Revenue

Sales and allowances

Due to the Company's arrangements, including elements of variable consideration, gross product sales are reduced in order to reflect the expected consideration to arrive at net product sales. Deductions to reduce gross product sales to net product sales in the three months ended June 30, 2019 and 2018 were as follows:

	Three Months Ended June 30,			
	2019	**2018**	**Variance**	**Variance %**
Gross product sales				
Mytesi	$ 2,350,058	$ 1,163,187	$ 1,186,871	102.0 %
Neonorm	20,962	29,676	(8,714)	(29.4)%
Total gross product sales	2,371,020	1,192,863	1,178,157	98.8 %
Medicare rebates	(153,307)	(121,203)	(32,104)	26.5 %

Sales discounts - Mytesi	(389,402)	(90,841)	(298,561)	328.7 %
Sales returns - Mytesi	(25,789)	(15,629)	(10,160)	65.0 %
Wholesaler fee - Mytesi	(96,828)	(81,344)	(15,484)	19.0 %
Net product sales	$ 1,705,694	$ 883,846	$ 821,848	93.0 %

Product revenue

Our gross product revenues were $2,371,020 and $1,192,863 for the three months ended June 30, 2019 and 2018, respectively. These periods reflect revenue from the sale of our human drug Mytesi and our animal products branded as Neonorm Calf and Neonorm Foal.

Human

Sales of Mytesi are recognized as revenue when the products are delivered to the wholesalers. Our gross revenues from the sale of Mytesi were $2,350,058 and $1,163,187 in the three months ended June 30, 2019 and 2018, respectively. The increase in sales of Mytesi is due to the more streamlined distribution channel and increased sales presence.

Sales discounts were $389,402 and $90,841 for the three months ended June 30, 2019 and 2018, respectively, an increase of $298,561. Sales discounts include discounts for prompt payments from customers and an estimated allowance for chargebacks on sales. The increase in allowance is mostly due to the transition in distributors during 2019.

Animal

We recognized Neonorm gross revenues of $20,962 and $29,676 for the three months ended June 30, 2019 and 2018, respectively. Focus on sales and marketing for Neonorm products had decreased during 2019.

Collaboration Revenue

Collaboration revenue is derived from our January 2017 licensing, development, co-promotion and commercialization agreement with Elanco US Inc. to license, develop and commercialize Canalevia. Elanco terminated the arrangement in January 2018 and all remaining deferred revenue was recognized at that time. We did not recognize collaboration revenues for the three months ended June 30, 2019 and 2018, respectively.

Cost of Product Revenue

Comparison of the Three Months ended June 30, 2019 and 2018

	Three Months Ended June 30,			
	2019	**2018**	**Variance**	**Variance %**
Cost of Product Revenue				
Material cost	$ 537,365	$ 246,884	$ 290,481	117.7 %
Direct labor	173,458	114,688	58,770	51.2 %
Distribution fees	65,529	94,168	(28,639)	(30.4)%
Royalties	48,491	31,727	16,764	52.8 %
Other	435,519	120,557	314,962	261.3 %
Total	$ 1,260,362	$ 608,024	$ 652,338	107.3 %

Cost of product revenue increased $652,338 from $608,024 in the three months ended June 30, 2018 to $1,260,362 for the same period in 2019. The increase in cost of product revenue quarter over quarter was due to increased sales of Mytesi, and other expenses which included the write-off of non-conforming inventory and the costs of equipment maintenance.

Research and Development Expense

Comparison of the Three Months ended June 30, 2019 and 2018

	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Variance	Variance %
R&D:				
Personnel and related benefits	$ 417,104	$ 559,340	$ (142,236)	(25.4)%
Materials expense and tree planting	34,885	44,315	(9,430)	(21.3)%
Travel, other expenses	71,568	26,602	44,966	169.0 %
Clinical and contract manufacturing	778,173	593,956	184,217	31.0 %
Stock-based compensation	148,844	145,035	3,809	2.6 %
Other	247,079	235,638	11,441	4.9 %
Total	$ 1,697,653	$ 1,604,886	$ 92,767	5.8 %

Research and development expense increased $92,767 from $1,604,886 in the three months ended June 30, 2019 to $1,697,653 for the same period in 2019 largely due to:

- Clinical and contract manufacturing expense increased $184,217 from $593,956 in the three months ended June 30, 2018 to $778,173 in the same period in 2019 primarily due to an increase in contract manufacturing costs for enhanced manufacturing process improvements the Company is developing to reduce the cost of revenue.

- Personnel and related benefits decreased $142,236 from $559,340 in the three months ended June 30, 2018 to $417,104 in the same period in 2019 due to changes in headcount and related salaries.

- Other expenses, consisting primarily of consulting, formulation and regulatory fees, increased $11,441 from $235,638 in the three months ended June 30, 2018 to $247,079 in the same period in 2019. Consulting expenses increased due to an increase in clinical trial consultants consistent with the temporary termination of clinical trials and an increase in R&D testing consultant work, net of an increase in Napo consulting expense. Formulation expenses were relatively constant in the comparative periods. Regulatory expenses decreased due to the Company receiving a waiver of fee payment from the FDA. Formulation expenses were relatively constant in the comparative periods.

