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

FORM 10-Q

(Mark one)

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

For the quarterly period ended September 30, 2020

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 001-37367

OPGEN, INC.

(Exact name of registrant as specified in its charter)

Delaware	**06-1614015**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. employer identification no.)**
708 Quince Orchard Road, Suite 205, Gaithersburg, MD	**20878**
(Address of principal executive offices)	**(Zip code)**

Registrant's telephone number, including area code: (240) 813-1260

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, a smaller reporting company, or an emerging growth company. See 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 or to be registered pursuant to Section 12(b) of the Act.

Title of each class	Trading Symbols	Name of each exchange on which registered
Common Stock	OPGN	Nasdaq Capital Market

20,155,039 shares of the Company's common stock, par value $0.01 per share, were outstanding as of November 12, 2020.

OPGEN, INC.

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INFORMATION REGARDING FORWARD-LOOKING STATEMENTS

This quarterly report on Form 10-Q of OpGen, Inc. contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). In this quarterly report, we refer to OpGen, Inc. as the "Company," "we," "our" or "us." All statements other than statements of historical facts contained herein, including statements regarding our future results of operations and financial position, strategy and plans, and our expectations for future operations, are forward-looking statements. The words "believe," "may," "will," "estimate," "continue," "anticipate," "design," "intend," "expect" or the negative version of these words and similar expressions are intended to identify forward-looking statements.

We have based these forward-looking statements on our current expectations and projections about future events and trends that we believe may affect our financial condition, results of operations, strategy, short- and long-term business operations and objectives, and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in Part II Item 1A "Risk Factors." In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances included herein may not occur, and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- our ability to integrate the OpGen, Curetis, and Ares Genetics businesses;
- our liquidity and working capital requirements, including our cash requirements over the next 12 months;
- our ability to maintain compliance with the ongoing listing requirements for the Nasdaq Capital Market;
- receipt of regulatory clearance of our submitted 510(k) pre-market submission for our Acuitas AMR Gene Panel test for use with bacterial isolates;
- the impact of the coronavirus pandemic on our business and operations;
- the completion of our development efforts for our Acuitas Lighthouse Software, Unyvero UTI and IJI panels, Unyvero A30 *RQ* platform and ARESdb and the timing of regulatory submissions;
- our ability to sustain or grow our customer base for our Unyvero IVD products as well as our current research use only products;
- regulations and changes in laws or regulations applicable to our business, including regulation by the FDA;
- anticipated trends and challenges in our business and the competition that we face;
- the execution of our business plan and our growth strategy;
- our expectations regarding the size of and growth in potential markets;
- our opportunity to successfully enter into new collaborative or strategic agreements;
- compliance with the U.S. and international regulations applicable to our business; and
- our expectations regarding future revenue and expenses;

Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, level of activity, performance or achievements. In addition, neither we nor any other person assumes responsibility for the accuracy and completeness of any of these forward-looking statements. These risks should not be construed as exhaustive and should be read in conjunction with our other disclosures, including but not limited to the risk factors described in Part II, Item 1A of this quarterly report. Other risks may be described from time to time in our filings made under the securities laws. New risks emerge from time to time. It is not possible for our management to predict all risks. All forward-looking statements in this quarterly report speak only as of the date made and are based on our current beliefs and expectations. We undertake no obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

NOTE REGARDING TRADEMARKS

We own various U.S. federal trademark registrations and applications and unregistered trademarks and servicemarks, including but not limited to OpGen®, Curetis®, Unyvero®, ARES® and ARES GENETICS®, Acuitas®, Acuitas Lighthouse®, AdvanDx®, QuickFISH®, and PNA FISH®. All other trademarks, servicemarks or trade names referred to in this quarterly report are the property of their respective owners. Solely for convenience, the trademarks and trade names in this quarterly report are sometimes referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend the use or display of other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies, products or services.

Part I. FINANCIAL INFORMATION

Item 1. Unaudited Condensed Consolidated Financial Statements

OpGen, Inc. and Subsidiaries
Condensed Consolidated Balance Sheets
(unaudited)

	September 30, 2020	December 31, 2019
Assets		
Current assets		
Cash and cash equivalents	$ 10,488,072	$ 2,708,223
Accounts receivable, net	423,432	567,811
Inventory, net	2,975,060	473,030
Note receivable	—	2,521,479
Prepaid expenses and other current assets	1,072,364	396,760
Total current assets	**14,958,928**	**6,667,303**
Property and equipment, net	3,370,847	130,759
Finance lease right-of-use assets, net	571,329	958,590
Operating lease right-of-use assets	1,373,418	1,043,537
Goodwill	8,057,894	600,814
Intangible assets, net	16,071,680	817,550
Other noncurrent assets	300,744	203,271
Total assets	**$ 44,704,840**	**$ 10,421,824**
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 1,240,351	$ 1,056,035
Accrued compensation and benefits	2,003,002	855,994
Accrued liabilities	2,664,581	1,046,661
Deferred revenue	51,622	9,808
Current maturities of long-term debt	1,156,517	373,599
Short-term finance lease liabilities	348,000	579,030
Short-term operating lease liabilities	1,142,435	1,017,414
Total current liabilities	**8,606,508**	**4,938,541**
Long-term debt, net	18,159,433	329,456
Long-term finance lease liabilities	76,701	313,263
Long-term operating lease liabilities	554,295	547,225
Derivative liabilities	74,239	—
Other long-term liabilities	154,716	—
Total liabilities	**27,625,892**	**6,128,485**
Commitments and contingencies (Note 9)		
Stockholders' equity		
Preferred stock, $0.01 par value; 10,000,000 shares authorized; none issued and outstanding at September 30, 2020 and December 31, 2019, respectively	—	—
Common stock, $0.01 par value; 50,000,000 shares authorized; 19,799,348 and 5,582,280 shares issued and outstanding at September 30, 2020 and December 31, 2019, respectively	197,993	55,823
Additional paid-in capital	208,892,463	178,779,814
Accumulated deficit	(193,625,510)	(174,524,983)
Accumulated other comprehensive income (loss)	1,614,002	(17,315)
Total stockholders' equity	**17,078,948**	**4,293,339**
Total liabilities and stockholders' equity	**$ 44,704,840**	**$ 10,421,824**

See accompanying notes to unaudited condensed consolidated financial statements.

OpGen, Inc. and Subsidiaries
Condensed Consolidated Statements of Operations and Comprehensive Loss
(unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2020	2019	2020	2019
Revenue				
Product sales	$ 601,562	$ 573,035	$ 1,569,799	$ 1,597,505
Laboratory services	112,892	185	138,884	5,435
Collaboration revenue	342,311	75,000	1,153,400	1,075,000
Total revenue	**1,056,765**	**648,220**	**2,862,083**	**2,677,940**
Operating expenses				
Cost of products sold	1,350,296	262,373	2,340,766	681,568
Cost of services	159,794	196,184	550,115	592,647
Research and development	2,433,553	1,139,369	6,630,134	4,069,335
General and administrative	2,356,413	1,560,706	6,549,432	4,901,136
Sales and marketing	932,671	376,955	2,258,980	1,142,755
Transaction costs	—	538,061	470,322	538,061
Impairment of right-of-use asset	—	—	—	520,759
Impairment of intangibles assets	—	—	750,596	—
Total operating expenses	**7,232,727**	**4,073,648**	**19,550,345**	**12,446,261**
Operating loss	**(6,175,962)**	**(3,425,428)**	**(16,688,262)**	**(9,768,321)**
Other income (expense)				
Interest and other income (expense)	19,965	1,043	101,644	(8,213)
Interest expense	(1,183,927)	(49,099)	(2,267,085)	(142,672)
Foreign currency transaction losses	(501,168)	(8,954)	(794,832)	(9,426)
Change in fair value of derivative financial instruments	165,497	—	548,008	67
Total other income (expense)	**(1,499,633)**	**(57,010)**	**(2,412,265)**	**(160,244)**
Loss before income taxes	**(7,675,595)**	**(3,482,438)**	**(19,100,527)**	**(9,928,565)**
Provision for income taxes	—	—	—	—
Net loss	**$ (7,675,595)**	**$ (3,482,438)**	**$ (19,100,527)**	**$ (9,928,565)**
Net loss available to common stockholders	**$ (7,675,595)**	**$ (3,482,438)**	**$ (19,100,527)**	**$ (9,928,565)**
Net loss per common share - basic and diluted	**$ (0.40)**	**$ (3.95)**	**$ (1.36)**	**$ (13.32)**
Weighted average shares outstanding - basic and diluted	19,116,864	882,280	14,016,896	745,471
Net loss	$ (7,675,595)	$ (3,482,438)	$ (19,100,527)	$ (9,928,565)
Other comprehensive income - foreign currency translation	1,266,901	7,298	1,631,319	5,174
Comprehensive loss	**$ (6,408,694)**	**$ (3,475,140)**	**$ (17,469,208)**	**$ (9,923,391)**

See accompanying notes to unaudited condensed consolidated financial statements.

OpGen, Inc. and Subsidiaries
Condensed Consolidated Statements of Stockholders' Equity
(unaudited)

	Common Stock		Preferred Stock					
	Number of Shares	Amount	Number of Shares	Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total
Balances at December 31, 2018	**432,286**	**$ 4,323**	**—**	**$ —**	**$ 165,396,036**	**$ (13,093)**	**$ (162,078,525)**	**$ 3,308,741**
Public offering of common stock and warrants, net of issuance costs	450,000	4,500	—	—	4,778,009	—	—	4,782,509
Stock compensation expense	—	—	—	—	98,033	—	—	98,033
Foreign currency translation	—	—	—	—	—	2,826	—	2,826
Net loss	—	—	—	—	—	—	(3,853,116)	(3,853,116)
Balances at March 31, 2019	**882,286**	**8,823**	**—**	**—**	**170,272,078**	**(10,267)**	**(165,931,641)**	**4,338,993**
Stock compensation expense	—	—	—	—	85,971	—	—	85,971
Foreign currency translation	—	—	—	—	—	(4,950)	—	(4,950)
Net loss	—	—	—	—	—	—	(2,593,011)	(2,593,011)
Balances at June 30, 2019	**882,286**	**8,823**	**—**	**—**	**170,358,049**	**(15,217)**	**(168,524,652)**	**1,827,003**
Stock compensation expense	—	—	—	—	91,167	—	—	91,167
Share cancellation	(18)	—	—	—	—	—	—	—
Foreign currency translation	—	—	—	—	—	7,298	—	7,298
Net loss	—	—	—	—	—	—	(3,482,438)	(3,482,438)
Balances at September 30, 2019	**882,268**	**$ 8,823**	**—**	**$ —**	**$ 170,449,216**	**$ (7,919)**	**$ (172,007,090)**	**$ (1,556,970)**
Balances at December 31, 2019	**5,582,280**	**$ 55,823**	**—**	**$ —**	**$ 178,779,814**	**$ (17,315)**	**$ (174,524,983)**	**$ 4,293,339**
At the market offering, net of offering costs	2,814,934	28,149	—	—	5,449,283	—	—	5,477,432
Common stock warrant exercises	4,071,000	40,710	—	—	8,101,290	—	—	8,142,000
Stock compensation expense	—	—	—	—	79,740	—	—	79,740
Foreign currency translation	—	—	—	—	—	39,477	—	39,477
Net loss	—	—	—	—	—	—	(3,949,294)	(3,949,294)
Balances at March 31, 2020	**12,468,214**	**124,682**	**—**	**—**	**192,410,127**	**22,162**	**(178,474,277)**	**14,082,694**
At the market offering, net of offering costs	2,739,442	27,394	—	—	5,870,807	—	—	5,898,201
Shares issued in business combination	2,028,208	20,282	—		4,827,135	—	—	4,847,417
Value of equity awards assumed in business combination	—	—	—	—	136,912	—	—	136,912
Issuance of RSUs	5,166	52	—	—	(52)	—	—	—
Shares issued to settle convertible notes	452,902	4,529	—	—	875,903	—	—	880,432
Stock compensation expense	—	—	—	—	33,587	—	—	33,587
Foreign currency translation	—	—	—	—	—	324,939	—	324,939
Net loss	—	—	—	—	—	—	(7,475,638)	(7,475,638)
Balances at June 30, 2020	**17,693,932**	**176,939**	**—**	**—**	**204,154,419**	**347,101**	**(185,949,915)**	**18,728,544**
At the market offering, net of offering costs	1,523,663	15,237	—	—	3,591,793	—	—	3,607,030
Common stock warrant exercises	270,000	2,700	—	—	537,300	—	—	540,000
Issuance of RSUs	750	7	—	—	(7)	—	—	—
Shares issued to settle convertible notes	311,003	3,110	—	—	567,255	—	—	570,365
Stock compensation expense	—	—	—	—	41,703	—	—	41,703
Foreign currency translation	—	—	—	—	—	1,266,901	—	1,266,901
Net loss	—	—	—	—	—		(7,675,595)	(7,675,595)
Balances at September 30, 2020	**19,799,348**	**$ 197,993**	**—**	**$ —**	**$ 208,892,463**	**$ 1,614,002**	**$ (193,625,510)**	**$ 17,078,948**

See accompanying notes to unaudited condensed consolidated financial statements.

OpGen, Inc. and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(unaudited)

	Nine months ended September 30,	
	2020	**2019**
Cash flows from operating activities		
Net loss	$ (19,100,527)	$ (9,928,565)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation and amortization	1,622,922	687,107
Noncash interest expense	1,714,543	2,659
Noncash interest income	(87,233)	—
Stock compensation expense	155,030	275,171
Loss on sale of equipment	—	9,904
Change in fair value of derivative liabilities	(548,008)	(67)
Impairment of right-of-use asset	—	520,759
Impairment of intangible assets	750,596	—
Changes in operating assets and liabilities, net of acquisition:		
Accounts receivable	649,079	(5,173)
Inventory	(348,484)	74,449
Other assets	754,484	55,122
Accounts payable	(1,037,810)	314,559
Accrued compensation and other liabilities	(166,753)	(55,871)
Deferred revenue	(816,006)	(6,016)
Net cash used in operating activities	**(16,458,167)**	**(8,055,962)**
Cash flows from investing activities		
Acquisition of business, net of cash acquired of $1,266,849	1,266,849	—
Note receivable	(2,200,000)	—
Purchases of property and equipment	(2,455)	(72,607)
Proceeds from sale of equipment	—	29,250
Net cash used in investing activities	**(935,606)**	**(43,357)**
Cash flows from financing activities		
Proceeds from issuance of common stock, net of issuance costs	14,982,663	4,782,509
Proceeds from the exercise of common stock warrants	8,682,000	—
Proceeds from debt	1,871,308	470,519
Payments on debt	(853,063)	(694,156)
Payments on finance lease obligations	(467,592)	(389,501)
Net cash provided by financing activities	**24,215,316**	**4,169,371**
Effects of exchange rates on cash	1,066,898	4,541
Net increase (decrease) in cash, cash equivalents and restricted cash	7,888,441	(3,925,407)
Cash, cash equivalents and restricted cash at beginning of period	2,893,603	4,737,207
Cash, cash equivalents and restricted cash at end of period	**$ 10,782,044**	**$ 811,800**
Supplemental disclosure of cash flow information		
Cash paid for interest	$ 118,540	$ 170,608
Supplemental disclosures of noncash investing and financing activities:		
Right-of-use assets acquired through finance leases	$ —	$ 528,413
Conversion of accounts payable to finance lease	$ —	$ 63,600
Shares issued in business combination	$ 4,847,417	$ —
Shares issued to settle convertible notes	$ 1,450,797	$ —

See accompanying notes to unaudited condensed consolidated financial statements.

Note 1 – Organization

OpGen, Inc. (“OpGen” or the “Company”) was incorporated in Delaware in 2001. On April 1, 2020, OpGen completed its business combination transaction (the “Transaction”) with Curetis N.V., a public company with limited liability under the laws of the Netherlands (the “Seller” or “Curetis N.V.”), as contemplated by the Implementation Agreement, dated as of September 4, 2019 (the “Implementation Agreement”), by and among the Company, the Seller, and Crystal GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany and wholly-owned subsidiary of the Company (“Purchaser”). Pursuant to the Implementation Agreement, the Purchaser acquired all of the shares of Curetis GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany (“Curetis GmbH”) and certain other assets and liabilities of the Seller (together, “Curetis”) (see Note 4). References in this report to the “Company” include OpGen and its wholly-owned subsidiaries. The Company’s headquarters are in Gaithersburg, Maryland, and its principal operations are in Gaithersburg, Maryland; Holzgerlingen and Bodelshausen, Germany; and Vienna, Austria. The Company operates in one business segment.

OpGen Overview

OpGen is a precision medicine company harnessing the power of molecular diagnostics and informatics to help combat infectious disease. The Company is developing and commercializing molecular microbiology solutions helping to guide clinicians with more rapid and actionable information about life threatening infections to improve patient outcomes, and decrease the spread of infections caused by multidrug-resistant microorganisms, or MDROs. OpGen's current product portfolio includes Unyvero, QuickFISH, PNA FISH, Acuitas AMR Gene Panel and Acuitas Lighthouse, and the ARES Technology Platform including ARESdb, using NGS technology and AI-powered bioinformatics solutions for antibiotic response prediction as well as the Curetis CE IVD marked SARS CoV-2 test kit. On October 13, 2020, the Company announced its decision to exit the FISH business in its entirety by June 30, 2021 and certain licensing agreements with Life Technologies a subsidiary of ThermoFisher havehas therefore been terminated accordingly.as of such date. The Company's FISH customers and distribution partners have been informed accordingly and last orders are expected to be processed in the coming months. This decision does not meet the criteria for reporting discontinued operations as management, having the authority to approve the action, did not commit to a plan until October 1, 2020.

The focus of OpGen is on its combined broad portfolio of products, which include high impact rapid diagnostics and bioinformatics to interpret AMR genetic data. OpGen will continue to develop and seek FDA and other regulatory clearances or approvals, as applicable, for the Acuitas AMR Gene Panel (Isolates) diagnostic test, Unyvero UTI and IJI products. OpGen will continue to offer the Acuitas AMR Gene Panel (Isolates) and Acuitas Lighthouse Software as well as the Unyvero UTI Panel as RUO products to hospitals, public health departments, clinical laboratories, pharmaceutical companies and contract research organizations, or CROs.

Note 2 – Liquidity and management’s plans

The accompanying unaudited condensed consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. Since inception, the Company has incurred, and continues to incur, significant losses from operations. The Company has funded its operations primarily through external investor financing transactions, including the following in 2019 and 2020 to date:

- On February 11, 2020, the Company entered into an At the Market Common Offering (the “ATM Agreement”) with H.C. Wainwright & Co., LLC ("Wainwright"), which we amended and restated on November 13, 2020 to add BTIG, LLC ("BTIG"), pursuant to which the Company may offer and sell from time to time in an "at the market offering," at its option, up to an aggregate of $22.1 million of shares of the Company's common stock through the sales agents, (the “2020 ATM Offering”). During the three months ended September 30, 2020, the Company sold 1,523,663 shares of its common stock under the 2020 ATM Offering resulting in aggregate net proceeds to the Company of approximately $3.6 million, and gross proceeds of $3.8 million. During the nine months ended September 30, 2020, the Company sold 7,078,039 shares of its common stock under the 2020 ATM Offering resulting in aggregate net proceeds to the Company of approximately $15.0 million, and gross proceeds of $15.7 million.
- On October 28, 2019, the Company closed a public offering (the “October 2019 Public Offering”) of 2,590,170 units at $2.00 per unit and 2,109,830 pre-funded units at $1.99 per pre-funded unit, raising gross proceeds of approximately $9.4 million and net proceeds of approximately $8.3 million. Each unit included one share of common stock and one common warrant to purchase one share of common stock at an exercise price of $2.00 per share. Each pre-funded unit included one pre-funded warrant to purchase one share of common stock for an exercise price of $0.01 per share, and one common warrant to purchase one share of common stock at an exercise price of $2.00 per share. The common warrants are exercisable immediately and have a five-year term from the date of issuance. As of September 30, 2020, all 2,109,830 pre-funded warrants issued in the October 2019 Public Offering have been exercised. Additionally, during the nine months ended September 30, 2020, 4,341,000 common warrants issued in the October 2019 Public Offering were exercised for net proceeds of approximately $8.7 million. As of September 30, 2020, 359,000 common warrants issued in the October 2019 Public Offering remain outstanding.
- On March 29, 2019, the Company closed a public offering (the “March 2019 Public Offering”) of 450,000 shares of its common stock at a public offering price of $12.00 per share. The offering raised gross proceeds of $5.4 million and net proceeds of approximately $4.8 million.

To meet our capital needs, the Company is considering multiple alternatives, including, but not limited to, strategic financings or other transactions, additional equity financings, debt financings and other funding transactions, licensing and/or partnering arrangements. There can be no assurance that the Company will be able to complete any such transaction on acceptable terms or otherwise. The Company believes that current cash will be sufficient to fund operations into the first quarter of 2021. This has led management to conclude that substantial doubt about the Company's ability to continue as a going concern exists. In the event the Company is unable to successfully raise additional capital during or before the end of the first quarter of 2021, the Company will not have sufficient cash flows and liquidity to finance its business operations as currently contemplated. Accordingly, in such circumstances, the Company would be compelled to immediately reduce general and administrative expenses and delay research and development projects, including the purchase of scientific equipment and supplies, until we are able to obtain sufficient financing. If sufficient financing is not received on a timely basis, the Company would then need to pursue a plan to license or sell its assets, seek to be acquired by another entity, cease operations and/or seek bankruptcy protection.

Note 3 – Summary of significant accounting policies

Basis of presentation and consolidation

The Company has prepared the accompanying unaudited condensed consolidated financial statements pursuant to the rules and regulations of the Securities and Exchange Commission (the "SEC") and the standards of accounting measurement set forth in the Interim Reporting Topic of the Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC"). Certain information and note disclosures normally included in annual financial statements prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP") have been condensed or omitted, although the Company believes that the disclosures made are adequate to make the information not misleading. The Company recommends that the following unaudited condensed consolidated financial statements be read in conjunction with the audited consolidated financial statements and the notes thereto included in the Company's latest Annual Report on Form 10-K. In the opinion of management, all adjustments that are necessary for a fair presentation of the Company's financial position for the periods presented have been reflected. All adjustments are of a normal, recurring nature, unless otherwise stated. The interim condensed consolidated results of operations are not necessarily indicative of the results that may occur for the full fiscal year. The December 31, 2019 consolidated balance sheet included herein was derived from the audited consolidated financial statements, but does not include all disclosures including notes required by GAAP for complete financial statements.

The accompanying unaudited condensed consolidated financial statements include the accounts of OpGen and its wholly-owned subsidiaries as of September 30, 2020 including Curetis GmbH and subsidiaries acquired on April 1, 2020; all intercompany transactions and balances have been eliminated.

Foreign currency

The Company has subsidiaries located in Holzgerlingen, Germany; Vienna, Austria; Copenhagen, Denmark; and Bogota, Colombia, each of which use currencies other than the U.S dollar as their functional currency. As a result, all assets and liabilities are translated into U.S. dollars based on exchange rates at the end of the reporting period. Income and expense items are translated at the average exchange rates prevailing during the reporting period. Translation adjustments are reported in accumulated other comprehensive income (loss), a component of stockholders' equity. Foreign currency translation adjustments are the sole component of accumulated other comprehensive income (loss) at September 30, 2020 and 2019.

Foreign currency transaction gains and losses, excluding gains and losses on intercompany balances where there is no current intent to settle such amounts in the foreseeable future, are included in the determination of net loss. Unless otherwise noted, all references to "$" or "dollar" refer to the United States dollar.

Use of estimates

In preparing financial statements in conformity with GAAP, management is required to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. In the accompanying unaudited condensed consolidated financial statements, estimates are used for, but not limited to, liquidity assumptions, revenue recognition, stock-based compensation, allowances for doubtful accounts and inventory obsolescence, discount rates used to discount unpaid lease payments to present values, valuation of derivative financial instruments measured at fair value on a recurring basis, deferred tax assets and liabilities and related valuation allowance, determining the fair value of assets acquired and liabilities assumed in business combinations, the estimated useful lives of long-lived assets, and the recoverability of long-lived assets. Actual results could differ from those estimates.

Fair value of financial instruments

Financial instruments classified as current assets and liabilities (including cash and cash equivalents, receivables, accounts payable, deferred revenue and short-term notes) are carried at cost, which approximates fair value, because of the short-term maturities of those instruments.

Cash, cash equivalents and restricted cash

The Company considers all highly liquid instruments with original maturities of three months or less to be cash equivalents. The Company has cash and cash equivalents deposited in financial institutions in which the balances occasionally exceed the Federal Deposit Insurance Corporation (“FDIC”) insured limit of $250,000. The Company has not experienced any losses in such accounts and management believes it is not exposed to any significant credit risk.

At September 30, 2020 and December 31, 2019, the Company had funds totaling $293,972 and $185,380, respectively, which are required as collateral for letters of credit benefiting its landlords and for credit card processors. These funds are reflected in other noncurrent assets on the accompanying unaudited condensed consolidated balance sheets.

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

	September 30, 2020	December 31, 2019	September 30, 2019	December 31, 2018
Cash and cash equivalents	$ 10,488,072	$ 2,708,223	$ 626,420	$ 4,572,487
Restricted cash	293,972	185,380	185,380	164,720
Total cash, cash equivalents and restricted cash in the condensed consolidated statements of cash flows	$ 10,782,044	$ 2,893,603	$ 811,800	$ 4,737,207

Accounts receivable

The Company’s accounts receivable result from revenues earned but not yet collected from customers. Credit is extended based on an evaluation of a customer’s financial condition and, generally, collateral is not required. Accounts receivable are due within 30 to 60 days and are stated at amounts due from customers. The Company evaluates if an allowance is necessary by considering a number of factors, including the length of time accounts receivable are past due, the Company’s previous loss history and the customer’s current ability to pay its obligation. If amounts become uncollectible, they are charged to operations when that determination is made. The allowance for doubtful accounts was $20,753 as of September 30, 2020 and December 31, 2019, respectively.

At September 30, 2020, the Company had accounts receivable from two customers which individually represented 17% and 10% of total accounts receivable, respectively. At December 31, 2019, one individual customer represented 44% of total accounts receivable. For the three months ended September 30, 2020, revenue earned from one customer represented 33% of total revenues. For the three months ended September 30, 2019, revenue earned from one customer represented 12% of total revenues. For the nine months ended September 30, 2020, revenue earned from two customers represented 29% and 11% of total revenues, respectively. For the nine months ended September 30, 2019, revenue earned from one customer represented 40% of total revenues.

Inventory

Inventories are valued using the first-in, first-out method and stated at the lower of cost or net realizable value and consist of the following:

	September 30, 2020	December 31, 2019
Raw materials and supplies	$ 780,054	$ 315,542
Work-in-process	141,365	35,080
Finished goods	2,053,641	122,408
Total	$ 2,975,060	$ 473,030

Inventory includes Unyvero instrument systems, Unyvero cartridges, reagents and components for Unyvero, Acuitas, QuickFISH and PNA FISH products, Curetis SARS CoV-2 test kits, and reagents and supplies used for the Company's laboratory services. Inventory reserves for obsolescence and expirations were $412,827 and $92,454 at September 30, 2020 and December 31, 2019, respectively.

Long-lived assets

Property and equipment

Property and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to future undiscounted net cash flows expected to be generated by the asset. Recoverability measurement and estimating of undiscounted cash flows is done at the lowest possible level for which we can identify assets. If such assets are considered to be impaired, impairment is recognized as the amount by which the carrying amount of assets exceeds the fair value of the assets. As of the three and nine months ended September 30, 2020 and 2019, the Company determined that its property and equipment was not impaired.

Leases

The Company determines if an arrangement is a lease at inception. For leases where the Company is the lessee, right-of-use ("ROU") assets represent the Company's right to use the underlying asset for the term of the lease and the lease liabilities represent an obligation to make lease payments arising from the lease. ROU assets and lease liabilities are recognized at the lease commencement date based on the present value of the future lease payments over the lease term. The Company uses its incremental borrowing rate based on the information available at the commencement date of the underlying lease arrangement to determine the present value of lease payments. The ROU asset also includes any prepaid lease payments and any lease incentives received. The lease term to calculate the ROU asset and related lease liability includes options to extend or terminate the lease when it is reasonably certain that the Company will exercise the option. The Company's lease agreements generally do not contain any material variable lease payments, residual value guarantees or restrictive covenants.

Lease expense for operating leases is recognized on a straight-line basis over the lease term as an operating expense while expense for financing leases is recognized as depreciation expense and interest expense using the effective interest method of recognition. The Company has made certain accounting policy elections whereby the Company (i) does not recognize ROU assets or lease liabilities for short-term leases (those with original terms of 12 months or less) and (ii) combines lease and non-lease elements of our operating leases.

ROU Assets

ROU assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to future undiscounted net cash flows expected to be generated by the asset. Recoverability measurement and estimating of undiscounted cash flows is done at the lowest possible level for which the Company can identify assets. If such assets are considered to be impaired, impairment is recognized as the amount by which the carrying amount of assets exceeds the fair value of the assets. In conjunction with adoption of Accounting Standards Update ("ASU") 2016-02, *Leases* (Topic 842) ("ASC 842"), the Company determined that the ROU asset associated with its Woburn, Massachusetts office lease may not be recoverable. As a result, the Company recorded an impairment charge of $520,759 during the nine months ended September 30, 2019.

Intangible assets and goodwill

Intangible assets and goodwill as of September 30, 2020 consist of finite-lived and indefinite-lived intangible assets and goodwill.

Finite-lived and indefinite-lived intangible assets

Intangible assets include trademarks, developed technology, In-Process Research & Development, software and customer relationships and consisted of the following as of September 30, 2020 and December 31, 2019:

			September 30, 2020				December 31, 2019	
	Subsidiary	Cost	Accumulated Amortization	Impairment	Effect of foreign exchange rates	Net Balance	Accumulated Amortization	Net Balance
Trademarks and tradenames	AdvanDx	$ 461,000	$ (217,413)	$ (243,587)	—	$ —	$ (205,887)	$ 255,113
Developed technology	AdvanDx	458,000	(308,526)	(149,474)	—	—	(292,170)	165,830
Customer relationships	AdvanDx	1,094,000	(736,465)	(357,535)	—	—	(697,393)	396,607
Trademarks and tradenames	Curetis	1,768,000	(93,606)	—	104,096	1,778,490	—	—
Distributor relationships	Curetis	2,362,000	(83,370)	—	139,067	2,417,697	—	—
A50 - Developed technology	Curetis	377,000	(28,514)	—	22,197	370,683	—	—
Ares - Developed technology	Curetis	5,345,000	(202,132)	—	314,697	5,457,565	—	—
A30 - In-Process Research & Development	Curetis	5,711,000	—	—	336,245	6,047,245	—	—
		$ 17,576,000	$ (1,670,026)	$ (750,596)	$ 916,302	$ 16,071,680	$ (1,195,450)	$ 817,550

Identifiable intangible assets will be amortized on a straight-line basis over their estimated useful lives. The estimated useful lives of the intangibles are:

	Estimated Useful Life
Trademarks and tradenames	10 years
Customer/distributor relationships	15 years
A50 – Developed technology	7 years
Ares – Developed technology	14 years
A30 – Acquired in-process research & development	Indefinite

Acquired IPR&D represents the fair value assigned to those research and development projects that were acquired in a business combination for which the related products have not received regulatory approval and have no alternative future use. IPR&D is capitalized at its fair value as an indefinite-lived intangible asset, and any development costs incurred after the acquisition are expensed as incurred. Upon achieving regulatory approval or commercial viability for the related product, the indefinite-lived intangible asset is accounted for as a finite-lived asset and is amortized on a straight-line basis over the estimated useful life. If the project is not completed or is terminated or abandoned, the Company may have an impairment related to the IPR&D which is charged to expense. Indefinite-lived intangible assets are tested for impairment annually and whenever events or changes in circumstances indicate that the carrying amount may be impaired. Impairment is calculated as the excess of the asset's carrying value over its fair value.

The Company reviews the useful lives of intangible assets when events or changes in circumstances occur which may potentially impact the estimated useful life of the intangible assets.

Total amortization expense of intangible assets was $205,026 and $66,954 for the three months ended September 30, 2020 and 2019, respectively. Total amortization expense of intangible assets was $464,689 and $200,862 for the nine months ended September 30, 2020 and 2019, respectively. Expected future amortization of intangible assets is as follows:

Year Ending December 31,	
2020 (Three months)	$ 203,811
2021	815,242
2022	815,242
2023	815,242
2024	815,242
2025	815,242
Thereafter	5,744,414
Total	$ 10,024,435

Intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. If any indicators were present, the Company would test for recoverability by comparing the carrying amount of the asset to the net undiscounted cash flows expected to be generated from the asset. If those net undiscounted cash flows do not exceed the carrying amount (i.e., the asset is not recoverable), the Company would perform the next step, which is to determine the fair value of the asset and record an impairment loss, if any.

In accordance with ASC 360-10, *Property, Plant and Equipment*, the Company records impairment losses on long-lived assets used in operations when events and circumstances indicate that long-lived assets might be impaired and the undiscounted cash flows estimated to be generated by those assets are less than the carrying amounts of those assets. During the nine months ended September 30, 2020, events and circumstances indicated the Company's FISH intangible assets might be impaired. These circumstances included decreased product sales related to the COVID-19 pandemic and the loss of significant customers. Management's updated estimate of undiscounted cash flows indicated that such carrying amounts were no longer expected to be recovered and that the FISH intangible assets were impaired. The Company's analysis determined that the fair value of the assets was $0 and the Company recorded an impairment loss of $750,596.

Goodwill

Goodwill represents the excess of the purchase price paid when the Company acquired AdvanDx, Inc. in July 2015 and Curetis in April 2020, over the fair values of the acquired tangible or intangible assets and assumed liabilities. Goodwill is not tax deductible in any relevant jurisdictions. The Company's goodwill balance as of September 30, 2020 and December 31, 2019 was $8,057,894 and $600,814, respectively.

The changes in the carrying amount of goodwill as of September 30, 2020, and since December 31, 2019, were as follows:

Balance as of December 31, 2019	$	600,814
Acquisition of Curetis		7,046,535
Changes in currency translation		410,545
Balance as of September 30, 2020	$	8,057,894

The Company conducts an impairment test of goodwill on an annual basis, and will also conduct tests if events occur or circumstances change that would, more likely than not, reduce the Company's fair value below its net equity value. During the nine months ended September 30, 2020 and 2019, the Company determined that its goodwill was not impaired.

Revenue recognition

The Company derives revenues from (i) the sale of QuickFISH and PNA FISH diagnostic test products, Unyvero Application cartridges, Unyvero Systems, Acuitas AMR Gene Panel RUO test products, (ii) providing laboratory services, and (iii) providing collaboration services including funded software arrangements, and license arrangements.

The Company analyzes contracts to determine the appropriate revenue recognition using the following steps: (i) identification of contracts with customers, (ii) identification of distinct performance obligations in the contract, (iii) determination of contract transaction price, (iv) allocation of contract transaction price to the performance obligations and (v) determination of revenue recognition based on timing of satisfaction of the performance obligation.

The Company recognizes revenues upon the satisfaction of its performance obligation (upon transfer of control of promised goods or services to our customers) in an amount that reflects the consideration to which it expects to be entitled in exchange for those goods or services.

The Company defers incremental costs of obtaining a customer contract and amortizes the deferred costs over the period that the goods and services are transferred to the customer. The Company had no material incremental costs to obtain customer contracts in any period presented.

Deferred revenue results from amounts billed in advance to customers or cash received from customers in advance of services being provided.

Research and development costs

Research and development costs are expensed as incurred. Research and development costs primarily consist of salaries and related expenses for personnel, other resources, laboratory supplies, and fees paid to consultants and outside service partners.

Stock-based compensation

Stock-based compensation expense is recognized at fair value. The fair value of stock-based compensation to employees and directors is estimated, on the date of grant, using the Black-Scholes model. The resulting fair value is recognized ratably over the requisite service period, which is generally the vesting period of the option. For all time-vesting awards granted, expense is amortized using the straight-line attribution method. The Company accounts for forfeitures as they occur.

Option valuation models, including the Black-Scholes model, require the input of highly subjective assumptions, and changes in the assumptions used can materially affect the grant-date fair value of an award. These assumptions include the risk-free rate of interest, expected dividend yield, expected volatility and the expected life of the award.

Income taxes

Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the expected future tax consequences attributable to temporary differences between financial statement carrying amounts of existing assets and liabilities and their respective tax basis. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. A valuation allowance is established when necessary to reduce deferred income tax assets to the amount expected to be realized.

Tax benefits are initially recognized in the condensed consolidated financial statements when it is more likely than not the position will be sustained upon examination by the tax authorities. Such tax positions are initially, and subsequently, measured as the largest amount of tax benefit that is greater than 50% likely of being realized upon ultimate settlement with the tax authority, assuming full knowledge of the position and all relevant facts.

The Company had federal net operating loss (“NOL”) carryforwards of $188,282,298 at December 31, 2019. Despite the NOL carryforwards, which begin to expire in 2022, the Company may have future tax liability due to alternative minimum tax or state tax requirements. Also, use of the NOL carryforwards may be subject to an annual limitation as provided by Section 382 of the Internal Revenue Code of 1986, as amended (the “Code”). To date, the Company has not performed a formal study to determine if any of its remaining NOL and credit attributes might be further limited due to the ownership change rules of Section 382 or Section 383 of the Code. The Company will continue to monitor this matter going forward. There can be no assurance that the NOL carryforwards will ever be fully utilized.

Loss per share

Basic loss per share is computed by dividing net loss available to common stockholders by the weighted average number of shares of common stock outstanding during the period.

For periods of net income, and when the effects are not anti-dilutive, diluted earnings per share is computed by dividing net income available to common stockholders by the weighted average number of shares outstanding plus the impact of all potential dilutive common shares, consisting primarily of common stock options and stock purchase warrants using the treasury stock method, and convertible preferred stock and convertible debt using the if-converted method.

For periods of net loss, diluted loss per share is calculated similarly to basic loss per share because the impact of all dilutive potential common shares is anti-dilutive. The number of anti-dilutive shares, consisting of (i) common stock options, (ii) stock purchase warrants, and (iii) restricted stock units representing the right to acquire shares of common stock which have been excluded from the computation of diluted loss per share, was 2.2 million shares and 0.2 million shares as of September 30, 2020 and 2019, respectively.

Adopted accounting pronouncements

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* (“ASC 842”), which amended the existing accounting standards for leases. The new standard requires lessees to record a right-of-use (“ROU”) asset and a corresponding lease liability on the balance sheet (with the exception of short-term leases), whereas under previous accounting standards, the Company’s lease portfolio consisting of operating leases were not recognized on its consolidated balance sheets. The new standard required expanded disclosures regarding leasing arrangements. The new standard was effective for the Company beginning January 1, 2019.

The Company adopted this guidance effective January 1, 2019 using the modified retrospective transition method and the following practical expedients:

- The Company did not reassess if any expired or existing contracts are or contain leases.
- The Company did not reassess the classification of any expired or existing leases.

Additionally, the Company made ongoing accounting policy elections whereby the Company (i) does not recognize ROU assets or lease liabilities for short-term leases (those with original terms of 12 months or less) and (ii) combines lease and non-lease elements of our operating leases.

Upon adoption of the new guidance on January 1, 2019, the Company recorded an operating lease ROU asset of approximately $2.2 million (net of existing deferred rent) and recognized a lease liability of approximately $2.5 million.

Prior to the adoption of ASC 842, deferred rent was recorded and amortized to the extent the total minimum rental payments allocated to the period on a straight-line basis exceeded or were less than the cash payments required.

The Company adopted Accounting Standards Update 2016-13, *Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments* ("ASU 2016-13"), as of January 1, 2020. ASU 2016-13 requires an entity to measure and recognize expected credit losses for certain financial instruments, including trade receivables, as an allowance that reflects the entity's current estimate of credit losses expected to be incurred. For available-for-sale debt securities with unrealized losses, the standard requires allowances to be recorded through net income instead of directly reducing the amortized cost of the investment under the previous other-than-temporary impairment model. The adoption of this standard did not have a material impact on our condensed consolidated financial statements.

Recently issued accounting standards

The Company has evaluated all other issued and unadopted ASUs and believes the adoption of these standards will not have a material impact on its results of operations, financial position or cash flows.

Note 4 – Business Combination

On April 1, 2020, the Company completed its business combination transaction with Curetis N.V., a public company with limited liability under the laws of the Netherlands, as contemplated by the Implementation Agreement, dated as of September 4, 2019, by and among the Company, the Seller, and Crystal GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany and wholly-owned subsidiary of the Company. Pursuant to the Implementation Agreement, the Purchaser acquired all of the shares of Curetis GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany, and certain other assets and liabilities of the Seller, as further described below, and paid, as the sole consideration, 2,028,208 shares of the Company’s common stock, to the Seller, and reserved for future issuance (a) 134,356 shares of Common Stock, in connection with its assumption of the Seller’s 2016 Stock Option Plan, as amended (the “Seller Stock Option Plan”), and the outstanding awards thereunder, and (b) 500,000 shares of common stock to be issued upon the conversion, if any, of certain convertible notes issued by the Seller.