Sales and Marketing Expense

Comparison of the Three Months ended June 30, 2019 and 2018

	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Variance	Variance %
S&M:				
Personnel and related benefits	$1,470,493	$1,052,234	$ 418,259	39.7 %
Stock-based compensation	12,251	18,167	(5,916)	(32.6)%
Direct marketing fees and expense	574,781	1,168,973	(594,192)	(50.8)%
Other	115,546	450,888	(335,342)	(74.4)%
Total	$2,173,071	$2,690,262	$(517,191)	(19.2)%

Sales and marketing expense decreased $517,191 from $2,690,262 in the three months ended June 30, 2018 to $2,173,071 in the same period in 2019 largely due to a decrease in marketing programs and advertising costs for Mytesi.

- Direct marketing and sales expense decreased $594,192 from $1,168,973 in the three months ended June 30, 2018 to $574,781 for the same period in 2019 due to a decrease in marketing programs for Mytesi.

- Personnel and related benefits increased $418,259 from $1,052,234 in the three months ended June 30, 2018 to $1,470,493 in the same period in 2019 due to the expansion of our sales and marketing headcount in support of Mytesi. The increased sales representatives for the three months ended 2019 and the 'boots on ground' strategy was implemented to enhance the face-to-face presence with designated high decile prescribers; and at the same time supplementing efforts with marketing, medical education, and sales promotion.

- Other expenses decreased $335,342 from $450,888 in the three months ended June 30, 2018 to $115,546 in the same period in 2019 largely due to a decrease of $378,674 in speaker fees.

General and Administrative Expense

Comparison of the Three Months ended June 30, 2019 and 2018

	Three Months Ended June 30,			
	2019	2018	Variance	Variance %
G&A:				
Personnel and related benefits	$ 449,546	$ 472,715	$ (23,169)	(4.9)%
Accounting fees	91,411	105,780	(14,369)	(13.6)%
Third-party consulting fees	692,875	439,296	253,579	57.7 %
Legal fees	355,455	656,622	(301,167)	(45.9)%
Travel	45,919	78,879	(32,960)	(41.8)%
Stock-based compensation	285,273	301,252	(15,979)	(5.3)%
Rent and lease expense	229,989	97,928	132,061	134.9 %
Public company expenses	243,008	188,903	54,105	28.6 %
Other	803,385	718,373	85,012	11.8 %
Total	$3,196,861	$3,059,748	$ 137,113	4.5 %

General and administrative expenses increased $137,113 from $3,059,748 in the three months ended June 30, 2018 to $3,196,861 for the same period in 2019,

- Other general and administrative expenses increased $85,012 from $718,373 in three months ended June 30, 2018 to $803,385 in the same period in 2019 largely due to $13,317 of Delaware state taxes, increased $36,662 of business insurance premiums for property and casualty, and $67,576 of D&O liability insurance.

- Consulting fees increased $253,579 from $439,296 in the three months ended June 30, 2018 to $692,875 in the same period in 2019. This was to supplement the technical accounting and Finance Planning and Analysis needs of the current staff. Human Resource and Information Technology consulting services have also been in place in lieu of regular employees.

- Legal fees decreased $301,167 from $656,622 in the three months ended June 30, 2018 to $355,455 in the same period in 2019. Except for capitalized legal costs related to financing, other corporate transactions requiring legal support declined.

- Accounting fees decreased slightly by $14,369 from $105,780 in the three months ended June 30, 2018 to $91,411 in the same period in 2019.

- Rent and lease expense increased $219,424 from $198,757 in the six months ended June 30, 2018 to $418,181 in the same period in 2019 primarily due to contractual increases in rent on the Company’s office facilities and the additional increase in rent expense beginning in March 2019 due to the cost of the LOC warrant.

In the near term, we expect general and administrative expense to remain the same as we consolidate sales territories and simultaneously focus on our pipeline development. This will include growing the business without adding headcount or increasing facilities.

Impairment of Indefinite-lived Intangible Assets

Acquired in-process research and development ("IPR&D") are intangible assets initially recognized at fair value and classified as indefinite-lived assets until the successful completion or abandonment of the associated research and development efforts. During the development period, these assets will not be amortized as charges to earnings; instead these assets will be tested for impairment on an annual basis or more frequently if impairment indicators are identified. We recorded an impairment of $4,000,000 in the three months ended June 30, 2019. There were no impairment charges recorded in the three months ended June 30, 2018. The impairment loss is measured based on the excess of the carrying amount over the asset's fair value.

Liquidity and Capital Resources

Sources of Liquidity

We have incurred net losses since our inception. For the three months ended June 30, 2019 and 2018, we had net losses of $16.7 million and $7.7 million, respectively, and for the six months ended June 30, 2019 and 2018, we had net losses of $25.0 million and $13.4 million, respectively. We expect to incur additional losses in the near-term future. At June 30, 2019 we had an accumulated deficit of $119.6 million. To date, we have generated only limited revenue, and we may never achieve revenue sufficient to offset our expenses.

We had cash of $1.6 million as of June 30, 2019. We do not believe our current capital, supplemented by our recent financing of $14.3 million net proceeds, is sufficient to fund our operating plan through one year from August 14, 2019. Our independent registered public accounting firm has included an explanatory paragraph in its audit report included in our Annual Report on Form 10-K for the year ended December 31, 2018 regarding our assessment of substantial doubt about our ability to continue as a going concern. Our condensed consolidated financial statements do not include any adjustments that may result from the outcome of this uncertainty.

We have funded our operations primarily through the issuance of equity and debt financing, in addition to sales of our commercial products. Our funding activities in the six months ended June 30, 2019 were as follows:

- Between January and April 2019, we issued 76,190 shares of its common stock via an equity line of credit with Oasis Capital. A further 114,285 shares of common stock were issued to Oasis Capital via an option to increase this equity line of credit. Total proceeds were $2.5 million.

- Between January and June 2019, we entered into exchange agreements with Chicago Venture Partners L.P., pursuant to which we issued to CVP 395,970 shares of common stock, with a fair value of $8.2 million, in exchange for a reduction of approximately $5.8 million in the principal amount of the CVP Promissory Notes and $2.4 million in accrued interest thereon.

- Since March 2019, we entered into a securities purchase agreement with selected investors, pursuant to which we issued up to $5.1 million in promissory notes (Bridge Notes). On July 19, 2019, $5,050,000 aggregate principal amount of Bridge Notes were issued in offerings and the proceeds from such offerings were paid to Jaguar. As an inducement, we issued 5-year warrants to the bridge note holders to purchase shares of Common Stock in an amount equal to 75% or 125% of the principal amount divided by the exercise price. Refer to Note 13 *Subsequent Events* for further discussion on the underwritten public offering by Jaguar on July 23, 2019.

- In March 2019, we entered into a securities purchase agreement with Oasis Capital, whereby we issued in a registered direct public offering 19,019 shares to Oasis Capital for gross proceeds of approximately $0.3 million.

- In March 2019, we issued 19,752 shares of our common stock in lieu of a cash payment of $0.4 million in interest expense on the Napo convertible notes payable.

- Between May and June 2019, we entered into exchange agreements with Chicago Venture Partners L.P., pursuant to which we issued to CVP 817,863 shares of common stock with a fair value of $5.6 million, in exchange for a reduction of approximately $5.1 million in the principal amount of CVP Exchange Note 1 and $0.4 million in accrued interest thereon.

- On July 19, 2019, the Company announced the pricing of a registered public offering by the Company. On July 23, 2019, we closed an underwritten public offering of units for gross proceeds of $16.56 million, which includes the full exercise of the underwriter's over-allotment option to purchase additional shares and warrants, prior to deducting underwriting discounts and commissions and offering expenses payable by the Company. Proceeds from the offering will be used to fund advancement of the Company’s pipeline and business development activities, repay outstanding debt and for working capital and other general corporate purposes. Refer to Note 13 *Subsequent Events* for discussion about the July 2019 financing activities.

We expect our expenditures will continue to increase as we continue our efforts to develop our products and continue development of our pipeline in the near term. We do not believe our current capital, supplemented by our recent financing of $14.3 million net proceeds, is sufficient to fund our operating plan through one year from August 14, 2019. We will need to seek additional funds through public or private equity or debt financings or other sources, such as strategic collaborations. Such financing may result in dilution to stockholders, imposition of debt covenants and repayment obligations or other restrictions that may affect our business. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. We may also not be successful in entering into partnerships that include payment of upfront licensing fees for our products and product candidates for markets outside the United States, where appropriate. If we do not generate upfront fees from any anticipated arrangements, it would have a negative effect on our operating plan. We plan to finance our operations and capital funding needs through equity and/or debt financing as well as revenue from future product sales. However, there can be no assurance that additional funding will be available to us on acceptable terms on a timely basis, if at all, or that we will generate sufficient cash from operations to adequately fund operating needs or ultimately achieve profitability. If we are unable to obtain an adequate level of financing needed for the long-term development and commercialization of our products, we will need to curtail planned activities and reduce costs. Doing so will likely have an adverse effect on our ability to execute on our business plan. These matters raise substantial doubt about the ability of the Company to continue in existence as a going concern within one year after issuance date of the condensed consolidated financial statements.

Cash Flows for the Six Months Ended June 30, 2019 Compared to the Six Months Ended June 30, 2018

The following table shows a summary of cash flows for the six months ended June 30, 2019 and 2018:

	June 30, 2019	June 30, 2018
Total cash used in operating activities	$ (8,771,217)	$ (15,018,513)
Total cash used in investing activities	(6,508)	(6,527)
Total cash provided by financing activities	7,816,161	16,676,646
	$ (961,564)	$ 1,651,606

Cash Used in Operating Activities

During the six months ended June 30, 2019, net cash used in operating activities of $8,771,217 resulted from our net loss of $25,024,988 adjusted for an impairment charge of $4,000,000 associated with our indefinite-lived intangible assets, a reduction in the fair value of warrant liabilities of $161,031, debt discounts and debt issuance costs of $3,879,353, stock-based compensation of $872,876, depreciation and amortization expenses of $873,142, amortization of operating lease right-of-use assets of $132,532, loss on the extinguishment of debt of $4,605,158 and of changes in operating assets and liabilities of $2,051,741.

During the six months ended June 30, 2018, cash used in operating activities of $15,018,513 resulted from our net loss of $13,353,820, adjusted by non-cash accretion of end of term payment, debt discounts and debt issuance costs of $817,927, stock-based compensation of $736,697, reduction in the fair value of warrants, conversion option and derivative liability of $141,230, common stock issued in exchange for services rendered of $6,425, depreciation and amortization expenses of $659,230, interest paid on the conversion of debt to equity of $59,737, net of changes in operating assets and liabilities of $3,800,479.

Cash Used in Investing Activities

During the six months ended June 30, 2019 and 2018, cash used in investing activities of $6,508 and $6,527, respectively, consisted of cash used to purchase property and equipment.