At the closing, the Company assumed all of the liabilities of the Seller solely and exclusively related to the acquired business, which is providing innovative solutions, through development of proprietary platforms, diagnostic content, applied bioinformatics, lab services, research services and commercial collaborations and agreements, for molecular microbiology, diagnostics designed to address the global challenge of detecting severe infectious diseases and identifying antibiotic resistances in hospitalized patients. Pursuant to the Implementation Agreement, the Company also assumed and adopted the Seller Stock Option Plan as an Amended and Restated Stock Option Plan of the Company. In connection with the foregoing, the Company assumed all awards thereunder that were outstanding as of the Closing Date and converted such awards into options to purchase shares of the Company’s Common Stock pursuant to the terms of the applicable award. In addition, the Company assumed, at the closing, all of the outstanding convertible notes issued by Seller in favor of YA II PN, LTD, pursuant to the previously disclosed Assignment of the Agreement for the Issuance of and Subscription to Notes Convertible into Shares, dated February 24, 2020, and entered into pursuant to the Implementation Agreement.

Curetis’ assets and liabilities were measured and recognized at their fair values as of the transaction date and combined with the assets, liabilities and results of operations of OpGen after the consummation of the business combination. The allocation of the purchase price to acquired assets and assumed liabilities based on their underlying fair values requires the extensive use of significant estimates and management’s judgment. The allocation of the purchase price is preliminary at this time, and will remain as such until management completes valuations and other studies in order to finalize the valuation of the net assets acquired. These provisional estimates will be adjusted upon the availability of further information regarding events or circumstances which exist at the acquisition date and such adjustments may be significant.

The components of the purchase price and net assets acquired are as follows:

Purchase Price

Number of shares issued to Curetis N.V		2,028,208
Multiplied by the market value per share of OpGen's common stock (i)	$	2.39
Total fair value of common stock issued to Curetis N.V shareholders		4,847,417
Fair value of replacement stock awards related to precombination service (ii)		136,912
Fair value of convertible notes assumed (iii)		1,323,750
Fair value of EIB debt assumed (iv)		15,784,892
Funds advanced to Curetis GmbH under Interim Facility		4,808,712
Cash, cash equivalents, and restricted cash acquired		(1,266,849)
	$	25,634,834

(i) The price per share of OpGen's common stock was based on the closing price as reported on the Nasdaq Capital Market on April 1, 2020.
(ii) The fair value of the stock options assumed was determined using the Black-Scholes option pricing model.
(iii) To derive the fair value of the convertible notes, the Company estimated the fair value of the convertible notes with and without the derivative liability using a scenario analysis and Monte Carlo simulation.
(iv) The fair value of the EIB debt is determined using a discounted cash flow analysis with current applicable rates for similar instruments.

Net Assets Acquired

Assets acquired		
Receivables	$	482,876
Inventory		2,022,577
Property and equipment		3,802,431
Right of use assets		1,090,812
Other current assets		585,500
Finite-lived intangible assets		
Trade names/trademarks		1,768,000
Customer/distributor relationships		2,362,000
A50 - Developed technology		377,000
Ares - Developed technology		5,345,000
Indefinite-lived intangible assets		
A30 - In-process research & development		5,711,000
Goodwill		7,046,535
Liabilities assumed		
Accounts payable		(1,168,839)
Accrued expenses and other current liabilities		(2,016,946)
Derivative liabilities		(615,831)
Lease liabilities		(1,108,193)
Other long-term liabilities		(49,088)
Net assets acquired	$	25,634,834

The fair value of identifiable intangible assets has been determined using the income approach, which involves significant unobservable inputs (Level 3 inputs). These inputs include projected sales, margin, required rate of return and tax rate, as well as an estimated royalty rate in the case of the trade names/trademarks intangibles. The trade names/trademarks intangibles are valued using a relief-from-royalty method. The customer/distributor relationships are valued using the with and without method. The developed technology intangibles are valued using a multi-period earnings method.

The Company determined the fair value of an IPR&D asset resulting from the acquisition of Curetis using the multi-period earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the IPR&D, less charges representing the required return on other assets to sustain those cash flows.

The weighted-average amortization periods for finite-lived intangible assets acquired are 15 years for customer/distributor relationships, 10 years for developed technology and 10 years for trade names/trademarks.

The total consideration paid in the acquisition exceeded the estimated fair value of the tangible and identifiable intangible assets acquired and liabilities assumed, resulting in approximately $7.0 million of goodwill. Goodwill, primarily related to expected synergies gained from combining operations, sales growth from future product offerings and customers, together with certain intangible assets that do not qualify for separate recognition, including assembled workforce, is not tax deductible in all relevant taxing jurisdictions.

The following unaudited pro forma financial information summarizes the results of operations for the periods indicated as if the Transaction had been completed as of January 1, 2019. Pro forma information primarily reflects adjustments relating to the amortization of intangibles acquired and elimination of interest expense due under the interim facility. The pro forma amounts do not purport to be indicative of the results that would have actually been obtained if the acquisition occurred as of January 1, 2019 or that may be obtained in the future.

Unaudited pro forma results	Three months ended September 30,	Nine months ended September 30,	
	2019	2020	2019
Revenues	$ 982,506	$ 3,886,834	$ 4,245,120
Net loss	(9,204,658)	(22,340,822)	(27,067,942)
Net loss per share	(10.43)	(1.59)	(36.31)

Note 5 – Revenue from contracts with customers

Disaggregated revenue

The Company provides diagnostic test products, laboratory services to hospitals, clinical laboratories and other healthcare provider customers, and enters into collaboration agreements with government agencies and healthcare providers. The revenues by type of service consist of the following:

	Three Months Ended September 30,		Nine months ended September 30,	
	2020	2019	2020	2019
Product sales	$ 601,562	$ 573,035	$ 1,569,799	$ 1,597,505
Laboratory services	112,892	185	138,884	5,435
Collaboration revenue	342,311	75,000	1,153,400	1,075,000
Total revenue	$ 1,056,765	$ 648,220	$ 2,862,083	$ 2,677,940

Revenues by geography are as follows:

	Three Months Ended September 30,		Nine months ended September 30,	
	2020	2019	2020	2019
Domestic	$ 309,119	$ 597,997	$ 1,202,244	$ 2,539,519
International	747,646	50,223	1,659,839	138,421
Total revenue	$ 1,056,765	$ 648,220	$ 2,862,083	$ 2,677,940

Deferred revenue

Changes in deferred revenue for the period were as follows:

Balance at December 31, 2019	$	9,808
Acquired deferrals from Curetis, net of amounts recognized in the current period		13,270
Revenue recognized in the current period from the amounts in the beginning balance		—
Effect of foreign exchange rates		28,544
Balance at September 30, 2020	$	51,622

Contract assets

The Company had approximately $22,000 of contract assets as of September 30, 2020, which are generated when contractual billing schedules differ from revenue recognition timing. The Company had no contract assets as of December 31, 2019. Contract assets represent a conditional right to consideration for satisfied performance obligations that becomes a billed receivable when the conditions are satisfied.

Unsatisfied performance obligations

The Company had no unsatisfied performance obligations related to its contracts with customers at September 30, 2020 and December 31, 2019.

Note 6 – Fair value measurements

The Company classifies its financial instruments using a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value. These tiers include:

- Level 1 - defined as observable inputs such as quoted prices in active markets;
- Level 2 - defined as inputs other than quoted prices in active markets that are either directly or indirectly observable; and
- Level 3 - defined as unobservable inputs in which little or no market data exists, therefore requiring an entity to develop its own assumptions such as expected revenue growth and discount factors applied to cash flow projections.

For the nine months ended September 30, 2020, the Company has not transferred any assets between fair value measurement levels.

Financial assets and liabilities measured at fair value on a recurring basis

The Company evaluates financial assets and liabilities subject to fair value measurements on a recurring basis to determine the appropriate level at which to classify them each reporting period. This determination requires the Company to make subjective judgments as to the significance of inputs used in determining fair value and where such inputs lie within the hierarchy.

In June 2019, Curetis drew down a third tranche of EUR 5.0 million from the EIB (“European Investment Bank”). In return for EIB waiving the condition precedent of a minimum cumulative equity capital raised of EUR 15 million to disburse this EUR 5.0 million tranche, the parties agreed on a 2.1% participation percentage interest (“PPI”). Upon maturity of the tranche, EIB would be entitled to an additional payment that is equity-linked and equivalent to 2.1% of the then total valuation of Curetis N.V. On July 9, 2020, the Company negotiated an amendment to the EIB debt financing facility. As part of the amendment, the parties adjusted the PPI percentage applicable to the previous EIB tranche of EUR 5.0 million which was funded in June 2019 from its original 2.1% PPI in Curetis N.V.’s equity value upon maturity to a new 0.3% PPI in OpGen’s equity value upon maturity between mid-2024 and mid-2025. This right constitutes an embedded derivative, which is separated and measured at fair value with changes being accounted for through profit or loss. The Company determines the fair value of the derivative using a Monte Carlo simulation model. Using this model, level 3 unobservable inputs include estimated discount rates and estimated risk-free interest rates.

The Company’s convertible debt with YA II PN, LTD (see Note 7) included a conversion feature which constitutes an embedded derivative, which is separated and measured at fair value with subsequent changes being accounted for through profit or loss. The Company determines the fair value of the derivative using a Monte Carlo simulation model. Using this model, level 3 unobservable inputs include estimated volatility rates and estimated risk-free interest rates.

The fair value of level 3 liabilities measured at fair value on a recurring basis for the nine months ended September 30, 2020 was as follows:

Description	Balance at December 31, 2019	Acquired from Curetis	Change in Fair Value	Effect of Foreign Exchange Rates	Balance at September 30, 2020
Participation percentage interest liability	$ —	$ 173,373	$ (105,550)	$ 6,416	$ 74,239
Embedded conversion option liability	—	442,458	(442,458)	—	—
Total revenue	$ —	$ 615,831	$ (548,008)	$ 6,416	$ 74,239

Financial assets and liabilities carried at fair value on a non-recurring basis

The Company does not have any financial assets and liabilities measured at fair value on a non-recurring basis.

Non-financial assets and liabilities carried at fair value on a recurring basis

The Company does not have any non-financial assets and liabilities measured at fair value on a recurring basis.

Non-financial assets and liabilities carried at fair value on a non-recurring basis

The Company measures its long-lived assets, including property and equipment and intangible assets (including goodwill), at fair value on a non-recurring basis when a triggering event requires such evaluation. During the nine months ended September 30, 2020, the Company recorded impairment expense of $750,596 related to its intangible assets (see Note 3).

Note 7 – Debt

The following table summarizes the Company's long-term debt and short-term borrowings as September 30, 2020 and December 31, 2019:

	September 30, 2020	December 31, 2019
EIB	$ 24,428,437	$ —
PPP	1,138,983	—
MGHIF	331,292	662,789
Insurance financings	252,861	40,266
Total debt obligations	26,151,573	703,055
Unamortized debt discount	(6,835,623)	—
Carrying value of debt	19,315,950	703,055
Less current portion	(1,156,517)	(373,599)
Long-term debt	$ 18,159,433	$ 329,456

MGHIF financing

In July 2015, the Company entered into a Purchase Agreement with MGHIF, pursuant to which MGHIF purchased 2,273 shares of common stock of the Company at $2,200 per share for gross proceeds of $5.0 million. Pursuant to the Purchase Agreement, the Company also issued to MGHIF an 8% Senior Secured Promissory Note (the "MGHIF Note") in the principal amount of $1.0 million with a two-year maturity date from the date of issuance. The Company's obligations under the MGHIF Note are secured by a lien on all of OpGen's assets excluding the assets of Curetis GmbH, Curetis USA, and Ares Genetics.

On June 28, 2017, the MGHIF Note was amended and restated, and the maturity date of the MGHIF Note was extended by one year to July 14, 2018. As consideration for the agreement to extend the maturity date, the Company issued an amended and restated secured promissory note to MGHIF that (1) increased the interest rate to ten percent (10%) per annum and (2) provided for the issuance of common stock warrants to purchase 656 shares of its common stock to MGHIF.

On June 11, 2018, the Company executed an Allonge to the MGHIF Note. The Allonge provided that accrued and unpaid interest of $285,512 due as of July 14, 2018, the original maturity date, be paid through the issuance of shares of OpGen's common stock in a private placement transaction. In addition, the Allonge revised and extended the maturity date for payment of the MGHIF Note to six semi-annual payments of $166,667 plus accrued and unpaid interest beginning on January 2, 2019 and ending on July 1, 2021. The Allonge to the MGHIF Note was treated as a debt modification and, as such, the unamortized issuance costs of approximately $7,000 as of June 11, 2018 is deferred and amortized as incremental expense over the term of the MGHIF Note.

On July 30, 2018, the Company issued 7,212 shares of common stock to MGHIF in a private placement transaction in payment of the $285,512 of accrued and unpaid interest due as of July 14, 2018 under the MGHIF Note.

Yorkville Convertible Notes

The Company agreed to assume, as a condition to closing the transactions all of the outstanding convertible notes (the "Convertible Notes") issued by Curetis N.V. in favor of YA II PN, LTD ("Yorkville"), pursuant to that certain Agreement for the Issuance of and Subscription to Notes Convertible into Shares and Share Subscription Warrants, dated October 2, 2018, by and between Curetis N.V. and Yorkville.

On February 24, 2020, the Company entered into an Assignment of the Agreement for the Issuance of and Subscription to Notes Convertible into Shares (the "Assignment Agreement") with Curetis N.V. and Yorkville. Pursuant to the Assignment Agreement, upon assumption of the Convertible Notes by the Company, the Convertible Notes ceased to be convertible into shares of Curetis N.V. and are instead convertible into shares of the Company's common stock, par value $0.01. The Assignment Agreement provided that an amount of 500,000 shares of the Company's common stock that comprise a portion of the consideration payable by the Company under the Implementation Agreement be reserved for issuance under the Convertible Notes. On June 17, 2020, the Company registered for resale an additional 450,000 shares of Company common stock issuable upon conversion of the Convertible Notes.

At closing of the Transaction, an aggregate amount of €1.3 million of unconverted Convertible Notes was assumed by the Company. The Convertible Notes were measured and recognized at fair value at the acquisition date. The fair value of the Convertible Notes as of the closing of the Transaction was approximately $1.3 million. The resulting debt discount was amortized over the life of the Convertible Notes as an increase in interest expense. During the three months ended September 30, 2020, the Company issued 311,003 shares of common stock in satisfaction of approximately $570,000 of Convertible Notes. During the nine months ended September 30, 2020, the Company issued 763,905 shares of common stock in satisfaction of approximately $1,451,000 of Convertible Notes. As of September 30, 2020, all notes have been converted.

EIB Loan Facility

In 2016, Curetis entered into a contract for an up to €25 million senior, unsecured loan financing facility from the European Investment Bank ("EIB"). The financing is in the first growth capital loan under the European Growth Finance Facility ("EGFF"), launched in November 2016. It is backed by a guarantee from the European Fund for Strategic Investment ("EFSI"), EFSI is an essential pillar of the Investment Plan for Europe ("IPE"), under which the EIB and the European Commission are working as strategic partners to support investments and bring back jobs and growth to Europe.

The funding can be drawn in up to five tranches within 36 months, under the EIB amendment, and each tranche is to be repaid upon maturity five years after draw-down.

In April 2017, Curetis drew down a first tranche of €10 million from this facility. This tranche has a floating interest rate of EURIBOR plus 4% payable after each 12-month-period from the draw-down-date and another additional 6% interest per annum that is deferred and payable at maturity together with the principal. In June 2018, another tranche of €3 million was drawn down. The terms and conditions are analogous to the first one.

In June 2019, Curetis drew down a third tranche of €5 million from the EIB. In line with all prior tranches, the majority of interest is also deferred into the bullet repayment structure upon maturity. In return for EIB waiving the condition precedent of a minimum cumulative equity capital raised of €15 million to disburse this €5 million tranche, the parties agreed on a 2.1% PPI. Upon maturity of the tranche, not before approximately mid-2024 (and no later than mid-2025) EIB would be entitled to an additional payment that is equity-linked and equivalent to 2.1% of the then total valuation of Curetis N.V. As part of the amendment between the Company and EIB on July 9, 2020, the parties adjusted the PPI percentage applicable to the previous EIB tranche of €5 million which was funded in June 2019 from its original 2.1% PPI in Curetis N.V.'s equity value upon maturity to a new 0.3% PPI in OpGen's equity value upon maturity. This right constitutes an embedded derivative, which is separated and measured at fair value with changes being accounted for through income or loss.

On July 9, 2020, the Company negotiated an amendment to the EIB debt financing facility for an additional €5 million tranche. This additional tranche is earmarked to co-fund R&D programs across several of the platforms and the entire product portfolio of OpGen subsidiaries Curetis and Ares Genetics as it relates to COVID-19.

This additional tranche, which can be drawn down, subject to certain conditions, at Curetis' option within nine months from the Effective Date of the amendment, will also have a five-year term to maturity from such draw-down date and will accrue interest at a rate of 10% per annum. All interest payments during that five-year term are compounded and become payable only upon maturity of the principal amount of this tranche. The EIB tranche disbursement will become available subject to typical conditions precedent including a pledge of certain Curetis IP rights as security to EIB. All other terms and conditions of the EIB financing contract with Curetis remain unchanged.

Additionally, on July 10, 2020, EIB agreed to defer total interest payments of €720k due in April and June 2020 under the first three tranches of the debt financing facility until December 31, 2020.

The EIB debt was measured and recognized at fair value as of the acquisition date. The fair value of the EIB debt was approximately $15.8 million as of the acquisition date. The resulting debt discount will be amortized over the life of the EIB debt as an increase to interest expense.

As of September 30, 2020, the outstanding borrowings under all tranches were €20,864,740 (approximately USD $24,428,000), including deferred interest payable at maturity of €2,864,740 (approximately USD $3,354,000).

PPP

On April 22, 2020, the Company entered into a Term Note (the "Company Note") with Silicon Valley Bank (the "Bank") pursuant to the Paycheck Protection Program (the "PPP") of the Coronavirus Aid, Relief, and Economic Security Act ("CARES Act") administered by the U.S. Small Business Administration. The Company's wholly-owned subsidiary, Curetis USA Inc. ("Curetis USA" and collectively with the Company, the "Borrowers"), also entered into a Term Note with the Bank (the "Subsidiary Note," and collectively with the Company Note, the "Notes"). The Notes are dated April 22, 2020. The principal amount of the Company Note is $879,630, and the principal amount of the Subsidiary Note is $259,353.

In accordance with the requirements of the CARES Act, the Borrowers will use the proceeds from the Notes in accordance with the requirements of the PPP to cover certain qualified expenses, including payroll costs, rent and utility costs. Interest accrues on the Notes at the rate of 1.00% per annum. The Borrowers may apply for forgiveness of amounts due under the Notes, in an amount equal to the sum of qualified expenses under the PPP, which include payroll costs, rent obligations, and covered utility payments incurred during the eight weeks following disbursement under the Notes. The Borrowers intend to use the entire proceeds under the Notes for such qualifying expenses. OpGen filed for forgiveness of the Company Note during the three months ended September 30, 2020 and the Subsidiary note subsequent to September 30, 2020.

Subject to any forgiveness under the PPP, the Notes mature two years following the date of issuance of the Notes and include a period for the first six months during which time required payments of interest and principal are deferred. Beginning on the seventh month following the date of the Notes, the Borrowers are required to make 18 monthly payments of principal and interest. The Notes may be prepaid at any time prior to maturity with no prepayment penalties. The Notes provide for customary events of default, including, among others, those relating to breaches of their obligations under the Notes, including a failure to make payments, any bankruptcy or similar proceedings involving the Borrowers, and certain material effects on the Borrowers' ability to repay the Notes. The Borrowers did not provide any collateral or guarantees for the Notes.

Total interest expense (including amortization of debt discounts and financing fees) on all debt instruments was $1,183,927 and $49,099 for the three months ended September 30, 2020 and 2019, respectively. Total interest expense (including accretion of fair value to face value and amortization of debt discounts and financing fees) on all debt instruments was $2,267,085 and $142,672 for the nine months ended September 30, 2020 and 2019, respectively.

Note 8 – Stockholders' equity

As of September 30, 2020, the Company had 50,000,000 shares of authorized common shares and 19,799,348 shares issued and outstanding, and 10,000,000 shares of authorized preferred shares, of which none were issued or outstanding.

Following receipt of approval from stockholders at a special meeting of stockholders held on January 17, 2018, the Company filed an amendment to its Amended and Restated Certificate of Incorporation to effect a reverse stock split of the issued and outstanding shares of common stock, at a ratio of one share for twenty-five shares, and to reduce the authorized shares of common stock from 200,000,000 to 50,000,000 shares. Additionally, following receipt of approval from stockholders at a special meeting of stockholders held on August 22, 2019, the Company filed an additional amendment to its Amended and Restated Certificate of Incorporation to effect a reverse stock split of the issued and outstanding shares of common stock, at a ratio of one share for twenty shares. All share amounts and per share prices in this Quarterly Report have been adjusted to reflect the reverse stock splits.

On March 29, 2019, the Company closed the March 2019 Public Offering of 450,000 shares of its common stock at a public offering price of $12.00 per share. The offering raised gross proceeds of $5.4 million and net proceeds of approximately $4.8 million.

On October 28, 2019, the Company closed the October 2019 Public Offering of 2,590,170 units at $2.00 per unit and 2,109,830 pre-funded units at $1.99 per pre-funded unit. The offering raised gross proceeds of approximately $9.4 million and net proceeds of approximately $8.3 million. As of September 30, 2020, the 2,109,830 pre-funded warrants issued in the October 2019 Public Offering have been exercised. Additionally, during the nine months ended September 30, 2020, 4,071,000 common warrants were exercised raising net proceeds of approximately $8.1 million.

In connection with the October 2019 Public Offering, the Company issued to its placement agent warrants to purchase 235,000 shares of common stock. The warrants issued to the placement agent have an exercise price of $2.60 per share and are exercisable for five years.

On February 11, 2020, the Company entered into an ATM Agreement with Wainwright, which we amended and restated on November 13, 2020 to add BTIG, LLC pursuant to which the Company may offer and sell from time to time in an "at the market offering," at its option, up to an aggregate of $22.1 million of shares of the Company's common stock through the sales agents. During the three months ended September 30, 2020, the Company sold 1,523,663 shares of its common stock under the 2020 ATM Offering resulting in aggregate net proceeds to the Company of approximately $3.6 million, and gross proceeds of $3.8 million. During the nine months ended September 30, 2020, the Company sold 7,078,039 shares of its common stock under the 2020 ATM Offering resulting in aggregate net proceeds to the Company of approximately $15.0 million, and gross proceeds of $15.7 million. As of September 30, 2020, remaining availability under the ATM Agreement is $6.4 million.

On April 1, 2020, the Company acquired all of the shares of Curetis GmbH, and certain other assets and liabilities of Curetis N.V., as further described in Notes 1 and 4, and paid, as the sole consideration, 2,028,208 shares of the Company's common stock to the Seller.

Stock options

In 2008, the Company adopted the 2008 Stock Option and Restricted Stock Plan (the "2008 Plan"), pursuant to which the Company's Board of Directors could grant either incentive or non-qualified stock options or shares of restricted stock to directors, key employees, consultants and advisors.

In April 2015, the Company adopted, and the Company's stockholders approved, the 2015 Equity Incentive Plan (the "2015 Plan"); the 2015 Plan became effective upon the execution and delivery of the underwriting agreement for the Company's initial public offering in May 2015. Following the effectiveness of the 2015 Plan, no further grants will be made under the 2008 Plan. The 2015 Plan provides for the granting of incentive stock options within the meaning of Section 422 of the Code to employees and the granting of non-qualified stock options to employees, non-employee directors and consultants. The 2015 Plan also provides for the grants of restricted stock, restricted stock units, stock appreciation rights, dividend equivalents and stock payments to employees, non-employee directors and consultants.

Under the 2015 Plan, the aggregate number of shares of the common stock authorized for issuance may not exceed (1) 54,200 plus (2) the sum of the number of shares subject to outstanding awards under the 2008 Plan as of the 2015 Plan's effective date, that are subsequently forfeited or terminated for any reason before being exercised or settled, plus (3) the number of shares subject to vesting restrictions under the 2008 Plan as of the 2015 Plan's effective date that are subsequently forfeited. In addition, the number of shares that have been authorized for issuance under the 2015 Plan will be automatically increased on the first day of each fiscal year beginning on January 1, 2016 and ending on (and including) January 1, 2025, in an amount equal to the lesser of (1) 4% of the outstanding shares of common stock on the last day of the immediately preceding fiscal year, or (2) another lesser amount determined by the Company's Board of Directors. Shares subject to awards granted under the 2015 Plan that are forfeited or terminated before being exercised or settled, or are not delivered to the participant because such award is settled in cash, will again become available for issuance under the 2015 Plan. However, shares that have actually been issued shall not again become available unless forfeited. As of September 30, 2020, 229,533 shares remain available for issuance under the 2015 Plan, which includes 223,291 shares automatically added to the 2015 Plan on January 1, 2020.

On September 30, 2020, the Company held its 2020 Annual Meeting of Stockholders (the "Annual Meeting"). At the Annual Meeting, stockholders of the Company voted to approve, among other things, a plan under which stock options to purchase an aggregate of 1.3 million shares of the Company's common stock would be made by the Board of Directors of the Company outside of the stockholder-approved equity incentive plan to its executive officers and non-employee directors (the "2020 Stock Options Plan"). The 2020 Stock Options Plan and the grant made thereunder were approved by the Board of Directors on August 6, 2020, subject to receipt of stockholder approval at the Annual Meeting. The aggregate number of shares of the Company's common stock authorized for issuance is 1,300,000 shares of common stock and all 1,300,000 million stock options were issued on September 30, 2020. Shares subject to awards granted under the 2020 Stock Options Plan that are forfeited or terminated before being exercised will not be available for re-issuance under the 2020 Stock Options Plan.

Replacement awards

In connection with the acquisition of Curetis, the Company issued equity awards to Curetis employees ("2016 Plan"), consisting of stock options ("replacement awards") in exchange for their Curetis equity awards. The replacement awards consisted of 134,371 stock options with a weighted average grant date fair value of $1.68. The terms of these replacement awards are substantially similar to the original Curetis equity awards. The fair value of the replacement awards for services rendered through April 1, 2020, the acquisition date, was recognized as a component of the purchase consideration, with the remaining fair value of the replacement awards related to the post-combination services recorded as stock-based compensation over the remaining vesting period.

For the three and nine months ended September 30, 2020 and 2019, the Company recognized share-based compensation expense as follows:

	Three months ended September 30,		Nine months ended September 30,	
	2020	2019	2020	2019
Cost of services	$ 736	$ 584	$ 2,191	$ 1,146
Research and development	12,259	20,175	38,322	55,635
General and administrative	24,100	65,318	102,810	202,696
Sales and marketing	4,608	5,090	11,707	15,694
	$ 41,703	$ 91,167	$ 155,030	$ 275,171

No income tax benefit for share-based compensation arrangements was recognized in the condensed consolidated statements of operations and comprehensive loss due to the Company's net loss position.

The Company granted 1,300,000 options during the three months ended September 30, 2020. During the three months ended September 30, 2020, no options were forfeited and 280 options expired. The Company assumed 134,371 options under the 2016 Plan and granted 1,300,000 stock options during the nine months ended September 30, 2020. During the nine months ended September 30, 2020, 145 options were forfeited and 872 options expired.

The Company had total stock options to acquire 1,443,008 shares of common stock outstanding at September 30, 2020 under all of its equity compensation plans.

Restricted stock units

During the nine months ended September 30, 2020, 5,924 restricted stock units vested and 933 restricted stock units were forfeited. The Company had 8,118 total restricted stock units outstanding at September 30, 2020.

Stock purchase warrants

At September 30, 2020 and December 31, 2019, the following warrants to purchase shares of common stock were outstanding:

Issuance	Exercise Price	Expiration	Outstanding at September 30, 2020	Outstanding at December 31, 2019
January 2010	$ 3,955.00	January 2020	—	17
March 2010	$ 3,955.00	March 2020	—	7
November 2011	$ 3,955.00	November 2021	15	15
December 2011	$ 3,955.00	December 2021	2	2
February 2015	$ 3,300.00	February 2025	451	451
May 2015	$ 3,300.00	May 2020	—	6,697
May 2016	$ 656.20	May 2021	9,483	9,483
June 2016	$ 656.20	May 2021	4,102	4,102
June 2017	$ 390.00	June 2022	938	938
July 2017	$ 345.00	July 2022	318	318
July 2017	$ 250.00	July 2022	2,501	2,501
July 2017	$ 212.60	July 2022	50,006	50,006
February 2018	$ 81.25	February 2023	9,232	9,232
February 2018	$ 65.00	February 2023	92,338	92,338
October 2019	$ 2.00	October 2024	359,000	4,700,000
October 2019	$ 2.60	October 2024	235,000	235,000
			763,386	5,111,107

The warrants listed above were issued in connection with various debt, equity or development contract agreements.

Note 9 – Commitments and Contingencies

Supply agreements

In June 2017, the Company entered into an agreement with Life Technologies Corporation, a subsidiary of Thermo Fisher Scientific (“LTC”), to supply the Company with Thermo Fisher Scientific’s QuantStudio 5 Real-Time PCR Systems (“QuantStudio 5”) to be used to run OpGen’s Acuitas AMR Gene Panel tests. Under the terms of the agreement, the Company must notify LTC of the number of QuantStudio 5s that it commits to purchase in the following quarter. As of September 30, 2020, the Company had acquired twenty-four QuantStudio 5s including none during the nine months ended September 30, 2020. As of September 30, 2020, the Company has not committed to acquiring additional QuantStudio 5s in the next three months.

Curetis places frame-work orders for Unyvero-Systems and for raw materials for its cartridge manufacturing to ensure availability during commercial ramp-up-phase and also to gain volume-scale-effects with regards to purchase prices. Some of the electronic parts used for the production of Unyvero-Systems have lead times of many months, hence it is necessary to order such systems with long-term framework-orders to ensure the demands from the market are covered. The aggregate purchase commitments over the next twelve months are approximately $2.8 million.

Contingencies

On March 11, 2020, the World Health Organization declared the outbreak of a novel coronavirus (“COVID-19”) as a global pandemic, which continues to spread throughout the United States and around the world.

As a result, we have experienced a material impact on our business, financial condition or results of operations for the nine months ended September 30, 2020 and significant business disruptions as a result of the outbreak. For example, most of our employees in the U.S. are currently working remotely from home, we have suspended virtually all business travel, and we are mostly unable to physically meet with future and current customers to sell and market our products. In addition, the COVID-19 pandemic has interrupted many of our clinical activities, which might delay our ability to complete clinical trials and obtain regulatory approval for new products including FDA clearance of our Acuitas AMR Gene Panel (Isolate) product.

We continue to monitor the impacts of COVID-19 on the global economy and on our business operations. However, at this time, it is difficult to predict how long the potential operational impacts of COVID-19 will remain in effect or to what degree they will impact our operations and financial results. An extended period of global supply chain and economic disruption could materially affect our business, results of operations, access to sources of liquidity and financial condition, as well as our ability to execute our business strategies and initiatives in their respective expected time frames. As a result, we are unable to estimate the potential impact on our business as of the date of this filing.

Note 10 – Leases

The following table presents the Company's ROU assets and lease liabilities as of September 30, 2020 and December 31, 2019:

Lease Classification	September 30, 2020	December 31, 2019
ROU Assets:		
Operating	$ 1,373,418	$ 1,043,537
Financing	571,329	958,590
Total ROU assets	$ 1,944,747	$ 2,002,127
Liabilities		
Current:		
Operating	$ 1,142,435	$ 1,017,414
Finance	348,000	579,030
Noncurrent:		
Operating	554,295	547,225
Finance	76,701	313,263
Total lease liabilities	$ 2,121,431	$ 2,456,932

Maturities of lease liabilities as of September 30, 2020 by fiscal year are as follows:

Maturity of Lease Liabilities	Operating	Finance	Total
2020	$ 413,498	$ 120,352	$ 533,850
2021	953,714	281,914	1,235,628
2022	205,389	45,374	250,763
2023	75,533	3,364	78,897
2024	75,533	280	75,813
Thereafter	44,061	—	44,061
Total lease payments	1,767,728	451,284	2,219,012
Less: Interest	(70,998)	(26,583)	(97,581)
Present value of lease liabilities	$ 1,696,730	$ 424,701	$ 2,121,431

Statement of operations classification of lease costs as of the three and nine months ended September 30, 2020, and 2019 are as follows:

		Three months ended September 30,		Nine months ended September 30,	
Lease Cost	Classification	2020	2019	2020	2019
Operating	Operating expenses	$ 332,241	$ 216,368	$ 882,659	$ 655,963
Finance:					
Amortization	Operating expenses	125,005	124,749	387,262	329,438
Interest expense	Other expenses	15,806	18,704	49,326	60,482
Total lease costs		$ 473,052	$ 359,821	$ 1,319,247	$ 1,045,883

Other lease information as of September 30, 2020 is as follows:

Other Information	Total
Weighted average remaining lease term (in years)	
Operating leases	2.0
Finance leases	1.1
Weighted average discount rate:	
Operating leases	5.9%
Finance leases	9.7%

Supplemental cash flow information as of the nine months ended September 30, 2020, and 2019 is as follows:

Supplemental Cash Flow Information	2020	2019
Cash paid for amounts included in the measurement of lease liabilities		
Cash used in operating activities		
Operating leases	$ 882,659	$ 655,963
Finance leases	$ 45,185	$ 60,482
Cash used in financing activities		
Finance leases	$ 467,593	$ 389,501
ROU assets obtained in exchange for lease obligations:		
Finance leases	$ —	$ 592,014

Note 11 – License agreements, research collaborations and development agreements

NYSDOH

In 2018, the Company announced a collaboration with the New York State Department of Health ("DOH") and ILÚM Health Solutions, LLC ("ILÚM"), a wholly-owned subsidiary of Merck's Healthcare Services and Solutions division, to develop a state-of-the-art research program to detect, track, and manage antimicrobial-resistant infections at healthcare institutions statewide. The Company is working together with DOH's Wadsworth Center and ILÚM to develop an infectious disease digital health and precision medicine platform that connects healthcare institutions to DOH and uses genomic microbiology for statewide surveillance and control of antimicrobial resistance. As part of the collaboration, the Company received approximately $1.6 million over the 15-month demonstration portion of the project. The demonstration project began in early 2019 and was completed in the first quarter of 2020. The Company began a second-year expansion phase to build on the successes and experience of the first year pilot phase while focusing on accomplishing the goal of this visionary effort to improve patient outcomes and save healthcare dollars by integrating real-time epidemiologic surveillance with rapid delivery of antibiotic resistance results to care-givers via web-based and mobile platforms. The second year contract includes a quarterly retainer-based project fee as well as volume-dependent per test fees for a total contract value of up to $450,000 to OpGen. During the three months ended September 30, 2020 and 2019, the Company recognized $43,000 and $75,000 of revenue related to the contract, respectively. During the nine months ended September 30, 2020 and 2019, the Company recognized $323,000 and $1,075,000 of revenue related to the contract, respectively.

Sandoz

In December 2018, Ares Genetics entered into a service frame agreement with Sandoz International GmbH ("Sandoz"), to leverage Ares Genetics' database on the genetics of antibiotic resistance, ARESdb, and the ARES Technology Platform for Sandoz' anti-infective portfolio.

Under the terms of the frame agreement, which has an initial term of 36 months and is currently scheduled to terminate December 13, 2021, Ares Genetics and Sandoz intend to develop a digital anti-infectives platform, combining established microbiology laboratory methods with advanced bioinformatics and artificial intelligence methods to support drug development and life-cycle management. The collaboration, in the short- to mid-term, aims to both rapidly and cost-effectively re-purpose existing antibiotics and design value-added medicines with the objective of expanding indication areas and to overcome antibiotic resistance, in particular with regards to infections with bacteria that has already developed resistance against multiple treatment options. In the longer-term, the platform is expected to inform the development of novel anti-infectives that are less prone to encounter resistance and thereby preserve antibiotics as an effective treatment option.

The agreement covers the first phases of the collaboration with Sandoz and provides certain moderate six-figure R&D funding to Ares Genetics. No milestones or royalties were agreed to as part of this first phase of the collaboration. The agreement may be terminated by Sandoz effective immediately at any time with written notice.

Qiagen

On February 18, 2019, Ares Genetics and Qiagen GmbH, or Qiagen, entered into a strategic licensing agreement for ARESdb and AREStools, in the area of antimicrobial resistance ("AMR") research. The agreement has a term of 20 years and may be terminated by Qiagen for convenience with 180 days written notice.

Ares Genetics has retained the rights to use ARESdb and AREStools for AMR research, customized bioinformatics services, and for the development of specific AMR assays and applications for the Curetis Group (including Ares Genetics), as well as third parties (e.g. other diagnostics companies or partners in the pharmaceutical industry). As the Qiagen research offering is expected to also enable advanced molecular diagnostic services and products, Qiagen's customers may obtain a diagnostic use license from Ares Genetics.

Under the terms of the agreement, Qiagen, in exchange for a moderate six figure up-front licensing payment, has received an exclusive RUO license to develop and commercialize general bioinformatics offerings and services for AMR research use only, based on Ares Genetics' database on the genetics of antimicrobial resistance, ARESdb, as well as on the ARES bioinformatics AMR toolbox, AREStools. Under the agreement, the parties agreed to a mid-single digit percentage royalty rate on Qiagen net sales, which is subject to a minimum royalty rate that steps up upon certain achieved milestones, which is payable to Ares Genetics. The parties also agreed to further modest six figure milestone payments upon certain product launches.

Global leading IVD corporation

On September 16, 2019, Ares Genetics entered into a multi-phase partnership with an undisclosed leading global in vitro diagnostics corporation, or the Partner, to jointly develop diagnostic solutions for infectious disease testing, based on next-generation sequencing, or NGS, technology. Ares Genetics and the Partner also entered into an R&D option agreement for the first phase of the partnership. Ares Genetics received an option fee of approximately $550,000. The initial 10-month term of the R&D collaboration, ended July 13, 2020, with payments excluding the option fee of approximately $1.2 million. The Partner could terminate, at any time and for any reason, with 30 days' written notice.

In the first phase of the collaboration, which lasted 10 months, the parties have further enriched ARESdb with a focus on certain pathogens relevant in a first, undisclosed infectious disease indication. Additional clinical isolates of such pathogens have been sequenced by Ares Genetics at its recently established NGS laboratory in Vienna, Austria. Based on this enlarged and enriched dataset, Ares Genetics has further developed the algorithms for predictive antibiotic resistance testing for drug/pathogen combinations particularly relevant in the targeted indication to enable NGS-based infectious disease diagnostics.

Under the initial agreement, the Partner funded Ares Genetics' R&D activities for the genotypic and phenotypic characterization of additional bacterial strains to augment ARESdb and the development of optimized algorithms for predicting antibiotic resistance. Furthermore, in return for the up-front option fee, the Partner obtained a three-month right for first negotiation for an exclusive human clinical diagnostic use license to ARESdb and the ARES Technology Platform. The option can be exercised during the term of the agreement plus three months. Subsequent to September 30, 2020, the Partner exercised the option on October 12, 2020.

The Company recognized approximately $351,000 and $816,000 of revenue related to the contract during the three and nine months ended September 30, 2020, respectively.

FISH License

The Company is a party to one license agreement with Life Technologies to acquire certain patent rights and technologies related to its FISH product line. Royalties are incurred upon the sale of a product or service which utilizes the licensed technology. The Company recognized net royalty expense of $62,500 for each of the three months ended September 30, 2020 and 2019. The Company recognized net royalty expense of $187,500 for each of the nine months ended September 30, 2020 and 2019. Annual future minimum royalty fees are $250,000 under this agreement. The Company terminated this license agreement in October 2020 effective as of June 30, 2020 in conjunction with its announced exit of the FISH business in June 2021. The Company will pay a one-time settlement fee of $350,000 and will pay a 10% royalty on the sale of eligible products through June 2021 but is no longer subject to any minimum royalty obligations.

Note 12 – Related party transactions

Prior to his departure from the Company's Board on September 30, 2019, Dr. David Rubin served as a representative of Merck Global Health Innovation Fund, or MGHIF, an affiliate of Merck, Inc. The Company has the following relationships with Merck and its subsidiaries:

On June 11, 2018, the Company executed the Allonge to its Second Amended and Restated Senior Secured Promissory Note, dated June 28, 2017, with a principal amount of $1,000,000 issued to MGHIF. The Allonge provided that accrued and unpaid interest of $285,512 due as of July 14, 2018, the original maturity date, be paid through the issuance of shares of OpGen's common stock in a private placement transaction. In addition, the Allonge revised and extended the maturity date for payment of the MGHIF Note to six semi-annual payments of $166,667 plus accrued and unpaid interest beginning on January 2, 2019 and ending on July 1, 2021. On July 30, 2018, the Company issued 7,212 shares of common stock to MGHIF in a private placement transaction for $285,512 of accrued and unpaid interest due as of July 14, 2018 under the MGHIF Note.