Cash Provided by Financing Activities

During the six months ended June 30, 2019, net cash provided by financing activities of $7,816,161 consisted of $5,050,000 in proceeds from the issuance of short-term Bridge Notes and $2,869,161 in net proceeds received from the issuance of common stock, offset by $100,000 in repayments of notes payable and $3,000 in payments for deferred offering costs.

During the six months ended June 30, 2018, cash provided by financing activities of $16,676,646 primarily consisted of $1,305,774 and $750,100 received in separate PIPE (“Private Investment in Public Entity”) financings, $14.0 million in net proceeds from the Sagard financing, including $5,000,000 in net proceeds received from the issuance of common stock and $9,000,002 in net proceeds received from the issuance of convertible preferred stock, $2,310,000 received in the issuance of non-convertible debt, offset by $1,689,200 in principal payments of our long-term debt.

JOBS Act

In April 2012, the JOBS Act was enacted. Section 107 of the JOBS Act provides that an emerging growth company can take advantage of an extended transition period 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 public companies.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Not applicable.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

Our management, Chief Executive Officer and Principal Financial and Accounting Officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2019. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed 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.

Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our Chief Executive Officer and Principal Financial and Accounting Officer, as appropriate, to allow timely decisions regarding required disclosure. Based on this evaluation, our Chief

Executive Officer and Principal Financial and Accounting Officer concluded that our disclosure controls and procedures were not effective at the reasonable assurance level as of June 30, 2019. This conclusion was based on the material weakness in our internal control over financial reporting further described below.

Material Weakness

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim consolidated financial statements will not be prevented or detected and corrected on a timely basis. In connection with our preparation of our annual financial statements for the year ended December 31, 2018, we identified a material weakness in our internal control over financial reporting related to staff turnover in our accounting department. We did not maintain a sufficient complement of internal personnel with appropriate knowledge, experience and/or training commensurate with our financial reporting requirements. We relied on outside consulting technical experts and did not maintain adequate internal qualified personnel to properly supervise and review the information provided by the outside consulting technical experts to ensure certain significant complex transactions and technical matters were properly accounted for, specifically with respect to accurately reflecting all potential accrued services on the balance sheet at December 31, 2018. In addition, we identified inadequate internal technical staffing levels and expertise to properly supervise and review the information of the outside consulting technical experts to properly apply ASC 815-40 for liability classification of certain warrants and ASC 470-50 and ASC 470-60 to properly reflect the accounting impact to multiple modifications of the Company's debt instruments. We have concluded that we must implement new or improved controls in our financial statement close process and policies in reviewing information received from our outside consulting technical experts.

Remediation Efforts to Address Material Weakness

We have prepared a preliminary remediation plan to address the underlying causes of the material weakness described above. The preliminary remediation plan includes:

- Reassessing the design and operation of internal controls over financial reporting, including interim and annual accruals cutoff procedures and review procedures related to information received from our outside consulting technical experts;
- We hired two senior level permanent accounting personnel and trained to further educate the existing staff on the accounting of significant complex transactions and technical accounting matters;
- Continue to reassess the staffing level and implement process improvements to ensure that our remediation plan is successful.

We cannot assure you that the measures we may take in response to this material weakness will be sufficient to remediate such material weakness or to avoid potential future material weaknesses.

Internal Control over Financial Reporting

Based on their evaluation as of the end of the period covered by this Quarterly Report on Form 10-Q, our Chief Executive Officer and Principal Financial and Accounting Officer have concluded that, as of such date, our disclosure controls and procedures were not effective due to the existence of a material weakness in the design of our internal controls over financial reporting relating to staff turnover in our accounting department.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of our annual or interim consolidated financial statements will not be prevented or detected in a timely basis. We plan to enhance existing controls and design and implement new controls applicable to staff, to ensure that our staff is accurately trained to properly understand and review financial transactions. We plan to devote significant time and attention to remediate the above material weakness as soon as reasonably possible. As we continue to evaluate our controls, we will make the necessary changes to improve the overall design and operation of our controls. We believe these actions will be sufficient to remediate the identified material weakness and strengthen our internal control over financial reporting; however, there can be no guarantee that such remediation will be sufficient. We will continue to monitor the effectiveness of our controls and will make any further changes management determines appropriate.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the period covered by this Quarterly Report on Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. — OTHER INFORMATION

Item 1. Legal Proceedings.

On July 20, 2017, a putative class action complaint was filed in the United States District Court, Northern District of California, Civil Action No. 3:17-cv-04102, by Tony Plant (the “Plaintiff”) on behalf of shareholders of the Company who held shares on April 12, 2017 and were entitled to vote at the 2017 Special Shareholders Meeting, against the Company and certain individuals who were directors as of the date of the vote (collectively, the “Defendants”), in a matter captioned Tony Plant v. Jaguar Animal Health, Inc., et al., making claims arising under Section 14(a) and Section 20(a) of the Exchange Act and Rule 14a-9, 17 C.F.R. § 240.14a-9, promulgated thereunder by the SEC. The claims alleged false and misleading information provided to investors in the Joint Proxy Statement/Prospectus on Form S-4 (File No. 333-217364) declared effective by the Commission on July 6, 2017 related to the solicitation of votes from shareholders to approve the merger and certain transactions related thereto. The Company accepted service of the complaint and summons on behalf of itself and the United States-based director Defendants on November 1, 2017. The Company has not accepted service on behalf of, and Plaintiff has not yet served, the non-U.S.-based director Defendants.