On April 1, 2020, as part of the Transaction, Oliver Schacht, Ph.D., the former CEO of Curetis N.V., was appointed as the CEO of the Company, and Johannes Bacher the former COO of Curetis N.V. was appointed as the COO of the Company. Effective April 1, 2020, Mr. Schacht and Mr. Bacher were appointed as liquidators of Curetis N.V. in liquidation and Curetis GmbH was designated as Custodian of the Books for Curetis N.V. During a portion of the nine months ended September 30, 2020, Curetis N.V. in liquidation processed payroll for Mr. Schacht and Mr. Bacher and invoiced OpGen and Curetis GmbH, respectively, in line with their signed management agreements.

Note 13 – Subsequent Events

Subsequent to September 30, 2020, the Company sold 355,691 shares of its common stock under the 2020 ATM Offering resulting in aggregate net proceeds to the Company of approximately $756,000, and gross proceeds of approximately $782,000. On November 13, 2020, the Company entered into an amended and restated at the market agreement for the 2020 ATM Offering in order to add BTIG as a sales agent in the offering.

On November 10, 2020, the Company entered into a new lease agreement to rent office space in Rockville, Maryland. The lease has an initial term of 10 years and is expected to commence in May 2021. The base rent under the new facility lease agreement is approximately $333,300 for the first year, escalating 2.75% annually thereafter. The lease is subject to additional charges for property management, common area expenses and other costs.

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

The following Management's Discussion and Analysis of Financial Condition and Results of Operations should be read in conjunction with the unaudited condensed consolidated financial statements and the accompanying notes thereto included in Part I, Item 1 of this quarterly report on Form 10-Q. This discussion contains forward-looking statements, based on current expectations and related to future events and our future financial performance, that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of many important factors, including those set forth under Part II. Item 1A. "Risk Factors" of this quarterly report on Form 10-Q and Part 1. Item 1A of our annual report on Form 10-K for the year ended December 31, 2019.

Overview

OpGen is a precision medicine company harnessing the power of molecular diagnostics and informatics to help combat infectious disease. Along with subsidiaries, Curetis GmbH and Ares Genetics GmbH, we are developing and commercializing molecular microbiology solutions helping to guide clinicians with more rapid and actionable information about life threatening infections to improve patient outcomes, and decrease the spread of infections caused by multidrug-resistant microorganisms, or MDROs. Our current product portfolio includes Unyvero, QuickFISH, PNA FISH, Acuitas AMR Gene Panel, Acuitas® Lighthouse, and the ARES Technology Platform including ARESdb, using NGS technology and AI-powered bioinformatics solutions for antibiotic response prediction. On October 13, 2020, we announced our decision to exit the FISH business in its entirety by June 30, 2021 and our licensinglicense agreement with Life Technologies a subsidiary of ThermoFisher has therefore been terminated accordinglyas of such date. Our FISH customers and distribution partners have been informed accordingly and last orders are expected to be processed in the coming months.

On April 1, 2020, we completed our business combination transaction (the "Transaction") with Curetis N.V., a public company with limited liability under the laws of the Netherlands (the "Seller" or "Curetis N.V."), as contemplated by the Implementation Agreement, dated as of September 4, 2019 (the "Implementation Agreement"), by and among the Company, the Seller, and Crystal GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany and wholly-owned subsidiary of the Company ("Purchaser"). Pursuant to the Implementation Agreement, the Purchaser acquired all of the shares of Curetis GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany ("Curetis GmbH") and certain other assets and liabilities of the Seller (together, "Curetis"). Curetis is an early commercial-stage molecular diagnostics (MDx) company focused on rapid infectious disease testing for hospitalized patients with the aim to improve the treatment of hospitalized, critically ill patients with suspected microbial infection and has developed the innovative Unyvero molecular diagnostic solution for comprehensive infectious disease testing. The Transaction was designed principally to leverage each company's existing research and development and relationships with hospitals and clinical laboratories to accelerate the sales of both companies' products and services.

The focus of OpGen is on its combined broad portfolio of products, which include high impact rapid diagnostics and bioinformatics to interpret AMR genetic data. The Company currently expects to focus on the following products for lower respiratory infection, urinary tract infection and invasive joint infection:

- The Unyvero Lower Respiratory Tract, or LRT, test is the first FDA cleared test that can be used for the detection of more than 90% of common causative agents of hospitalized pneumonia. According to the National Center for Health Statistics (2018), pneumonia is a leading cause of admissions to the hospital and is associated with substantial morbidity and mortality. The Unyvero LRT automated test detects 19 pathogens within less than five hours, with approximately two minutes of hands-on time and provides clinicians with a comprehensive overview of 10 genetic antibiotic resistance markers. We are also commercializing the Unyvero LRT BAL test for testing bronchoalveolar lavage, or BAL, specimens from patients with lower respiratory tract infections following FDA clearance received by Curetis in December 2019. The Unyvero LRT BAL automated test simultaneously now detects 20 pathogens and 10 antibiotic resistance markers, and it is the first and only FDA-cleared panel that includes now also includes *Pneumocystis jirovecii*, a key fungal pathogen often found in immunocompromised patients that can be difficult to diagnose as the 20th pathogen on the panel. We believe the Unyvero LRT and LRT BAL tests have the ability to help address a significant, previously unmet medical need that causes over $10 billion in annual costs for the U.S. healthcare system, according to the Centers for Disease Control, or CDC.

- The Unyvero Urinary Tract Infection, or UTI, test which is CE-IVD marked in Europe is currently being made available to laboratories in the U.S. as a research use only or RUO kit. The test detects a broad range of pathogens as well as antimicrobial resistance markers directly from native urine specimens. As part of our portfolio strategy update on October 13, 2020, we have decided to proceed with the analytical validation and clinical verification and trials required for a subsequent U.S. FDA submission. Microbial diagnosis of IJI is difficult because of challenges in sample collection, usually at surgery, and patients being on prior antibiotic therapy which minimizes the chances of recovering live bacteria. We believe that Unyvero IJI could be useful in identifying pathogens as well as their AMR markers to help guide optimal antibiotic treatment for these patients.

- The Unyvero Invasive Joint Infection, or IJI, test which is a variant developed for the U.S. market based on the CE IVD marked European Unyvero ITI test, has also been selected for analytical validation and clinical verification and trials towards a future U.S. FDA submission.

- The Acuitas AMR Gene Panel (Isolates) is currently pending final FDA review and a potential clearance decision. The FDA recently notified us that the agency plans to continue prioritizing emergency use authorization requests for diagnostic products intended to address the COVID-19 pandemic for at least the remainder of the year, which will impact the statutory review periods for submissions, including the potential clearance decision on our Acuitas AMR Gene Panel (Isolates) submission. Once FDA cleared, we expect to commercialize the Acuitas AMR Gene Panel for isolates more broadly to customers in the U.S. The Acuitas AMR Gene Panel (Urine) test has been discontinued as part of the October 13, 2020 portfolio and pipeline strategy review.

- We are also developing novel bioinformatics tools and solutions to accompany or augment our current and potential future IVD products and may seek regulatory clearance for such bioinformatics tools and solutions to the extent they would be required either as part of our portfolio of IVD products or even as a standalone bioinformatics product.

OpGen has extensive offerings of additional in vitro diagnostic tests including CE-marked Unyvero tests for hospitalized pneumonia patients, implant and tissue infections, intra-abdominal infections, complicated urinary tract infections, and blood stream infections. Our portfolio furthermore includes a CE IVD marked rapid test kit for SARS CoV-2 detection in combination with our PCR compatible universal lysis buffer (PULB) which we also market as a stand-alone RUO reagent.

OpGen's combined AMR bioinformatics offerings, once such products are cleared for marketing, if ever, will offer important new tools to clinicians treating patients with AMR infections. We have collaborated with Merck, Inc. to establish the Acuitas Lighthouse Knowledgebase, which is currently commercially available in the United States for RUO. The Acuitas Lighthouse Knowledgebase includes approximately 15,000 bacterial isolates from the Merck SMART surveillance network of 192 hospitals in 52 countries and other sources. Ares Genetics' ARESdb is a comprehensive database of genetic and phenotypic information. ARESdb was originally designed based on the SIEMENS microbiology strain collection covering resistant pathogens and its development has significantly expanded, also by transferring data from the Acuitas Lighthouse® into ARESdb to now cover approximately 55,000 bacterial isolates that have been sequenced using NGS technology and tested against over 100 antibiotics. In September 2019, Ares Genetics signed a technology evaluation agreement with an undisclosed global IVD corporation. In the collaboration, Ares Genetics further enriched ARESdb with a focus on certain pathogens relevant in a first, undisclosed infectious disease indication. Following the successful completion of this collaborative R&D project, the IVD partner has exercised their option for a 90-day period of exclusive negotiations with Ares Genetics for a potential exclusive license to ARESdb in the field of human clinical diagnostics, such negotiations are ongoing.

In addition to potential future licensing and partnering, Ares Genetics intends to also independently utilize the proprietary biomarker content in these databases, as well as to build an independent business in NGS and AI based offerings for AMR research and diagnostics in collaboration with its current and potential future partners in the life science, pharmaceutical and diagnostics industries. Ares Genetics has recently signed up Siemens Technology Accelerator and AGES (Austrian Agency for Health and Food Safety) as new customers, as well as entered into another technology assessment and feasibility project with another undisclosed major global IVD corporation, which was also successfully completed.

The Unyvero A50 tests for up to 130 diagnostic targets (pathogens and resistance genes) in under five hours with approximately two minutes of hands-on time. The system was first CE marked in 2012 and was FDA cleared in 2018 along with the LRT test through the De Novo process. As of September 30, 2020, there is an installed base of about 170 Unyvero A50 Analyzers globally. The Unyvero A30 RQ is a new device designed to address the low-to mid-plex testing market for 5-30 DNA targets and to provide results in 45 to 90 minutes with 2-5 minutes of hands on time. The Unyvero A30 RQ has a small laboratory footprint and has an attractive cost of goods profile. Curetis has been following a partnering strategy for the Unyvero A30 RQ.

The Company has extensive partner and distribution relationships to help accelerate the establishment of a global infectious disease diagnostic testing and informatics business. Partners include A. Menarini Diagnostics for pan-European distribution to currently 11 countries; Beijing Clear Biotech Co. Ltd. for Unyvero A50 product distribution in China. We have a network currently consisting of 26 distributors covering 45 countries. With the discontinuation of our FISH products business in Europe we expect that network of distributors to be reduced to only those distributors actively commercializing our Unyvero line of products and / or CE IVD marked SARS CoV-2 test kits.

OpGen will continue to develop and seek FDA and other regulatory clearances or approvals, as applicable, for the Acuitas Lighthouse Software products. OpGen will continue to offer the Acuitas AMR Gene Panel (Isolates) and Acuitas Lighthouse Software as well as the Unyvero UTI Panel as RUO products to hospitals, public health departments, clinical laboratories, pharmaceutical companies and contract research organizations ("CROs").

Our headquarters are in Gaithersburg, Maryland, and our principal operations are in Gaithersburg, Maryland and Holzgerlingen and Bodelshausen, both in Germany. We also have operations in Vienna, Austria. We operate in one business segment.

Recent developments

COVID-19

On March 11, 2020, the World Health Organization declared the novel coronavirus ("COVID-19") a pandemic, and on March 13, 2020, the United States declared a national emergency with respect to COVID-19. COVID-19 has negatively impacted the global economy, disrupted global supply chains and created significant volatility and disruption in the financial markets.

As a result, we have experienced a material impact on our business, financial condition or results of operations for the nine months ended September 30, 2020 and significant business disruptions as a result of the outbreak. For example, most of our employees are currently working remotely from home, we have suspended virtually all business travel, and we are mostly unable to physically meet with future and current customers to sell and market our products. In addition, the COVID-19 pandemic has interrupted many of our clinical activities, which might delay our ability to complete clinical trials and obtain regulatory approval for new products.

We continue to monitor the impacts of COVID-19 on the global economy and on our business operations. However, at this time, it is difficult to predict how long the potential operational impacts of COVID-19 will remain in effect or to what degree they will impact our operations and financial results. An extended period of global supply chain and economic disruption could materially affect our business, results of operations, access to sources of liquidity and financial condition, as well as our ability to execute our business strategies and initiatives in their respective expected time frames.

Financings

Since inception, we have incurred, and continue to incur, significant losses from operations. We have funded our operations primarily through external investor financing arrangements. During 2019, we raised net proceeds of approximately $13.1 million. On February 11, 2020, we entered into an ATM Agreement with Wainwright, which we amended and restated on November 13, 2020, to add BTIG as a sales agent, pursuant to which we may offer and sell from time to time in an "at the market offering," at its option, up to an aggregate of $22.1 million of shares of our common stock through Wainwright, asthe sales agentagents. During the three months ended September 30, 2020, we sold 1,523,663 shares of its common stock under the 2020 ATM Offering resulting in aggregate net proceeds to us of approximately $3.6 million, and gross proceeds of $3.8 million. During the nine months ended September 30, 2020, we sold 7,078,039 shares of its common stock under the 2020 ATM Offering resulting in aggregate net proceeds to us of approximately $15.0 million, and gross proceeds of $15.7 million. Additionally, during the nine months ended September 30, 2020, approximately 4.3 million common warrants issued in our October 2019 Public Offering were exercised raising net proceeds of approximately $8.7 million. See Note 2 ("Liquidity and management's plan") to the Notes to Unaudited Condensed Consolidated Financial Statements included in this quarterly report on Form 10-Q for additional information.

Results of operations for the three months ended September 30, 2020 and 2019

The results of operations for the three months ended September 30, 2019 herein exclude results from operations of Curetis and its subsidiaries for the three months ended September 30, 2019.

Revenues

	Three months ended September 30,	
	2020	2019
Product sales	$ 601,562	$ 573,035
Laboratory services	112,892	185
Collaboration revenue	342,311	75,000
Total revenue	$ 1,056,765	$ 648,220

Total revenue for the three months ended September 30, 2020 increased approximately 63% when compared to the same period in 2019, with a change in the mix of revenue, as follows:

- Product Sales: an increase in revenue of approximately 5% in the 2020 period compared to the 2019 period is primarily attributable to the inclusion of Curetis' products sales subsequent to the Transaction, offset in part by a reduction in the sale of our FISH rapid pathogen ID testing products due to the loss of large customers and COVID-19;
- Laboratory Services: an increase in revenue in the 2020 period compared to the 2019 period is primarily attributable to the inclusion of Ares Genetics' laboratory services subsequent to the Transaction; and
- Collaboration Revenue: an increase in revenue of approximately 356% in the 2020 period compared to the 2019 period is primarily the result of the inclusion of Ares Genetics' Collaboration revenue subsequent to the Transaction, offset by lower revenue from our contract with the New York State DOH.

Operating expenses

	Three months ended September 30,	
	2020	2019
Cost of products sold	$ 1,350,296	$ 262,373
Cost of services	159,794	196,184
Research and development	2,433,553	1,139,369
General and administrative	2,356,413	1,560,706
Sales and marketing	932,671	376,955
Transaction costs	—	538,061
Total operating expenses	$ 7,232,727	$ 4,073,648

Our total operating expenses for the three months ended September 30, 2020 increased approximately 78% when compared to the same period in 2019. Operating expenses changed as follows:

- Costs of products sold: cost of products sold for the three months ended September 30, 2020 increased approximately 415% when compared to the same period in 2019. The change in costs of products sold is primarily attributable to the inclusion of Curetis' cost of products sold subsequent to the Transaction as well as increased regulatory costs and an increase in the Company's inventory reserve;
- Costs of services: cost of services for the three months ended September 30, 2020 decreased approximately 19% when compared to the same period in 2019. The change in costs of services is primarily attributable to lower cost of services related to our contract with the New York State DOH;
- Research and development: research and development expenses for the three months ended September 30, 2020 increased approximately 114% when compared to the same period in 2019. The change in research and development is primarily attributable to the inclusion of Curetis' research and development expenses subsequent to the Transaction;
- General and administrative: general and administrative expenses for the three months ended September 30, 2020 increased approximately 51% when compared to the same period in 2019, primarily due to the inclusion of Curetis' expenses subsequent to the Transaction, as well as an increase in payroll related costs;
- Sales and marketing: sales and marketing expenses for the three months ended September 30, 2020 increased approximately 147% when compared to the same period in 2019, primarily due to the inclusion of Curetis' sales and marketing expenses subsequent to the Transaction, partially offset by lower travel costs; and
- Transaction costs: transaction costs for the three months ended September 30, 2019 represent one-time costs incurred as part of the business combination with Curetis;

Other expense

	Three months ended September 30,	
	2020	2019
Interest expense	$ (1,183,927)	$ (49,099)
Foreign currency transaction (losses) gains	(501,168)	(8,954)
Other (expense) income	19,965	1,043
Change in fair value of derivative financial instruments	165,497	—
Total other expense	$ (1,499,633)	$ (57,010)

Our total other expense for the three months ended September 30, 2020 when compared to the same period in 2019 increased primarily due to an increase in interest expense associated with the debt assumed as part of the Transaction with Curetis.

Results of operations for the nine months ended September 30, 2020 and 2019

The results of operations for the nine months ended September 30, 2020 and 2019 herein exclude results from operations of Curetis and its subsidiaries prior to its acquisition on April 1, 2020.

Revenues

	Nine months ended September 30,	
	2020	2019
Product sales	$ 1,569,799	$ 1,597,505
Laboratory services	138,884	5,435
Collaboration revenue	1,153,400	1,075,000
Total revenue	$ 2,862,083	$ 2,677,940

Total revenue for the nine months ended September 30, 2020 increased approximately 7% when compared to the same period in 2019, with a change in the mix of revenue, as follows:

- Product Sales: a decrease in revenue of approximately 2% in the 2020 period compared to the 2019 period is primarily attributable to a reduction in the sale of our FISH rapid pathogen ID testing products due to the loss of large FISH products customers and COVID-19, partially offset by the inclusion of Curetis' products sales subsequent to the Transaction;
- Laboratory Services: an increase in revenue of approximately 2455% in the 2020 period compared to the 2019 period is primarily attributable to the inclusion of Ares Genetics laboratory services subsequent to the Transaction; and
- Collaboration Revenue: an increase in revenue of approximately 7% in the 2020 period compared to the 2019 period is primarily the result of the inclusion of Ares Genetics' collaboration revenue subsequent to the Transaction, offset by lower revenue from our contract with the New York State DOH.

Operating expenses

	Nine months ended September 30,	
	2020	2019
Cost of products sold	$ 2,340,766	$ 681,568
Cost of services	550,115	592,647
Research and development	6,630,134	4,069,335
General and administrative	6,549,432	4,901,136
Sales and marketing	2,258,980	1,142,755
Transaction costs	470,322	538,061
Impairment of intangible assets	750,596	—
Impairment of right-of-use asset	—	520,759
Total operating expenses	$ 19,550,345	$ 12,446,261

Our total operating expenses for the nine months ended September 30, 2020 increased approximately 57% when compared to the same period in 2019. Operating expenses changed as follows:

- Costs of products sold: cost of products sold for the nine months ended September 30, 2020 increased approximately 243% when compared to the same period in 2019. The change in costs of products sold is primarily attributable to the inclusion of Curetis' cost of products sold subsequent to the Transaction as well as increased regulatory costs and an increase in the Company's inventory reserve;
- Costs of services: cost of services for the nine months ended September 30, 2020 decreased approximately 7% compared to the same period in 2019. The change in cost of service was primarily attributable to lower costs associated with our New York State DOH contract partially offset by the inclusion of Curetis' and Ares Genetics' cost of services subsequent to the Transaction;
- Research and development: research and development expenses for the nine months ended September 30, 2020 increased approximately 63% when compared to the same period in 2019. The change in research and development is primarily attributable to the inclusion of Curetis' research and development expenses subsequent to the Transaction;
- General and administrative: general and administrative expenses for the nine months ended September 30, 2020 increased approximately 34% when compared to the same period in 2019, primarily due to the inclusion of Curetis' expenses subsequent to the Transaction;
- Sales and marketing: sales and marketing expenses for the nine months ended September 30, 2020 increased approximately 98% when compared to the same period in 2019, primarily due to the inclusion of Curetis' sales and marketing expenses subsequent to the Transaction, partially offset by lower travel costs;
- Transaction costs: transaction costs for the nine months ended September 30, 2020 and 2019 represent one-time costs incurred as part of the business combination with Curetis;
- Impairment of intangible assets: impairment of intangible assets for the nine months ended September 30, 2020 represents the write down of intangible assets acquired from AdvanDx in 2015; and
- Impairment of right-of-use asset: impairment of right-of-use asset for the nine months ended September 30, 2019 represents the impairment of our Woburn, Massachusetts ROU asset recorded as part of the Company's adoption of ASU 2016-02, *Leases (Topic 842)* in 2019.

Other income (expense)

	Nine months ended September 30,	
	2020	2019
Interest expense	$ (2,267,085)	$ (142,672)
Foreign currency transaction losses	(794,832)	(9,426)
Other income (expense)	101,644	(8,213)
Change in fair value of derivative financial instruments	548,008	67
Total other income (expense)	$ (2,412,265)	$ (160,244)

Our total other expense for the nine months ended September 30, 2020 when compared to the same period in 2019 increased primarily due to an increase in interest expense associated with the debt assumed as part of the Transaction with Curetis.

Liquidity and capital resources

As of September 30, 2020, we had cash and cash equivalents of $10.5 million compared to $2.7 million at December 31, 2019. We have funded our operations primarily through external investor financing arrangements and have raised funds in 2020 and 2019, including:

During the three months ended September 30, 2020, we sold 1,523,663 shares of common stock under the 2020 ATM Offering resulting in aggregate net proceeds to us of approximately $3.6 million, and gross proceeds of $3.8 million. During the nine months ended September 30, 2020, we sold 7,078,039 shares of common stock under the 2020 ATM Offering resulting in aggregate net proceeds to us of approximately $15.0 million, and gross proceeds of $15.7 million.

During the nine months ended September 30, 2020, approximately 4.3 million common warrants issued in our October 2019 Public Offering were exercised for net proceeds of approximately $8.7 million.

On October 28, 2019, we closed the October 2019 Public Offering of 2,590,170 units at $2.00 per unit and 2,109,830 pre-funded units at $1.99 per pre-funded unit. The offering raised gross proceeds of approximately $9.4 million and net proceeds of approximately $8.3 million.

On March 29, 2019, we closed the March 2019 Public Offering of 450,000 shares of our common stock at a public offering price of $12.00 per share. The offering raised gross proceeds of $5.4 million and net proceeds of approximately $4.8 million.

To meet our capital needs, we are considering multiple alternatives, including, but not limited to, additional equity financings, debt financings and other funding transactions, and licensing and/or partnering arrangements. There can be no assurance that we will be able to complete any such transaction on acceptable terms or otherwise. We believe that current cash on hand will be sufficient to fund operations into the first quarter of 2021. This has led management to conclude that there is substantial doubt about our ability to continue as a going concern. In the event we are unable to successfully raise additional capital during or before the end of the first quarter of 2021, we will not have sufficient cash flows and liquidity to finance our business operations as currently contemplated. Accordingly, in such circumstances we would be compelled to immediately reduce general and administrative expenses and delay research and development projects, including the purchase of scientific equipment and supplies, until we are able to obtain sufficient financing. If such sufficient financing is not received on a timely basis, we would then need to pursue a plan to license or sell its assets, seek to be acquired by another entity, cease operations and/or seek bankruptcy protection.

Sources and uses of cash

Our principal source of liquidity is from financing activities, including issuances of equity and debt securities. The following table summarizes the net cash and cash equivalents provided by (used in) operating activities, investing activities and financing activities for the periods indicated:

	Nine months ended September 30,	
	2020	**2019**
Net cash used in operating activities	$ (16,458,167)	$ (8,055,962)
Net cash used in investing activities	(935,606)	(43,357)
Net cash provided by financing activities	24,215,316	4,169,371

Net cash used in operating activities

Net cash used in operating activities for the nine months ended September 30, 2020 consists primarily of our net loss of $19.1 million, reduced by certain noncash items, including impairment of intangible assets of $0.7 million, depreciation and amortization expense of $1.6 million, noncash interest expense of $1.7 million, and share-based compensation expense of $0.2 million. Net cash used in operating activities for the nine months ended September 30, 2019 consists primarily of our net loss of $9.9 million, reduced by certain noncash items, including impairment of ROU asset of $0.5 million, depreciation and amortization expense of $0.7 million, and stock-based compensation expense of $0.3 million.

Net cash used in investing activities

Net cash used in investing activities for the nine months ended September 30, 2020 consisted primarily of funds provided to Curetis GmbH as part of the Interim Facility offset by the acquisition of Curetis net of cash acquired of $1.3 million. Net cash provided by investing activities for the nine months ended September 30, 2019 consisted of the purchase of property and equipment offset by proceeds from the sale of equipment.

Net cash provided by financing activities

Net cash provided by financing activities for the nine months ended September 30, 2020 of $24.2 million consisted primarily of the net proceeds from the 2020 ATM Offering, exercises of common stock warrants, and issuance of debt. Net cash provided by financing activities for the nine months ended September 30, 2019 of $4.2 million consisted primarily of the net proceeds from the March 2019 Public Offering.

Critical accounting policies and use of estimates

This Management's Discussion and Analysis of Financial Condition and Results of Operations is based on our unaudited condensed consolidated financial statements, which have been prepared in accordance with GAAP. The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. In our unaudited consolidated financial statements, estimates are used for, but not limited to, liquidity assumptions, revenue recognition, share-based compensation, allowances for doubtful accounts and inventory obsolescence, valuation of derivative financial instruments measured at fair value on a recurring basis, deferred tax assets and liabilities and related valuation allowance, estimated useful lives of long-lived assets, and the recoverability of long-lived assets. Actual results could differ from those estimates.

A summary of our significant accounting policies is included in Note 3 "Summary of significant accounting policies" to the accompanying unaudited condensed consolidated financial statements. Certain of our accounting policies are considered critical, as these policies require significant, difficult or complex judgments by management, often requiring the use of estimates about the effects of matters that are inherently uncertain. Our critical policies are summarized in Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Annual Report on Form 10-K for the year ended December 31, 2019.

Recently issued accounting pronouncements

See Note 3 "Summary of significant accounting policies" in this Form 10-Q for a full description of recent accounting pronouncements, including the respective expected dates of adoption and effects on our unaudited condensed consolidated financial statements.

Off-balance sheet arrangements

As of September 30, 2020, and December 31, 2019, we did not have any off-balance sheet arrangements.

JOBS Act

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

Subject to certain conditions set forth in the JOBS Act, as an "emerging growth company," the Company intends to rely on certain of these exemptions, including without limitation, (i) providing an auditor's attestation report on our system of internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act of 2002 and (ii) complying with any requirement that may be adopted by the PCAOB regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, known as the auditor discussion and analysis. The Company will remain an "emerging growth company" until the earliest of (i) the last day of the fiscal year in which it has total annual gross revenues of $1.07 billion or more; (ii) December 31, 2020; (iii) the date on which the Company has issued more than $1 billion in nonconvertible debt during the previous three years; or (iv) the date on which the Company is deemed to be a large accelerated filer under the rules of the SEC.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

As a smaller reporting company, we are not required to provide the information required by this Item.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Disclosure controls and procedures are controls and other procedures that are designed to ensure that information required to be disclosed in our reports filed or submitted 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 in our reports filed under the Exchange Act is accumulated and communicated to management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Our management has carried out an evaluation, under the supervision and with the participation of our principal executive officer and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), as of September 30, 2020. Based upon that evaluation, our principal executive officer and principal financial officer concluded that, as of the end of the period covered by this report, our disclosure controls and procedures were effective. In designing and evaluating our disclosure controls and procedures, we recognize that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives.

Changes in Internal Control over Financial Reporting

On April 1, 2020, OpGen completed its business combination transaction of Curetis. The Company has not yet completed an assessment of the design and/or operating effectiveness of Curetis' internal control over financial reporting. There were no changes in the Company's internal control over financial reporting during the quarter ended September 30, 2020 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Part II. OTHER INFORMATION

Item 1. Legal Proceedings

None.

Item 1A. Risk Factors

Reference is made to the Risk Factors included in our Annual Report on Form 10-K for the year ended December 31, 2019, as supplemented by the following:

We have a history of losses, and we expect to incur losses for the next several years. The report of our independent registered public accounting firm on our financial statements for the years ended December 31, 2019 and 2018 contain explanatory language that substantial doubt exists about our ability to continue as a going concern.

We have incurred substantial losses since our inception, and we expect to continue to incur additional losses for the next several years. For the years ended December 31, 2019 and 2018, we had net losses of $12.4 million and $13.4 million, respectively. From our inception through September 30, 2020, we had an accumulated deficit of $193.6 million. The reports of our independent registered public accounting firm on our financial statements for the years ended December 31, 2019 and 2018 each contain explanatory language that substantial doubt exists about our ability to continue as a going concern. We completed a number of financings in 2019 and 2020 to date, including the October 2019 Public Offering, March 2019 Public Offering, and 2020 ATM Offering. The net proceeds from such financings were approximately $36.7 million. We believe we can fund our operations into the first quarter of 2021, but cannot assure you that we can continue to raise the capital necessary to fund our business beyond that date.

We need to raise equity capital to support our business. If we cannot do so successfully, we will not be able to continue as a going concern.

We need to raise equity capital to support our business. If we cannot do so successfully, we will not be able to continue as a going concern. To meet our capital needs, we are considering multiple alternatives, including, but not limited to, the 2020 ATM Offering, additional equity financings, debt financings, convertible note issuances, and other funding transactions, licensing and/or partnering arrangements and business combination transactions.

For example, in July 2015, in connection with our acquisition of our subsidiary, AdvanDx, MGHIF made investments in the Company, including the $1 million MGHIF Note, secured by a security interest in substantially all of our assets, including our intellectual property assets. The debt is due to be paid in six semi-annual payments of $166,667, which began on January 2, 2019 and will end on July 1, 2021. Such secured creditor rights could negatively impact our ability to raise money in the future. If we default on payments under the MGHIF Note, MGHIF has the rights of a secured creditor. If those rights are exercised, it could have a material adverse effect on our financial condition.

Further, in 2016, Curetis entered into a contract for an up to €25 million senior, unsecured loan financing facility from the European Investment Bank ("EIB"), which we assumed in connection with our acquisition of Curetis. As of September 30, 2020, $21.1 million plus deferred interest in the amount of approximately $3.4 million was outstanding under the contract.

We believe that additional equity financings are the most likely source of capital going forward. There can be no assurance that we will be able to complete any such financing transaction on acceptable terms or otherwise.

We believe that current cash on hand will be sufficient to fund operations into the first quarter of 2021. In the event we are unable to successfully raise additional capital during or before the first quarter of 2021, we will not have sufficient cash flows and liquidity to finance our business operations as currently contemplated. Accordingly, in such circumstances we would be compelled to immediately reduce general and administrative expenses and delay research and development projects, including the purchase of scientific equipment and supplies, until we are able to obtain sufficient financing. If such sufficient financing is not received timely, we would then need to pursue a plan to license or sell assets, seek to be acquired by another entity, cease operations and/or seek bankruptcy protection.

The COVID-19 pandemic has adversely impacted our business, financial condition and results of operations.

The COVID-19 pandemic has impacted the global economy and has impacted our operations in the United States and abroad, including by negatively impacting our sales and revenue. As a result we have implemented certain operational changes in order to address the evolving challenges presented by the global pandemic. We have experienced significant reductions in the demand for certain of our products, particularly due to the decline in elective medical procedures and medical treatment unrelated to COVID-19, which negatively impacted our revenues in the first half of fiscal year 2020. As the pandemic continues, we expect to continue to experience weakened demand for these products as a result of the reduction in elective and nonessential procedures, lower utilization of routine testing and related specimen collection, reduced spending by customers and reduced demand from research laboratories.

Healthcare providers, including our strategic partners, are focused almost exclusively on dealing with COVID-19, and may be unable to continue to participate in our clinical activities. For example, some clinical trial sites have imposed restrictions on site visits by sponsors and CROs, the initiation of new trials, and new patient enrollment to protect both site staff and patients from possible COVID-19 exposure and to focus medical resources on patients suffering from COVID-19. The pandemic will therefore likely delay enrollment in and completion of our clinical trials due to prioritization of hospital resources toward the outbreak, and some patients may not be able to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services. Moreover, due to site and participant availability during the pandemic and in the interest of patient safety, many of our partners have paused new subject enrollment for most clinical trials.

For ongoing and/or planned future trials, we have seen an increasing number of clinical trial sites imposing restrictions on patient visits to limit risks of possible COVID-19 exposure, and we may experience issues with participant compliance with clinical trial protocols as a result of quarantines, travel restrictions and interruptions to healthcare services. The current pressures on medical systems and the prioritization of healthcare resources toward the COVID-19 pandemic have also resulted in interruptions in data collection and submissions for certain clinical trials and delayed starts for certain planned studies. Further, health regulatory agencies globally may also experience disruptions in their operations as a result of the COVID-19 pandemic. The FDA and comparable foreign regulatory agencies mayhave had and may continue to have slower response times or be under-resourced, which could significantly delay the FDA's ability to timely review and process any submissions we or our partners have filed or may file. The FDA recently notified us that the agency plans to continue prioritizing emergency use authorization requests for diagnostic products intended to address the COVID-19 pandemic for at least the remainder of the year, which will impact the statutory review periods for submissions, including the potential clearance decision on our Acuitas AMR Gene Panel (isolates) submission.

As a result of the outbreak, we and certain of our suppliers may also be affected and could experience closures and labor shortages, which could disrupt activities. We could therefore face difficulty sourcing key components necessary to produce our product candidates, which may negatively affect our clinical development activities. Even if we are able to find alternate sources for some of these components, they may cost more, which could affect our results of operations and financial position.

At this point in time, there remains significant uncertainty relating to the potential effect of the novel coronavirus on our business and results of operations. As coronavirus becomes more widespread, each day manufacturing closures and travel restrictions may remain or worsen, all of which would have a negative impact on our ability to operate our business, financial condition and results of operations as well as virtual marketing, sales and customer service interactions not being as effective as in-person interactions.

Moreover, we have transitioned a significant subset of our office-based employee population to a remote work environment in an effort to mitigate the spread of COVID-19, which may exacerbate certain risks to our business, including cybersecurity attacks and risk of phishing due to an increase in the number of points of potential attack, such as laptops and mobile devices (both of which are now being used in increased numbers). Additionally, we may find that remote work arrangements are not as efficient as physical operations.

We and our wholly-owned subsidiary, Curetis USA, accepted loans under the CARES Act pursuant to the Paycheck Protection Program, or the PPP, which loan may not be forgiven or may subject us to challenges and investigations regarding qualification for the loan.

We have secured loans under the CARES Act Paycheck Protection Program ("PPP") in the aggregate amount of approximately $1.1 million. We intend to use such funds for the intended purposes to maintain our employee base and pay rent and utility expenses. There has been significant negative publicity regarding the receipt of PPP loans by publicly traded companies, and there is a risk that our receipt of PPP loans will be closely scrutinized and additional requirements will be imposed on us by the lender and the Small Business Association, or the SBA.

The PPP loan application required us to certify, among other things, that the current economic uncertainty made the PPP loan request necessary to support our ongoing operations. While we made this certification in good faith after analyzing, among other things, our financial situation and access to alternative forms of capital, and believe that we satisfied all eligibility criteria for the PPP loan and that our receipt of the PPP loans is consistent with the broad objectives of the PPP of the CARES Act, the certification described above does not contain any objective criteria and is subject to interpretation.

In addition, the SBA previously stated that it is unlikely that a public company with substantial market value and access to capital markets will be able to make the required certification in good faith. The lack of clarity regarding loan eligibility under the PPP has resulted in significant media coverage and controversy with respect to public companies applying for and receiving loans. If, despite our good faith belief that we satisfied all eligibility requirements for the PPP loans, we are found to have been ineligible to receive the PPP loans or in violation of any of the laws or governmental regulations that apply to us in connection with the PPP loans, including the False Claims Act, we may be subject to penalties, including significant civil, criminal and administrative penalties and could be required to repay the PPP loans.

During September and November of 2020, we filed for forgiveness of the secured loans we received under the PPP. As part of the forgiveness process, we were required to make certain certifications which will be subject to audit and review by governmental entities and could subject us to significant penalties and liabilities if found to be inaccurate, including under the False Claims Act. In addition, our receipt of the PPP loans may result in adverse publicity and damage to our reputation, and a review or audit by the SBA or other government entity or claims under the False Claims Act could consume significant financial and management resources. Any of these events could harm our business, results of operations and financial condition.

Customer demand for and our ability to sell and market our products may be adversely affected by the COVID-19 pandemic and the legislative and regulatory responses thereto.

U.S. state and local governments as well as many governments around the world have imposed orders, restrictions and recommendations resulting in closures of businesses, work stoppages, travel restrictions, social distancing practices and cancellations of gatherings and events. Such orders, restrictions and recommendations, combined with fears of the spreading of COVID-19, has and may continue to cause certain of our customers to delay, cancel or reduce orders of our products and makes it difficult to facilitate meetings with current and potential customers, as our sales personnel often rely on in-person meetings and interaction with our customers. COVID-19 related restrictions have thus harmed our sales efforts, and continued restrictions could have a negative impact on our sales and results of operations. We are unable to accurately predict how these factors will reduce our sales going forward and when these orders, restrictions and recommendations will be relaxed or lifted. There can be no assurances that our customers and distributors will resume purchases of our products upon termination of these governmental orders, restrictions and recommendations, particularly if there remains any continued community outbreak of COVID-19. A prolonged economic contraction or recession may also result in our customers seeking to reduce their costs and expenditures, which could result in lower demand for our products. If our sales decline, or if such lost sales are not recoverable in the future, our revenues, business and results of operations will be significantly adversely affected.

It is not possible to predict the future of the emerging COVID-19 global pandemic or the development of potential tests or treatments. No assurance can be given that our products will aid in the testing or the treatment of this virus.

We offer products for the testing for SARS-CoV-2, the causal pathogen of COVID-19. We may offer other products for testing or treatment of coronavirus. There can be no assurance that the existing test or any such future tests will be broadly adopted for use. We are among many companies that are trying to develop and commercialize tests for coronavirus, most of whom have far greater resources than us. If one of these companies develops an effective test, our development of such tests may not significantly increase our revenues and results of operations.

We incurred significant indebtedness as a result of the combination with Curetis, which could have a material adverse effect on our financial condition.

On April 1, 2020, we assumed the indebtedness of Curetis N.V. and Curetis. As of September 30, 2020, we owed indebtedness of $21.1 million of principal (plus deferred interest of $3.4. million) under a loan provided by the European Investment Bank with maturities in 2022, 2023, and 2024. In addition, we have secured indebtedness to MGHIF under the MGHIF Note. OpGen may not be able to generate sufficient cash to service all of its indebtedness and may be forced to take other actions to satisfy its obligations under indebtedness that may not be successful. The inability in the future to repay such indebtedness when due would have a material adverse effect on us.

The business combination transaction with Curetis significantly changed the business and operations of OpGen. We may face challenges integrating the businesses.

Following the consummation of the combination with Curetis, we will continue as the operating entity and both the size and geographic scope of our business will significantly increase. Most of the Curetis business is currently conducted in Europe, Asia and other countries outside of the United States, and many of the Curetis employees are located outside of the United States. In addition, the majority of the initial board of directors consist of individuals appointed by Curetis N.V., and we expect that the focus of our business may shift to Curetis operations. We may face challenges integrating such geographically diverse businesses and implementing a smooth transition of business focus and governance in a timely or efficient manner, especially while the global COVID-19 pandemic is continuing. In particular, if the effort we devote to the integration of our businesses diverts more management time or other resources from carrying out our operations than we originally planned, our ability to maintain and increase revenues as well as manage our costs could be impaired. Furthermore, our capacity to expand other parts of our existing businesses may be impaired. We also cannot assure you that our combination with Curetis will function as we anticipate, or that significant synergies will result from the business combination. Any of the above could have a material adverse effect on our business.

Management and the board of directors of OpGen changed upon the consummation of our acquisition of the Curetis businesses. We cannot assure you that this will not have a material impact on our business.

Oliver Schacht, Ph.D., the prior chief executive officer of Curetis N.V., became the chief executive officer at the closing of our acquisition of the Curetis business. Pursuant to the acquisition, four members of our board of directors following the closing were appointed by Curetis N.V. and two by OpGen. Any new members of management or new directors are likely to have different backgrounds, experiences and perspectives from those individuals who previously served as executive officers or directors and, thus, may have different views on the issues that will determine our future. Additionally, the ability of our new directors to quickly expand their knowledge of our operations will be critical to their ability to make informed decisions about our business and strategies, particularly given the competitive environment in which we operate. As a result, our future strategy and plans may differ materially from those of the past.

The acquisition of the Curetis businesses may not lead to the growth and success of the combined business that we believe will occur.

Although we believe the combination of the OpGen and Curetis businesses provides a significant commercial opportunity for growth, we may not realize all of the synergies that we anticipate and may not be successful in implementing our commercialization strategy. Our combined business will be subject to all of the risks and uncertainties inherent in the pursuit of growth in our industry and we may not be able to successfully sell our products, obtain the regulatory clearances and approvals we apply for or, or realize the anticipated benefits from our distribution, collaboration and other commercial partners. If we are not able to grow our business as a commercial enterprise, our financial condition will be negatively impacted.

Integrating the businesses of OpGen and Curetis may disrupt or have a negative impact on OpGen.

We could have difficulty integrating the assets, personnel and business of OpGen and Curetis. The proposed transaction was complex and we have devoted and will need to continue to devote significant time and resources to integrating the businesses. Risks that could impact us negatively include:

- the difficulty of integrating the acquired companies, and their concepts and operations;
- the difficulty in combining our financial operations and reporting;
- the potential disruption of the ongoing businesses and distraction of our management;
- changes in our business focus and/or management;
- risks related to international operations;
- the potential impairment of relationships with employees and partners as a result of any integration of new management personnel; and
- the potential inability to manage an increased number of locations and employees.

If we are not successful in addressing these risks effectively, our business could be severely impaired.

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

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

On November 11, 2020, the Company entered into a Lease (the "Lease Agreement") with Key West MD Owner, LLC (the "Landlord") for the lease of a new corporate facility at 9717 Key West Avenue, Rockville, Maryland 20850. The facility consists of approximately 10,100 square feet, which will serve as the Company's new corporate headquarters and also be used for research and development purposes upon commencement of the Lease. The term of the Lease Agreement commences upon the earlier of the Company first occupying the facility and May 1, 2021 and will continue for ten (10) years and ten (10) months. The Company has the right, at its sole option, to extend the term of the Lease Agreement for one additional period of five (5) years. The Lease Agreement provides for annual base rent of approximately $333,300 in the first year of the Lease Agreement, which increases on a yearly basis up to approximately $437,229 for the final ten months of the lease.

The foregoing description of the material terms of the Lease Agreement does not purport to be complete and is qualified in its entirety by reference to such agreement, which is attached as Exhibit 10.6 hereto.

Item 6. Exhibits

Exhibit Number	Description
3.1	Amendment to the Amended and Restated Bylaws of OpGen, Inc., dated August 5, 2020 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on August 11, 2020)
10.1	Executive Employment Agreement by and between the Company and Oliver Schacht, dated as of October 29, 2020.(incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on November 2, 2020)
10.2	Managing Director's Employment Contract by and between Curetis GmbH and Johannes Bacher, dated August 6, 2020 (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on August 11, 2020).
10.3*	2020 Stock Options Plan, dated September 30, 2020
10.4*	Form of Director Grant to the 2020 Stock Options Plan
10.5*	Form of Employee Grant to the 2020 Stock Options Plan
10.6*	Lease Agreement, dated as of November 11, 2020, between the Registrant and Key West MD Owner, LLC (the "Landlord")
31.1*	Certification of Chief Executive Officer pursuant to Rule 13a-14(a)/15d-14(a).
31.2*	Certification of Chief Financial Officer pursuant to Rule 13a-14(a)/15d-14(a).
32.1*	Certification of Chief Executive Officer and Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101*	Interactive data files pursuant to Rule 405 of Regulation S-T: (i) the Condensed Consolidated Balance Sheets, (ii) the Condensed Consolidated Statements of Operations and Comprehensive Loss, (iii) the Condensed Consolidated Statements of Cash Flows and (iv) the Notes to Unaudited Condensed Consolidated Financial Statements.

* Filed or furnished herewith

SIGNATURES

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

OPGEN, INC.

By: /s/ Timothy C. Dec
Timothy C. Dec
Chief Financial Officer

Date: November 16, 2020

OPGEN, INC.

2020 STOCK OPTION PLAN

ARTICLE 1
ADMINISTRATION

1.1 Effective Date. The Plan became effective upon approval by the stockholders at the Annual Meeting held on September 30, 2020. The 2020 Stock Options Plan will terminate upon the expiration or termination of the last outstanding award.

1.2 Administration. The Compensation Committee ("Committee") of the Board of Directors of OpGen, Inc. (the "Company") will administer the 2020 Stock Options Plan ("Plan"), including, whether, for U.S. taxpayer employees, an option is to be classified as an incentive stock option or non-qualified stock option. To the extent necessary to comply with Rule 16b-3 of the Exchange Act, the Committee, shall consist solely of two or more nonemployee Directors appointed by and holding office at the pleasure of the Board, each of whom is intended to qualify as a "non-employee director" as defined by Rule 16b-3 of the Exchange Act or any successor rule. Additionally, to the extent required by Applicable Law, each of the individuals constituting the Committee shall be an "independent director" under the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded. The Committee's interpretation of the Plan, any Option granted pursuant to the Plan, all decisions and determinations by the Committee with respect to the Plan are final, binding and conclusive on all parties.

1.3 Authorized shares. The aggregate number of shares of common stock of the Company authorized for issuance under the Plan is 1,300,000 shares of common stock. Shares subject to awards granted under the 2020 Stock Options Plan that are forfeited or terminated before being exercised will not be available for re-issuance under the 2020 Stock Options Plan. No more than 500,000 shares may be delivered upon the exercise of incentive stock options granted under the Plan.

1.4 Adjustments. In the event of a recapitalization, stock split or similar capital transaction, the Committee will make appropriate and equitable adjustments to the number of shares reserved for issuance under the Options Plan, the number of shares that can be issued as incentive stock options, the number of shares subject to outstanding awards and the exercise price under each outstanding stock option.

ARTICLE 2

OPTION TERMS

2.1 Grant of Options. The following individuals shall be granted stock options under the Plan in the amounts set forth on the following chart:

Eligible Holders	Number of Stock Options
Board of Directors	
William E. Rhodes, III, Board Chair	50,000
Mario Crovetto	50,000
R. Donald Elsey	50,000
Prabhavathi Fernandes, Ph.D.	50,000
Evan Jones	50,000
Executive Officers	
Oliver Schacht, Ph.D.	630,000
Johannes Bacher	210,000
Timothy C. Dec	210,000

Options granted to Officers shall be Incentive Stock Options, provided, however, that to the extent that the aggregate Fair Market Value of stock with respect to which "incentive stock options" (within the meaning of Section 422 of the Internal Revenue Code of 1986 (the "Code") but without regard to Section 422(d) of the Code) are exercisable for the first time by an Officer during any calendar year under the Plan, and all other plans of the Company and any parent or subsidiary corporation thereof (each as defined in Section 424(e) and 424(f) of the Code, respectively), exceeds $100,000, the Options shall be treated as Non-Qualified Stock Options to the extent required by Section 422 of the Code. The rule set forth in the immediately preceding sentence shall be applied by taking Options and other "incentive stock options" into account in the order in which they were granted and the Fair Market Value of stock shall be determined as of the time the respective options were granted. Options granted to members of the Board of Directors shall be Nonqualified Stock Options, which are options that do not qualify as "incentive stock options" within the meaning of Section 422 of the Code

2.2 Exercise Price. All stock Options under the Plan must be granted with an exercise price of at least 100% of the Fair Market Value of the common stock on the date of grant. Incentive stock options granted to any holder of more than 10% of the voting shares must have an exercise price of at least 110% of the fair market value of the common stock on the date of grant. All Options shall have an exercise price of $2.12 per share. The stock option agreement specifies the date when all or any installment of the option is to become exercisable.

2.3 Manner of Exercise. For non-employee Directors, payment of the exercise price must be made in cash. For executive Officers, payment of the exercise price may be made in cash or, if provided for in the stock option agreement evidencing the award, (1) by surrendering, or attesting to the ownership of, shares which have already been owned by the Holder, (2) by delivery of an irrevocable direction to a securities broker to sell shares and to deliver all or part of the sale proceeds to us in payment of the aggregate exercise price, (3) by a "net exercise" arrangement, or (4) by any other form that is consistent with applicable laws, regulations and rules.[1]

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[1] NTD: the Option Agreement will permit all these methods for Officers.

2.4 Awards to Non-Employee Directors. The Options granted to the members of the Board of Directors will have a one-year vesting schedule, vesting quarterly in equal installments on the first day of each three month period as long as the Director is providing services to the Company on each such vesting date. The term of such stock options are ten (10) years after the date of grant; provided, however, that any unvested stock options will expire if the Director ceases providing services to the Company, and a departing Director will have ninety (90) days to exercise vested stock options after the Director ceases providing services to the Company.

2.5 Awards to Executive Officers. The Options granted to the Officers will have a four year vesting schedule, vesting 25% on the first anniversary of the date of grant and the remaining options vesting 6.25% on the quarterly anniversary of the first vesting date for a period of three years, as long as the Officer continues providing services to the Company on each such vesting date. The term of such stock options are ten (10) years after the date of grant; provided, however, that any unvested stock options will expire if the Officer ceases providing services to the Company, and a departing Officer will have ninety (90) days to exercise vested stock options after the Officer ceases providing services to the Company.

ARTICLE 3

GENERAL TERMS

3.1 No Transfer. No award granted under the 2020 Stock Options Plan may be transferred in any manner, other than by will or the laws of descent and distribution, provided, however, that an incentive stock option may be transferred or assigned only to the extent consistent with Section 422 of the Code.

3.2 Change in Control. In the event of a merger or other reorganization involving the Company, outstanding awards will be subject to the agreement of merger or reorganization. Such agreement will provide for (1) the continuation of the outstanding awards by the Company if it is the surviving corporation, (2) the assumption or substitution of the outstanding awards by the surviving corporation or its parent or subsidiary, (3) immediate vesting, exercisability and settlement of the outstanding awards followed by their cancellation, or (4) settlement of the intrinsic value of the outstanding awards (whether or not vested or exercisable) in cash, cash equivalents, or equity (including cash or equity subject to deferred vesting and delivery consistent with the vesting restrictions applicable to such award or the underlying shares) followed by cancellation of such awards.

3.3 Termination or Amendment. The Plan can be terminated by the Board of Directors or the Committee at any time, and, subject to stockholder approval where required by applicable law, can be amended. Any amendment or termination may not materially impair the rights of holders of outstanding awards without their consent.

3.4 Compliance with Laws. The Plan and the Options awarded under the Plan and the issuance and delivery of Shares are subject to compliance with all Applicable Law (including but not limited to state, federal and foreign securities law and margin requirements), and to such approvals by any listing, regulatory or governmental authority as may, in the opinion of counsel for the Company, be necessary or advisable in connection therewith.

3.5 Governing Law. The Plan and any agreements hereunder shall be administered, interpreted and enforced under the internal laws of the State of Delaware without regard to conflicts of laws thereof or of any other jurisdiction.

Non-employee Director Stock Option Award Agreement
Granted Under OpGen, Inc. 2020 Stock Options Plan

1. Grant of Option. This certificate evidences a stock option (this "Stock Option") granted by OpGen, Inc., a Delaware corporation (the "Company"), on **September 30, 2020** (the "Grant Date"), to _____ (the "Holder"), pursuant to the Company's 2020 Stock Options Plan (as from time to time in effect, the "Plan"). Under this Stock Option, the Holder may purchase, in whole or in part, on the terms herein provided, a total of _____ (_____) shares of common stock of the Company (the "Shares") at $2.12 per Share, which is equal to the fair market value of the Shares on the Grant Date. The latest date on which this Stock Option, or any part thereof, may be exercised is **September 30, 2030** (the "Final Exercise Date") subject to earlier termination as provided in the Plan.

This Stock Option will have a one-year vesting schedule, vesting quarterly in equal installments on the first day of each three-month period as long as the Director is providing services to the Company on each such vesting date.

2. Provisions of the Plan. This Stock Option is subject to the provisions of the Plan, which are incorporated herein by reference. A copy of the Plan as in effect on the date of the grant of this Stock Option has been furnished to the Holder. By exercising all or any part of this Stock Option, the Holder agrees to be bound by the terms of the Plan and this certificate. All initially capitalized terms used herein will have the meaning specified in the Plan, unless another meaning is specified herein.

1.1 Partial Exercise. An exercisable Option may be exercised in whole or in part. However, an Option shall not be exercisable with respect to fractional Shares and the Administrator may require that, by the terms of the Option, a partial exercise must be with respect to a minimum number of Shares.

1.2 Manner of Exercise. All or a portion of an exercisable Option shall be deemed exercised upon delivery of all of the following to the Secretary of the Company, the stock plan administrator of the Company or such other person or entity designated by the Administrator, or his, her or its office, as applicable:

(a) A written or electronic notice complying with the applicable rules established by the Administrator stating that the Option, or a portion thereof, is exercised. The notice shall be signed by the Holder or other person then entitled to exercise the Option or such portion of the Option;

(b) Such representations and documents as the Administrator, in its sole discretion, deems necessary or advisable to effect compliance with Applicable Law. The Administrator, in its sole discretion, may also take whatever additional actions it deems appropriate to effect such compliance including, without limitation, placing legends on share certificates and issuing stop-transfer notices to agents and registrars;

(c) In the event that the Option shall be exercised pursuant to Section 11.3 by any person or persons other than the Holder, appropriate proof of the right of such person or persons to exercise the Option, as determined in the sole discretion of the Administrator; and

(d) Full payment of the exercise price and applicable withholding taxes to the stock plan administrator of the Company for the Shares with respect to which the Option, or portion thereof, is exercised, in a manner permitted by Sections 11.1 and 11.2.

1.3 Payment. If the Holder is an executive Officer, the exercise price may be paid by one or more of the following methods: (a) cash or check, (b) Shares (including Shares issuable pursuant to the exercise of the Option) or Shares held for such period of time as may be required by the Committee in order to avoid adverse accounting consequences, in each case, having a Fair Market Value on the date of delivery equal to the aggregate payments required, (c) delivery of a written or electronic notice that the Holder has placed a market sell order with a broker acceptable to the Company with respect to Shares then issuable upon exercise of the Option, and that the broker has been directed to pay a sufficient portion of the net proceeds of the sale to the Company in satisfaction of the aggregate payments required; provided that payment of such proceeds is then made to the Company upon settlement of such sale, or (d) other form of legal consideration acceptable to the Committee in its sole discretion. The Committee shall also determine the methods by which Shares shall be delivered or deemed to be delivered to Holders.

1.4 Tax Withholding. The Company or any Subsidiary shall have the authority and the right to deduct or withhold, or require a Holder to remit to the Company, an amount sufficient to satisfy federal, state, local and foreign taxes (including the Holder's FICA, employment tax or other social security contribution obligation) required by law to be withheld with respect to any taxable event concerning a Holder arising as a result of the Plan. The Administrator, in its sole discretion and in satisfaction of the foregoing requirement, may withhold, or allow a Holder to elect to have the Company withhold, Shares otherwise issuable under an Option (or allow the surrender of Shares). The number of Shares which may be so withheld or surrendered shall be limited to the number of Shares which have a Fair Market Value on the date of withholding or repurchase equal to the aggregate amount of such liabilities based on the applicable statutory withholding rates for federal, state, local and foreign income tax and payroll tax purposes that are applicable to such supplemental taxable income without leading to any avoid adverse accounting consequences. The Administrator shall determine the Fair Market Value of the Shares, consistent with applicable provisions of the Code, for tax withholding obligations due in connection with a broker-assisted cashless Option exercise involving the sale of Shares to pay the Option exercise price or any tax withholding obligation.

1.5 Conditions to Issuance of Shares.

(a) Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any certificates or make any book entries evidencing Shares pursuant to the exercise of any Award, unless and until the Board or the Committee has determined, with advice of counsel, that the issuance of such Shares is in compliance with Applicable Law and the Shares are covered by an effective registration statement or applicable exemption from registration. In addition to the terms and conditions provided herein, the Board or the Committee may require that a Holder make such reasonable covenants, agreements and representations as the Board or the Committee, in its sole discretion, deems advisable in order to comply with Applicable Law.

(b) All share certificates delivered pursuant to the Plan and all Shares issued pursuant to book entry procedures may be subject to any stop-transfer orders and other restrictions as the Administrator deems necessary or advisable to comply with Applicable Law. The Administrator may place legends on any share certificate or book entry to reference restrictions applicable to the Shares.

(c) The Administrator shall have the right to require any Holder to comply with any timing or other restrictions with respect to the settlement, distribution or exercise of any Award, including a window-period limitation, as may be imposed in the sole discretion of the Administrator.

(d) Notwithstanding any other provision of the Plan, unless otherwise determined by the Administrator or required by Applicable Law, the Company shall not deliver to any Holder certificates evidencing Shares issued in connection with any Award and instead such Shares shall be recorded in the books of the Company (or, as applicable, its transfer agent or stock plan administrator).

(e) Any securities delivered under the Plan shall be subject to such restrictions, and the person acquiring such securities shall, if requested by the Company, provide such assurances and representations to the Company as the Company may deem necessary or desirable to assure compliance with all Applicable Law. To the extent permitted by Applicable Law, the Plan and Awards granted or awarded hereunder shall be deemed amended to the extent necessary to conform to Applicable Law.

1.6 Notification Regarding Disposition. The Holder shall give the Company prompt written or electronic notice of any disposition of Shares acquired by exercise of an Incentive Stock Option which occurs within (a) two years from the date of grant (including the date the Option is modified, extended or renewed for purposes of Section 424(h) of the Code) of such Option to such Holder, or (b) one year after the transfer of such Shares to such Holder.

1.7 At-Will Employment; Voluntary Participation. Nothing in the Plan or in any Program or Award Agreement hereunder shall confer upon any Holder any right to continue in the employ of, or as a Director for, the Company or any Subsidiary, or shall interfere with or restrict in any way the rights of the Company and any Subsidiary, which rights are hereby expressly reserved, to discharge any Holder at any time for any reason whatsoever, with or without cause, and with or without notice, or to terminate or change all other terms and conditions of employment or engagement, except to the extent expressly provided otherwise in a written agreement between the Holder and the Company or any Subsidiary. Participation by each Holder in the Plan shall be voluntary and nothing in the Plan shall be construed as mandating that any Eligible Individual shall participate in the Plan.

1.8 No Stockholders Rights. Except as otherwise provided herein, a Holder shall have none of the rights of a stockholder with respect to Shares covered by any Award until the Holder becomes the record owner of such Shares.

1.9 Paperless Administration. In the event that the Company establishes, for itself or using the services of a third party, an automated system for the documentation, granting or exercise of Awards, such as a system using an internet website or interactive voice response, then the paperless documentation, granting or exercise of Awards by a Holder may be permitted through the use of such an automated system.

1.10 "Termination of Service" means:

(a) As to a Non-Employee Director, the time when a Holder who is a Non-Employee Director ceases to be a Director for any reason, including, without limitation, a termination by resignation, failure to be elected, death or retirement, but excluding terminations where the Holder simultaneously commences or remains in employment or service with the Company or any Subsidiary.

(b) As to an Employee, the time when the employee-employer relationship between a Holder and the Company or any Subsidiary is terminated for any reason, including, without limitation, a termination by resignation, discharge, death, disability or retirement; but excluding terminations where the Holder simultaneously commences or remains in employment or service as a Consultant or Non-Employee Director with the Company or any Subsidiary.

The Administrator, in its sole discretion, shall determine the effect of all matters and questions relating to any Termination of Service, including, without limitation, the question of whether a Termination of Service resulted from a discharge for "cause" and all questions of whether particular leaves of absence constitute a Termination of Service; provided, however, that, with respect to Incentive Stock Options, a leave of absence, change in status from an employee to an independent contractor or other change in the employee-employer relationship shall constitute a Termination of Service only if, and to the extent that, such leave of absence, change in status or other change interrupts employment for the purposes of Section 422(a)(2) of the Code and the then-applicable regulations and revenue rulings under said Section. For purposes of the Plan, a Holder's employee-employer relationship or consultancy relations shall be deemed to be terminated in the event that the Subsidiary employing or contracting with such Holder ceases to remain a Subsidiary following any merger, sale of stock or other corporate transaction or event (including, without limitation, a spin-off).

IN WITNESS WHEREOF, the Company has caused this instrument to be executed by its duly authorized officer.

OpGen, Inc.

Dated:

_____

By:
Title:

Acknowledged and agreed:
Holder

Dated:

_____

Name:

Employee Stock Option Award Agreement
Granted Under OpGen, Inc. 2020 Stock Options Plan

1. Grant of Option. This certificate evidences a stock option (this "Stock Option") granted by OpGen, Inc., a Delaware corporation (the "Company"), on **September 30, 2020** (the "Grant Date"), to _____ (the "Holder"), pursuant to the Company's 2020 Stock Options Plan (as from time to time in effect, the "Plan"). Under this Stock Option, the Holder may purchase, in whole or in part, on the terms herein provided, a total of _____ (_____) shares of common stock of the Company (the "Shares") at $2.12 per Share, which is equal to the fair market value of the Shares on the Grant Date. The latest date on which this Stock Option, or any part thereof, may be exercised is **September 30, 2030** (the "Final Exercise Date") subject to earlier termination as provided in the Plan. If the Holder is an executive Officer, the Stock Option evidenced by this certificate is intended to be, and is hereby designated, as an incentive stock option as defined in section 422 of the Internal Revenue Code of 1986, as amended from time to time (the "Code"), to the extent permitted by section 422 of the Code, and a nonstatutory option, that is, an option that does *not* qualify as an incentive stock option as defined in section 422 of the Code for the remainder. Defined terms used in this Award Agreement without definition have the meanings set forth in the Plan.

This Stock Option is exercisable in the following installments prior to the Final Exercise Date: twenty-five percent (25%) of the shares underlying this Stock Option on the first anniversary of the Grant Date (the "Vesting Commencement Date"), and six and one-quarter percent (6.25%) at the end of each quarterly period thereafter.

2. Provisions of the Plan. This Stock Option is subject to the provisions of the Plan, which are incorporated herein by reference. A copy of the Plan as in effect on the date of the grant of this Stock Option has been furnished to the Holder. By exercising all or any part of this Stock Option, the Holder agrees to be bound by the terms of the Plan and this certificate. All initially capitalized terms used herein will have the meaning specified in the Plan, unless another meaning is specified herein.

1.1 Partial Exercise. An exercisable Option may be exercised in whole or in part. However, an Option shall not be exercisable with respect to fractional Shares and the Administrator may require that, by the terms of the Option, a partial exercise must be with respect to a minimum number of Shares.

1.2 Manner of Exercise. All or a portion of an exercisable Option shall be deemed exercised upon delivery of all of the following to the Secretary of the Company, the stock plan administrator of the Company or such other person or entity designated by the Administrator, or his, her or its office, as applicable:

(a) A written or electronic notice complying with the applicable rules established by the Administrator stating that the Option, or a portion thereof, is exercised. The notice shall be signed by the Holder or other person then entitled to exercise the Option or such portion of the Option;

(b) Such representations and documents as the Administrator, in its sole discretion, deems necessary or advisable to effect compliance with Applicable Law. The Administrator, in its sole discretion, may also take whatever additional actions it deems appropriate to effect such compliance including, without limitation, placing legends on share certificates and issuing stop-transfer notices to agents and registrars;

(c) In the event that the Option shall be exercised pursuant to Section 11.3 by any person or persons other than the Holder, appropriate proof of the right of such person or persons to exercise the Option, as determined in the sole discretion of the Administrator; and

(d) Full payment of the exercise price and applicable withholding taxes to the stock plan administrator of the Company for the Shares with respect to which the Option, or portion thereof, is exercised, in a manner permitted by Sections 11.1 and 11.2.

1.3 Payment. If the Holder is an executive Officer, the exercise price may be paid by one or more of the following methods: (a) cash or check, (b) Shares (including Shares issuable pursuant to the exercise of the Option) or Shares held for such period of time as may be required by the Committee in order to avoid adverse accounting consequences, in each case, having a Fair Market Value on the date of delivery equal to the aggregate payments required, (c) delivery of a written or electronic notice that the Holder has placed a market sell order with a broker acceptable to the Company with respect to Shares then issuable upon exercise of the Option, and that the broker has been directed to pay a sufficient portion of the net proceeds of the sale to the Company in satisfaction of the aggregate payments required; provided that payment of such proceeds is then made to the Company upon settlement of such sale, or (d) other form of legal consideration acceptable to the Committee in its sole discretion. The Committee shall also determine the methods by which Shares shall be delivered or deemed to be delivered to Holders.

1.4 Tax Withholding. The Company or any Subsidiary shall have the authority and the right to deduct or withhold, or require a Holder to remit to the Company, an amount sufficient to satisfy federal, state, local and foreign taxes (including the Holder's FICA, employment tax or other social security contribution obligation) required by law to be withheld with respect to any taxable event concerning a Holder arising as a result of the Plan. The Administrator, in its sole discretion and in satisfaction of the foregoing requirement, may withhold, or allow a Holder to elect to have the Company withhold, Shares otherwise issuable under an Option (or allow the surrender of Shares). The number of Shares which may be so withheld or surrendered shall be limited to the number of Shares which have a Fair Market Value on the date of withholding or repurchase equal to the aggregate amount of such liabilities based on the applicable statutory withholding rates for federal, state, local and foreign income tax and payroll tax purposes that are applicable to such supplemental taxable income without leading to any avoid adverse accounting consequences. The Administrator shall determine the Fair Market Value of the Shares, consistent with applicable provisions of the Code, for tax withholding obligations due in connection with a broker-assisted cashless Option exercise involving the sale of Shares to pay the Option exercise price or any tax withholding obligation.

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(a) Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any certificates or make any book entries evidencing Shares pursuant to the exercise of any Award, unless and until the Board or the Committee has determined, with advice of counsel, that the issuance of such Shares is in compliance with Applicable Law and the Shares are covered by an effective registration statement or applicable exemption from registration. In addition to the terms and conditions provided herein, the Board or the Committee may require that a Holder make such reasonable covenants, agreements and representations as the Board or the Committee, in its sole discretion, deems advisable in order to comply with Applicable Law.

(b) All share certificates delivered pursuant to the Plan and all Shares issued pursuant to book entry procedures may be subject to any stop-transfer orders and other restrictions as the Administrator deems necessary or advisable to comply with Applicable Law. The Administrator may place legends on any share certificate or book entry to reference restrictions applicable to the Shares.

(c) The Administrator shall have the right to require any Holder to comply with any timing or other restrictions with respect to the settlement, distribution or exercise of any Award, including a window-period limitation, as may be imposed in the sole discretion of the Administrator.

(d) Notwithstanding any other provision of the Plan, unless otherwise determined by the Administrator or required by Applicable Law, the Company shall not deliver to any Holder certificates evidencing Shares issued in connection with any Award and instead such Shares shall be recorded in the books of the Company (or, as applicable, its transfer agent or stock plan administrator).

(e) Any securities delivered under the Plan shall be subject to such restrictions, and the person acquiring such securities shall, if requested by the Company, provide such assurances and representations to the Company as the Company may deem necessary or desirable to assure compliance with all Applicable Law. To the extent permitted by Applicable Law, the Plan and Awards granted or awarded hereunder shall be deemed amended to the extent necessary to conform to Applicable Law.

1.6 Notification Regarding Disposition. The Holder shall give the Company prompt written or electronic notice of any disposition of Shares acquired by exercise of an Incentive Stock Option which occurs within (a) two years from the date of grant (including the date the Option is modified, extended or renewed for purposes of Section 424(h) of the Code) of such Option to such Holder, or (b) one year after the transfer of such Shares to such Holder.

1.7 At-Will Employment; Voluntary Participation. Nothing in the Plan or in any Program or Award Agreement hereunder shall confer upon any Holder any right to continue in the employ of, or as a Director for, the Company or any Subsidiary, or shall interfere with or restrict in any way the rights of the Company and any Subsidiary, which rights are hereby expressly reserved, to discharge any Holder at any time for any reason whatsoever, with or without cause, and with or without notice, or to terminate or change all other terms and conditions of employment or engagement, except to the extent expressly provided otherwise in a written agreement between the Holder and the Company or any Subsidiary. Participation by each Holder in the Plan shall be voluntary and nothing in the Plan shall be construed as mandating that any Eligible Individual shall participate in the Plan.

1.8 No Stockholders Rights. Except as otherwise provided herein, a Holder shall have none of the rights of a stockholder with respect to Shares covered by any Award until the Holder becomes the record owner of such Shares.

1.9 Paperless Administration. In the event that the Company establishes, for itself or using the services of a third party, an automated system for the documentation, granting or exercise of Awards, such as a system using an internet website or interactive voice response, then the paperless documentation, granting or exercise of Awards by a Holder may be permitted through the use of such an automated system.

1.10 "Termination of Service" means:

(a) As to a Non-Employee Director, the time when a Holder who is a Non-Employee Director ceases to be a Director for any reason, including, without limitation, a termination by resignation, failure to be elected, death or retirement, but excluding terminations where the Holder simultaneously commences or remains in employment or service with the Company or any Subsidiary.

(b) As to an Employee, the time when the employee-employer relationship between a Holder and the Company or any Subsidiary is terminated for any reason, including, without limitation, a termination by resignation, discharge, death, disability or retirement; but excluding terminations where the Holder simultaneously commences or remains in employment or service as a Consultant or Non-Employee Director with the Company or any Subsidiary.

The Administrator, in its sole discretion, shall determine the effect of all matters and questions relating to any Termination of Service, including, without limitation, the question of whether a Termination of Service resulted from a discharge for "cause" and all questions of whether particular leaves of absence constitute a Termination of Service; provided, however, that, with respect to Incentive Stock Options, a leave of absence, change in status from an employee to an independent contractor or other change in the employee-employer relationship shall constitute a Termination of Service only if, and to the extent that, such leave of absence, change in status or other change interrupts employment for the purposes of Section 422(a)(2) of the Code and the then-applicable regulations and revenue rulings under said Section. For purposes of the Plan, a Holder's employee-employer relationship or consultancy relations shall be deemed to be terminated in the event that the Subsidiary employing or contracting with such Holder ceases to remain a Subsidiary following any merger, sale of stock or other corporate transaction or event (including, without limitation, a spin-off).

IN WITNESS WHEREOF, the Company has caused this instrument to be executed by its duly authorized officer.

OpGen, Inc.

Dated:

_____

By:
Title:

Acknowledged and agreed:
Holder

Dated:

_____

Name:

DEED OF LEASE

This Lease (the "Lease") is made this 11th day of November, 2020 (the "Effective Date"), between KEY WEST MD OWNER, LLC, a Delaware limited liability company ("Landlord"), and OPGEN INC., a Delaware corporation ("Tenant").

WITNESSETH:

For and in consideration of the covenants herein contained and upon the terms and conditions herein set forth, the parties agree as follows:

1. Introductory Provisions.

(a) Fundamental Lease Provisions. Certain Fundamental Lease Provisions are presented in this Section in summary form solely to facilitate convenient reference by the parties hereto:

1.	Demised Premises	Suite No. 100	[See Section 2(a)]
2.	Building	Building located at 9717 Key West Avenue, Rockville, Maryland 20850, which Building contains approximately 75,719 square feet of rentable area	[See Section 2(a)]
3.	Rentable Area of Demised Premises	Approximately 10,100 square feet of rentable area	[See Section 2(a)]
4.	Proportionate Share	13.34%	[See Section 2(b)]
5.	Lease Term	Ten (10) "Lease Years" (as defined below) and ten (10) months	[See Section 3(a)]
6.	Commencement Date	The earlier to occur of (a) the date Tenant occupies the Demised Premises for the conduct of its business, or (b) May 1, 2021.	[See Section 3(a)]
7.	Expiration Date	The date which is ten (10) Lease Years and ten (10) months after the Commencement Date	[See Section 3(a)]
8.	Rental Agent	Lincoln Property Company 9713 Key West Avenue Suite 110 Rockville, MD 20850	[See Section 4]
9.	Base Annual Rent and Base Monthly Rent		

Period	Base Annual Rent	Base Monthly Rent	Rent Per Square Foot
Lease Year 1	$333,300.00	$27,775.00	$33.00
Lease Year 2	$342,491.04	$28,540.92	$33.91
Lease Year 3	$351,884.04	$29,323.67	$34.84
Lease Year 4	$361,580.04	$30,131.67	$35.80
Lease Year 5	$371,478.00	$30,956.50	$36.78
Lease Year 6	$381,678.96	$31,806.58	$37.79
Lease Year 7	$392,183.04	$32,681.92	$38.83
Lease Year 8	$402,990.00	$33,582.50	$39.90
Lease Year 9	$414,099.96	$34,508.33	$41.00
Lease Year 10	$425,513.04	$35,459.42	$42.13
1st Ten (10) Months of Lease Year 11	$437,229.00 (annualized amount)	$36,435.75	$43.29

Provided Tenant is not in default under the Lease beyond the expiration of any applicable notice and cure period, Landlord agrees to abate the first ten (10) installments of Base Monthly Rent that are payable under the Lease (the "Total Rent Abatement").

10.	Intentionally Deleted		
11.	Intentionally Deleted		
12.	Use of Demised Premises	General office and laboratory use consistent with other first class office and laboratory buildings in Rockville, Maryland	[See Section 7]
13.	Security Deposit	$425,000.00	[See Section 4(h)]
14.	Intentionally Deleted		
15.	Intentionally Deleted		
16.	Standard Building Operating Hours:	8:00 a.m. to 6:00 p.m. Monday – Friday 9:00 a.m. to 1:00 p.m. Saturday (upon request)	[See Section 10(a)]
17.	Building Holidays	New Year's Day, Martin Luther King Jr. Day, Memorial Day, President's Day, the Fourth of July, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, Christmas Day	[See Section 10(a)]
18.	Address for Notices to Tenant before Occupancy of Demised Premises	OpGen, Inc. 708 Quince Orchard Road Gaithersburg, MD 20878	[See Section 37]
19.	Address for Notices to Tenant after Occupancy of Demised Premises	At the Demised Premises	[See Section 37]

20.	Address for Notices to Landlord	Key West MD Owner, LLC c/o with a copy to: Shulman, Rogers, Gandal, Pordy & Ecker, P.A. 12505 Park Potomac Avenue, 6th Floor Potomac, Maryland 20854 Attention: Douglas K. Hirsch, Esquire	[See Section 37]
21.	Leasing Brokers	CBRE Inc and Cushman & Wakefield of Maryland, Inc.	[See Section 38]
22.	Intentionally Deleted		
23.	Name and Address of Tenant's Resident Agent	The Corporation Trust, Incorporated 2405 York Road, Suite 201 Lutherville Timonium MD 21093-2264	

(b) References and Conflicts. References appearing in Section 1(a) are intended to designate some of the other places in the Lease where additional provisions applicable to the particular Fundamental Lease Provisions appear. These references are for convenience only and shall not be deemed all inclusive. Each reference in this Lease to any of the Fundamental Lease Provisions contained in Section 1(a) shall be construed to incorporate all of the terms provided for under such provisions, and such provisions shall be read in conjunction with all other provisions of this Lease applicable thereto. If there is any conflict between any of the Fundamental Lease Provisions set forth in Section 1(a) and any other provisions of the Lease, the latter shall control.

(c) Exhibits. The following drawings and special provisions are attached hereto as exhibits and hereby made a part of this Lease:

Exhibit "A" Floor Plan of Demised Premises [§2(a)]
Exhibit "B" Rules and Regulations [§8]
Exhibit "C" Certificate of Commencement [§3(b)]
Exhibit "D" Intentionally Deleted
Exhibit "E" Work Agreement [§6]
Exhibit "F" HVAC Specifications [§10(a)]
Exhibit "G" Exterior Signage [§13]
Exhibit "H" Location of Reserved Parking Spaces [§15]

2. Premises.

(a) Demised Premises. Landlord hereby leases to Tenant, and Tenant hereby rents from Landlord, the Demised Premises as specified in Section 1(a)(1) located in the Building specified in Section 1(a)(2). The Demised Premises shall consist of approximately the square footage of rentable floor space as specified in Section 1(a)(3) and as shown on floor plan attached hereto as Exhibit "A". The rentable area of the Demised Premises and the Building have been measured using the ANSI/BOMA 2017 method of measurement (the "Measurement Method").

(b) Tenant's Proportionate Share. Tenant's Proportionate Share of certain expenses hereinafter made payable to Landlord as Additional Rent is specified in Section 1(a)(4). Said computation is based upon the ratio of the total rentable area of the Demised Premises to the rentable area of the Building. The Proportionate Share shall be modified during the Lease Term in the event that the rentable area of the Building is modified. Notwithstanding anything herein to the contrary, so long as the Building is owned by Landlord, the Proportionate Share shall not change by more than two percent (2%) (i.e., assuming Tennant does not lease any additional space in the Building, Tenant's Proportionate Share shall not exceed 13.87%).

(c) Project. The Building, the Common Areas and the land upon which the same are located, along with all other buildings and improvements thereon or thereunder, including all parking facilities, are herein collectively referred to as the "Project."

3. Term.

(a) Lease Term. The term of this Lease (sometimes herein called the "Lease Term") shall be the earlier to occur of (i) the date Tenant occupies the Demised Premises for the conduct of its business, or (ii) May 1, 2021 (the "Commencement Date") and, subject to sooner termination as herein provided, ending the number of years and months specified in Section 1(a)(5) after the Commencement Date (the "Expiration Date"). The period commencing with the Commencement Date and ending on the last day of the twelfth (12th) full calendar month thereafter shall constitute the first "Lease Year" as such term is used herein. Each successive full twelve (12) month period during the Lease Term shall constitute a "Lease Year".

(b) Inability to Deliver Possession. The parties acknowledge that the Demised Premises is vacant. Landlord shall tender possession of the Demised Premises to Tenant within two (2) business days after the Effective Date for the purpose of permitting Tenant to construct the Tenant's Work. Within fifteen (15) days after the delivery to Tenant of a factually correct Certificate of Commencement, , Landlord and Tenant shall execute the same in in the form of Exhibit "C". Tenant's failure to execute and deliver the Certificate of Commencement shall not affect the Commencement Date or the Expiration Date.

(c) Acceptance of Demised Premises. Except as provided in the last two (2) sentences of this Section, occupancy of the Demised Premises or any portion thereof by Tenant or anyone claiming through or under Tenant for the conduct of Tenant's business therein shall be conclusive evidence that Tenant and all parties claiming through or under Tenant (a) have accepted the Demised Premises or such portion (i) as suitable for the purposes for which the Demised Premises are leased hereunder, and (ii) as complying with all requirements of Tenant with respect to the condition, order and repair thereof as required by the terms of this Lease, (b) have accepted the common areas as being in a good and satisfactory condition, and (c) have waived any defects in the Demised Premises. Within three (3) business days after the date that Landlord completes the Landlord's Work, Landlord and Tenant shall jointly inspect the Demised Premises and prepare a punch list of those items of Landlord's Work which need to be corrected or completed. Landlord shall use reasonable efforts to cause such punch list items to be corrected or completed within thirty (30) days after the date that the punch list is created.

(d) Rule Against Perpetuities. In the event that the Lease Term has not commenced within one (1) year after the date specified as the Commencement Date in Section 1(a)6 above, then this Lease shall automatically terminate at the expiration of such three (3) year period, whereupon the parties shall thereupon be relieved of any and all further liability hereunder.

(e) Extension Term. Provided (i) that the Lease shall be in full force and effect; (ii) that, except for a "Corporate Transfer" (as defined below), Tenant shall have not assigned the Lease or sublet more than thirty percent (30%) of the rentable area of the Demised Premises; and (iii) that Tenant is not in default under this Lease beyond the expiration of any applicable notice and cure period, then, and only in such event, Tenant shall have the right, at Tenant's sole option, to extend the term of the Lease for one (1) additional period of five (5) years (the "Extension Term"). Such extension option shall be exercisable by Tenant giving written notice of the exercise of such extension option to Landlord no later than three hundred sixty five (365) days prior to the expiration of the Lease Term and not earlier than four hundred fifty five (455) days prior to the expiration of the Lease Term; provided, however, in the event Tenant fails to exercise such option to extend during the aforesaid time period, such extension option shall become null and void and all rights with respect thereto shall automatically terminate and expire. The Extension Term shall be upon the terms, covenants and conditions as set forth herein with respect to the Lease Term, except that Base Annual Rent shall be adjusted for the Extension Term to the fair market rental for renewal leases in laboratory buildings in the North Rockville submarket after factoring in all prevailing fair market concessions, and the then existing build out of the Demised Premises. In the event that the parties do not, within sixty (60) days after the date that Tenant exercises its extension option, agree upon the fair market rent for the Demised Premises and enter into an amendment of the Lease setting forth the Base Annual Rent payable during the Extension Term and prevailing fair market concessions, then the Base Annual Rent and prevailing fair market concessions shall be determined in accordance with Section 3(f) below.