On October 3, 2017, Plaintiff filed a motion seeking appointment as lead plaintiff and appointment of Monteverde & Associates PC as lead counsel. That motion was granted. Plaintiff filed an amended complaint against the Company and the United States-based director Defendants on January 10, 2018. The Defendants filed a motion to dismiss on March 12, 2018, for which oral arguments were held on June 14, 2018. The court dismissed the amended complaint on September 20, 2018 but gave Plaintiff leave to amend the complaint within 20 days from the date of dismissal. On October 10, 2018, Plaintiff amended the complaint to focus on the Company’s commercial strategy in support of Equilevia and the related disclosure statements in the Form S-4 described above. On November 6, 2018, the Defendants moved to dismiss the second amended complaint. The Defendants argued in their motion that the second amended complaint fails to state a claim upon which relief can be granted because the omissions and misrepresentations alleged in the complaint are immaterial as a matter of law. The court denied the Defendants’ motion to dismiss on June 28, 2019. The defendants answered the second amended complaint on August 2, 2019. Discovery will now proceed. If the Plaintiff were able to prove his allegations in this matter and to establish the damages he asserts, then an adverse ruling could have a material impact on the Company.

The Company believes that it is not probable that an asset has been impaired or a liability has been incurred as of the date of the financial statements and the amount of any potential loss is not reasonably estimable.

Other than as described above, there are currently no claims or actions pending against us, the ultimate disposition of which could have a material adverse effect on our results of operations, financial condition or cash flows.

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

Other than equity securities issued in transactions disclosed on our Form 8-K/A filed with the SEC on July 12, 2019, there were no unregistered sales of equity securities during the period.

Item 5. Other Information

Departure of Directors or Certain Officer

On August 9, 2019, Karen Wright notified the Company of her intention to resign from her position as Chief Financial Officer and Treasurer effective immediately. On August 13, 2019, the board of directors of the Company appointed Carol R. Lizak, the Company’s Vice President of Finance & Corporate Controller, to serve as the Company’s principal financial and accounting officer effective immediately.

Item 6. Exhibits

Exhibit No.	Description
3.1	Third Amended and Restated Certificate of Incorporation of Jaguar Health, Inc. (f/k/a Jaguar Animal Health, Inc.) (incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K (No. 001-36714) filed on August 1, 2017).
3.2	Certificate of Second Amendment of the Third Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to the Form 8-K of Jaguar Health, Inc. filed June 1, 2018, File No. 001-36714).
3.3	Certificate of Third Amendment of the Third Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.2 to the Form 8-K of Jaguar Health, Inc. filed June 1, 2018, File No. 001-36714).
3.4	Certificate of Designation of Series B Preferred Stock (incorporated by reference to Exhibit 3.1 to the Form 8-K of Jaguar Health, Inc. filed July 23, 2019, File No. 001-36714).
4.1	Specimen Common Stock Certificate of Jaguar Health, Inc. (incorporated by reference to Exhibit 4.1 to the Form 8-K of Jaguar Health, Inc. filed June 1, 2018, File No. 001-36714).
4.2	Secured Promissory Note, dated May 28, 2019, by and among Jaguar Health, Inc., Napo Pharmaceuticals, Inc. and Chicago Venture Partners, L.P. (incorporated by reference to Exhibit 4.1 to the Form 8-K of Jaguar Health, Inc. filed June 3, 2019, File No. 001-36714).
4.3	Secured Promissory Note, dated May 28, 2019, by and among Jaguar Health, Inc., Napo Pharmaceuticals, Inc. and Chicago Venture Partners, L.P. (incorporated by reference to Exhibit 4.2 to the Form 8-K of Jaguar Health, Inc. filed June 3, 2019, File No. 001-36714).
4.4	Form of Series 1 Warrant (incorporated by reference to Exhibit 4.1 to the Form 8-K of Jaguar Health, Inc. filed July 23, 2019, File No. 001-36714).
4.5	Form of Series 2 Warrant (incorporated by reference to Exhibit 4.2 to the Form 8-K/A of Jaguar Health, Inc. filed July 23, 2019, File No. 001-36714).
10.1	Guaranty and Suretyship Agreement, dated May 28, 2019, made by Jaguar Health, Inc. (incorporated by reference to Exhibit 10.1 to the Form 8-K of Jaguar Health, Inc. filed June 3, 2019, File No. 001-36714).
10.2	Exchange Agreement, dated May 28, 2019, by and among Jaguar Health, Inc., Napo Pharmaceuticals, Inc. and Chicago Venture Partners, L.P. (incorporated by reference to Exhibit 10.2 to the Form 8-K of Jaguar Health, Inc. filed June 3, 2019, File No. 001-36714).
10.3	Security Agreement, dated May 28, 2019, between Jaguar Health, Inc. and Chicago Venture Partners, L.P. (incorporated by reference to Exhibit 10.3 to the Form 8-K of Jaguar Health, Inc. filed June 3, 2019, File No. 001-36714).
10.4	Security Agreement, dated May 28, 2019, between Napo Pharmaceuticals, Inc. and Chicago Venture Partners, L.P. (incorporated by reference to Exhibit 10.4 to the Form 8-K of Jaguar Health, Inc. filed June 3, 2019, File No. 001-36714).
10.5	Form of Amendment Agreement (incorporated by reference to Exhibit 10.1 to the Form 8-K of Jaguar Health, Inc. filed July 5, 2019, File No. 001-36714).
10.6*	Form of Exchange Agreement, between Jaguar Health, Inc. and Chicago Venture Partners, L.P.
10.7	Form of Warrant Agency Agreement between Jaguar Health, Inc. and American Stock Transfer & Trust Company, LLC (incorporated by reference to Exhibit 10.117 to the Form S-1/A of Jaguar Health, Inc. filed on July 15, 2019, File No. 333-231399).
10.8	Form of Leak-out Agreement (incorporated by reference to Exhibit 10.118 to the Form S-1/A of Jaguar Health, Inc. filed on July 18, 2019, File No. 333-231399).
31.1*	Principal Executive Officer's Certification Pursuant to Section 302 of the Sarbanes- Oxley Act of 2002.
31.2*	Principal Financial Officer's Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification Pursuant to 18 U.S.C. § 1350 (Section 906 of Sarbanes-Oxley Act of 2002).
32.2**	Certification Pursuant to 18 U.S.C. § 1350 (Section 906 of Sarbanes-Oxley Act of 2002).
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.