(f) Fair Market Rent. In the event Landlord and Tenant are unable to agree upon the current fair market rent payable during the Extension Term within sixty (60) days of Landlord's receipt of Tenant's notice to extend, then the fair market rent for the Extension Term shall be determined by a board of three (3) disinterested real estate brokers, one (1) of whom shall be named by Landlord, one (1) by Tenant, and the two (2) so appointed shall select a third. Said brokers shall each be practicing real estate brokers, specializing in the field of commercial real estate in North Rockville, Maryland, having no less than ten (10) years experience in such field and recognized as ethical and reputable within their field. Landlord and Tenant agree to make their appointments promptly within ten (10) business days after the expiration of the sixty (60) day period, or sooner if mutually agreed upon. Within fifteen (15) days after both such brokers have been appointed, the two (2) brokers shall promptly select a third broker. Within fifteen (15) days after the third broker is selected, each broker shall submit his or her determination of said fair market rent. The Base Annual Rent for the Extension Term shall be the average of the two (2) closest determinations, provided that same are within five percent (5%) of the other. If no two determinations are closer than five percent (5%) to each other, the Base Annual Rent for the Extension Term shall be the one of the first two (2) broker's determinations (i.e., Landlord's or Tenant's determination) which is closer to the third (3^{rd}) broker's determination. In arriving at their individual rate determinations, each broker shall consider and analyze all the components of the Lease and apply them to current market factors. Landlord and Tenant shall pay the fee of the broker selected by it and they shall equally share the payment of the fee of the third broker. Notwithstanding the foregoing, Landlord and Tenant may at any time after appointing the brokers, agree upon the Base Annual Rent payable during the Extension Term and such mutual agreement shall supersede the brokers' determinations.

4. Rent.

(a) Base Annual Rent. The Base Annual Rent reserved hereunder shall be as specified in Section 1(a)(9) which shall be payable by Tenant to the Landlord during each Lease Year of the Lease Term in equal monthly installments of Base Monthly Rent each as specified in Section 1(a)(9). Tenant shall pay the first monthly installment of Base Annual Rent upon execution of this Lease. Subject to the provisions of Section 1 (a) 9 above, Tenant shall pay the remaining monthly installments of Base Annual Rent in advance, without notice or demand, and without set-off, deduction or abatement of any kind (except as expressly provided in this Lease), on or before the first day of each and every calendar month throughout the entire term of the Lease, at the office of the Rental Agent specified in Section 1(a)(8), or to such other person or at such other address as Landlord may designate by written notice to Tenant from time to time.

(b) Intentionally Deleted.

(c) Additional Rent.

(i) General. Whenever it is provided by the terms of this Lease that Tenant is required to make any payment to Landlord other than of Base Annual Rent, such payment shall be deemed to be additional rent ("Additional Rent"). Unless otherwise expressly specified herein, Additional Rent shall be paid by Tenant within thirty (30) days following Tenant's receipt from Landlord of a statement showing the amount owed. Additional Rent shall include, but not be limited to:

(ii) Operating Expenses. Commencing on the first day of the second Lease Year and continuing throughout the Lease Term, Tenant agrees to pay to Landlord, as Additional Rent, Tenant's Proportionate Share, as set forth in Section 1(a)(4), of operating expenses. The term "operating expenses" shall mean any and all expenses incurred by Landlord in connection with owning, managing, operating, maintaining, servicing, insuring and repairing the Building, including but not limited to: (1) wages and salaries of all employees engaged in the management, operation or maintenance of the Building, including taxes, insurance and benefits relating hereto (equitably prorated to the extent any employees works at any building other than the Building); (2) all supplies, materials, equipment and tools used in the operation or maintenance of the Building; (3) cost of all maintenance and service agreements for the Building and the equipment therein, including but not limited to controlled access and energy management services, generator maintenance, window cleaning and elevator maintenance; (4) cost of all insurance relating to the Building, including the cost of casualty, liability and rent loss insurance applicable to the Building and Landlord's personal property used in connection therewith; (5) general and special repairs and maintenance; (6) management fees, which shall not exceed 3% of the gross revenues of the Building (it being understood and agreed that the current management fee is 2.75%); (7) legal, accounting, auditing and other professional fees; (8) the cost of any additional services not provided to the Building at the Commencement Date of the Lease Term, but thereafter provided by Landlord in the prudent management of the Building; (9) intentionally deleted; (10) costs for char service and cleaning supplies; (11) costs for utility services such as electricity, gas, water and sewage, generator fuel, including the cost of heating and cooling the Building (it being understood and agreed that amounts that are separately payable by tenants for utilities shall not be included in operating expenses) ; (12) the cost of any capital improvements or alterations made to the Building after the Commencement Date, that reduce other operating expenses, or which are required under any governmental law or regulation that was not applicable to the Building at the Effective Date, such cost to be amortized over the useful life of such capital improvement or alteration in accordance with generally accepted accounting principles, together with interest on the unamortized balance at the rate paid by Landlord on funds borrowed for the purposes of constructing said capital improvements (or, in the event that Landlord elects not to borrow funds to construct such capital improvements, at the rate that Landlord would have paid had it borrowed funds for the purpose of constructing said improvements) (the cost of such capital improvements or alterations, together with interest thereon shall hereinafter be collectively referred to as the "Permitted Capital Expenditures"); (13) transportation district fees, parking district fees, and the cost of other amenities required by law; (14) cost of onsite Building management office expenses and directly allocable offsite management expenses, including telephone, rent, stationery and supplies; (15) costs of all elevator and escalator (if installed in the Building) maintenance and operation; (16) cost of providing security; (17) cost of providing garbage and snow removal and pest control; (18) cost of decoration of Common Areas; (19) cost of landscaping; (20) cost of maintenance and operation of the parking area; (21) costs and fees charged and/or assessed in connection with any business improvement district that is applicable to the Building; (22) subject to clause (12) above, the cost of operating, replacing, modifying and/or adding improvements or equipment mandated by any law, statute, regulation or directive of any governmental agency and any repairs or removals necessitated thereby (including, but not limited to, the cost of complying with the Americans With Disabilities Act and regulations of the Occupational Safety and Health Administration); (23) payments made by Landlord under any easement, license, operating agreement, declaration, restrictive covenant, or instrument pertaining to the payment or sharing of costs among property owners; (24) any business property taxes or personal property taxes imposed upon the fixtures, machinery, equipment, furniture and personal property used in connection with the operation of the Building; (25) the cost of all business licenses, including Business Professional and Occupational License Taxes and Business Improvements Districts Taxes, any gross receipt taxes based on rental income or other payments received by Landlord, commercial rental taxes or any similar taxes or fees; (26) transportation taxes, fees or assessments, including but not limited to, mass transportation fees, metrorail fees, trip fees, regional and transportation district fees; (27) all costs and expenses associated with or related to the implementation by

Landlord of any transportation demand management program or similar program; (28) fees assessed by any air quality management district or other governmental or quasi-governmental entity regulating pollution; (29) the cost of any other service provided by Landlord or any cost that is elsewhere stated in this Lease to be an "operating expense"; (30) operating expenses incurred in connection with the Project to the extent that they are attributable to the Building; (31) a reasonable rental rate and all other costs for the operation and maintenance of a fitness facility; (32) a reasonable rental rate and all other costs for the operation and maintenance of a conference facility; and (33) a reasonable rental rate and all other costs for the operation and maintenance of a management office (not to exceed 1,600 square feet of rentable area). Real Property Taxes (as defined in Section 5 hereof) shall be paid in accordance with Section 5 below and shall not be included in operating expenses. Landlord shall have the right but not the obligation, from time to time, to equitably allocate some or all of the operating expenses among different tenants of the Project or among the different buildings which comprise the Project (the "Cost Pools"). Such Cost Pools may include, but shall not be limited to, the office space tenants of the Project and the retail space tenants of the Project. Notwithstanding anything in this Lease to the contrary, the preceding list is for definitional purposes only and shall not impose any obligation upon Landlord to incur such expenses or provide such services. "Operating expenses" shall not include any of the following, except to the extent that such costs and expenses are included in operating expenses as described above:

(1) Payments of principal or other finance charges made on any debt, or the amortization of funds borrowed by Landlord;

(2) Ground rent or other payments made under any ground lease or underlying lease (excepting amounts paid for Real Property Taxes required thereunder);

(3) All other expenses incurred in connection with negotiations with tenants or prospective tenants, brokers, prospective purchasers or mortgagees of the Building including leasing commissions payable by Landlord and also any costs or expense incurred by Landlord in order to complete the Landlord's Work;

(4) Costs of painting, redecorating, or other services or work performed for the benefit of another tenant, prospective tenant or occupant (other than for Common Areas);

(5) Except for the management fee, salaries, wages, or other compensation paid to any partner, shareholder, officer, executive or director of Landlord for salary or other compensation;

(6) Except for the management fee, salaries, wages, or other compensation or benefits paid to employees above the grade level of property manager;

(7) Costs of advertising and public relations and promotional costs associated with the promotion or leasing of the Building and costs of signs in or on the Building identifying the owners, leasing agent, property manager or any tenant at the Building;

(8) Costs and expenses relating to administering the affairs of the ownership entity of Landlord which are unrelated to the maintenance, management or operation of the Building, including, but not limited to, maintaining Landlord's existence, either as a corporation, partnership or other entity;

(9) Costs of repairs, restoration, replacements or other work occasioned by (A) fire, windstorm or other casualty (whether such destruction be total or partial) and (B) the exercise by governmental authorities of the right of eminent domain (whether such taking be total or partial);

(10) Costs incurred in connection with disputes with tenants, other occupants, or prospective tenants, or costs and expenses incurred in connection with negotiations or disputes with employees, consultants, management agents, leasing agents, purchasers or mortgagees of the Building;

(11) Costs directly incurred in connection with the sale, financing, refinancing, mortgaging, selling or change of ownership of the Building;

(12) All amounts which would otherwise be included in operating expenses which are paid to any affiliate or subsidiary of Landlord, or any representative, employee or agent of same but only to the extent the costs of such services exceed the competitive rates for similar services of comparable quality rendered by persons or entities of similar skill, competence and experience;

(13) Interest, late charges or penalties payable by Landlord due to Landlord's failure to make timely payments of any Real Property Taxes or other payments;

(14) Depreciation on the Building or equipment therein, except to the extent set forth above;

(15) The costs of special services or utilities separately charged to individual tenants of the Building;

(16) Any reserves for future expenditures not yet incurred;

(17) Costs incurred by Landlord due to the gross negligence or willful misconduct of Landlord or its agents and employees;

(18) Costs incurred as a result of the violation by Landlord or its agents and employees of any Laws;

(19) Costs relating to hazardous materials, asbestos and the like not resulting from actions of Tenant or any of its employees, agents, representatives or contractors;

(20) Costs or expenses of a capital nature except for Permitted Capital Expenditures; or

(21) Legal fees, accounting fees, professional expenses and other related costs except those incurred in connection with the management, maintenance, operation and repair of the Building.

Notwithstanding any other provision herein to the contrary, it is agreed that in the event the Building is not fully occupied during any calendar year, an adjustment shall be made in computing the operating expenses for such year so that the operating expenses shall be computed for such year as though the Building had been one hundred percent (100%) occupied during such year. In the event that specific tenants are billed directly for certain charges normally covered under operating expenses, Tenant's pro rata share will be appropriately adjusted for purposes of determining Tenant's pro rata share with respect to such charge.

(iii) Landlord's Enforcement Costs. Additional Rent shall include any and all expenses incurred by Landlord, including reasonable attorneys' fees, for the collection of monies due from Tenant and the enforcement of Tenant's obligations under the provisions of this Lease. When Landlord, at Tenant's expense, performs an obligation of Tenant pursuant to the terms of this Lease after Tenant has failed to do so within applicable notice and cure periods expressly provided in this Lease, the reasonable costs and expenses (including overhead) incurred by Landlord in performance of such obligations shall be Additional Rent.

(d) Additional Rent Estimates and Adjustments.

(i) In order to provide for current monthly payments of Additional Rent, Landlord shall submit to Tenant prior to January 1st of each year a written statement of Landlord's estimate of the amount of the increases described in Section 4(c)(ii) above, together with the amount of Tenant's Additional Rent which is estimated to result from such increases. Tenant shall pay each month one-twelfth (1/12th) of Tenant's Proportionate Share of Landlord's estimate of the operating expenses. Landlord may revise its estimate of operating expenses at any time during a calendar year by written notice to Tenant, setting forth such revised estimate. In such event, all monthly payments made by Tenant after such notice shall be in an amount calculated on the basis of such revised estimate.

(ii) If payment of Additional Rent begins on a date other than January 1st under this Lease, in order to provide for current payments of Additional Rent through December 31st of that partial calendar year, Landlord shall submit to Tenant a statement of Landlord's estimate of Tenant's Additional Rent for that partial year, stated in monthly increments. Tenant shall make the monthly incremental payments of estimated Additional Rent, together with its installments of Base Monthly Rent.

(iii) After the end of each calendar year, Landlord will as soon as practicable submit to Tenant a reasonably detailed statement, on a line item basis, of the actual operating expenses for the preceding calendar year. Tenant shall pay Landlord, within thirty (30) days of Tenant's receipt of such statement, Tenant's Proportionate Share of the excess, if any, of actual operating expenses over the projected operating expenses. If the amount paid by Tenant during the previous year exceeded Tenant's share of actual operating expenses for the year, the excess shall be credited toward payment of the next installment of operating expenses to be paid by Tenant after Tenant receives said statement from Landlord. If the amount paid by Tenant during the last calendar year of the Lease Term exceeds Tenant's share of actual operating expenses for such year, Landlord shall pay Tenant the excess amount within thirty (30) days after Landlord's submission to Tenant of the aforesaid operating expense statement for such calendar year.

(iv) Landlord shall, upon Tenant's written request which shall be made no later than one hundred eighty (180) days after receipt of an annual expense statement, permit Tenant or an independent entity that regularly audits operating expenses for office/lab buildings that are located in Montgomery County, Maryland, to inspect such of its records as are reasonably necessary to certify that the calculation of operating expenses set forth in such statement were made in accordance with the applicable provisions of this Lease; provided, however, that Tenant shall not be entitled to delay any payment under this Lease during the pendency of any such inspection. Despite the foregoing, as an express condition of the entity conducting such inspection, Tenant and such entity shall certify in writing to Landlord that such entity (i) is being compensated by Tenant on an hourly basis to conduct such audit, and (ii) is not being compensated, in whole or in part, on a contingency basis or a percentage of savings basis. Tenant shall bear all costs of any such inspection. Tenant shall keep the results of any such audit confidential, except to the extent (x) reasonably required to be revealed in any legal action between Landlord and Tenant relating to operating expenses, or (y) as may be required by law. Despite the foregoing, in the event it is determined that Landlord has overstated the amount of operating expenses (A) that are payable by Tenant during any calendar year, Landlord shall, within thirty (30) days thereafter, refund such overpayment to Tenant, and (B) by five percent (5%) or more, then Landlord shall reimburse Tenant for the reasonable out-of-pocket costs incurred by Tenant to conduct such audit, provided in no event shall any such reimbursement exceed the sum of Three Thousand Five Hundred and 00/100 Dollars ($3,500.00).

(e) Taxes on Tenant’s Property. Tenant shall be liable for, and shall pay at least ten (10) days before delinquency, all taxes levied against any personal property or trade fixtures placed by Tenant in or about the Demised Premises. If any such taxes on Tenant’s personal property or trade fixtures are levied against Landlord or Landlord’s property, or if the assessed value of the Demised Premises is increased by the inclusion therein of a value placed upon such personal property or trade fixtures of Tenant, and if Landlord, after written notice to Tenant, pays the taxes based upon such increased assessments (which Landlord shall have the right to do regardless of the validity thereof, but under protest if requested by Tenant), Tenant shall, within fifteen (15) days after demand, repay to Landlord a sum equal to the taxes levied against Landlord or the portion of such taxes resulting from such increase in the assessment; provided that, in any such event, Tenant shall have the right, at Tenant’s sole cost and expense, to bring suit to recover the amount of any such taxes so paid under protest, and any amount so recovered shall belong to Tenant.

(f) Payment of Rent. Any rent payable for a portion of a month shall be prorated based upon a thirty (30)-day calendar month. Any Base Annual Rent or Additional Rent which is not paid within five (5) days after the same is due shall bear interest at twelve percent (12%) per annum or the highest legal rate, whichever is lower, from the due date until the date received by Landlord. No payment by Tenant or receipt by Landlord of lesser amounts of rent than those herein stipulated shall be deemed to be other than on account of the earliest unpaid stipulated rent. No endorsement or statement on any check or any letter accompanying any check or payment as rent shall be deemed an accord and satisfaction, and Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such rent or pursue any other remedy provided in this Lease. In addition, in the event Base Annual Rent or Additional Rent is not paid within five (5) days of its due date, Landlord, at its sole option, may assess a late charge equal to five percent (5%) of the Base Monthly Rent or Additional Rent, as applicable, as liquidated damages for the additional administrative charges incurred by Landlord as a result of such late payment. If Landlord receives from Tenant two or more returned or "bounced" checks in any twelve (12) month period, Landlord may require all future rent by cashier's or certified check. Despite the foregoing, Landlord shall waive such interest and late charge on the first (1^{st}) occasion during any twelve (12) month period in which Tenant does not timely pay Base Annual Rent or Additional Rent, provided that Tenant pays such installment of Base Annual Rent or Additional Rent to Landlord within five (5) days after the date Tenant receives notice that such amount is past due.

(g) Survival of Rent Obligation. The obligation of Tenant with respect to the payment of Additional Rent shall survive the termination of this Lease or assignment thereof.

(h) Security Deposit. Within five (5) business days after the Effective Date, Landlord and Tenant shall enter into an escrow agreement pursuant to which Tenant shall deposit with an escrow agent that is mutually agreed to by Landlord and Tenant (the "Escrow Agent") the amount stipulated in Section 1(a)(13) as a deposit (the "Security Deposit") to secure the prompt performance of Tenant's obligations hereunder. Notwithstanding anything herein to the contrary, this Lease is expressly contingent upon Tenant timely delivering the Security Deposit to the Escrow Agent. The escrow agreement shall provide the following: in the event that (i) the "Construction Allowance" (as defined in Exhibit E) is fully funded and paid by the Landlord, the Security Deposit shall be released to Landlord by the Escrow Agent upon the date that the Construction Allowance (or the applicable portion thereof to the extent that the Construction Allowance is not fully utilized by Tenant) has been paid to Tenant; (ii) any portion of the Construction Allowance is not paid by Landlord to Tenant, and such remaining amount of the Construction Allowance is more than the amount of the Security Deposit, and it is finally determined that the amount that was not paid to Tenant from the Construction Allowance should have been paid to Tenant, then Escrow Agent shall return the Security Deposit to Tenant, Tenant shall have no further obligation under this Lease to fund the Security Deposit, and all references in this Lease to the Security Deposit shall be of no force and effect; and (iii) any portion of the Construction Allowance is not paid to Tenant, and it is finally determined that the amount that was not paid to Tenant from the Construction Allowance should have been paid to Tenant, and such remaining amount of the Construction Allowance is less than the amount of the Security Deposit, the Escrow Agent shall return to Tenant that portion of the Security Deposit which represents any unpaid portion of the Construction Allowance and pay to Landlord that portion of the Security Deposit between the amount returned to Tenant and the amount of the Security Deposit. In the event (iii) occurs, for all purposes of the Lease, the amount of the Security Deposit shall be the amount of the Security Deposit disbursed to Landlord. Notwithstanding anything to the contrary, in the event that Tennant does not request the full amount of the Construction Allowance, and Landlord funds the full amount requested by Tenant, then for purposes of this Section it shall be deemed that Landlord has fully funded the Construction Allowance and the Escrow Agent shall promptly deliver the Security Deposit to Landlord. The Security Deposit may be commingled with Landlord's general funds, if permitted by law. Landlord shall have the right, but shall not be obligated, to apply all or any portion of the Security Deposit to cure any default which remains uncured after the expiration of any applicable notice and cure period, in which event Tenant shall be obligated to deposit with Landlord the amount necessary to restore the Security Deposit to its original amount within five (5) days after written notice from Landlord. To the extent not forfeited or otherwise used as provided herein, and

provided Tenant is not then an uncured event of default which extends beyond applicable notice and cure periods, the Security Deposit shall be returned, without interest, to Tenant within thirty (30) days after the termination of this Lease. Landlord may deliver the Security Deposit to the purchaser or any assignee of Landlord's interest in the Demised Premises or the Building, whereupon Landlord shall be discharged from any further liability with respect to the Security Deposit. This provision shall apply also to any and all subsequent transferors of the Landlord's interest in this Lease. If the Tenant fails to take possession of the Demised Premises as required by this Lease, the Security Deposit shall not be deemed liquidated damages and Landlord's use of the Security Deposit pursuant to this Section 4 shall not preclude Landlord from recovering from Tenant all additional damages incurred by Landlord. In the event that (A) from and after November 1, 2020, Tenant raises Twenty Million and 00/100 Dollars ($20,000,000.00) in any consecutive nine (9) month period, (B) the costs and fees incurred by Tenant are less than ten percent (10%) of the amount so raised, and (C) Tenant is not then in default under the Lease beyond the expiration of any applicable notice and cure period, then (x) Tenant shall provide Landlord with reasonably detailed written information, which shall be certified as true and correct by Tenant's chief financial officer, which evidences the foregoing amounts, and (y) the amount of the Security Deposit shall be reduced to Three Hundred Thousand and 00/100 Dollars ($300,000.00). In the event that (W) from and after the Effective Date Tenant achieves break even status for a period of twelve (12) consecutive months [i.e., where Tenant's net revenue in the ordinary course of its business (excluding any revenue from a capital event) exceeds Tenant's expenses], and (X) Tenant is not then in default under the Lease beyond the expiration of any applicable notice and cure period, then (i) Tenant shall provide Landlord with reasonably detailed written information, which shall be certified as true and correct by Tenant's chief financial officer, which evidences the foregoing amounts, and (ii) the amount of the Security Deposit shall be reduced to One Hundred Fifty Thousand and 00/100 Dollars ($150,000.00).

5. Real and Personal Property Taxes.

(a) Payment of Taxes. Tenant shall pay to Landlord during the Term hereof, in addition to Base Annual Rent and Tenant's Share of operating expenses, Tenant's Proportionate Share of all "Real Property Taxes" (as defined in Section 5(b) below) for each year. Tenant's Proportionate Share of Real Property Taxes shall be payable by Tenant at the same time, in the same manner and under the same terms and conditions as Tenant pays Tenant's Share of operating expenses as provided in Section 4 of this Lease.

(b) Definition of "Real Property Tax." The term "Real Property Tax" shall mean all taxes and assessments, general and special, ordinary and extraordinary, foreseen and unforeseen, now or hereafter assessed, levied or imposed upon the Building, and the land on which it is built, including, without limitation, vault fees and charges, arena taxes, front foot benefit charges and adequate public facility costs and assessments, together with (i) any tax, assessment, or other imposition in the nature of a real estate tax, (ii) any ad valorem tax on rent or any tax on income if imposed in lieu of or in addition to real estate taxes and assessments, and (iii) any taxes and assessments which may hereafter be substituted for real estate taxes, including by way of illustration only, any tax, assessment or other imposition (whether a business rental or other tax) now or hereafter levied for Tenant's use or occupancy of or conduct of business at the Demised Premises, on Tenant's improvements to or furniture, fixtures or equipment in the Demised Premises, or imposed upon the rent payments. In the event that Landlord elects to contest Real Property Taxes, then reasonable expenses incurred by Landlord in obtaining or attempting to obtain a reduction of any Real Property Taxes shall be added to and included in Real Property Taxes.

(c) Reassessments. From time to time Landlord may challenge the assessed value of the Project as determined by applicable taxing authorities and/or Landlord may attempt to cause the Real Property Taxes to be reduced on other grounds. If Landlord is successful in causing the Real Property Taxes to be reduced or in obtaining a refund, rebate, credit or similar benefit (hereinafter collectively referred to as a "reduction"), Landlord shall credit the reduction(s) to Real Property Taxes for the calendar year to which a reduction applies and to recalculate the Real Property Taxes owed by Tenant for years after the year in which the reduction applies based on the reduced Real Property Taxes All commercially reasonable costs incurred by Landlord in attempting to obtain or obtaining the Real Property Tax reductions shall be considered an operating expense and Landlord shall determine, in its commercially reasonable discretion to which years any reductions will be applied.

6. As-Is.

(a) Except for the "Landlord's Work" (as defined below), Tenant is leasing the Demised Premises in its as-is condition. Tenant shall cause the Tenant's Work to be performed in accordance with the provisions of Exhibit E of this Lease. Working in conjunction with and reasonably cooperating with Tenant's contractors, on or before the Commencement Date Landlord shall perform the following work (collectively, the Landlord's Work") in a good and workmanlike fashion, using new materials and in compliance with all "Laws" (as defined below): provide a minimum of approximately 5 watts per square foot for the Demised Premises on the Building's backup generator; provide 6 square foot shaft to allow for reasonable outside air and exhaust systems to be installed (it being understood and agreed that Tenant, at its cost, subject to the application of the Construction Allowance, shall be responsible for purchasing and installing all handling units serving the Demised Premises); and allow connection to the Building chilled water system to allow Tenant to utilize its pro-rata share of chilled water to serve the new lab fan coils (it being understood and agreed that Tenant, at its sole cost and expense, subject to the application of the Construction Allowance, shall purchase and install all air handlers that serve the Demised Premises).

(b) Permits. Tenant shall be responsible for obtaining all permits or licenses necessary for its lawful occupancy of the Demised Premises. This requirement shall not relieve Tenant of its liability for Base Annual Rent from the Commencement Date in the event all of said permits have not been acquired prior thereto.

7. Use of Demised Premises.

(a) Use. Tenant shall use and occupy the Demised Premises for the purpose specified in Section 1(a)(12) and for no other purpose whatsoever. Tenant shall not use or permit the Demised Premises to be used for any other purpose or purposes without the prior written consent of Landlord, which consent may be granted or withheld in Landlord's sole discretion. Notwithstanding anything in this Lease to the contrary, in no event shall Tenant use or permit any party to use any portion of the Demised Premises for any of the following purposes: (i) classroom; (ii) data center; (iii) call center; (iv) sales order center; or (v) conference facility.

(b) Compliance. Tenant shall, at Tenant's sole expense, (i) comply with all applicable laws, orders, ordinances, codes, and regulations of federal, state, county, and municipal authorities (collectively, "Laws") having jurisdiction over the Demised Premises, (ii) comply with any directive, order or citation made pursuant to law by any public officer requiring abatement of any nuisance or which imposes upon Landlord or Tenant any duty or obligation arising from Tenant's occupancy or use of the Demised Premises or from conditions which have been created by or at the request or insistence of Tenant, or required by reason of a breach of any of Tenant's obligations hereunder or by or through other fault of Tenant; (iii) comply with all insurance requirements applicable to the Demised Premises; and (iv) cause the Demised Premises to comply with the Americans With Disabilities Act of 1990, 42 U.S.C. 12101 et seq., as amended from time to time (the "ADA") and all rules and regulations promulgated to further the purpose of the ADA. If Tenant receives notice of any such directive, order, citation or of any violation of any law, order, ordinance, regulation or any insurance requirement, Tenant shall promptly notify Landlord in writing of such alleged violation and furnish Landlord with a copy of such notice. In furtherance of the foregoing, and provided Tenant shall first have obtained Landlord's prior written consent in accordance with the provisions of Section 12 of the Lease (which Tenant agrees to promptly request), Tenant shall, at Tenant's sole cost and expense, make such changes, alterations, renovations or modifications to the Demised Premises in accordance with the provisions of Section 12 of the Lease (except for structural repairs) which are necessitated or required by any such law, ordinance, rule, regulation, directive or insurance requirement.

(i) Legal. Tenant shall not use or permit the Demised Premises or any part thereof to be used in violation of any present or future Law, or of the certificate of occupancy issued for the Building or the Demised Premises, and shall promptly discontinue any use of the Demised Premises which is declared by any governmental authority having jurisdiction to be in violation of law or said certificate of occupancy. Tenant will not use or permit the Demised Premises to be used for any purposes that interfere with the use and enjoyment of the Building by Landlord or the other tenants, or which violate the requirements of any insurance company insuring the Building or its contents, or which, in Landlord's commercially reasonable discretion, impair the reputation of the Building. Tenant shall refrain from and discontinue such use immediately upon receipt of written notice from Landlord.

(ii) Fire and Safety. Tenant shall not do, or permit anything to be done in the Demised Premises, or bring or keep anything therein, which will in any way increase the rate of fire insurance on the Building, or invalidate or conflict with fire insurance policies on the Building, fixtures or on property kept therein. Tenant agrees that any increases of fire insurance premiums on the Building or contents caused by the occupancy of Tenant and any expense or cost incurred in consequence of negligence or the willful action of Tenant, Tenant's employees, agents, servants, invitees, or licensees (in all cases, as supported by written evidence from Landlord's insurer specifying that Tenant was the cause of such increase) shall be deemed Additional Rent and paid as accrued.

(c) Environmental Protection.

(i) Except for items which are customarily used in offices and laboratory spaces located in laboratory office buildings located in Rockville, Maryland, which items shall be used, stored and disposed of by Tenant in accordance with the Act (as defined below) Tenant and Tenant's employees, contractors and agents shall not knowingly dispose of or generate, manufacture, store, treat or use any oil, petroleum or chemical liquids or solids, liquid or gaseous products or any hazardous waste or hazardous substance including, without limitation, asbestos (hereinafter collectively referred to as "hazardous waste"), as those terms are used in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, or in any other federal, state or local law governing hazardous substances (hereinafter collectively referred to as the "Act"), as such laws may be amended from time to time at, upon, under or within the Demised Premises or the Building or the land on which it is built, or into the plumbing or sewer or water system servicing the Demised Premises or the Building, nor shall Tenant, its employees, contractors or agents cause or permit the discharge, spillage, uncontrolled loss, seepage or filtration of any hazardous waste at, upon, under or within the Demised Premises or the Building or the land or into the plumbing or sewer or water system servicing the same. Tenant shall comply in all respects with the requirements of the Act and related regulations, and shall notify Landlord immediately in the event of its discovery of any hazardous waste at, upon, under or within the Demised Premises or the Building or the land, or of any notice by a governmental authority or private party alleging that a disposal of hazardous waste on or near the Demised Premises may have occurred. Subject to appropriate confidentiality/non-disclosure agreements, Tenant further agrees to provide Landlord full and complete access to any documents or information in Tenant's possession or control relevant to the question of the generation, treatment, storage or disposal of hazardous waste on or near the Demised Premises. To the best of Landlord's knowledge, without investigation or inquiry, the Building does not contain hazardous waste in violation of the Act. In the event that any hazardous waste is located in the Demised Premises, and such hazardous waste was located in the Demised Premises prior to the date of this Lease, or such hazardous waste was introduced into the Demised Premises by Landlord, or its employees, agents, or contractors, or by any party other than Tenant, or its agents, employees or contractors, then Landlord, at its sole cost (and not as an operating expense), shall remove or remediate such hazardous waste in accordance with applicable governmental law.

(ii) Landlord acknowledges that it is not the intent of this Section 7(c) to prohibit Tenant from using the Demised Premises for the use set forth in Section 1(a)12 above. Tenant may operate its business according to prudent industry practices so long as the use or presence of hazardous waste is strictly and properly monitored according to all Environmental Laws. As a material inducement to Landlord to allow Tenant to use hazardous waste in connection with its business, Tenant agrees to deliver to Landlord prior to the Start Date a list identifying each type of hazardous waste to be brought upon, kept, used, stored, handled, treated, generated on, or released or disposed of from, the Demised Premises on the Start Date and setting forth those governmental approvals or permits that Tenant has obtained in connection with the presence, use, storage, handling, treatment, generation, release or disposal of such hazardous waste on or from the Demised Premises ("Hazardous Waste List"). Tenant shall deliver to Landlord an updated Hazardous Waste List at least once a year and shall also deliver an updated list before any new hazardous waste is brought onto, kept, used, stored, handled, treated, generated on, or released or disposed of from, the Demised Premises. Tenant shall deliver to Landlord true and correct copies of the following documents (the "Haz Mat Documents") relating to the use, storage, handling, treatment, generation, release or disposal of hazardous waste prior to the Commencement Date, or if unavailable at that time, concurrent with the receipt from or submission to a governmental authority: permits; approvals; reports and correspondence; storage and management plans, notice of violations of the Act; plans relating to the installation of any storage tanks to be installed in or under the Project (provided, said installation of tanks shall only be permitted after Landlord has given Tenant its written consent to do so, which consent may be withheld in Landlord's sole and absolute discretion); all closure plans or any other documents required by any and all federal, state and local governmental authorities for any storage tanks installed in, on or under the Project by or on behalf of Tenant for the closure of any such tanks.

(iii) Tenant hereby represents and warrants to Landlord that (i) neither Tenant nor any of its legal predecessors has been required by any prior landlord, lender or governmental authority at any time to take remedial action in connection with hazardous waste contaminating a property which contamination was permitted by Tenant or such predecessor or resulted from Tenant's or such predecessor's action or use of the property in question, and (ii) Tenant is not currently subject to any enforcement order issued by any governmental authority in connection with the use, storage, handling, treatment, generation, release or disposal of hazardous waste (including, without limitation, any order related to the failure to make a required reporting to any governmental authority).

(iv) From time to time, upon reasonable prior written notice to Tenant, prior to the expiration or earlier termination of the Term, Landlord shall have the right to conduct appropriate tests of the Demised Premises and the Project to determine if contamination has occurred as a result of Tenant's use of the Demised Premises. In connection with such testing, upon the request of Landlord, Tenant shall deliver to Landlord or its consultant such information concerning the use of hazardous waste in or about the Demised Premises by Tenant or any Tenant Party. If contamination has occurred for which Tenant is liable under this Section 7(c), Tenant shall pay all actual, reasonable costs to conduct such tests. Landlord shall provide Tenant with a copy of all third party, non-confidential reports and tests of the Demised Premises made by or on behalf of Landlord during the Term without representation or warranty and subject to a confidentiality agreement. Tenant shall, at its sole cost and expense, promptly and satisfactorily remediate any environmental conditions identified by such testing (and for which Tenant is liable under this Section 7(c)) in accordance with the Act. Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights which Landlord may have against Tenant.

(d) Indemnification. Subject to Section 19(f), and except to the extent caused by the negligence or willful misconduct of Landlord, it agents or employees, Tenant shall indemnify Landlord against all costs, expenses, liabilities, losses, damages, injunctions, suits, fines, penalties, claims, and demands, including, without limitation, remediation and clean-up costs, reasonable attorneys' fees, arising out of any violation of or default in the covenants of this Section 7. The provisions of Sections 7(b) and (c) and this Section 7(d) shall survive the expiration of the Lease Term.

(e) Moving and Deliveries. No freight, furniture or other bulky matter of any description shall be received into the Building or carried in the elevators, except at times and by routes authorized by Landlord. Tenant shall give Landlord at least forty-eight (48) hours telephonic notice prior to moving any freight, furniture or other bulky material into or out of the Building. All moving of furniture, material and equipment shall be under the direct control and supervision of Landlord, who shall, however, not be responsible for any damage to or charges for moving same. Tenant shall promptly remove from the public areas within or adjacent to the Building any of Tenant's property delivered or deposited there, and shall be responsible for any damage to the Building or the Demised Premises caused by its moving and deliveries.

(f) Excessive Floor Load. Landlord shall have the right to prescribe the weight and method of installation and position of safes or other heavy fixtures or equipment. Tenant will not, without Landlord's prior written approval, install in the Demised Premises any fixtures, equipment or machinery that will place a load upon the floor exceeding the designed floor load capacity. Tenant shall be liable for all damage done to the Building by installing or removing a safe or any other article of Tenant's office equipment, or machinery or fixtures or other personal property or due to its being in the Demised Premises. Landlord shall repair any such damage at Tenant's expense, and Tenant shall pay the cost therefor to Landlord upon demand, as Additional Rent.

8. Rules and Regulations. Tenant covenants on behalf of itself, its employees, agents, contractors, licensees and invitees to comply with the rules and regulations set forth in Exhibit "B", which is attached hereto and made a part hereof (the "Rules and Regulations"). Landlord shall have the right, in its sole discretion, to make reasonable additions and amendments to the Rules and Regulations from time to time and Tenant covenants that Tenant, its employees, agents, contractors, licensees and invitees will comply with additions and amendments to the Rules and Regulations upon Landlord's provision to Tenant of a written copy of the same. Any default by Tenant, or any other party set forth above, of any of the provisions of the Rules and Regulations as set forth on Exhibit "B" or as amended, from time to time, which continues beyond any applicable notice and cure period, shall be considered to be a default under the terms of this Lease. Nothing contained in this Lease shall be construed to impose upon Landlord any duty or obligation to enforce the Rules and Regulations, or any amendments or additions thereto, against any other tenant, and Landlord shall have no liability to Tenant or any other party for violations of the Rules and Regulations by any party whatsoever. Landlord agrees to use commercially reasonable efforts to not enforce the Rules and Regulations against Tenant in a manner which unreasonably discriminates against Tenant. If there is any inconsistency between this Lease and the Rules and Regulations, the Lease shall govern.

9. Subletting and Assignment.

(a) Consent. Tenant will not sublet the Demised Premises or any part thereof or transfer possession or occupancy thereof to any person, firm or corporation, or transfer or assign this Lease, without the prior written consent of Landlord, which consent shall be granted or withheld by Landlord in the exercise of its sole and absolute discretion. Despite the foregoing, Landlord's consent to a proposed assignment of this Lease or proposed subletting of the entire Leased Premises shall not be unreasonably withheld, conditioned or delayed, provided, however, that it shall not be unreasonable for Landlord to withhold its consent on the basis that (i) the proposed assignee or subtenant does not have the financial capacity to perform its obligations under the Lease or the sublease, as applicable, or (ii) the proposed assignee or subtenant is a party by whom any suit or action could be defended on the ground of sovereign immunity, or (iii) the proposed assignee's or subtenant's proposed use of the Leased Premises is not in keeping with a first class laboratory office buildings in Rockville, or (iv) the proposed assignee or subtenant is a tenant or occupant of the Building, and Landlord has space available in the Building to reasonably accommodate such party's space needs in the Building, or (v) the proposed assignee or subtenant does not have a good reputation in the business community. Tenant shall not encumber the Lease or any interest therein nor grant any franchise, concession, license or permit arrangement with respect to the Demised Premises or any portion thereof. No subletting or assignment hereof shall be affected by operation of law or in any other manner unless with the prior written consent of Landlord, which consent shall be granted or withheld by Landlord in the exercise of its sole and absolute discretion. Unless Tenant is a publicly traded company, a sale, transfer, assignment or other conveyance of a general partnership interest in Tenant, if Tenant is a partnership or joint venture, or a transfer of more than a forty nine percent (49%) stock interest, if Tenant is a corporation, or a transfer of any ownership interest in Tenant (whether membership interest or otherwise) shall be an assignment for purposes hereof. Tenant shall not modify, extend or amend a sublease previously consented to by Landlord without obtaining Landlord's consent thereto.

(b) Assignment. In the event Tenant desires to assign this Lease, Tenant shall give to Landlord written notice of Tenant's desire to do so, which notice shall be accompanied by the "Required Information (as hereinafter defined). Within thirty (30) days of receipt of said notice and the Required Information, Landlord shall have the right to terminate this Lease on a date to be agreed upon by Landlord and Tenant. If Landlord exercises its right to terminate this Lease, Tenant agrees that Landlord shall have access to the Demised Premises thirty (30) days prior to the effective termination date to show the Demised Premises to prospective tenants. In the event Landlord exercises its right to terminate this Lease, then Tenant shall have the right, exercisable upon written notice to Landlord within ten (10) days after receiving Landlord's notice, to withdraw its request to assign this Lease. In the event Tenant timely withdraws its request to assign the Lease, Landlord shall not have the right to terminate the Lease in connection with such withdrawn request to assign the Lease.

(c) Subletting. In the event Tenant desires to sublet all or any part of the Demised Premises, Tenant shall give to Landlord written notice of Tenant's desire to do so, which notice shall be accompanied by the Required Information. In the event that the rentable square footage of the space that Tenant desires to sublease, when aggregated with the space that Tenant is then subleasing in the Building, exceeds fifty percent (50%) of the rentable area of the Demised Premises, then within sixty (60) days of receipt of said notice and Required Information, Landlord shall have the right (i) to terminate this Lease on a date to be agreed upon by Landlord and Tenant; or (ii) with Tenant's consent, to terminate this Lease and to enter into a new lease with Tenant for that portion of the Demised Premises Tenant desires to retain, upon terms to be mutually agreed upon; or (iii) to sublease from Tenant at the same rental rate then being paid by Tenant and subsequently to relet that portion of the Demised Premises that Tenant desires to relinquish. If Landlord exercises its right to terminate this Lease or to sublet a portion of the Demised Premises, Tenant agrees that Landlord shall have access to all or such portion of the Demised Premises thirty (30) days prior to the effective termination or sublease commencement date or to show the same to prospective tenants. In the event Landlord exercises its right to sublease the applicable portion of the Leased Premises or to terminate this Lease, then Tenant shall have the right, exercisable upon written notice to Landlord within ten (10) days after receiving Landlord's notice, to withdraw its request to sublease the applicable portion of the Leased Premises. In the event Tenant timely withdraws its request to sublease the Leased Premises, Landlord shall not have the right to terminate the Lease in connection with such withdrawn request to sublease.

(d) Required Information. If Tenant should desire to assign this Lease or sublet the Demised Premises (or any part thereof), Tenant shall give Landlord written notice no later than thirty (30) days in advance of the proposed effective date of such proposed assignment or sublease, which notice shall specify the following information (such information shall be collectively referred to as the "Required Information"): (i) the name, current address and business of the proposed assignee or sublessee, (ii) the amount and location of the space within the Demised Premises proposed to be so subleased, (iii) the proposed effective date and duration of the assignment or subletting, and (iv) the proposed rent and other consideration to be paid to Tenant by such assignee or sublessee. Tenant also shall promptly supply Landlord with financial statements and other information as Landlord may request to evaluate the proposed assignment or sublease.

(e) Fees; Documents. Tenant agrees to reimburse Landlord for commercially reasonable legal fees and any other reasonable out-of-pocket expenses and costs incurred by Landlord in connection with any proposed assignment or subletting. Tenant shall deliver to Landlord copies of all documents executed in connection with any proposed assignment or subletting, which documents shall be in form and substance reasonably satisfactory to Landlord and which documents, (i) in the case of a permitted assignment, shall require such assignee to assume performance of all terms of this Lease on Tenant's part to be performed, and (ii) in the case of permitted subletting, shall require such sublessee to comply with all terms of this Lease on Tenant's part to be performed with respect to the subleased premises. No acceptance by Landlord of any Base Monthly Rent or any other sum of money from any assignee, sublessee or other category of transferee shall be deemed to constitute Landlord's consent to any assignment, sublease, or transfer.

(f) No Release. Any attempted assignment or sublease by Tenant in violation of the terms and provisions of this Section 9 shall be void and shall constitute a material breach of this Lease. In the event Landlord consents to any assignment or sublease on one occasion, such consent shall not affect Tenant's obligation to comply with the provisions of Section 9 of this Lease with respect to any future assignment or sublease.

(g) Tenant Liability. In the event of any subletting of all or any portion of the Demised Premises or assignment of this Lease by Tenant, with or without Landlord's consent, Tenant shall remain primarily liable to Landlord for the payment of the rent stipulated herein and for the performance of all other covenants and conditions contained herein.

(h) Profit. If any sublease or assignment (whether by operation of law or otherwise, including without limitation an assignment pursuant to the provisions of the Bankruptcy Code or any other Insolvency Law) provides that the subtenant or assignee thereunder is to pay any amount in excess of the rental and other charges due under this Lease, then whether such excess be in the form of an increased monthly or annual rental, a lump sum payment, payment for the sale, transfer or lease of Tenant's fixtures, leasehold improvements, furniture and other personal property to the extent the payment therefor exceeds the fair market value thereof (and if the subleased or assigned space does not constitute the entire Demised Premises, the existence of such excess shall be determined on a pro-rata basis), Tenant shall pay to Landlord fifty percent (50%) of any "Profit" (as defined below) applicable to the sublease or assignment, which amount shall be paid by Tenant to Landlord as additional rent upon such terms as shall be specified by Landlord and in no event later than ten (10) business days after any receipt thereof by Tenant. "Profit" shall be defined as the difference between (i) any and all consideration received by Tenant in the aggregate from any assignment of the Lease and/or subletting of the Demised Premises, and (ii) the sum of (A) the rent and charges due to Landlord from Tenant under the terms of this Lease (and if the subleased or assigned space does not constitute the entire Demised Premises, the rent and charges payable by Tenant shall be determined on a pro-rata basis), (B) Tenant's reasonable attorneys' fees and brokerage costs in connection with such assignment or subletting that are paid to a third party that is not related to or affiliated with Tenant, (C) Tenant's actual out-of-pocket cost of performing alterations to the Demised Premises in connection with such assignment or subletting, (D) the actual amount of any rent abatement that is granted in connection with such assignment or subletting, and (E) the actual amount of improvement allowance that is paid in connection with such assignment or subletting. Acceptance by Landlord of any payments due under this Section shall not be deemed to constitute approval by Landlord of any sublease or assignment, nor shall such acceptance waive any rights of Landlord hereunder. Landlord shall have the right to inspect and audit Tenant's books and records relating to any sublease or assignment. The provisions of this Section 9(h) shall not be applicable to any transaction that is governed by the provisions of Section 9(i) below.

(i) Corporate Transfer Notwithstanding anything to the contrary contained herein, Tenant may assign its entire interest under this Lease, or sublet all or any portion of the Demised Premises, to a wholly owned corporation or entity or controlled subsidiary or parent of the Tenant or to any successor to Tenant by purchase, merger, consolidation or reorganization (hereinafter collectively referred to as "Corporate Transfer" and the entity a "Corporate Transferee") without the consent of Landlord, provided (i) Tenant is not in default under this Lease beyond the expiration of any applicable notice and cure period; (ii) if such proposed transferee is a successor to Tenant by purchase, said proposed transferee shall acquire all or substantially all of the stock or assets of Tenant's business or, if such proposed transferee is a successor to Tenant by merger, consolidation or reorganization, the continuing or surviving corporation shall own all or substantially all of the assets of Tenant; (iii) in the event of an assignment, such proposed transferee shall have a net worth which is equal to or greater than Tenant's net worth at the date of this Lease; and (iv) in the event of an assignment, such proposed transferee assumes all of the obligations of Tenant hereunder. Tenant shall endeavor to give Landlord written notice at least thirty (30) days prior to the effective date of such Corporate Transfer. As used herein, the term "controlled subsidiary" shall mean a corporate entity wholly owned by Tenant or at least fifty-one percent (51%) of whose voting stock is owned by Tenant. Notwithstanding anything in this Lease to the contrary, any assignment or subletting under this Section 9 (i), (x) shall (i) be on a commercially reasonable form and (ii) shall be subject to the terms of this Lease, and (y) Tenant shall pay to Landlord a reasonable fee for processing any sublease or assignment, which fee shall not exceed $2,500.00 on any one occasion.

10. Services and Utilities.

(a) Building Standard Services and Utilities. Landlord agrees to furnish heating and cooling to the office portion of the Demised Premises (but excluding the lab portion of the Demised Premises) during the appropriate seasons of the year, between the hours and on the days set forth in Section 1(a)(16), exclusive of the Building Holidays specified in Section 1(a)(17) (as the same may be adjusted as aforesaid), in accordance with the design specifications attached to and made apart hereof as Exhibit F, the cost of which shall be included in operating expenses to the extent not otherwise directly billed as provided in Section 10(d)(iii) below. From and after the Commencement Date and continuing throughout the entire Lease Term (including any extension thereof), except as provided in the immediately preceding sentence, Tenant shall be solely responsible for janitorial services for the Demised Premises, and shall promptly pay to the applicable utility companies (or directly to Landlord, if such utilities are submetered) any and all charges for electricity, gas, water, sewer or any other utility used, consumed or supplied to the laboratory portion of the Demised Premises. Unless such utilities are submetered to the Demised Premises, Tenant shall promptly cause all of the applicable utility companies to put the utility service in Tenant's name. Tenant shall install a supplemental heating, ventilation and air conditioning unit to furnish heating and cooling to the lab portion of the Demised Premises.

(b) Overtime Services. Should Tenant require heating and cooling services beyond the hours stipulated in Section 10(a), Landlord will furnish such additional service at the then-prevailing hourly rate, as established by Landlord from time to time, provided that Tenant gives Landlord no less than twenty-four (24) business hours advance written notice of the need therefor.

(c) Interruption of Service. In no event shall Landlord be liable to Tenant for any interruption or failure in the supply of any utilities to the Demised Premises. Landlord reserves the right to interrupt service of the heat, elevator, plumbing, air conditioning, cooling, electric, and sewer and water systems, when necessary, by reason of accident, or of repairs, alterations or improvements which in the judgment of Landlord are desirable or necessary to be made, until such repairs, alterations or improvements shall have been completed; and Landlord shall have no responsibility or liability for failure to supply heat, plumbing, air conditioning, cooling, electric, and sewer and water service, or other service or act for the benefit of Tenant, when prevented from so doing by strikes, accidents or by any other causes beyond Landlord's reasonable control, or by orders or regulations of any federal, state, county, or municipal authority, or by any failure to receive suitable fuel supply, or inability despite exercise of reasonable diligence to obtain the regularly-used fuel or other suitable substitute; and Tenant agrees that Tenant shall have no claim for damages nor shall there be any abatement of Base Annual Rent in the event that any of said systems or service shall be discontinued or shall fail to function for any reason. Despite the foregoing, in the event that as a result of Landlord's negligence or intentional misconduct (i) the services to be provided by Landlord under this Lease shall not be furnished for more than five (5) consecutive business days, and (ii) Tenant, in its reasonable business judgment, determines that it is unable to use and occupy the Demised Premises (or any part thereof) as a result thereof, then the Base Annual Rent Tenant is obligated to pay hereunder shall abate with respect to that part of the Demised Premises which Tenant does not use and occupy, commencing on the sixth (6^{th}) such business day until the date on which such services and utilities are restored, unless the failure to furnish such services and utilities is caused by Tenant's acts or omissions.

(d) Excessive Electrical Usage.

(i) Tenant will not install or operate in the Demised Premises any heavy duty electrical equipment or machinery, without obtaining the prior written consent of Landlord.

(ii) Tenant, at its sole expense, as part of the "Tenant's Work" (as defined in Exhibit E), will install one or more submeters to record the consumption or use of electricity within the Demised Premises and Landlord shall reimburse Tenant for the actual, reasonable out-of-pocket costs incurred by Tenant to install the same.

(iii) Landlord will submit monthly submeter readings to Tenant and Tenant will pay, as Additional Rent, for all consumption of electricity in the Demised Premises based on such readings. Such payment shall be based on the same charges paid by Landlord for other electricity consumed in the Building (i.e., at the rates charged for such service by the local public utility company).

(e) Excessive Heat Generation. Landlord shall not be liable for its failure to maintain comfortable atmospheric conditions in all or any portion of the Demised Premises, due to heat generated by any equipment or machinery installed by Tenant (with or without Landlord's consent) that exceeds generally-accepted engineering design practices for normal office purposes. If Tenant desires additional cooling to offset excessive heat generated by such equipment or machinery, Tenant shall pay for auxiliary cooling equipment and its operating costs, including without limitation electricity, gas, oil and water, or for excess electrical consumption by the existing cooling system, as appropriate.

(f) Security. In the event that Landlord, in the exercise of its sole and absolute discretion, elects to provide any security measures, such security measures: (i) shall be for protection of the Building only; and (ii) shall not be relied upon by Tenant to protect Tenant, its property, its employees or their property.

(g) Occupant Density. Tenant acknowledges that the Building is currently equipped to accommodate a ratio of not more than one occupant for each two hundred (200) square feet of rentable area in the Demised Premises. For purposes of this Section, "Occupants" shall include employees, visitors, contractors and other people that visit the Demised Premises but shall not include people not employed by Tenant that deliver or pick up mail or other packages at the Demised Premises, employees of Landlord or employees of Landlord's agents or contractors. In the event Tenant exceeds such density ratio in connection with its use of the Demised Premises, however, Tenant understands and acknowledges that Tenant, and not Landlord, shall be solely responsible for any discomfort or inconvenience experienced by Tenant and its Occupants in connection with such use or for any additional wear and tear on the Demised Premises and the common areas, or any additional use of electricity, water and other utilities, and additional demand by Tenant for other Building services resulting from exceeding such density ratio. To the extent that Tenant's use of the Demised Premises exceeds such density ratio, the cost to (i) supply additional services and utilities to the Demised Premises, (ii) install additional systems and equipment to the Premises, and (iii) repair wear and tear to the Demised Premises and the common areas occasioned by such usage shall be borne by Tenant solely.

11. Maintenance and Repairs.

(a) Landlord's Obligations. Landlord shall make structural repairs to the Demised Premises necessary for safety and tenantability, and shall maintain and repair all structural portions of the Building, the Building equipment serving the Demised Premises and shall maintain the Common Areas in a good, clean operating condition and in compliance with all Laws, and the cost of all such repairs or maintenance shall be included in Building operating expenses unless necessitated by the act or omission of Tenant, its agents, employees, licensees, invitees or contractors, in which event Tenant shall pay such cost to Landlord, as Additional Rent. Tenant agrees to report immediately in writing to Landlord any defective condition in or about the Demised Premises known to Tenant which Landlord is required to repair. Tenant waives the right to make repairs at Landlord's expense under any law, statute or ordinance now or hereafter in effect.

(b) Tenant's Obligations. Tenant will keep the interior, non-structural portions of the Demised Premises and the fixtures and equipment therein in good order and in a safe, neat and clean condition, will take good care thereof and will suffer no waste or damage thereto. All repairs and maintenance required to be performed by Tenant shall be made or performed immediately upon the occurrence of the necessity therefor, and shall be made or performed in a first class manner, using first class materials, by a contractor approved by Landlord and bonded unless waived by Landlord, and shall be made or performed in accordance with (i) all Laws, and (ii) insurance requirements. Maintenance and repair of equipment such as kitchen fixtures, auxiliary air-conditioning equipment, private bathroom fixtures and any other type of special equipment, together with related plumbing or electrical services, whether installed by Tenant or by Landlord on behalf of Tenant, shall be the sole responsibility of Tenant, and Landlord shall have no obligation in connection therewith. Tenant shall be responsible for the replacement of all light bulbs and tubes in the Demised Premises. If Tenant refuses or neglects to promptly commence and complete repairs or maintenance necessary to satisfy the provisions of this Section, and such failure continues for a period of ten (10) days after written notice to Tenant, then Landlord may, but shall not be required to, make and complete said repairs or maintenance and Tenant shall pay the cost therefor (including overhead) to Landlord upon demand, as Additional Rent.

(c) ADA Notification. Within ten (10) business days after receipt, Tenant shall advise Landlord in writing, and provide copies of (as applicable) any notices alleging violation of the ADA relating to any portion of the Building or of the Demised Premises, any claims made or threatened in writing regarding noncompliance with the ADA and relating to any portion of the Building or of the Demised Premises, or any governmental or regulatory actions or investigations instituted or threatened regarding noncompliance with the ADA and relating to any portion of the Building or of the Demised Premises.

12. Alterations.

(a) Landlord's Consent. Except for the "Tenant's Work" (as defined in Exhibit E), Tenant will not make any alterations, installations, changes, replacements, additions or improvements, structural or otherwise (collectively, "Alterations") in or to the Demised Premises or any part thereof, without the prior written consent of Landlord, except that the consent of Landlord shall not be required for any Alteration to the Demised Premises which is purely cosmetic or decorative (and does not affect any element of the Building structure or systems), is not visible from the exterior of the Demised Premises, does not require a building permit or other governmental approval for performance of same and costs less than Seventy-Five Thousand Dollars ($75,000.00) to perform ("Permitted Alterations") (but Tenant shall be required to provide Landlord at least ten (10) days' notice prior to commencing any Permitted Alterations). Notwithstanding the foregoing, Landlord's consent shall not be unreasonably withheld, conditioned or delayed to any Alteration to the Demised Premises (excluding any Permitted Alterations with respect to which Landlord's prior written consent shall not be required), unless the proposed Alterations may (i) affect the structure or safety of the Building; (ii) adversely affect the Building structure and systems or the functioning thereof; (iii) interfere with the operation of the Building or the provision of services or utilities to other tenants in the Building; or (iv) be of a type or quality which is not consistent with the type or quality of alterations customarily made to office spaces in comparable buildings in the Rockville submarket. All Alterations made to, or installed by or for Tenant in, the Demised Premises shall be and remain Landlord's property (excluding Tenant's furniture, personal property and moveable trade fixtures) and shall not be removed without Landlord's written consent. Any construction up-gradings required by any governmental authority as a result of said Alterations, either in the Demised Premises or in any other part of the Building, will be paid for by Tenant. Tenant shall not install any equipment of any nature whatsoever which may affect the insurance rating of the Building, the structure of the Building, or which may necessitate any changes, replacements or additions to the water system, plumbing system, heating system, air-conditioning system or the electrical system of the Demised Premises, without the prior written consent of Landlord. In the event that Landlord grants its consent thereto, Tenant shall pay all costs to make such changes, replacements or additions. Any approved Alterations shall be made by licensed and bonded contractors and mechanics approved by Landlord, in accordance with (i) Laws, (ii) the building code and zoning regulations of any such authority, (iii) plans and specifications that have been approved by Landlord in writing, and (iv) any rules and regulations established from time to time by the Underwriters Association of the local area. Prior to commencing construction of any approved Alterations, Tenant shall obtain any necessary building permits and shall deliver copies of such permits to Landlord. Tenant shall pay to Landlord, upon ten (10) business days notice, as Additional Rent, (i) a fee to cover Landlord's administrative and out-of-pocket costs of reviewing the proposed Alterations, and (ii) a fee to cover Landlord's administrative and out-of-pocket costs of supervising the performance of such Alterations, which fee shall not exceed one percent (1%) of the hard costs of the Alterations in the aggregate.

(b) Liens. In making any approved Alterations, Tenant shall promptly pay all contractors, materialmen and laborers, so as to minimize the possibility of a lien attaching to the Building, or attaching to any portion of the real property on which said Building is located. Should any such lien be filed, Tenant shall bond against or discharge the same within ten (10) business days after notice of the filing. If Tenant shall fail to bond against or discharge any such lien within such ten (10) business-day period, then Landlord may, at its option, discharge such lien at Tenant's expense in which event Tenant shall reimburse Landlord for all actual reasonable costs (including legal expenses) of discharging such lien within ten (10) days after demand, as Additional Rent.

(c) Indemnification. Except to the extent caused by the negligence or wrongful misconduct of Landlord, its agents, employees or contractors, Tenant will defend, indemnify and hold Landlord harmless from and against any and all expenses, liens, claims or damages, including attorneys' fees, for injury to person or property which may or might arise, directly or indirectly, by reason of the making of any Alterations. If any Alteration is effected without the prior written consent of Landlord, Landlord may remove or correct the same and Tenant shall be liable for any and all expenses of this work. All rights given to Landlord herein shall be in addition to any other right or remedy of Landlord contained in this Lease.

(d) Removal of Alterations. In the event that Tenant desires to know whether Landlord will require Tenant to remove any Alterations from the Demised Premises at the expiration of the Lease Term, then, at the time Tenant delivers a written request to Landlord which requests Landlord's approval of such Alterations, Tenant shall have the right to deliver to Landlord a notice which specifically requests that Landlord advise Tenant whether Landlord will require Tenant to remove such proposed Alterations at the expiration of the Lease Term. In the event that Landlord receives such a written request, and in the event that Landlord is willing to grant its consent to such Alterations, Landlord shall advise Tenant, in writing, at the time the Alterations are approved, whether or not Tenant will be required to remove the same at the expiration of the Lease Term.

13. Signs and Advertisements.

(a) No sign, advertisement or notice shall be inscribed, painted, affixed or displayed on any part of the outside or the inside of the Building, or inside of the Demised Premises where it may be visible from outside or from the public areas of the Building, except with Landlord's prior written consent and then only in such location, number, size, color and style (i.e., Building standard lettering) as is authorized by Landlord. If any such sign, advertisement or notice is exhibited without first obtaining Landlord's written consent, Landlord shall have the right to remove same, and Tenant shall be liable for any and all expenses incurred by Landlord in connection with said removal.

(b) Landlord, at its expense, shall provide Tenant with (i) one listing on each of the Building's directories, and (ii) a Building standard suite entry sign on the exterior of the entrance door to the Demised Premises.

(c) Subject to applicable Laws, Tenant, at Tenant's sole cost and expense, shall have the non-exclusive right to erect and maintain its company name on a sign to be located on the exterior facade of the Building (the "Exterior Sign"). Tenant, at its sole cost and expense, shall obtain all governmental approvals, licenses and waivers that are needed in connection with the Exterior Sign. The size, location, color, design, method of installation, and method of illumination (if applicable) of the Exterior Sign shall be subject to: (a) Landlord's prior written consent, and (b) all Laws. Subject to applicable Laws, Landlord hereby approves the sign sketch that is attached to and made a part hereof s Exhibit G. The sign contractor who installs the Exterior Sign shall be subject to Landlord's prior written approval, which approval shall not be unreasonably withheld, conditioned or delayed. Tenant, at Tenant's sole cost and expense, shall maintain the Exterior Sign in a first-class manner in accordance with the Laws. Upon the expiration of the Lease Term or the sooner termination thereof, Tenant, at its sole cost and expense, shall remove the Exterior Sign from the Building and shall restore the affected areas of the Building to the condition that existed prior to the erection of the Exterior Sign. Landlord shall have the right to grant other parties the right to install signage on the exterior and/or roof of the Building. Notwithstanding anything herein to the contrary (a) except for a Corporate Transferee, the right to erect and maintain the Exterior Sign on the exterior façade of the Building shall be personal to OpGen Inc., (b) except for a Corporate Transferee, OpGen Inc. shall have no right to permit any other party to put its name on the Exterior Sign, and (c) except for a Corporate Transferee, no sublessee, assignee or other transferee of OpGen, Inc. shall have the right to erect the Exterior Sign. Notwithstanding anything to the contrary, Landlord shall have the right to grant other parties the right to erect signage on the exterior of the Building.

14. Common Areas.

(a) Common Areas Defined. In this Lease, "Common Areas" means all areas, facilities and improvements provided, from time to time, in the Building for the mutual convenience and use of tenants or other occupants of the Building, their respective agents, employees, and invitees and shall include, if provided, but shall not be limited to, the lobbies and hallways, the public restrooms, the parking areas and facilities, access roads, driveways, retaining walls, sidewalks, walkways, landscaped areas, and exterior lighting facilities.

(b) Landlord's Control. Landlord shall, as between Landlord and Tenant, at all times during the term of the Lease have the sole and exclusive control, management and direction of the common areas, and may at any time and from time to time during the term exclude and restrain any person from use or occupancy thereof, excepting, however, Tenant and other tenants of Landlord and bona fide invitees of either who make use of said areas in accordance with the reasonable rules and regulations established by Landlord from time to time with respect thereto. The rights of Tenant in and to the Common Areas shall at all times be subject to the rights of others to use the same in common with Tenant, and it shall be the duty of Tenant to keep all of said areas free and clear of any obstructions created or permitted by Tenant or resulting from Tenant's operation. Landlord may at any time and from time to time close all or any portion of the common areas to make repairs or changes or to such extent as may, in the opinion of Landlord, be necessary to prevent a dedication thereof or the accrual of any rights to any person or to the public therein, to close temporarily any or all portions of the said areas to discourage non-customer parking, and to do and perform such other acts in and to said areas as, in the exercise of good business judgment, Landlord shall determine to be advisable with a view to the improvement of the convenience and use thereof by tenants, their employees, agents, and invitees. In exercising any of the foregoing rights, Landlord agrees to use reasonable efforts to minimize disruption to Tenant's use of and access to the Demised Premises.

(c) Changes and Additions. Landlord reserves the right at any time and from time to time, as often as Landlord deems desirable, without the same constituting an actual or constructive eviction and without incurring any liability to Tenant or otherwise affecting Tenant's obligations under this Lease, to make changes, alterations, additions, improvements, repairs, relocations or replacements in or to the Building and the fixtures and equipment thereof, as well as in or to the street entrances, halls, passages, stairways and other common facilities thereof, and to change the name by which the Building is commonly known and/or the Building's address. Landlord reserves the right from time to time to install, use, maintain, repair and replace pipes, ducts, conduits, wires and appurtenant meters and equipment for service to other parts of the Building, above the ceiling surfaces, below the floor surfaces, within the walls and in the central core areas, and to relocate any pipes, ducts, conduits, wires and appurtenant meters and equipment included in the Demised Premises which are located in the Demised Premises or located elsewhere outside the Demised Premises, and to expand and/or build additional stories on the Building. Landlord further reserves the right at any time to alter, expand or reduce the parking facilities, to change the means of ingress thereto and egress therefrom, and to impose charges for parking in such facilities (provided, however, neither Tenant, nor its employees or invitees shall be charged for parking). Nothing contained herein shall be deemed to relieve Tenant of any duty, obligation or liability with respect to making any repair, replacement or improvement or complying with any Law, and nothing contained herein shall be deemed or construed to impose upon Landlord any obligation, responsibility or liability whatsoever, for the care, supervision or repair of the Building, or any part thereof, other than as expressly provided in this Lease. In exercising any of the foregoing rights, Landlord agrees to use reasonable efforts to minimize disruption to Tenant's use of and access to the Demised Premises.

15. Parking.

(a) Parking Rights. Landlord shall provide, or shall cause any garage operator to provide, during the initial term of this Lease, to Tenant a non-exclusive license for the use of up to three (3) parking contracts for every one thousand (1,000) square feet of rentable area of the Demised Premises (the "Parking Rights") in the surface parking lot and/or parking structure serving the Building (the "Parking Facilities"). Parking Rights shall (i) be unassigned, and (ii) be on a self-park or attendant parking basis (or a combination thereof), as determined by Landlord. Landlord reserves the right to institute a valet parking system, a parking access control system (e.g., utilizing barrier gates), a parking permit system (e.g., which requires the use and display of parking permits), or to otherwise change the parking system. Despite the foregoing, as part of the Parking Rights, Tenant shall have the right to license three (3) reserved spaces, which spaces shall be located in the location depicted on Exhibit H. In addition, Landlord reserves the right to designate reserved parking areas at the Building which may be used exclusively by Tenant or other tenants of the Building. Tenant shall at all times abide by all rules and regulations governing the use of the Parking Facilities.

(b) Parking Fees. Parking shall be at no additional charge for the Term of the Lease, including any renewal thereof.

16. Surrender and Inspection.

(a) Surrender. Upon the Expiration Date or other termination of the term of this Lease, Tenant shall quit and surrender the Demised Premises to the Landlord in as good order and condition as when received, ordinary wear and tear, casualty and condemnation excepted, and Tenant shall remove all of its personal property from the Demised Premises by the Expiration Date or other termination of this Lease and leave same broom clean. Tenant's obligation to observe or perform this covenant shall survive the expiration or other termination of this Lease.

(b) Inspection. Tenant shall have the right to be present at time of final inspection of the Demised Premises to determine if any damages were done thereto, if Tenant notifies Landlord by certified mail of its intention to move, date of moving and new address. The notice of Tenant's desire to be present at the final inspection of the Demised Premises shall be given at least fifteen (15) days prior to the date of moving. Upon receipt of such notice, Landlord shall notify Tenant of time and date when the Demised Premises are to be inspected. The inspection shall occur within five (5) days before or five (5) days after Tenant's date of moving, said inspection date to be designated by Landlord. Tenant shall be deemed to have been advised of its rights under this Section by execution of this Lease.

(c) Alterations. All Alterations, including without limitation wall-to-wall carpet, blinds, draperies and drapery accessories, to or within the Demised Premises (whether made with or without Landlord's consent), shall remain upon the Demised Premises and be surrendered with the Demised Premises at the expiration of the Lease Term without disturbance, molestation or injury, unless otherwise specified by Landlord. Subject to the provisions of Section 12 above, should Landlord elect that any Alterations made by Tenant upon the Demised Premises be removed upon the expiration of the Lease Term, Tenant agrees that Landlord shall have the right to cause same to be removed at Tenant's sole cost and expense. Tenant agrees to reimburse Landlord for the cost of (i) such removal, (ii) repairing any damage resulting therefrom or from the installation or use of such Alterations, and (iii) restoring the Demised Premises to its condition at the commencement of the Lease Term as initially improved by Landlord, ordinary wear and tear excepted.

(d) Fixtures and Personal Property Remaining. If Tenant does not remove Tenant's furniture, equipment, machinery, trade fixtures, and all other items of personal property of every kind and description from the Demised Premises prior to the Expiration Date, then Tenant shall be conclusively presumed to have conveyed the same to Landlord under this Lease as a bill of sale without further payment or credit by Landlord to Tenant.

17. Access.

(a) Access to Building. Tenant shall have access to the Building twenty-four (24) hours per day, seven (7) days per week, by means of a key or an electronic controlled access system. On or before the Commencement Date, Landlord shall provide to Tenant, at no additional cost thirty (30) keys or access cards to the Building. Additional keys or controlled access cards required by Tenant for any reason will be provided upon Tenant's payment of a fee as determined by Landlord, based upon Landlord's actual cost to obtain such additional keys or cards.

(b) Landlord's Access to Demised Premises. Upon reasonable prior notice (except in the event of an emergency, in which event no notice shall be required), Landlord, its agents, employees and contractors shall have the right to enter the Demised Premises at all reasonable times, including emergencies determined by Landlord, (a) to make inspections or to make repairs to the Demised Premises or other premises as Landlord may deem necessary; (b) to perform nightly cleaning of the Demised Premises; (c) to exhibit the Demised Premises to prospective tenants during the last twelve (12) months of the Lease Term; and (d) for any purpose whatsoever relating to the safety, protection or preservation of the Building. In connection with any such entry, Landlord and its agents shall be accompanied by a representative of Tenant (except in cases of emergency or in cases where Tenant fails to identify and make available such representative on the date of such entry. Landlord shall use reasonable efforts to minimize interference to Tenant's business when making repairs, but Landlord shall not be required to perform the repairs at any time other than during normal working hours. Except as may be required by Law, Landlord agrees that it shall not knowingly share information relating to any party having access to the Demised Premises without the express written consent of Tenant, which may be withheld in Tenant's sole discretion.

(c) Restricted Access. No additional locks, other devices or systems, including without limitation alarm systems, which would restrict access to the Demised Premises shall be placed upon any doors without the prior written consent of Landlord, which consent shall not be unreasonably withheld, conditioned or delayed, Unless access to the Demised Premises is provided during the hours when cleaning service is normally rendered, Landlord shall not be responsible for providing such service to the Demised Premises or to those portions thereof which are inaccessible. Such inability by Landlord to provide cleaning service to inaccessible areas shall not entitle Tenant to any adjustment in rent.

18. Liability.

(a) Personal Property. All personal property of Tenant in the Demised Premises or in the Building shall be at the sole risk of Tenant. Landlord and its agents shall not be liable for any damage thereto. Landlord and its agents shall not be liable for any accident or damage to property of Tenant resulting from the use or operation of elevators or of the heating, cooling, electrical or plumbing apparatus, unless caused by and due to the wanton or willful acts of Landlord, its agents or employees. Landlord shall not, in any event, be liable for damages to property resulting from water, steam or other causes. Tenant hereby expressly releases Landlord and its agents from any liability incurred or claimed by reason of damage to Tenant's property. Landlord and its agents shall not be liable in damages, nor shall this Lease be affected, for conditions arising or resulting, and which affect the Building, due to construction on contiguous premises.

(b) Tenant's Liability. Any and all injury, breakage or damage of any type whatsoever to the Demised Premises or to other portions of the Building, arising from any act or omission of Tenant or its agents, employees, licensees, invitees or contractors, shall be repaired by Landlord at the sole expense of Tenant. Tenant shall reimburse Landlord for the actual, reasonable costs of such repairs within ten (10) days of receipt of written notice from Landlord of such costs. This provision shall be construed as an additional remedy granted to Landlord and not in limitation of any other rights and remedies which Landlord may have in said circumstances. Tenant shall reimburse Landlord for all expenses, damages or fines, incurred or suffered by Landlord by reason of any breach, violation or nonperformance by Tenant, or its agents, servants, or employees, of any covenant or provision of this Lease or the Rules and Regulations promulgated by Landlord hereunder from time to time, or by reason of damage to persons or property caused by moving property of or for Tenant in or out of the Building, or by the installation or removal of furniture or other property of or for Tenant, or by reason of or arising out of the carelessness, negligence or improper conduct of Tenant, or its agents, servants, employees, invitees or licensees.

(c) Criminal Acts of Third Parties. Landlord shall not be liable in any manner to Tenant, its agents, employees, licensees or invitees for any injury or damage to Tenant, Tenant's agents, employees, licensees or invitees or their property caused by the criminal or intentional misconduct of third parties. All claims against Landlord for any such damage or injury are hereby expressly waived by Tenant, and Tenant hereby agrees to hold harmless and indemnify Landlord from all such damages and the expense of defending all claims made by Tenant's agents, contractors, employees, licensees or invitees arising out of such acts.

(d) Indemnity. Except to the extent caused by the negligence or willful misconduct of Landlord, or Landlord's agents or employees, Tenant shall indemnify Landlord, Landlord's Rental Agent, and their respective agents and employees and save them harmless from and against any and all claims, actions, damages, liabilities and expense in connection with loss of life, personal injury and/or damage to property arising from or out of any occurrence in, upon or at the Demised Premises, or the occupancy or use by Tenant of the Demised Premises or any part thereof, or occasioned wholly or in part by any act or omission of the Tenant, its agents, contractors, employees, invitees or licensees. In the event that Landlord, Landlord's Rental Agent, or their respective agents or employees shall, without fault on its or their part, be made a party to any litigation commenced by or against Tenant, then Tenant shall protect and hold the same harmless and shall pay all costs, expenses and reasonable attorneys' fees incurred or paid in connection with such litigation.

(e) Survival. The provisions of Section 18 shall survive the expiration or sooner termination of this Lease.

19. Insurance.

(a) Insurance Rating. Tenant will not conduct or permit to be conducted any activity, or place any equipment or property in or around the Demised Premises, that will increase in any way the rate of fire insurance or other insurance on the Building, unless consented to by Landlord in writing. Landlord's consent may be conditioned upon Tenant's payment of any costs arising directly or indirectly from such increase. If any increase in the rate of fire insurance or other insurance on the Building is stated by any insurance company or by the applicable Insurance Rating Bureau to be due to Tenant's activity, equipment or property in or around the Demised Premises, said statement shall be conclusive evidence that the increase in such rate is due to such activity, equipment or property, and Tenant shall be liable for such increase. Any such rate increase and related costs incurred by Landlord shall be deemed Additional Rent, due and payable by Tenant to Landlord upon receipt by Tenant of a written statement of the rate increase and costs.

(b) Coverages. Tenant shall have issued, pay the premiums therefor, and maintain in full force and effect during the Lease Term:

(i) Commercial General Liability. A commercial general liability insurance policy written on an ISO CG 00 01 occurrence policy form or its equivalent protecting the Landlord and Tenant for liability arising out of this Lease in respect of the Demised Premises and the conduct or operation of business therein in the amount of not less than (x) One Million and No/100 Dollars ($1,000,000.00) each occurrence and Two Million and No/100 Dollars ($2,000,000.00) general aggregate (applying per location) for bodily injury or property damage, One Million and No/100 Dollars ($1,000,000.00) personal and advertising injury, and Two Million and No/100 Dollars ($2,000,000.00) products-completed operations, or the applicable limits of insurance shown in the policy declarations, whichever are greater, which amounts may be increased from time to time by the Landlord in its reasonable determination if such increases are then being requested by owners of comparable buildings in the Rockville submarket. Such policy shall include a separation of insureds provision, coverage for contractual liability covering Tenant's contractual obligations assumed under this Lease as an "insured contract", and, if Tenant is selling, serving or furnishing alcoholic beverages, coverage for liquor liability by scheduling the specific activity(ies) as an exception to the liquor liability exclusion;

(ii) Special Form Property. Special form property insurance, including theft, vandalism and malicious mischief, as well as coverage against sprinkler leakage and other damage due to water written at replacement cost value and with replacement cost endorsement, covering all leasehold improvements installed in the Demised Premises by Tenant or at Tenant's request and all of Tenant's personal property and any other personal property leased by or in the care, custody and control of Tenant in the Demised Premises (including, without limitation, inventory, trade fixtures, floor coverings, furniture and other property removable by Tenant under the provisions of this Lease). The proceeds of policies providing special form property insurance of Tenant's property insurance shall be payable to Landlord, Tenant and any mortgagee of the Building, as their interests may appear. In addition, loss of income and extra expense insurance in amounts as will reimburse Tenant for direct or indirect loss of earnings attributable to all perils insured against in under the special form property insurance herein and as otherwise commonly insured against by prudent tenants in the business of Tenant or attributable to prevention of access to the Demised Premises as a result of such perils;

(iii) Workers' Compensation. If and to the extent required by law, workers' compensation in form and amounts required by law and employer's liability in amounts of not less than One Million and No/100 Dollars ($1,000,000.00) each accident, One Million and No/100 Dollars ($1,000,000.00) disease-policy limit, and One Million and No/100 Dollars ($1,000,000.00) disease-each employee;

(iv) Business Automobile Liability. A business automobile liability policy of insurance covering liability arising from any owned (if any), non-owned and hired vehicles, provided that, such non-owned and hired automobile liability may be satisfied by endorsement to the commercial general lability policy, in an amount of not less than One Million and No/100 Dollars ($1,000,000.00) combined single limit each accident for bodily injury and property damage; and

(v) Umbrella/Excess Liability. An umbrella/excess liability policy or policies in amounts of not less than Three Million and No/100 Dollars ($3,000,000.00) each occurrence and Three Million and No/100 Dollars ($3,000,000.00) annual aggregate (applying per location) providing coverage in excess of the commercial general liability, business automobile liability, and employer's liability policies of insurance, concurrent to, and at least as broad as the underlying insurance policies, which must "drop down" over reduced or exhausted aggregate limits as to such underlying policies and contain a "follow form" statement.

(vi) Additional Insurance. Such additional insurance as any mortgagee of the Building may require.

(c) Policy Requirements. All insurance required of Tenant under this Lease shall be issued by insurance companies authorized to do business in the jurisdiction where the Building is located. Such companies shall have a policyholder rating of at least "A" and be assigned a financial size category of at least "Class XIV" as rated in most recent edition of "Best's Key Rating Guide" for insurance companies. The insurance required of Tenant under Section 19(a)(i) hereof shall insure performance by Tenant of the indemnity provisions of Section 18 hereof and shall contain an assumed contractual liability endorsement that refers expressly to this Lease. All insurance required of Tenant under this Lease shall: (i) be written as primary policy coverage and non-contributing with respect to any coverage on which Landlord or any additional insured are an insured (it being understood and agreed that any insurance on which Landlord or any additional insured is an insured shall be excess insurance); (ii) name Landlord, Landlord's Rental Agent and any mortgagee of the Building, and any other applicable party whose name and address shall have been furnished to Tenant as additional insureds, as their respective interests may appear (except with respect to workers' compensation insurance), and (iii) waive rights of subrogation in favor of Landlord and the additional insureds, except with respect to property insurance which is addressed in subparagraph (f) hereunder. Tenant shall make commercially reasonable efforts to ensure that such policies shall contain an endorsement requiring thirty (30) days' written notice from the insurance company to Landlord before cancellation or any change in the coverage, scope or amount of any policy, and if Tenant is unable to obtain such endorsement despite using its commercially reasonable efforts to do so, then Tenant shall be required to provide such 30-days's written notice of cancellation or change to Landlord; provided, however, that only a 10-day notice shall be provided in the event of non-payment of premium. Each policy, or a certificate showing it is in effect, together with evidence of payment of premiums, shall be deposited with Landlord at the commencement of the Lease Term, and renewal certificates or copies of renewal policies shall be delivered to Landlord at least thirty (30) days prior to the expiration date of any policy. The deductible or self-insured retention amount required under any insurance policy maintained by Tenant shall be the sole responsibility of Tenant and not exceed Twenty Five Thousand and 00/100 Dollars ($25,000.00), unless otherwise approved by Landlord in writing.

(d) No Limitation of Liability. Neither the issuance of any insurance policy required under this Lease nor the minimum limits specified herein shall be deemed to limit or restrict in any way Tenant's liability arising under or out of this Lease.

(e) Notice of Fire and Accident. Tenant shall give Landlord prompt notice in case of fire, theft, or accidents in the Demised Premises, and in case of fire, theft or accidents in the Building if involving Tenant, its agents, employees or invitees.

(f) Waiver of Subrogation. Landlord and Tenant mutually covenant and agree that each party, in connection with any all-risk property insurance policies required to be furnished in accordance with the terms and conditions of this Lease, or in connection with any all-risk property insurance policies which they obtain insuring such insurable interest as Landlord or Tenant may have in its own properties, whether personal or real, shall expressly waive any right of subrogation on the part of the insurer against the Landlord (and any mortgagee requested by Landlord) or Tenant as the same may be applicable, which right to the extent not prohibited or violative of any such policy is hereby expressly waived, and Landlord and Tenant each mutually waive all right of recovery against each other, their agents, or employees for any loss, damage or injury of any nature whatsoever to property for which either party is required by this Lease to carry insurance; provided, however, that the foregoing waiver shall not apply with respect to Section 19(b)(iv) above.

(g) Landlord's Insurance. Throughout the term of this Lease, Landlord shall maintain or cause to be maintained (i) a commercial general liability insurance policy or policies protecting Landlord in the aggregate amount of One Million and 00/100 Dollars ($1,000,000.00) combined single limit coverage per occurrence for bodily injury, death or property damage, and Two Million and 00/100 Dollars ($2,000,000.00) in the aggregate, and (ii) a special causes of loss property insurance policy upon the Building. Such property coverage shall be in amounts sufficient to prevent Landlord from becoming a co-insurer within the terms of the applicable policies and in an amount equal to ninety percent (90%) of the actual replacement cost of the Building. Landlord may maintain the foregoing insurance through the use of a blanket insurance policy which references this Building.