** In accordance with Item 601(b)(32)(ii) of Regulation S-K and SEC Release No. 34-47986, the certifications furnished in Exhibits 32.1 and 32.2 hereto are deemed to accompany this Form 10-Q and will not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934 (the “Exchange Act”) or deemed to be incorporated by reference into any filing under the Exchange Act or the Securities Act of 1933 except to the extent that the registrant specifically incorporates it by reference.

SIGNATURE

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.

Date: August 14, 2019

JAGUAR HEALTH, INC.

By: /s/ Carol R. Lizak

Principal Financial and Accounting Officer

THE EXCHANGE CONTEMPLATED HEREIN IS INTENDED TO COMPORT WITH THE REQUIREMENTS OF SECTION 3(a)(9) OF THE SECURITIES ACT OF 1933, AS AMENDED.

EXCHANGE AGREEMENT

This Exchange Agreement (this "**Agreement**") is entered into as of ____________, 2019 by and among Chicago Venture Partners, L.P., a Utah limited partnership ("**Lender**"), Jaguar Health, Inc., a Delaware corporation ("**Jaguar**"), and Napo Pharmaceuticals, Inc. ("**Napo**," and together with Jaguar, "**Borrower**"). Capitalized terms used in this Agreement without definition shall have the meanings given to them in the Original Note (as defined below).

A. Borrower previously sold and issued to Lender that certain Secured Promissory Note dated May 28, 2019 but with an original issuance date of July 31, 2017 in the original principal amount of $10,535,900.42 (the "**Original Note**") pursuant to that certain Exchange Agreement dated May 28, 2019, by and between Lender and Borrower (the "**Prior Exchange Agreement**," and together with the Original Note and all other documents entered into in conjunction therewith, the "**Transaction Documents**").

B. Subject to the terms of this Agreement, Borrower and Lender desire to partition a new Secured Promissory Note in the original principal amount of $____________ (the "**Partitioned Note**") from the Original Note and then cause the outstanding balance of the Original Note to be reduced by an amount equal to the initial outstanding balance of the Partitioned Note.

C. Borrower and Lender further desire to exchange (such exchange is referred to as the "**Note Exchange**") the Partitioned Note for ____________ shares of the Jaguar's Common Stock, par value $0.0001 (the "**Common Stock,**" and such ____________ shares of Common Stock, the "**Exchange Shares**"), at an effective price per Exchange Share equal to $______, according to the terms and conditions of this Agreement.

D. The Note Exchange will consist of Lender surrendering the Partitioned Note in exchange for the Exchange Shares, which will be issued free of any restrictive securities legend.

E. Other than the surrender of the Partitioned Note, no consideration of any kind whatsoever shall be given by Lender to Borrower in connection with this Agreement.

F. Lender and Borrower now desire to exchange the Partitioned Note for the Exchange Shares on the terms and conditions set forth herein.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. Recitals and Definitions. Each of the parties hereto acknowledges and agrees that the recitals set forth above in this Agreement are true and accurate, are contractual in nature, and are hereby incorporated into and made a part of this Agreement.

2. Partition. Effective as of the date hereof, Borrower and Lender agree that the Partitioned Note is hereby partitioned from the Original Note. Following such partition of the

Original Note, Borrower and Lender agree that the Original Note shall remain in full force and effect, provided that the outstanding balance of the Original Note shall be reduced by an amount equal to the initial outstanding balance of the Partitioned Note.

3. Issuance of Shares. Pursuant to the terms and conditions of this Agreement, the Exchange Shares may not be issued under any circumstances if the issuance of the Exchange Shares would cause Lender to beneficially own a number of shares of Common Stock exceeding 9.99% of the number of shares of Common Stock outstanding on the issuance date (the "**Maximum Percentage**"). The Note Exchange shall occur with Lender surrendering the Partitioned Note to Borrower on the Free Trading Date (as defined below). On the Free Trading Date, the Partitioned Note shall be cancelled and all obligations of Borrower under the Partitioned Note shall be deemed fulfilled. Upon receipt of written confirmation from Lender that the issuance of the Exchange Shares (or any portion thereof designated be Lender) will not cause Lender's ownership of the Common Stock to exceed the Maximum Percentage, Borrower shall be obligated to deliver to Lender the number of Exchange Shares requested by Lender within two (2) business days of receipt of the applicable notice. All Exchange Shares delivered hereunder shall be delivered via DWAC to Lender's designated brokerage account. Borrower agrees to provide all necessary cooperation or assistance that may be required to cause all Exchange Shares delivered hereunder to become Free Trading (the first date on which all Exchange Shares become Free Trading, the "**Free Trading Date**"). For purposes hereof, the term "**Free Trading**" means that (a) the Exchange Shares have been cleared and approved for public resale by the compliance departments of Lender's brokerage firm and the clearing firm servicing such brokerage, and (b) such shares are held in the name of the clearing firm servicing Lender's brokerage firm and have been deposited into such clearing firm's account for the benefit of Lender. By written notice to Borrower, Lender may increase, decrease or waive the Maximum Percentage as to itself but any such waiver will not be effective until the 61st day after delivery thereof. The foregoing 61-day notice requirement is enforceable, unconditional and non-waivable and shall apply to all affiliates and assigns of Lender.

4. Closing. The closing of the transaction contemplated hereby (the "**Closing**") along with the delivery of the Exchange Shares to Lender shall occur on the date that is mutually agreed to by Borrower and Lender by means of the exchange by express courier and email of .pdf documents, but shall be deemed to have occurred at the offices of Hansen Black Anderson Ashcraft PLLC in Lehi, Utah.

5. Holding Period, Tacking and Legal Opinion. Borrower represents, warrants and agrees that for the purposes of Rule 144 ("**Rule 144**") of the Securities Act of 1933, as amended (the "**Securities Act**"), the holding period of the Partitioned Note and the Exchange Shares will include the prior noteholder's holding period of the notes that were exchanged for the Original Note and Lender's holding period of the Original Note from July 31, 2017. Borrower agrees not to take a position contrary to this Section 5 in any document, statement, setting, or situation. Borrower agrees to take all action necessary to issue the Exchange Shares without restriction, and not containing any restrictive legend without the need for any action by Lender; provided that the applicable holding period has been met. In furtherance thereof, prior to the Closing, counsel to Lender may, in its sole discretion, provide an opinion that: (a) the Exchange Shares may be resold pursuant to Rule 144 without volume or manner-of-sale restrictions; and (b) the transactions contemplated hereby and all other documents associated with this transaction comport with the

requirements of Section 3(a)(9) of the Securities Act. Borrower represents that it is not subject to Rule 144(i). The Exchange Shares are being issued in substitution of and exchange for and not in satisfaction of the Partitioned Note. The Exchange Shares shall not constitute a novation or satisfaction and accord of the Partitioned Note. Borrower acknowledges and understands that the representations and agreements of Borrower in this Section 5 are a material inducement to Lender's decision to consummate the transactions contemplated herein.

6. Borrower's Representations, Warranties and Agreements. In order to induce Lender to enter into this Agreement, Borrower, for itself, and for its affiliates, successors and assigns, hereby acknowledges, represents, warrants and agrees as follows: (a) Borrower has full power and authority to enter into this Agreement and to incur and perform all obligations and covenants contained herein, all of which have been duly authorized by all proper and necessary action, (b) no consent, approval, filing or registration with or notice to any governmental authority is required as a condition to the validity of this Agreement or the performance of any of the obligations of Borrower hereunder, (c) no Event of Default has occurred under the Original Note and any Events of Default that may have occurred thereunder have not been, and are not hereby, waived by Lender, (d) except as specifically set forth herein, nothing herein shall in any manner release, lessen, modify or otherwise affect Borrower's obligations under the Original Note, (e) the issuance of the Exchange Shares is duly authorized by all necessary corporate action and the Exchange Shares are validly issued, fully paid and non-assessable, free and clear of all taxes, liens, claims, pledges, mortgages, restrictions, obligations, security interests and encumbrances of any kind, nature and description, (f) Borrower has not received any consideration in any form whatsoever for entering into this Agreement, other than the surrender of the Partitioned Note, and (g) Borrower has taken no action which would give rise to any claim by any person for a brokerage commission, placement agent or finder's fee or other similar payment by Borrower related to this Agreement.

7. Lender's Representations, Warranties and Agreements. In order to induce Borrower to enter into this Agreement, Lender, for itself, and for its affiliates, successors and assigns, hereby acknowledges, represents, warrants and agrees as follows: (a) Lender has full power and authority to enter into this Agreement and to incur and perform all obligations and covenants contained herein, all of which have been duly authorized by all proper and necessary action, (b) no consent, approval, filing or registration with or notice to any governmental authority is required as a condition to the validity of this Agreement or the performance of any of the obligations of Lender hereunder, and (c) Lender has taken no action which would give rise to any claim by any person for a brokerage commission, placement agent or finder's fee or other similar payment by Borrower related to this Agreement.

8. Governing Law; Venue. This Agreement shall be construed and enforced in accordance with, and all questions concerning the construction, validity, interpretation and performance of this Agreement shall be governed by, the internal laws of the State of Utah, without giving effect to any choice of law or conflict of law provision or rule (whether of the State of Utah or any other jurisdictions) that would cause the application of the laws of any jurisdictions other than the State of Utah. The provisions set forth in the Prior Exchange Agreement to determine the proper venue for any disputes are incorporated herein by this reference. **BORROWER HEREBY IRREVOCABLY WAIVES ANY RIGHT IT MAY HAVE TO, AND AGREES NOT TO REQUEST, A JURY TRIAL FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN**

CONNECTION WITH OR ARISING OUT OF THIS AGREEMENT OR ANY TRANSACTION CONTEMPLATED HEREBY.