20. Damage by Casualty.

(a) Damage to Demised Premises. If the Demised Premises shall be damaged by fire or other casualty, then, except as otherwise provided in subparagraphs (b), (c) and (d) hereof, Landlord, at Landlord's expense, shall promptly restore the Demised Premises, and Tenant, at Tenant's sole expense, shall promptly restore all leasehold improvements installed in the Demised Premises by Tenant or at Tenant's request and its own furniture, furnishings, trade fixtures and equipment. No penalty shall accrue for reasonable delay which may arise by reason of adjustment of insurance on the part of Landlord, or on account of labor problems, or any other cause beyond Landlord's reasonable control. If the damage or destruction is such as to make the Demised Premises or any substantial part thereof untenantable (in Landlord's reasonable judgment), and provided that such damage or destruction is not due in whole or part to the gross negligence or willful misconduct of Tenant or Tenant's agents, employees or invitees, the Base Annual Rent shall abate proportionately (based on proportion of the number of square feet rendered untenantable to the total number of square feet of the Demised Premises), from the date of the damage or destruction until the date the Demised Premises has been restored by Landlord.

(b) Substantial Damage. If the Demised Premises are substantially damaged or are rendered substantially untenantable by fire or other casualty, or if Landlord's architect certifies that the Demised Premises cannot be repaired within one hundred twenty (120) working days of normal working hours, said period commencing with the start of the repair work, or if Landlord shall decide not to restore or repair the same, or if more than fifty percent (50%) of the gross leasable area of the Building is rendered untenantable (even if the Demised Premises is undamaged) or if Landlord shall decide to demolish the Building or not to rebuild it, then Landlord may, within ninety (90) days after such fire or other casualty, terminate this Lease by giving Tenant a notice in writing of such decision, and thereupon the term of this Lease shall expire by lapse of time upon the third day after such notice is given, and Tenant shall vacate the Demised Premises and surrender the same to Landlord. Upon the termination of this Lease under the conditions hereinbefore provided, Tenant's liability for Base Annual Rent and Additional Rent shall cease as of the day following the casualty.

(c) Insurance Proceeds. The proceeds payable under all casualty insurance policies maintained by Landlord on the Demised Premises shall belong to and be the property of Landlord, and Tenant shall not have any interest in such proceeds. Tenant agrees to look to Tenant's casualty insurance policies for the restoration and replacement of all of the improvements installed in the Demised Premises by Tenant or at Tenant's request and Tenant's fixtures, equipment and furnishings in the Demised Premises, and in the event of termination of this Lease, for any reason, following any such damage or destruction, Tenant shall promptly assign to Landlord or otherwise pay to Landlord, upon Landlord's request, the proceeds of said insurance and such other additional funds so that the total amount assigned and/or paid by Tenant to Landlord shall be sufficient to restore (whether or not any such restoration is actually to occur) all improvements, fixtures, equipment and furnishings (excepting only Tenant's trade fixtures and equipment) existing therein immediately prior to such damage or destruction. Notwithstanding anything to the contrary in this Section 20 or in any other provision of this Lease, any obligation (under this Lease or otherwise) of Landlord to restore all or any portion of the Demised Premises shall be subject to Landlord's receipt of approval of the same by the mortgagee(s) of Landlord (and any other approvals required by applicable laws), as well as receipt from any such mortgagee(s) of such fire and other hazard insurance policy proceeds as may have been assigned to any such mortgagee; it being agreed that if Landlord has not received such approval(s) and proceeds within one hundred and eighty (180) days after any such casualty, then Landlord shall have the option to terminate this Lease, at any time thereafter, upon notice to Tenant.

(d) **Tenant's Right of Termination .**

(i) In the event the Demised Premises is damaged by fire or other casualty, such damage is not caused by the intentional acts of Tenant or its employees, contractors or agents, and such damage is not capable of being repaired within three hundred (300) days after the date of the damage, then, within ninety (90) days after the date of the casualty, Landlord shall deliver a written notice (the "Repair Estimate Notice") to Tenant which advises Tenant that the Demised Premises cannot be repaired within three hundred (300) days after the date of the damage. Tenant shall have the right, exercisable by written notice to Landlord within twenty (20) days after the date of its receipt of the Repair Estimate Notice, to terminate this Lease. In the event Tenant timely delivers such notice of termination to Landlord, then this Lease shall terminate and the parties shall be released of all further liability hereunder. In the event Tenant fails to timely exercise such termination right, Tenant shall be deemed to have irrevocably waived its right to terminate this Lease on account of such damage.

(ii) In the event the Demised Premises is damaged by fire or other casualty, such damage is not caused by the intentional acts of Tenant or its employees, contractors or agents, and such damage is not repaired within three hundred (300) days after the date of the damage, then Tenant shall have the right, exercisable upon written notice to Landlord within twenty (20) days after the expiration of such three hundred (300) day period, to terminate this Lease. In the event that Tenant timely delivers such notice of termination to Landlord, then this Lease shall terminate and the parties shall be relieved of all further liability hereunder. In the event Tenant fails to timely exercise such termination right, Tenant shall be deemed to have irrevocably waived its right to terminate this Lease on account of such damage.

21. **Condemnation**. In the event the whole or a substantial part of the Demised Premises or the Building shall be taken for any public or quasi-public purpose by any lawful power or authority by exercise of the right of appropriation, condemnation or eminent domain, or sold to said authority to prevent such taking (collectively referred to herein as a "taking"), Landlord shall have the right to terminate this Lease effective as of the date possession is required to be surrendered to said authority, and rent shall be apportioned as of that date. For purposes of this Section, a substantial part of the Demised Premises or the Building shall be considered to have been taken if, in Landlord's sole opinion, the taking shall render it commercially undesirable for Landlord to permit this Lease to continue or to continue operating the Building. Tenant shall not assert any claim against Landlord or the taking authority for any compensation arising out of or related to such taking. In the event of any taking, Landlord shall be entitled to receive the entire amount of any award without deduction for any estate or interest of Tenant and Tenant hereby assigns to Landlord all of Tenant's rights, title and interest in and to any such award. If Landlord does not elect to terminate this Lease, the Base Annual Rent and Additional Rent payable by Tenant pursuant to Section 4 shall be adjusted (based on the ratio that the number of square feet of rentable area taken from the Demised Premises bears to the number of rentable square feet in the Demised Premises immediately prior to such taking) as of the date possession is required to be surrendered to said authority. Nothing contained in this Section shall be deemed to give Landlord any interest in any award made to Tenant for the taking of personal property and fixtures belonging to Tenant, as long as such award is made in addition to and separately stated from any award made to Landlord for the Demised Premises and the Building. Landlord shall have no obligation to contest any taking. In addition, if twenty-five percent (25%) or more of the Demised Premises is taken, and Tenant shall not be reasonably able to use the Demised Premises for the purposes intended hereunder, then Tenant shall have the right to terminate this Lease as of the date title vests in such authority by delivering written notice thereof to Landlord within thirty (30) days following such taking.

22. Defaults and Remedies.

(a) Default. Each of the following shall be deemed a default by Tenant and a breach of this Lease, which failure shall continue for a period of five (5) days following written notice from Landlord of non-payment:

(i) A failure by Tenant to pay when due Base Annual Rent or Additional Rent herein reserved, which failure continues for a period of five (5) days after written notice from landlord of non-payment;

(ii) An assignment of this Lease or subletting of the Demised Premises in violation of Section 9;

(iii) Except as provided in clause (iv) below, a failure by Tenant in the observance or performance of any other term, covenant, agreement or condition of this Lease on the part of Tenant to be observed or performed, including the Rules and Regulations, after ten (10) days written notice, provided, however, if such failure cannot reasonably be cured prior to the expiration of such ten (10) day period, Tenant shall not be deemed in default if it commences to cure such failure prior to the expiration of such ten (10) day period and diligently prosecutes such cure to completion;

(iv) A failure by Tenant in the performance of any obligation under Section 19 hereof;

(v) An Event of Bankruptcy as defined in Section 23; or

(vi) An abandonment of the Demised Premises.

(b) Remedies. Upon default by Tenant of any of the terms or covenants of this Lease, Landlord shall be entitled to remedy such default as follows:

(i) Landlord shall have the right, immediately or at any time thereafter, without further notice to Tenant (unless otherwise expressly provided herein), to enter the Demised Premises through applicable judicial process, without terminating this Lease or being guilty of trespass, and do any and all acts as Landlord may deem necessary, proper or convenient to cure such default, for the account and at the expense of Tenant, and Tenant agrees to pay to Landlord as Additional Rent all actual damage and/or expense incurred by Landlord in so doing.

(ii) Landlord shall have the right to enter upon and take possession of the Demised Premises without terminating this Lease, in accordance with applicable Laws, and remove Tenant, any occupant and any property therefrom, using judicial process, without being guilty of trespass and without relinquishing any right of Landlord against Tenant, and, if Landlord elects, relet the Demised Premises on such terms as Landlord deems advisable.

(iii) Landlord shall have the right to terminate this Lease and Tenant's right to possession of the Demised Premises and, in accordance with applicable Laws, take possession of the Demised Premises and remove Tenant, any occupant and any property therefrom, by judicial process, without being guilty of trespass and without relinquishing any right of Landlord against Tenant.

(iv) Landlord shall be entitled to recover damages from Tenant in an amount equal to the Base Annual Rent and Additional Rent which is due and payable hereunder as of the date of such default, together with the amount herein covenanted to be paid as Base Annual Rent and Additional Rent during the remainder of the term, said Base Annual Rent and Additional Rent for the full term then remaining having been fully accelerated at the option of Landlord, together with (A) all actual, reasonable, out-of-pocket expenses of any proceedings (including, but not limited to, reasonable legal expenses and reasonable attorneys' fees) which may be necessary in order for Landlord to recover possession of the Demised Premises, and (B) the actual, reasonable, out-of-pocket expenses of re-renting of the Demised Premises (including, but not limited to, any market commissions paid to any real estate agent, advertising expense and the costs of such repairs or replacements as Landlord, in its commercially reasonable judgment, considers advisable and necessary for the purpose of re-renting the Demised Premises). Landlord shall in no event be liable in any way whatsoever for failure to re-rent the Demised Premises or, in the event that the Demised Premises are re-rented, for failure to collect the rent thereof under such re-renting. No act or thing done by Landlord shall be deemed to be an acceptance of a surrender of the Demised Premises, unless Landlord shall execute a written agreement of surrender with Tenant. Tenant's liability hereunder shall not be terminated by the execution of a new lease of the Demised Premises by Landlord. In the event Landlord does not exercise its option to accelerate the payment of Base Annual Rent as provided hereinabove, then Tenant agrees to pay to Landlord, within 10 days after demand, the amount of damages herein provided after the amount of such damages for any month shall have been ascertained; provided, however, that any actual, reasonable, out-of-pocket expenses incurred by Landlord shall be deemed to be a part of the damages for the month in which they were incurred. Separate actions may be maintained each month or at other times by Landlord against Tenant to recover the damages then due, without waiting until the end of the Lease Term to determine the aggregate amount of such damages. Tenant hereby expressly waives any and all notices (other than those notices specially outlined in this Lease) to cure or vacate or to quit the Demised Premises provided by current or future law. TENANT HEREBY EXPRESSLY WAIVES ANY AND ALL RIGHTS OF REDEMPTION GRANTED BY OR UNDER ANY PRESENT OR FUTURE LAWS IN THE EVENT OF TENANT BEING EVICTED OR BEING DISPOSSESSED FOR ANY CAUSE, OR IN THE EVENT OF LANDLORD OBTAINING POSSESSION OF THE DEMISED PREMISES BY REASON OF THE DEFAULT BY TENANT OF ANY OF THE COVENANTS AND CONDITIONS OF THIS LEASE. If, under the provisions hereof, applicable summary process shall be served, and a compromise or settlement therefor shall be made, such action shall not be constituted as a waiver by Landlord of any breach of any covenant, condition or agreement herein contained.

(c) Right of Landlord to Cure Tenant's Default. If Tenant defaults in the making of any payment to any third party, or doing any act required to be made or done by Tenant relating to the Demised Premises, then Landlord may, but shall not be required to, make such payment or do such act. The amount of any resulting expense or cost to Landlord, including attorneys' fees, with interest thereon at the rate of twelve percent (12%) per annum or the highest legal rate, whichever is lower, accruing from the date paid by Landlord, shall be paid by Tenant to Landlord and shall constitute Additional Rent hereunder, due and payable by Tenant upon receipt of a written statement of costs from Landlord. The making of such payment or the doing of such act by Landlord shall not operate to cure Tenant's default, nor shall it prevent Landlord from the pursuit of any remedy to which Landlord would otherwise be entitled.

(d) Distress. Upon any default by Tenant in the payment of Base Annual Rent or Additional Rent, Landlord shall have the right, without notice, fifteen (15) days after payment of such sum was due, to institute an action of distress therefor, and, upon distress, in Landlord's discretion, this Tenancy shall terminate. In the event of such termination, the provisions of Section 22(b) shall be applicable.

(e) Lien for Rent. Landlord hereby waives any statutory lien it may have on the property of tenant in the Demised Premises.

(f) Landlord's Remedies Cumulative. All rights and remedies of Landlord herein enumerated shall be cumulative. In the event of any breach by Tenant of any of the covenants or provisions of this Lease, then, regardless of whether the Lease Term has commenced, this Lease has been terminated, or Landlord has recovered possession of the Demised Premises, Landlord shall have the right of injunction and the right to invoke any remedy allowed at law or in equity, and mention in this Lease of any particular remedy shall not preclude Landlord from any other remedy at law or in equity.

(g) Attorneys' Fees. In the event that a party incurs any fees or expenses to enforce the provisions of this Lease, including, without limitation, attorneys' fees and litigation costs, then the losing party shall pay to the prevailing party such fees and expenses on demand.

(h) Mitigation of Damages.

(i) Both Landlord and Tenant shall each use commercially reasonable efforts to mitigate any damages resulting from a default of the other party under this Lease.

(ii) Landlord's obligation to mitigate damages after a default by Tenant under this Lease shall be satisfied in full if Landlord undertakes to lease the Demised Premises to another tenant (a "Substitute Tenant") in accordance with the following criteria: (a) Landlord shall have no obligation to solicit or entertain negotiations with any other prospective tenants for the Demised Premises until Landlord obtains full and complete possession of the Demised Premises including, without limitation, the final and unappealable legal right to relet the Demised Premises free of any claim of Tenant; (b) Landlord shall not be obligated to offer the Demised Premises to a prospective tenant when other premises in the Building suitable for that prospective tenant's use are (or soon will be) available; (c) Landlord shall not be obligated to lease the Demised Premises to a Substitute Tenant for a rental less than the current fair market rental then prevailing for similar office uses in comparable buildings in the same market area as the Building, nor shall Landlord be obligated to enter into a new lease under other terms and conditions that are unacceptable to Landlord under Landlord's then current leasing policies for comparable space in the Building; (d) Landlord shall not be obligated to enter into a lease with any proposed tenant whose use would: (1) violate any restriction, covenant or requirement contained in the lease of another tenant of the Building; (2) adversely affect the reputation of the Building; or (3) be incompatible with the operation of the Building as a first class building; (e) Landlord shall not be obligated to enter into a lease with any proposed Substitute Tenant which does not have, in Landlord's reasonable opinion, sufficient financial resources or operating experience to operate the Demised Premises in a first class manner; (f) Landlord shall not be required to expend any amount of money to alter, remodel or otherwise make the Demised Premises suitable for use by a proposed Substitute Tenant unless: (1) Tenant pays any such sum to Landlord in advance of Landlord's execution of a substitute lease with such tenant (which payment shall not be in lieu of any damages or other sums to which Landlord may be entitled as a result of Tenant's default under this Lease); or (2) Landlord, in Landlord's sole discretion, determines that any such expenditure is financially justified in connection with entering into any such substitute lease.

(iii) Upon compliance with the above criteria regarding the releasing of the Demised Premises after a default by Tenant, Landlord shall be deemed to have fully satisfied Landlord's obligation to mitigate damages under this Lease and under any law or judicial ruling in effect on the date of this Lease or at the time of Tenant's default, and Tenant waives and releases any right to assert in any action by Landlord to enforce the terms of this Lease, any defense, counterclaim, or rights of setoff or recoupment respecting the mitigation of damages by Landlord, unless and to the extent Landlord maliciously or in bad faith fails to act in accordance with the requirements of this Section 22(h).

(iv) Tenant's right to seek damages from Landlord as a result of a default by Landlord under the Lease shall be conditioned on Tenant taking all actions reasonably required, under the circumstances, to minimize any loss or damage to Tenant's property or business, or to any of Tenant's officers, employees, agents, invitees, or other third parties that may be caused by any such default of Landlord.

(i) Amortizing of Expenses. Notwithstanding anything to the contrary contained in this Lease, (i) any expenses incurred by Landlord related to any re-leasing of the Demised Premises shall be amortized on a straight-line basis over the greater of the remaining term of the Lease or the new lease for the Demised Premises, and (ii) Tenant shall be liable for only that portion of the foregoing expenses within the remaining Lease Term.

(j) Landlord shall not be in default under this Lease unless Landlord fails to perform obligations required of Landlord within thirty (30) days after written notice is delivered by Tenant to Landlord and to the holder of any mortgages or deeds of trust (collectively, "Lender") covering the Demised Premises whose name and address shall have theretofore been furnished to Tenant in writing, specifying the obligation which Landlord has failed to perform; provided, however, that if the nature of Landlord's obligation is such that more than thirty (30) days are required for performance, then Landlord shall not be in default if Landlord or Lender commences performance within such thirty (30) day period and thereafter diligently prosecutes the same to completion. All obligations of Landlord hereunder shall be construed as covenants, not conditions.

23. Bankruptcy.

(a) The following shall be Events of Bankruptcy under this Lease: (i) Tenant's or any guarantor of Tenant's obligations under this Lease ("Tenant's Guarantor") becoming insolvent, as that term is defined in Title 11 of the United States Code (the "Bankruptcy Code"), or under the insolvency laws of any state, district, commonwealth or territory of the United States (the "Insolvency Laws"); (ii) The appointment of a receiver or custodian for any or all of Tenant's or Tenant's Guarantor's property or assets, or the institution of a foreclosure action upon any of Tenant's or Tenant's Guarantor's real or personal property; (iii) The filing of a voluntary petition under the provisions of the Bankruptcy Code or Insolvency Laws; (iv) The filing of an involuntary petition against Tenant or Tenant's Guarantor as the subject debtor under the Bankruptcy Code or Insolvency Laws, which either (A) is not dismissed within thirty (30) days of filing, or (B) results in the issuance of an order for relief against the debtor; or (v) Tenant's or Tenant's Guarantor's making or consenting to an assignment for the benefit of creditors or a common law composition of creditors.

(b) Upon occurrence of an Event of Bankruptcy, Landlord shall have all rights and remedies available to Landlord pursuant to Section 22 and pursuant to the Bankruptcy Code and the Insolvency Laws; provided, however, that while a case in which Tenant is the subject debtor under the Bankruptcy Code is pending, Landlord shall not exercise its rights and remedies pursuant to Section 22 so long as (i) the Bankruptcy Code prohibits the exercise of such rights and remedies, and (ii) Tenant or its Trustee in Bankruptcy (hereinafter referred to as "Trustee") (A) cures all defaults under this Lease, (B) compensates Landlord for monetary damages incurred as a result of such defaults, including reasonable attorneys' fees, (C) provides adequate assurance of future performance on the part of Tenant as debtor in possession or on the part of the assignee tenant; and (D) complies with all other requirements of the Bankruptcy Code.

24. Lender Requirements.

(a) Subordination. This Lease is subject and subordinate to any first mortgage or first deed of trust (each such mortgage or deed of trust shall hereinafter be referred to as the "First Trust") which may now or hereafter affect such leases or the real property of which the Demised Premises form a part, and to all renewals, modifications, consolidations, replacements and extensions thereof. Provided that the beneficiary of the First Trust grants its written consent to any additional subordination of this Lease, this Lease shall be subject and subordinate to all ground or underlying leases and to all other mortgages and/or other deeds of trust which may now or hereafter affect such leases or the real property of which the Demised Premises form a part, and to all renewals, modifications, consolidations, replacements and extensions thereof. Subject to obtaining the written consent of the beneficiary of the First Trust with respect to subordinating this Lease to the lien of any mortgage, deed of trust or ground lease other than the First Trust, the foregoing subordination provisions shall be self-operative and no further instrument of subordination shall be required. Tenant agrees to execute and deliver, within ten (10) business days after Landlord's written request, such further commercially reasonable instrument or instruments confirming this subordination as shall be desired by Landlord or by any ground lessor, mortgagee or proposed mortgagee. Tenant further agrees that, at the option of the holder of any mortgage or of the trustee under any deed of trust, this Lease may be made superior to said mortgage or first deed of trust by the insertion therein of a declaration that this Lease is superior thereto.

(b) Attornment. In the event any proceedings are brought for the foreclosure of, or in the event of exercise of the power of sale under, any deed of trust to secure debt given by Landlord and covering the Demised Premises, the party secured by any such deed of trust shall have the right to recognize this Lease and, in the event of any foreclosure sale under such deed of trust, this Lease shall continue in full force and effect at the option of the party secured by such deed of trust or the purchaser under any such foreclosure sale. If such party elects to recognize this Lease, then (x) Tenant shall attorn to the purchaser upon any such foreclosure or sale and recognize such purchaser as the owner and landlord under this Lease, and (y) such party, as landlord: (i) shall recognize Tenant's rights to continue to occupy the Demised Premises and exercise and enjoy all of its rights hereunder, and so long as Tenant complies with the terms and provisions of this Lease; (ii) shall not be bound by payments of Base Annual Rent or Additional Rent more than one (1) month in advance of their due date; (iii) shall have no obligation for the return of any security deposit not actually received by such party; (iv) shall not be bound by any amendment or modification to the Lease to which such party has not consented in writing; (v) shall not be subject to any claim, defense or setoff which could be asserted against any predecessor Landlord; and (vi) shall have no liability for any default by any predecessor Landlord.

(c) Notice of Default. Tenant agrees to give any mortgagee(s) and/or trust deed holder(s), by certified or registered mail, postage prepaid, return receipt requested, a copy of any notice of any failure by Landlord to fulfill any of its obligations under this Lease, provided that prior to such notice Tenant has been notified in writing (by way of notice of assignment of rents and leases, or otherwise) of the addresses of such mortgagee(s) and/or trust deed holder(s). Tenant further agrees that the mortgagee(s) and/or trust deed holder(s) shall have such time as may be necessary to cure such failure as long as any mortgagee(s) and/or trust deed holder(s) has commenced and is diligently pursuing the remedies necessary to cure such failure (including, but not limited to, time to take possession and/or commence foreclosure proceedings, if necessary, to effect such cure). Notwithstanding anything herein to the contrary, so long as any mortgagee(s) and/or trust deed holder(s) has commenced and is diligently pursuing the remedies necessary to cure such failure (including, but not limited to, taking possession and/or commencing foreclosure proceedings, if necessary, to effect such cure), Tenant shall have no right to terminate this Lease as a result of any such failure by Landlord.

(d) New Financing. In the event that any trust or mortgage lender providing financing in connection with the Building requires, as a condition of such financing, that modifications to this Lease be obtained, and provided that such modifications (i) are reasonable, (ii) do not adversely affect Tenant's use of the Demised Premises as herein permitted, (iii) do not materially alter the approved Space Plan for the Demised Premises, (iv) do not increase the rent and other sums required to be paid by Tenant hereunder, and (v) do not materially increase Tenant's obligations or materially decrease Tenant's rights under this Lease, then Landlord may submit to Tenant a written amendment to this Lease incorporating such required modifications, and, Tenant shall execute and return to Landlord such written amendment within ten (10) days after the same has been submitted to Tenant.

(e) Financial Statements. From time to time at Landlord's request (but no more than twice per year except in connection with a default by Tenant under this Lease, financing, refinancing, potential sale or sale), Tenant shall cause the following financial information to be delivered to Landlord, at Tenant's sole cost and expense, upon not less than ten (10) business days' advance written notice from Landlord: (a) a current financial statement for Tenant and Tenant's financial statements for the previous two accounting years, (b) a current financial statement for any guarantor(s) of this Lease and the guarantor's financial statements for the previous two accounting years and (c) such other financial information pertaining to Tenant or any guarantor as Landlord or any lender or purchaser of Landlord may reasonably request. All financial statements shall be prepared in accordance with generally accepted accounting principles consistently applied and, if such is the normal practice of Tenant, shall be audited by an independent certified public accountant. Tenant hereby authorizes Landlord, from time to time, with notice to Tenant, to obtain a credit report or credit history on Tenant form any credit reporting company.

25. Estoppel Certificates. Tenant agrees from time to time, upon ten (10) business days prior written notice by Landlord, to execute, acknowledge and deliver to Landlord a written estoppel certificate (a) certifying that this Lease is unmodified and in full force and effect (or if there have been modifications, stating the nature of same), (b) stating the Commencement Date of the Lease Term, (c) stating the amounts of Base Annual Rent and Additional Rent and the dates to which the Base Annual Rent and Additional Rent have been paid by Tenant, (d) stating the amount of any Security Deposit, (e) stating whether or not to the actual knowledge of Tenant, Landlord is in default in the performance of any covenant, agreement or condition contained in this Lease, and, if so, specifying each such default of which Tenant may have knowledge, (f) stating whether or not Tenant has the right to setoff and no defense against payment of the Base Annual Rent or Additional Rent, (g) stating the address to which notices to Tenant should be sent, and (h) certifying such other matters with respect to this Lease and Tennant's tenancy as may be requested by Landlord. Any such certificate delivered pursuant hereto may be relied upon by an owner of the Building, any prospective purchaser of the Building, any mortgagee or prospective mortgagee of the Building or of Landlord's interest therein, or any prospective assignee of any such mortgage. Failure to deliver the aforesaid certificate within the ten (10) business days shall be conclusive upon Tenant for the benefit of Landlord and any successor to Landlord that this Lease is in full force and effect and has not been modified except as may be represented by the party requesting the certificate. If Tenant fails to deliver the certificate within the ten (10) business days, Landlord may elect to deliver a second written notice to Tenant requesting delivery of the estoppel certificate. In the event Tenant fails to deliver the estoppel certificate to Landlord within ten (10) business days following Landlord's written notice, then Tenant shall be deemed to be in default under this Lease without any notice or cure periods and all matters set forth in the certificate shall be deemed true and accurate.

26. Tenant Holdover.

(a) With Landlord Consent. If Tenant continues, with the knowledge and written consent of Landlord obtained at least thirty (30) days prior to the expiration of the Lease Term, to remain in the Demised Premises after the expiration of the Lease Term, and in that event, Tenant shall, by virtue of this agreement become a tenant by the month at Base Monthly Rent which is one and one-half (1½) times the Base Monthly Rent applicable to the last month of the Lease Term, and otherwise subject to the terms, covenants and conditions herein specified, commencing said monthly tenancy with the first day next after the end of the Lease Term.

(b) Without Landlord Consent. In the event that Tenant, without the consent of Landlord, shall hold over the expiration of the term hereby created, then Tenant shall become a tenant of sufferance only, at a monthly rent which is one and one-half (1½) times the Base Monthly Rent applicable to the last month of the Lease Term for the first sixty (60) days and two (2) times thereafter, and otherwise subject to the terms, covenants and conditions herein specified Tenant expressly agrees to hold Landlord harmless from all loss and damages, direct and consequential, which Landlord may suffer in defense of claims by other parties against Landlord arising out of the holding over by Tenant, including, without limitation, attorneys' fees which may be incurred by Landlord in defense of such claims. Acceptance of rent by Landlord subsequent to the expiration of the Lease Term shall not constitute consent to any holding over. Landlord shall have the right to apply all payment received after the expiration date of this Lease toward payment for use and occupancy of the Demised Premises subsequent to the expiration of the Lease Term and toward any other sums owed by Tenant to Landlord. Landlord, at its option, may forthwith re-enter and take possession of the Demised Premises by any legal process in force.

27. No Relocation. Landlord shall have no right to relocate the Demised Premises.

28. Quiet Enjoyment. Subject to the terms of this Lease, so long as Tenant is not in default under this Lease beyond the expiration of any applicable notice and cure period, Tenant shall at all times during the term herein granted, peacefully and quietly have and enjoy possession of the Demised Premises without any encumbrance or hindrance or molestation by Landlord, except as provided for elsewhere under this Lease.

29. Mechanics Liens. Tenant will not permit to be created or to remain undischarged any lien, encumbrance or charge (arising out of any work done or materials or supplies furnished, or claimed to have been done or furnished, by any contractor, mechanic, laborer or materialman or any mortgage, conditional sale, security agreement or chattel mortgage, or otherwise by or for Tenant) which might be or become a lien or encumbrance or charge upon the Building or any part thereof or the income therefrom. Tenant will not suffer any other matter or thing whereby the estate, rights and interests of Landlord in the Building or any part thereof might be impaired. If any lien, or notice of lien on account of an alleged debt of Tenant or any notice of contract by a party engaged by Tenant or Tenant's contractor to work on the Demised Premises shall be filed against the Building or any part thereof, Tenant, within ten (10) business days after notice of the filing thereof, will cause the same to be discharged of record by payment, deposit, bond, order of a court of competent jurisdiction or otherwise. If Tenant shall fail to cause such lien or notice of lien to be discharged within the period aforesaid, then, in addition to any other right or remedy, Landlord may, but shall not be obligated to, discharge the same either by paying the amounts claimed to be due or by procuring the discharge of such lien by deposit or by bonding proceedings and in any such event Landlord shall be entitled, if Landlord so elects, to compel the prosecution of an action for the foreclosure of such lien by the lienor and to pay the amount of the judgment in favor of the lienor with interest, costs and allowances. Any amount so paid by Landlord and all reasonable out-of-pocket costs and expenses, including attorneys' fees, incurred by Landlord in connection therewith, shall constitute Additional Rent payable by Tenant under this Lease and shall be paid by Tenant to Landlord on demand. Nothing herein contained shall obligate Tenant to pay or discharge any lien created by Landlord.

30. **Time.** Landlord and Tenant acknowledges that time is of the essence in the performance of any and all obligations, terms, and provisions of this Lease.

31. **Postponement of Performance.** In the event that either party hereto shall be delayed or hindered in or prevented from the performance of any act required hereunder by reason of strikes, labor troubles, inability to procure labor or materials, failure of power, restrictive governmental laws or regulations, riots, insurrection, war, acts of God, fire or other casualty or other reason of a similar or dissimilar nature beyond the reasonable control of the party delayed in performing work or doing acts required under the terms of this Lease, then performance of such act shall be excused for the period of the delay and the period for the performance of any such act shall be extended for a period equivalent to the period of such delay. The provisions of this Section shall not operate to excuse Tenant from the prompt payment of Base Annual Rent or Additional Rent or from surrendering the Demised Premises, and shall not operate to extend the term of this Lease. Delays or failures to perform resulting from lack of funds shall not be deemed delays beyond the reasonable control of a party.

32. **Landlord's Reserved Rights.** The Landlord reserves the following rights: to show the Demised Premises to prospective tenants or brokers during the last three hundred sixty five (365) days of the term of this Lease; and to show the Demised Premises to prospective purchasers at all reasonable times provided that reasonable prior notice is given to Tenant in each case and that Tenant's use and occupancy of the Demised Premises shall not be materially inconvenienced by any such action of Landlord.

33. **No Waiver.** No provision of this Lease shall be deemed to have been waived by a party, unless such waiver be in writing signed by such party. No waiver by a party of any breach by the other of any of the terms, covenants, agreements, or conditions of this Lease shall be deemed to constitute a waiver of any succeeding breach thereof, or a waiver of any breach of any of the other terms, covenants, agreements, and conditions herein contained. No custom or practice which may occur or develop between the parties in connection with the terms of this Lease shall be construed to waive or lessen a party's right to insist upon strict performance of the terms of this Lease, without a written notice thereof from the waiving party No employee of Landlord or of Landlord's agents shall have any authority to accept the keys of the Demised Premises prior to termination of the Lease, and the delivery of keys to any employee of Landlord or Landlord's agents shall not operate as a termination of the Lease or a surrender of the Demised Premises. The receipt by Landlord of any payment of Base Annual Rent or Additional Rent with knowledge of the breach of any covenant of this Lease shall not be deemed a waiver of such breach. The failure of Landlord to enforce any of the Rules and Regulations made a part of this Lease, or hereafter adopted, against Tenant or any other tenant in the Building shall not be deemed a waiver of any such Rules and Regulations.

34. **Limitation of Landlord's Liability.** In consideration of the benefits accruing hereunder, Tenant and all successors and assigns of Tenant covenant and agree that in the event of any actual or alleged failure, breach or default hereunder by Landlord: (a) the sole and exclusive remedy shall be against the interest of Landlord in the Building (and the insurance proceeds and condemnation awards therefrom); (b) neither Landlord nor (if Landlord is a limited liability company) any member or (if Landlord is a partnership) any partner of Landlord nor (if Landlord is a corporation) any shareholder of Landlord, nor Rental Agent specified in Section 1(a)8 hereof nor (if Rental Agent is a partnership) any member, partner of Rental Agent nor (if Rental Agent is a corporation) any shareholder of Rental Agent shall be personally liable with respect to any claim arising out of or related to this Lease; (c) no partner or shareholder of Landlord nor any member, partner or shareholder of Rental Agent shall be sued or named as a party in any suit or action (except as may be necessary to secure jurisdiction of Landlord); (d) no service of process shall be made against any member, partner or shareholder of Landlord nor against any member, partner or shareholder of Rental Agent (except as may be necessary to secure jurisdiction of Landlord); (e) any judgment granted against any member, partner or shareholder of Landlord or against any member, partner or shareholder of Rental Agent may be vacated and set aside at any time as if such judgment had never been granted; and (f) these covenants and agreements are enforceable both by Landlord and also by any member, partner or shareholder of Landlord and by any member, partner or shareholder of Rental Agent.

35. **Transfer of the Building.** In the event of the sale or other transfer of Landlord's right, title and interest in the Demised Premises or the Building (except in the case of a sale-leaseback financing transaction in which Landlord is the lessee), Landlord shall transfer and assign to such purchaser or transferee all amounts of pre-paid Base Annual Rent and the Security Deposit. Tenant shall have no right to terminate this Lease nor to abate Base Annual Rent nor to deduct from, nor set-off, nor counterclaim against Base Annual Rent because of any sale or transfer (including, without limitation, any sale-leaseback) by Landlord or its successors or assigns. In the event of the transfer and assignment by Landlord of its interest in this Lease, Landlord shall thereby be released from any further responsibility hereunder, and Tenant agrees to look solely to such successor in interest of the Landlord for performance of such obligations. The term "Landlord" as used in this Lease shall mean the owner of the Building, at the time in question. In the event of a transfer (whether voluntary or involuntary) by such owner of its interest in the Building, such owner shall thereupon be released and discharged from all covenants and obligations of the Lease thereafter accruing, but such covenants and obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's ownership. Upon any sale or other transfer as above provided (other than a sale-leaseback), or upon any assignment of Landlord's interest herein, it shall be deemed and construed conclusively, without further agreement between the parties, that the purchaser or other transferee or assignee has assumed and agreed to perform the obligations of Landlord thereafter accruing.

36. Waiver of Counterclaim and Trial by Jury. LANDLORD AND TENANT WAIVE THEIR RIGHT TO TRIAL BY JURY IN ANY ACTION, PROCEEDING OR COUNTERCLAIM BROUGHT BY EITHER OF THE PARTIES HERETO AGAINST THE OTHER ON ANY MATTERS WHATSOEVER ARISING OUT OF OR IN ANY WAY CONNECTED WITH THIS LEASE, THE RELATIONSHIP OF LANDLORD AND TENANT, TENANT'S USE OF OR OCCUPANCY OF THE DEMISED PREMISES, AND ANY EMERGENCY STATUTORY OR ANY OTHER STATUTORY REMEDY. TENANT SHALL NOT INTERPOSE ANY NON-COMPULSORY COUNTERCLAIM OR COUNTERCLAIMS OR CLAIMS FOR SET-OFF, RECOUPMENT OR DEDUCTION OF BASE ANNUAL RENT OR ADDITIONAL RENT IN A SUMMARY PROCEEDING FOR NONPAYMENT OF BASE ANNUAL RENT OR ADDITIONAL RENT OR OTHER ACTION OR SUMMARY PROCEEDING BASED ON TERMINATION, HOLDOVER OR OTHER DEFAULT IN WHICH LANDLORD SEEKS REPOSSESSION OF THE DEMISED PREMISES FROM TENANT.

37. Notices.

(a) Addresses for Notices. All notices required or desired to be given hereunder by either party to the other shall be in writing and be given in person, by a nationally recognized overnight carrier which provides receipt of delivery, or by certified or registered mail and addressed as specified in Section 1(a). Either party may, by like written notice, designate a new address to which such notices shall be directed.

(b) Effective Date of Notice. Notice shall be deemed to be effective when delivered in person or a nationally recognized overnight carrier, or when delivery is refused, or three (3) days after mailing, unless otherwise stipulated herein.

38. Brokers. Landlord and Tenant each represents and warrants to the other that it has not employed any broker in connection with this Lease transaction, except the brokers named in Section 1(a)(21). Said broker shall be paid a brokerage commission pursuant to a separate agreement between Landlord and said broker, and Landlord and Tenant each shall indemnify and hold harmless the other from and against any claims for brokerage or other commission arising by reason of a breach by the indemnifying party of the aforesaid representation and warranty. Pursuant to separate written agreements between Landlord and each of the brokers, Landlord shall pay each of such brokers a commission in connection with this Lease.

39. Intentionally Deleted.

40. Miscellaneous Provisions.

(a) Governing Law. The laws of the jurisdiction in which the Building is located shall govern the validity, performance and enforcement of this Lease.

(b) Successors. All rights, remedies and liabilities herein given to or imposed upon either of the parties hereto, shall extend to their respective heirs, executors, administrators, successors and assigns. This provision shall not be deemed to grant Tenant any right to assign this Lease or to sublet the Demised Premises.

(c) No Partnership. Nothing contained in this Lease shall be deemed or construed to create a partnership or joint venture of or between Landlord and Tenant, or to create any other relationship between the parties other than that of Landlord and Tenant.

(d) No Representations by Landlord. Neither Landlord nor any employee or agent of Landlord has made any representations or promises with respect to the Demised Premises or the Building except as herein expressly set forth, and no rights, privileges, easements or licenses are granted to Tenant except as herein expressly set forth.

(e) Exhibits. It is agreed and understood that any Exhibits referred to herein, and attached hereto, form an integral part of this Lease and are hereby incorporated by reference.

(f) Pronouns. Feminine or neuter pronouns shall be substituted for those of the masculine form, and the plural shall be substituted for the singular number, in any place or places herein in which the content may require such substitution or substitutions. Landlord and Tenant herein for convenience have been referred to in neuter form.

(g) Captions. All section and paragraph captions herein are for the convenience of the parties only, and neither limit nor amplify the provisions of this Lease.

(h) Landlord's Approval. Whenever Landlord's consent or approval is required under the terms of this Lease, Landlord may grant or deny such consent or approval in its sole discretion unless otherwise specified herein.

(i) Invalidity of Particular Provisions. If any term or provision of this Lease or applications thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remaining terms and provisions of this Lease, or the application of such term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of this Lease shall be valid and enforced to the fullest extent permitted by law.

(j) Counterparts. This Lease may be executed in several counterparts, but all counterparts shall constitute one and the same legal document.

(k) Entire Agreement; Modification; Merger. This Lease and all Exhibits hereto contain all the agreements and conditions made between the parties and may not be modified orally or in any other manner than by an agreement in writing, signed by the parties hereto. Notwithstanding anything herein to the contrary, in the event Landlord obtains a judgment against Tenant in connection with the Lease, the Lease shall not merge into the judgment.

(l) Authority. Landlord and Tenant hereby covenant each for itself, that it has full right, power and authority to enter into this Lease upon the terms and conditions herein set forth. If Tenant signs as a corporation, Tenant does hereby covenant and warrant that Tenant is a duly authorized and existing corporation, qualified to do business in the jurisdiction in which the Demised Premises is located, that the corporation has full right and authority to enter into this Lease, and that each and both of the persons signing on behalf of the corporation were authorized to do so. If Tenant signs as a partnership, Tenant does hereby covenant and warrant that Tenant is a duly formed and validly existing partnership, that the partnership has full right and authority to enter into this Lease, and that each of the persons signing on behalf of the partnership were authorized to do so.

(m) Examination of Lease. Submission of this Lease for examination or signature by Tenant shall not constitute reservation of or option for Lease, and the same shall not be effective as a Lease or otherwise until execution and delivery by both Landlord and Tenant.

(n) Intentionally Deleted.

(o) Covenants. The parties hereto agree that all the provisions of this Lease are to be construed as covenants and agreements as though the words importing such covenants and agreements were used in each separate provision hereof.

(p) Interpretation. Although the printed provisions of this Lease were drawn by Landlord, this Lease shall not be construed for or against Landlord or Tenant, but this Lease shall be interpreted in accordance with the general tenor of the language in an effort to reach the intended result.