9. Arbitration of Claims. This Agreement shall be subject to the arbitration of claims provisions set forth in Section 9.1 of the Prior Exchange Agreement.

10. Counterparts. This Agreement may be executed in any number of counterparts with the same effect as if all signing parties had signed the same document. All counterparts shall be construed together and constitute the same instrument. The exchange of copies of this Agreement and of signature pages by facsimile transmission or other electronic transmission (including email) shall constitute effective execution and delivery of this Agreement as to the parties and may be used in lieu of the original Agreement for all purposes. Signatures of the parties transmitted by facsimile transmission or other electronic transmission (including email) shall be deemed to be their original signatures for all purposes.

11. Attorneys' Fees. In the event of any arbitration or action at law or in equity to enforce or interpret the terms of this Agreement, the parties agree that the party who is awarded the most money shall be deemed the prevailing party for all purposes and shall therefore be entitled to an additional award of the full amount of the attorneys' fees and expenses paid by such prevailing party in connection with the arbitration, litigation and/or dispute without reduction or apportionment based upon the individual claims or defenses giving rise to the fees and expenses. Nothing herein shall restrict or impair an arbitrator's or a court's power to award fees and expenses for frivolous or bad faith pleading.

12. No Reliance. Borrower acknowledges and agrees that neither Lender nor any of its officers, directors, members, managers, equity holders, representatives or agents has made any representations or warranties to Borrower or any of its agents, representatives, officers, directors, or employees except as expressly set forth in this Agreement and the Transaction Documents and, in making its decision to enter into the transactions contemplated by this Agreement, Borrower is not relying on any representation, warranty, covenant or promise of Lender or its officers, directors, members, managers, equity holders, agents or representatives other than as set forth in this Agreement.

13. Severability. If any part of this Agreement is construed to be in violation of any law, such part shall be modified to achieve the objective of the parties to the fullest extent permitted and the balance of this Agreement shall remain in full force and effect.

14. Entire Agreement. This Agreement, together with the Transaction Documents, and all other documents referred to herein, supersedes all other prior oral or written agreements between Borrower, Lender, its affiliates and persons acting on its behalf with respect to the matters discussed herein, and this Agreement and the instruments referenced herein contain the entire understanding of the parties with respect to the matters covered herein and therein and, except as specifically set forth herein or therein, neither Lender nor Borrower makes any representation, warranty, covenant or undertaking with respect to such matters.

15. Amendments. This Agreement may be amended, modified, or supplemented only by written agreement of the parties. No provision of this Agreement may be waived except in writing signed by the party against whom such waiver is sought to be enforced.

16. Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their respective successors and assigns. This Agreement or any of the severable rights and obligations inuring to the benefit of or to be performed by Lender hereunder may be assigned by Lender to a third party, including its financing sources, in whole or in part. Borrower may not assign this Agreement or any of its obligations herein without the prior written consent of Lender.

17. Continuing Enforceability; Conflict Between Documents. Except as otherwise modified by this Agreement, the Original Note and each of the other Transaction Documents shall remain in full force and effect, enforceable in accordance with all of its original terms and provisions. This Agreement shall not be effective or binding unless and until it is fully executed and delivered by Lender and Borrower. If there is any conflict between the terms of this Agreement, on the one hand, and the Original Note or any other Transaction Document, on the other hand, the terms of this Agreement shall prevail.

18. Time of Essence. Time is of the essence with respect to each and every provision of this Agreement.

19. Notices. Unless otherwise specifically provided for herein, all notices, demands or requests required or permitted under this Agreement to be given to Borrower or Lender shall be given as set forth in the “Notices” section of the Prior Exchange Agreement.

20. Further Assurances. Each party shall do and perform or cause to be done and performed, all such further acts and things, and shall execute and deliver all such other agreements, certificates, instruments and documents, as the other party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the date first set forth above.

BORROWER:

JAGUAR HEALTH, INC.

By: ____________________
Name: ____________________
Title: ____________________

NAPO PHARMACEUTICALS, INC.

By: ____________________
Name: ____________________
Title: ____________________

LENDER:

CHICAGO VENTURE PARTNERS, L.P.

By: Chicago Venture Management, L.L.C.,
its General Partner

By: CVM, Inc., its Manager

By: ____________________
John M. Fife, President

[Signature Page to Exchange Agreement]

Exhibit 31.1

PRINCIPAL EXECUTIVE OFFICER'S CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Lisa A. Conte, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Jaguar Health, Inc. for the quarter ended June 30, 2019;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(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 14, 2019

/s/ Lisa A. Conte
Lisa A. Conte
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

PRINCIPAL FINANCIAL OFFICER'S CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Carol Lizak, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Jaguar Health, Inc. for the quarter ended June 30, 2019;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(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 14, 2019

/s/ Carol Lizak
Carol Lizak
Principal Financial and Accounting Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Jaguar Health, Inc. (the "Company") on Form 10-Q for the quarter ended June 30, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer's knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 14, 2019

/s/ Lisa A. Conte
Lisa A. Conte
President and Chief Executive Officer
(Principal Executive Officer)

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Jaguar Health, Inc. (the “Company”) on Form 10-Q for the quarter ended June 30, 2019, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer’s knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 14, 2019

/s/ Carol Lizak
Carol Lizak
Principal Financial and Accounting Officer