(q) Confidentiality. Tenant acknowledges and agrees that the terms of this Lease are confidential and constitute proprietary information of Landlord. Disclosure of the terms hereof could adversely affect the ability of Landlord to negotiate other leases with respect to the Project and may impair Landlord's relationship with other tenants of the Project. Except as required by law, including in connection with any SEC requirements concerning Tenant's publicly traded status, Tenant agrees that it and its partners, officers, directors, employees, brokers, financial advisors, and attorneys, if any, shall not disclose the terms and conditions of this Lease to any other person or entity without the prior written consent of Landlord which may be given or withheld by Landlord, in Landlord's sole discretion. It is understood and agreed that damages alone would be an inadequate remedy for the breach of this provision by Tenant, and Landlord shall also have the right to seek specific performance of this provision and to seek injunctive relief to prevent its breach or continued breach.

(r) OFAC Certification. Tenant represents and warrants that (i) Tenant is (a) not currently identified on the Specially Designated Nationals and Blocked Persons List maintained by the Office of Foreign Assets Control, Department of the Treasury ("OFAC") and/or on any other similar list maintained by OFAC pursuant to any authorizing statute, executive order or regulation (collectively, the "List"), and (b) not a person or entity with whom a citizen of the United States is prohibited to engage in transactions by any trade embargo, economic sanction, or other prohibition of United States law, regulation or Executive Order of the President of the United States. The term "Embargoed Person" means any person, entity or government subject to trade restrictions under U.S. law including but not limited to, the International Emergency Economic Powers Act 50 U.S.C. Section 1701, et. seq. The Trading with the Enemy Act, 50 U.S.C. App. 1 et. seq., and any Executive Orders or regulations promulgated thereunder with the result that the investment in Tenant is prohibited by law or Tenant is in violation of law. Tenant hereby agrees to defend, indemnify, and hold harmless Landlord from and against any and all claims, damages, losses, risks, liabilities, and expenses (including reasonable attorney's fees and costs) arising from or related to any breach of the foregoing certification.

41. Termination Option.

In the event that Tenant delivers a written notice to Landlord which states that Tenant desires to expand the Demised Premises by more than twenty percent (20%) of the rentable square footage of the Demised Premises, but Landlord in unable to provide Tenant with the expansion space in the Building, then provided that (x) Tenant has not been in default under the Lease beyond the expiration of any applicable notice and cure periods, and (y) except for a Corporate Transfer, Tenant has not assigned the Lease or sublet more than thirty percent of the rentable area of the Demised Premises, Tenant shall have the right, at Tenant's sole option, to terminate this Lease on the last day of ninety fourth (94^{th}) calendar month of the term of this Lease (the "Early Termination Date"). Such termination shall be effective only so long as (a) Tenant provides Landlord with written notice of termination of this Lease (the "Termination Notice") not later than twelve (12) full months prior to the Early Termination Date (the "Termination Notice Date"), and (b) on or before the Termination Notice Date, Tenant pays to Landlord, in immediately available Federal funds, the "Termination Fee" (as hereinafter defined). As used herein, "Termination Fee" shall mean the unamortized costs (collectively, the "Transaction Costs"), of the Construction Allowance" (as defined in Exhibit E), the Total Rent Abatement, and brokerage fees and commissions, attorneys' fees. The Transaction Costs shall be amortized using an interest rate of eight percent (8%) per annum, in equal monthly installments, which amortization period shall commence on the first day of the eleventh (11^{th}) calendar month of the term, and which shall end on the date which is ten (10) lease years and ten (10) months after the Commencement Date. In the event Tenant shall exercise its option to terminate this Lease as aforesaid, Tenant shall surrender the Demised Premises to Landlord pursuant to the applicable provisions of this Lease on the Early Termination Date, and the parties shall thereupon be relieved of any further liability under this Lease. At any time that is forty five (45) days after the Commencement Date, Tenant may request in writing that Landlord shall provide Tenant with the amount of the termination Fee, and Landlord shall, within thirty (30) days of its receipt of such request, provide Tenant with the amount of the Termination Fee. Notwithstanding the foregoing, at Landlord's option, Tenant's exercise of the option to terminate shall become null and void in the event Tenant shall be in default under the Lease beyond the expiration of any applicable notice and cure period between the exercise of such option and the Early Termination Date.

42. Roof Top Equipment.

(a) Subject to the satisfaction of all the conditions in this Section, Tenant shall have the right, free of charge, to install in an area mutually agreed to by Tenant and Landlord on the roof of the Building satellite dish antennas, together with the cables extending from such antenna to the Demised Premises and/or a supplemental heating, ventilation and air conditioning unit (collectively, the "Roof Top Equipment"). Tenant acknowledges and agrees that other occupants of the Building will also be permitted to install equipment on the roof of the Building, and that the square footage of the roof utilized by Tenant for the Roof Top Equipment shall not exceed Tenant's proportionate share of space on the roof. Tenant shall not be entitled to install such Roof Top Equipment (i) if such installation would adversely affect (or in a manner that would adversely affect) any warranty with respect to the roof, (ii) (A) if such installation would adversely affect (or in a manner that would adversely affect) the structure or any of the building systems of the Building, or (B) without Landlord's prior written reasonable consent, if such installation would require (or in a manner that would require) any structural alteration to the Building, (iii) if such installation would violate (or in a manner that would violate) any applicable federal, state or local Law, (iv) intentionally deleted, (v) unless Tenant has obtained at Tenant's expense, and has submitted to Landlord copies of, all permits and approvals relating to such Roof Top Equipment and such installation, (vi) unless such Roof Top Equipment is white or of a beige or lighter color (or is otherwise appropriately screened), (vii) unless such Roof Top Equipment is installed, at Tenant's sole cost and expense, by a qualified contractor chosen by Tenant and approved in advance by Landlord, which approvals shall not be unreasonably withheld, conditioned or delayed, (viii) to the extent that the installation and/or use of said Roof Top Equipment and related equipment would unreasonably interfere with any existing tenant of the Building's (at the time of installation of said equipment) use of its telecommunication equipment, and (ix) unless Tenant obtains Landlord's prior consent to the manner in which such installation work is to be done. All plans and specifications concerning such installation shall be subject to Landlord's prior written approval, which approval shall not be unreasonably withheld, conditioned or delayed. All Roof Top Equipment must be mounted clear of the roof (such as to the penthouse walls, concrete columns or steel dunnage) with sufficient structural support for the weight of the equipment and wind loading. All cables will be neatly run in conduit mounted clear of the roof and all penetrations of the building envelope appropriately weatherproofed with high quality caulking and an escutcheon ring.

(b) Tenant shall have access to any such Roof Top Equipment without Landlord's prior written consent to the extent necessary for Tenant to perform its maintenance obligations hereunder and only if Tenant is accompanied by Landlord's representative (if Landlord so requests).

(c) At all times during the Lease Term, Tenant shall maintain said Roof Top Equipment in good condition and in a manner that avoids unreasonable interference with or disruption to Landlord and other tenants of the Building. If requested by Landlord, at the expiration or earlier termination of the Lease Term (or if Tenant discontinues use of such Roof Top Equipment), Tenant shall remove such Roof Top Equipment and related equipment from the Building.

(d) Upon ten (10) days' prior written notice to Tenant, Landlord shall have the right to require Tenant to relocate any satellite dish antenna that forms a portion of the Roof Top Equipment (but not the portion that contains any supplemental heating, ventilation and air conditioning units), if in Landlord's reasonable opinion such relocation is necessary or desirable. Any such relocation shall be performed by Tenant at Landlord's expense (except that if a satellite dish is being relocated, such work shall be performed at Tenant's cost), and in accordance with all of the requirements of this Section. Nothing in this Section shall be construed as granting Tenant any line of sight easement with respect to such Roof Top Equipment; provided, however, that if Landlord requires that such Roof Top Equipment be relocated in accordance with the preceding two (2) sentences, then Landlord shall use reasonable efforts to provide either (a) the same line of sight for such Roof Top Equipment as was available prior to such relocation, or (b) a line of sight for such Roof Top Equipment which is functionally equivalent to that available prior to such relocation.

(e) In granting Tenant the right hereunder, Landlord makes no representation as to the legality of such Roof Top Equipment or its installation. If any federal, state, county, regulatory or other authority requires the removal or relocation of such Roof Top Equipment, Tenant shall remove or relocate such Roof Top Equipment at Tenant's sole cost and expense, and Landlord shall under no circumstances be liable to Tenant therefor.

(f) Tenant shall indemnify and hold Landlord harmless from and against all costs, damages, claims, liabilities and expenses (including reasonable attorneys' fees) suffered by or claimed against Landlord, directly or indirectly, based on, arising out of or resulting from any act or omission by Tenant with respect to the installation, use, operation, maintenance, repair or disassembly of such Roof Top Equipment.

43. **Fitness Facility.** Subject to temporary closures for maintenance and repairs, Landlord shall construct and maintain as an amenity of the Project an unstaffed fitness facility for the exclusive use (in common) by occupants of the Project. All costs of operating and maintaining the fitness facility shall be included in operating expenses after being equitably allocated among all of the buildings in the Project. In addition, if Landlord determines in its sole and absolute discretion that the fitness facility will be staffed, all reasonable costs associated with such staffing shall be included in operating expenses. Tenant and its employees shall use the fitness facility at its own risk, in accordance with written rules and regulations established by Landlord from time to time, and will provide any certifications of waiver of liability as Landlord may reasonably request from time to time. Notwithstanding anything in this Lease to the contrary, Landlord shall have the right at any time, in its sole and absolute discretion to relocate or alter the fitness facility. Notwithstanding anything herein to the contrary, Landlord shall have the right to staff the fitness facility (or not) and contract or terminate any party hired in connection therewith.

44. **Conference Center**. Landlord has constructed a conference facility at the Project (the "Conference Facility"), and shall maintain the same throughout the initial term of this Lease. All costs of operating and maintaining the Conference Center shall be included in operating expenses after being equitably allocated among all of the buildings in the Project. Landlord hereby grants to Tenant the non-exclusive right to use, on an equitably allocated basis, the Conference Facility in accordance with this Section 44, and subject to reasonable written policies and procedures regarding use of the Conference Facility established by Landlord from time to time. Use of the Conference Facility is for Project tenants and their employees only; guests are not permitted to use the Conference Facility at any time. If Tenant desires to use the Conference Facility, Tenant shall submit a written request to Landlord and Landlord shall permit Tenant to use the Conference Facility during such requested hours, if available, in Landlord's reasonable discretion. At Landlord's request, Tenant shall enter into a conference facility use agreement on Landlord's current standard form, if applicable. The Conference Facility shall be used for business related purposes only; no personal events shall be scheduled in the Conference Facility. The Conference Facility must be left in proper order, with all paper, trash, cups, etc. disposed of in trash receptacles. All chairs and tables should be placed back in their original position. Tenant is responsible for any loss of or damage to any furnishings or equipment as a result of theft or vandalism caused by Tenant, its guests, employees or agents. Tenant shall be responsible for the replacement value of any lost or stolen items from the Conference Facility. The consumption or use of alcohol (including beer, wine and spirits) and/or tobacco products is strictly prohibited in the Conference Facility. Tenant agrees to indemnify, defend, and hold harmless the officers, agents, and employees of Landlord from and against any and all liabilities, damages, costs, expenses (including reasonable attorneys' fees and expenses), causes of actions, suits, claims, demands, or judgments of any nature arising out of or in connection with Tenant's use and occupancy of the Conference Facility. Landlord shall have the right, in its sole discretion, to relocate, alter, modify, reconstruct, reduce and/or change, the Conference Facility.

45. **Cafe**. Landlord shall use reasonable efforts to maintain as an amenity of the Project a café/lounge in the "mall area" of the Building. If the tenants of the Project do not support the café, such that it is not economically viable, then Landlord reserves the right to curtail its hours of operation or close the café in its entirety. In such event, Landlord agrees to use commercially reasonable efforts to schedule food trucks or similar services to provide food and beverage to the Project.

IN WITNESS WHEREOF, the parties have executed this Lease the day and year first above written.

WITNESS/ATTEST:	**LANDLORD:**
	KEY WEST MD OWNER, LLC, a Delaware limited liability company
/s/ Donna Gumbin Donna Gumbin	By: /s/ Neal Gumbin (SEAL) Name: Neal Gumbin Title: Authorized Signor
WITNESS/ATTEST:	**TENANT:**
	OPGEN INC., a Delaware corporation
/s/ Oliver Schacht Oliver Schacht	By: /s/ Tim Dec (SEAL) Title: CFO Date: 11/10/20

EXHIBIT A

Floor Plan of Demised Premises
[§2(a)]

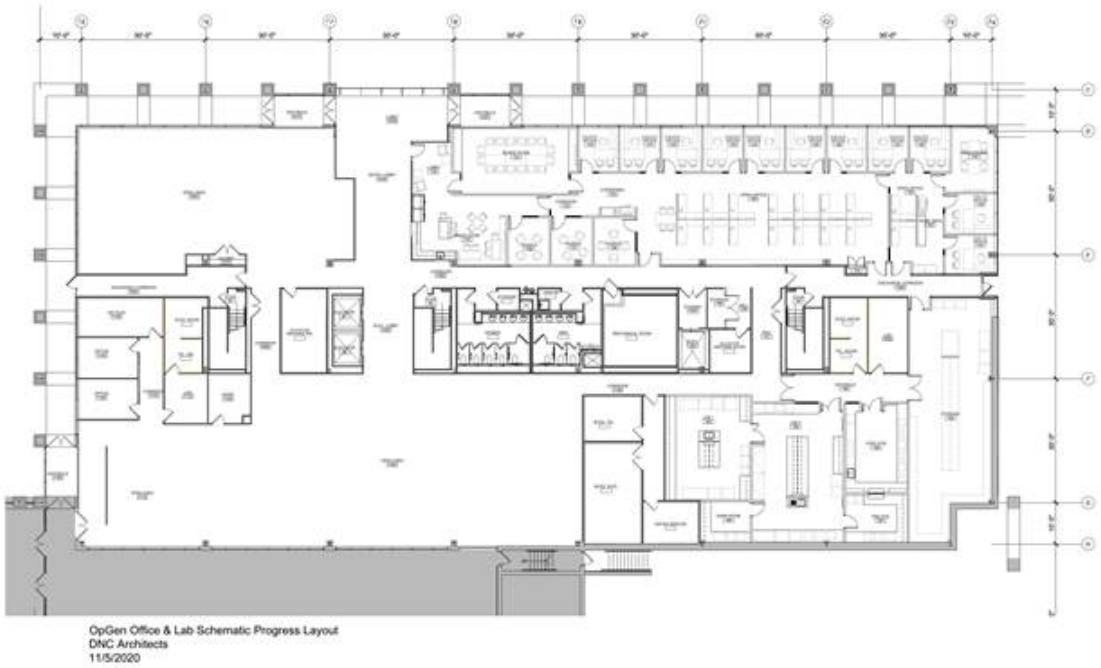

EXHIBIT B

RULES AND REGULATIONS
[§8]

1. No part of the whole of any sidewalks, plaza areas, entrances, loading docks, passages, courts, elevators, vestibules, stairways, corridors, balconies or halls of the Building shall be obstructed or encumbered by any tenant or used for any purpose other than that expressly provided for in the Lease.

2. No awnings or other projections shall be attached to the outside walls, balconies or windows of the Building. No curtains, blinds, shades, or screens other than Building Standard window coverings, shall be attached to or hung in, or used in connection with, any window or door of the space demised to any tenant.

3. No showcases or other articles, including furniture, shall be put on the balcony, in front of or affixed to any part of the exterior of the Demised Premises, or placed in the halls, corridors, vestibules, balconies or other appurtenant or public parts of the Building.

4. Any water and wash closets and other plumbing fixtures in any Demised Premises or the Building shall not be used for any purposes other than those for which they were constructed, and no sweepings, rubbish, rags, or other substances (including, without limitation, coffee grounds) shall be thrown therein.

5. No tenant shall bring or keep, or permit to be brought or kept, any inflammable, combustible, or explosive fluid, material, chemical, or substance in or about the space demised to such tenant.

6. Except for the hanging of artwork and bulletin boards on interior walls, no tenant shall make, paint, drill into, or in any way deface, any part of the interior or exterior of the Building or the space demised to such tenant. No boring, cutting, or stringing of wires shall be permitted.

7. No tenant shall cause or permit any odors to emanate from the space demised to such tenant.

8. Tenant shall promptly report to the Landlord any cracked or broken glass on the Demised Premises.

9. No tenant shall make, or permit to be made, any noises which may be heard outside of such tenant’s Demised Premises or disturb or interfere with other tenants or occupants of the Building or neighboring buildings or premises whether by the use of any musical instrument, radio, television set, or other audio device, unmusical noise, whistling, singing, or in any other way. Nothing shall be thrown out, or off, of any doors, windows, balconies or skylights or down any passageways.

10. No additional locks or bolts of any kind shall be placed upon any of the doors or windows in the space demised to any tenant, nor shall any changes be made in locks or the mechanism thereof, without landlord's written approval, not to be unreasonably withheld. Each tenant must, upon the termination of his tenancy, return to Landlord all keys to offices and toilet rooms, either furnished to, or otherwise procured by, such tenant, and in the event of the loss of any such keys, such tenant shall pay Landlord the reasonable cost of replacement keys or locks (at Landlord's option).

11. Landlord reserves the right to inspect all freight for violation of any of these rules and regulations or the provisions of such tenant's lease.

12. No tenant shall engage or pay any employees in the Building, except those actually working for such tenant in the Building, nor advertise for laborers giving an address at the Building.

13. Landlord shall have the right to prohibit any advertising by any tenant which, in Landlord's opinion, tends to impair the reputation of the Building or its desirability as a building for offices, and upon notice from Landlord, such tenant shall refrain from or discontinue such advertising.

14. Each tenant, before closing and leaving the space demised to such tenant at any time, shall use reasonable efforts to see that all entrance doors are locked.

15. No space demised to any tenant shall be used, or permitted to be used, for lodging or sleeping.

16. The requests of tenants will be attended to only upon verbal or written request to Landlord or Landlord's designated Rental Agent. Building employees shall not be required to perform, and shall not be requested by any tenant to perform, any work outside of their regular duties, unless under specific instructions from Landlord.

17. Canvassing, soliciting, and peddling in the Building are prohibited, and each tenant shall cooperate in seeking their prevention.

18. There shall not be used in the Building, either by any tenant or by any of tenant's employees, agents, or invitees, in the delivery or receipt of merchandise, freight, or other matter, any hand trucks or other means of conveyance except those equipped with rubber tires, rubber side guards, and such other safeguards as Landlord may require.

19. No animals of any kind shall be brought into or kept about the Building by any tenant, excluding "Assistance Dogs".

20. No tenant will install or operate in the space demised to such tenant any electrically operated equipment or other machinery, other than a reasonable number of electric typewriters, adding machines, radios, televisions, tape recorders, dictaphones, bookkeeping machines, copying machines, clocks, word processors, personal computers, and securities systems, without first obtaining the prior written consent of Landlord, who may condition such consent upon payment by Tenant of additional rent as compensation for additional consumption of utilities as determined at the discretion of Landlord and for the cost of separate metering or additional wiring as may be occasioned by the operation of said equipment or machinery. Landlord reserves the right to separately meter any utility consumption in the Demised Premises.

21. All equipment and machinery belonging to any tenant which causes noise, vibration or electrical interference that may be transmitted to the structure of the Building or to any space therein to such degree to be objectionable to Landlord and any tenant in the Building shall be installed and maintained by each such tenant, at such tenant's expense, on vibration eliminators or other devices sufficient to eliminate such noise or vibration.

22. No bicycles are permitted in the Building or to be attached or stored on any part of the Building's rails, doors, balconies or other parts.

23. No Building or suite doors shall be propped open at any time.

24. Each tenant shall reasonably cooperate with any efforts of Landlord to conserve energy.

25. Each tenant shall use reasonable efforts to light any windows of the Demised Premises and exterior signs and turn the same off to the extent required by Landlord.

26. There shall be no smoking of any kind, including, without limitation, electronic cigarettes, e-cigs, vapor pens, etc. in the Building or within twenty-five (25) feet of any entrance to the Building.

EXHIBIT C

CERTIFICATE OF COMMENCEMENT
[§3(b)]

THIS CERTIFICATE OF COMMENCEMENT ("Certificate") is made this _____ day of _____, 20__, by and between KEY WEST MD OWNER, LLC, a Delaware limited liability company ("Landlord"), and OPGEN INC., a Delaware corporation ("Tenant").

WHEREAS, Landlord and Tenant have entered into a Deed of Lease dated _____, 20__ ("Lease");

WHEREAS, the Commencement Date of the Lease, as described in Section 1 thereof, is dependent upon the occurrence of certain events; and

WHEREAS, those certain events have occurred and Landlord and Tenant now desire to specify the Commencement Date of the Lease Term for purposes of establishing the term of the Lease and the schedule for payment of rent during said period.

NOW, THEREFORE, in consideration of the premises, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant warrant and represent each to the other as follows:

1. The Commencement Date of the Lease Term is _____, 20__.

2. The Expiration Date of the Lease Term is _____, 20__. MD

3. The Rentable Area of the Demised Premises is _____ square feet.

4. Tenant's Proportionate Share is _____ percent.

5. The Base Annual Rent is $_____.

6. The Base Monthly Rent is $_____.

IN WITNESS WHEREOF, Landlord and Tenant do hereby execute this Certificate under seal on the day and year first above written.

WITNESS/ATTEST:

_____

LANDLORD:

KEY WEST MD OWNER, LLC, a Delaware limited liability company

By: _____(SEAL)
Name: _____
Title: _____

WITNESS/ATTEST:

_____

TENANT:

OPGEN INC.,
a Delaware corporation

By: _____ (SEAL)
Title: _____
Date: _____

EXHIBIT D

INTENTIONALLY DELETED

EXHIBIT E

WORK AGREEMENT
[§6]

This Exhibit is attached to and made a part of that certain Lease dated as of _____, 2020 (the "Lease"), by and between KEY WEST MD OWNER, LLC ("Landlord") and OPGEN INC. ("Tenant"). Terms used but not defined in this Exhibit shall have the meaning ascribed to them in the Lease.

1. Tenant's Authorized Representative. Tenant designates Tim Dec ("Tenant's Authorized Representative") as the person authorized to initial all plans, drawings, change orders and approvals pursuant to this Exhibit. Landlord shall not be obligated to respond to or act upon any such item until such item has been initialed by Tenant's Authorized Representative.

2. As-Is. Except for the Landlord's Work, Landlord is leasing the Demised Premises to Tenant in its as-is condition, with all base Building systems in good working order, including all base Building window coverings. All of the work to be performed in initially finishing and completing the Demised Premises shall be performed by Tenant pursuant to this Exhibit E and pursuant to all other applicable provisions of the Lease including, without limitation, insurance, damage and indemnification provisions, and such work shall be deemed to be alterations for all purposes of the Lease.

3. Costs.

(a) Tenant shall pay all expenses incurred in connection with Tenant's Work over and above the "Construction Allowance" (as defined below) as follows.

(b) Landlord shall pay to Tenant (or at Tenant's written direction, to Tenant's general contractor and/or architect) the product of One Hundred Twenty and 00/100 Dollars ($120.00) multiplied by the number of square feet of rentable area contained within the Demised Premises (i.e., $1,212,000.00) (such product shall hereinafter be referred to as the "Construction Allowance") as a reimbursement to Tenant for the costs of performing alterations and improvements to the Demised Premises, including architectural costs, preparing space plans, and preparing mechanical, electrical and plumbing working drawings (the "Tenant's Work"). Up to fifteen percent (15%) of the Construction Allowance may be used for soft costs, including design consultant fees, signage, furniture, cabling and security system costs. The Construction Allowance shall be paid by Landlord to Tenant in accordance with the provisions of Sections 3(c), 3(d) and 3(e) below. Despite the foregoing, Tenant shall pay all costs of performing the Tenant's Work that are in excess of the Construction Allowance. Pursuant to a separate written agreement between Tenant and Landlord's project manager, Lincoln Property Company ("LPC"), Tenant hereby elects to have LPC manage the construction of the Tenant's Work. LPC shall be entitled to receive a construction management fee in the amount of three percent (3%) of the hard construction costs, which amount may be deducted from the Construction Allowance.

(c) Periodically (but not more often than once per calendar month), Tenant shall deliver to Landlord an invoice from contractors or materialmen who have supplied labor or materials for Tenant's Work. Such invoice shall contain (or be accompanied by) a certification by Tenant and Tenant's architect in the form of A.I.A. Document G702 "Application and Certificate for Payment" that the labor or materials for which Tenant is seeking reimbursement has been satisfactorily performed or delivered to the Demised Premises in accordance with the terms of the Lease. Within thirty (30) days after receiving any such invoice (and certifications), Landlord shall pay to Tenant (or at Tenant's written direction, to Tenant's general contractor and/or architect) the amount that is set forth in such invoice; provided: (A) such request is accompanied by a copy of the invoice for such expenses marked "approved"; (B) copies of all contracts, bills, vouchers, change orders and other information relating to the expenses for which reimbursement is being sought as may be requested by Landlord shall be made available to Landlord by Tenant; (C) the work and materials for which payment is requested are performed in accordance with the working drawings approved by Landlord; (D) the work for which payment is requested has been performed both by a contractor and in accordance with a construction contract (including retainage provisions) approved by Landlord; (E) the work and materials for which payment is requested have been physically incorporated into the Demised Premises, free of any security interest, lien or encumbrance; and (F) Tenant delivers to Landlord lien waivers from all contractors and materialmen supplying work or materials in excess of $5,000 for such work or materials for which such draw payment is being made. Each payment made by Landlord hereunder with respect to payments to Tenant's general contractor and subcontractors shall be subject to retainage of ten percent (10%). Upon completion of the Tenant's Work, Tenant shall provide to Landlord (i) a valid certificate of occupancy for the Demised Premises, and (ii) a certificate of completion from Tenant's architect with respect to the Tenant's Work.

(d) Landlord shall pay the retainage to Tenant (or at Tenant's written direction, to Tenant's general contractor and/or architect) within thirty (30) days after the last to occur of the following: (A) final completion of all of the Tenant's Work in accordance with the terms of this Lease, (B) evidence of the satisfaction of the requirements of governmental authorities with respect thereto, (C) receipt of releases of lien from all contractors and materialmen who supplied at least $5,000 worth of labor or materials for the Tenant's Work, (D) Landlord's receipt of paid invoices evidencing that Tenant has actually paid to materialmen and contractors who have supplied materials or labor for the Tenant's Work an amount equal to or in excess of the Construction Allowance, and (E) Tenant having commenced to use the Demised Premises for the use set forth in Section 1 (a) 12 of the Lease. If the Construction Allowance is not fully utilized by the date which occurs one (1) year after the Commencement Date, the unused portion of the Construction Allowance shall be retained by Landlord.

(e) If Landlord fails to disburse a properly submitted and complete request for disbursement of the Construction Allowance by the date which is thirty (30) days after the date such amount was due and payable to Tenant, and such failure continues for thirty (30) days after written notice of such failure to Landlord (which failure notice (x) must reference the provisions of this Section 3(e) in bold and capitalized letters, (y) must be given to Landlord in accordance with Section 37 of the Lease and (z) must be given to Landlord's lender if the address for notices to Landlord's lender has been provided to Tenant), then Tenant shall have the right to offset the undisbursed portion of the amount so requested (up to the undisbursed balance of the Construction Allowance, as applicable), against the next installments of Base Annual Rent coming due under the Lease.

(d) Landlord shall pay to Tenant's architect a fee equal to the product of twelve cents ($.12) multiplied by the number of square feet of rentable area contained within the Demised Premises to perform a test fit of the Demised Premises.

4. Schedule.

(a) Tenant shall submit to Landlord a final space plan and all specifications, details, finishes (including, without limitation, paint and carpet selections), elevations and sections, all as approved by Tenant, on or before the date that is thirty (30) days after the Effective Date. Such space plan shall indicate partition and space layout and proposed fixturing, door location, special equipment types, materials and colors, reflected ceiling plan (including lighting, materials and sprinkler heads), floor load requirements exceeding fifty (50) pounds per square foot live load, telephone and electrical outlet locations. For the purposes of preparing Tenant's plans and specifications referenced herein, Tenant and its authorized representatives shall have reasonable access to the Premises after the Effective Date

(b) Tenant shall submit to Landlord final architectural and engineering working drawings approved by Tenant on or before the date that is sixty (60) days after the Effective Date. Such architectural working drawings shall include: master legend, construction and floor plan, reflected ceiling plan, telephone and electrical outlet layout and usage system, finish plan, sign, window and storefront details (if any), and all architectural details, elevations, specifications and finishes necessary to construct the Demised Premises. Said drawings, when approved by Landlord, are referred to herein as the “Final Construction Drawings.”

(c) If Tenant shall be delayed in completing the Tenant’s Work as a result of (1) Landlord’s failure to comply with any of the deadlines specified in this Exhibit or with any of the other requirements of this Exhibit or the Lease, (2) the performance of any work, or the entry into the Premises, by Landlord or any person or firm employed or retained by Landlord, and such failure continues for a period of three (3) business days after Landlord’s receipt of written notice, then (i) such delay shall be a “Landlord Delay”, and (ii) for purposes of determining the Commencement Date, the outside date shall be extended for one (1) day for each day of Landlord Delay.

5. Approval. Tenant shall have the right to bid out the performance of Tenant’s Work to multiple general contractors, and to select its contractor(s), which contractors shall be subject to Landlord’s approval, which approval shall not be unreasonably withheld, conditioned or delayed. All plans and drawings (and changes thereto) shall be subject to Landlord’s written approval. Landlord shall not unreasonably withhold or delay its consent to such plans and drawings and shall grant its approval or set forth specific reasonable grounds for disapproval within five (5) business days of delivery of said plans and drawings by Tenant. If Landlord reasonably disapproves of Tenant’s plans and drawings, Tenant shall modify and resubmit same to Landlord, whereupon Landlord shall have five (5) business days to approve or reasonably disapprove of said plans and drawings. The foregoing five (5) business day period shall apply with respect to any additional revisions and resubmissions of the plans and specifications to Landlord. Notwithstanding anything herein to the contrary, any alterations or improvements which connect into the Building’s systems, or which are made to the exterior of the Demised Premise or the Building, or which are visible from the exterior of the Demised Premises or the Building shall be subject to Landlord’s prior written approval, in its sole and absolute discretion.

6. Change Orders. All additional expenses attributable to any change order requested by Tenant and approved by Landlord, shall to the extent that it would cause the total construction costs to exceed the Construction Allowance, be payable by Tenant prior to the performance of the work contemplated by such change order.

7. General Requirements.

(a) Tenant construction shall proceed only on the basis of drawings approved as set forth in Section 5 above. Changes that occur during actual construction that differ from the approved drawings will require alterations at Tenant's expense (subject to the application of the Construction Allowance) to restore compliance with approved drawings. No drawings are considered "approved" unless they bear Landlord's signature of approval.

(b) Landlord shall have no obligation or responsibility to Tenant in respect of minor deviations in the actual dimensions of the Demised Premises. Tenant shall have the affirmative obligation to conduct an on-site verification of all measurements and dimensions prior to letting any contracts for the performance of Tenant's Work and prior to ordering the fabrication of any trade fixtures.

(c) Upon Landlord's approval of the Final Construction Drawings, Tenant shall submit the following:

1. Names of all contractors and subcontractors (all of which shall be subject to Landlord's approval);

2. Reasonable proof of financial ability;

3. Tenant insurance coverage;

4. Copy of building permit(s); and

5. Completion schedule from Tenant's contractor.

8. Performance of Tenant's Work. Tenant will perform and complete Tenant's Work in compliance with such reasonable rules and regulations as Landlord and its architect and contractor, or contractors, may make.

9. Completion of Tenant's Work. At such time as Tenant's Work shall be completed, Tenant, at its sole cost and expense and without cost to Landlord shall:

(a) Furnish evidence satisfactory to Landlord that all of Tenant's Work has been completed and paid for in full (and such work has been accepted by Landlord), that any and all liens therefor that have been or might be filed have been discharged of record (by payment, bond, order of a court of competent jurisdiction or otherwise) or waived, and that no security interests relating thereto are outstanding;

(b) Furnish to Landlord all certifications and approvals with respect to Tenant's Work that may be required from any governmental authority and any board of fire underwriters or similar body for the use and occupancy of the Demised Premises;

(c) Furnish Landlord with an electronic copy of "as built" drawings of the Demised Premises; and

(d) Furnish an affidavit from Tenant's architect certifying that all work performed in the Demised Premises is in accordance with the working drawings and specifications approved by Landlord.

10. Work Standards. All of Tenant's Work shall be done and installed in compliance with all applicable laws and with the overall design and construction standards of the Building.

11. Permits. As expeditiously as possible, Tenant shall file all applications, plans and specifications, pay all fees (subject to the application of the Construction Allowance) and obtain all permits, certificates and other approvals required by the jurisdiction in which the Building is located and any other authorities having jurisdiction in connection with the commencement and completion of Tenant's Work, and diligently and in good faith pursue same so that all permits and approvals are issued as soon as practicable. If minor modifications are at any time required by government authorities to any such plans or specifications, then Tenant shall make such modifications. Tenant shall obtain a Certificate of Occupancy and all other approvals required for Tenant to use and occupy the Demised Premises and to open for business to the public. Copies of all building permits/occupancy permits are to be forwarded to Landlord.

12. Contractor Insurance. Tenant's contractors and subcontractors shall be required to provide, in addition to the insurance required of Tenant pursuant to the Lease, the following types of insurance:

(a) Builder's Risk Insurance. At all times during the period between the commencement of construction of Tenant's Work and the date on which Tenant opens the Demised Premises for business with a valid certificate of occupancy in place, Tenant shall maintain, or cause to be maintained, casualty insurance in Builder's Risk Form covering Landlord, Landlord's architects, Landlord's contractor or subcontractors, Tenant and Tenant's contractors, as their interest may appear, against loss or damage by fire, vandalism, and malicious mischief and other such risks as are customarily covered by the so-called "broad form extended coverage endorsement" upon all Tenant's Work in place and all materials stored at the site of Tenant's Work, and all materials, equipment, supplies and temporary structures of all kinds incident to Tenant's Work and builder's machinery, tools and equipment, all while forming a part of, or on the Demised Premises, or when adjacent thereto, while on drives, sidewalks, streets or alleys, all on a completed value basis for the full insurable value at all times. Said Builder's Risk Insurance shall contain an express waiver of any right of subrogation by the insurer against Landlord, its agents, employees and contractors.

(b) Worker's Compensation. At all times during the period of construction of Tenant's Work, Tenant's contractors and subcontractors shall maintain in effect statutory worker's compensation as required by the jurisdiction in which the Building is located.

13. Contractor Liability. Tenant assumes the responsibility and liability for any and all injuries or death of any or all persons, including Tenant's contractors and subcontractors, and their respective employees, and for any and all damages to property caused by, or resulting from or arising out of any act or omission on the part of Tenant. . Except to the extent caused by the negligence or willful misconduct of Landlord, its agents, employees or contractors, Tenant's contractors or subcontractors or their respective employees, in the prosecution of Tenant's Work, and with respect to such work, agree to indemnify and save free and harmless Landlord from and against all losses and/or expenses, including reasonable legal fees and expenses which they may suffer or pay as the result of claims or lawsuits due to, because of, or arising out of any and all such injuries or death and/or damage, whether real or alleged; and Tenant and Tenant's contractors and/or subcontractors or their respective insurance companies shall assume and defend at their own expense all such claims or lawsuits. Tenant agrees to insure this assumed liability in its policy of Broad Form Commercial General Liability insurance and the certificate of insurance or copy of the policy that Tenant will present to Landlord shall so indicate such contractual coverage.

14. Coordination. Tenant's Work shall be coordinated with any other work being performed by Landlord and other tenants in the Building so that Tenant's Work will not interfere with or delay the completion of any other construction work in the Building.

15. Loads. No item shall be mounted on or hung from the interior or exterior of the Building by Tenant without Landlord's prior written approval. If Tenant desires to mount or hang anything, Tenant shall notify Landlord of the loads involved and shall pay all costs involved.

16. Ducts. Tenant shall permit Landlord or its agent to install, maintain, repair and replace in the ceiling space and/or under the concrete slab, adjacent to demising partitions and free standing columns, electrical, water or other lines and/or ducts that may be required to serve the common areas or others in the Building.

17. Contractor Responsibilities. It shall be Tenant's responsibility to cause each of Tenant's contractors and subcontractors to:

(a) Maintain continuous protection of any premises adjacent to the Demised Premises in such a manner (including the use of lights, guardrails, barricades and dust-proof partitions where required) as to prevent any damage to the Building or any adjacent premises by reason of the performance of Tenant's Work.

(b) Secure all parts of Tenant's Work against accident, storm, and any other hazard. However, no barricades or other protective device shall extend more than two (2) feet beyond the Demised Premises. In addition to the foregoing, Tenant's barricade or other protective device shall be attractive in appearance, shall extend across the frontage and full height of the Demised Premises and shall be of materials reasonably approved by Landlord.

(c) Comply strictly with the Rules and Regulations and Procedures set forth in Exhibit E, Schedule I, and Tenant agrees to be responsible for any violations thereof. Remove and dispose of, at Tenant's sole cost and expense (subject to the application of the Construction Allowance), at least daily and more frequently as Landlord may reasonably direct, all debris and rubbish caused by or resulting from Tenant's Work, and upon completion, to remove all temporary structures, surplus materials, debris and rubbish of whatever kind remaining on any part of the Building or in proximity thereto which was brought in or created in the performance of Tenant's Work (including stocking refuse). If at any time Tenant's contractors and subcontractors shall neglect, refuse or fail to remove any debris, rubbish, surplus materials, or temporary structures, Landlord at its sole option may remove the same at Tenant's expense without prior notice.

(d) Use only the Demised Premises for the performance of Tenant's Work. Entry into areas unrelated to the performance of Tenant's Work is prohibited.

(e) Guarantee that the work done by it will be free from any defects in workmanship and materials for a period of not less than one (1) year from the date of completion thereof. Tenant shall also require that any such contractors and subcontractors shall be responsible for the replacement or repair without charge for any and all work done or furnished by or through such contractors or subcontractors which becomes defective within one (1) year after completion. Replacement or repair of such work shall include, without charge, all expenses and damages in connection with such removal, replacement, or repair of all or any part of such work, or any part of the Building which may have been damaged or disturbed thereby. All warranties or guarantees as to materials or workmanship or with respect to Tenant's Work shall be contained in the contract or subcontract, which shall provide that said guarantees or warranties shall inure to the benefit of both Landlord and Tenant and be directly enforceable by either of them. Tenant covenants to give to Landlord any assignment or other assurance necessary to effect such right of direct enforcement.

EXHIBIT E

SCHEDULE I

The following are rules and procedures to be followed by contractors when working in or around the Demised Premises or Building:

1. Provide a trash can with a lid to dispose of lunches and food. Trash must not be allowed to accrue in the open lease spaces. This is to avoid fire and rodent hazards.

2. Access into spaces under construction must be limited to one door. If an unfinished lease space has two doors, one must be locked. Passage can occur through the door most convenient to the freight elevator and should have a temporary foot mat.

3. No access to the Building's interior lobby or corridors will be permitted at any time.

4. All unused entry doors to vacant areas must be closed at all times and locked.

5. Construction employees must conduct themselves as mature gentlemen and ladies when working in tenant occupied spaces and all public spaces.

6. Loud radios are prohibited in all work areas.

7. Noisy operations such as chopping, etc. are to be done after hours, unless prior consent is given.

8. All work performed outside of normal working hours must be coordinated with the Building manager for security reasons. No one will be allowed access without prior permission.

9. Every effort must be made to avoid disturbance of any other tenant's normal business operations. Punch list corrections must be performed only with the tenant's permission, in advance. If an operation underway proves disturbing to a tenant it must be discontinued immediately and performed outside of normal business hours

EXHIBIT F

HVAC SPECIFICATIONS

A. Summer: Room conditions not in excess of 75°F dry bulb and 55% relative humidity when outside conditions do not exceed 95°F dry bulb and 78°F wet bulb, provided that Tenant complies with the following conditions:

1. Light-colored blinds, fully drawn, with slats at 45° angle coincident with peak sun load;
2. Power load heat gain does not exceed 5.5 watts per square foot; and
3. People load does not exceed an average one person per 100 square feet for office space.

B. Winter: Room conditions of not less than 68°F when the outside dry bulb temperature is not less than 0°F.

EXHIBIT G

EXTERIOR SIGNAGE

EXHIBIT H

LOCATION OF RESERVED PARKING SPACES

Tenant shall initially have the exclusive right to use the three (3) parking space that are located directly in front of the Building. Landlord shall have the right to relocate the reserves spaces in the future to a location that is mutually acceptable to Landlord and Tenant.

DEED OF LEASE

between

ADVENT KEY WEST, LLC

Landlord

and

OPGEN INC.

Tenant

Dated November 11, 2020

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER

PURSUANT TO RULE 13A-14(A)/15D-14(A)

I, Oliver Schacht, certify that:

1. I have reviewed this quarterly report on Form 10-Q of OpGen, Inc.;

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

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

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

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

    b. 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: November 16, 2020

/s/ Oliver Schacht
Oliver Schacht
Chief Executive Officer (principal executive officer)

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER

PURSUANT TO RULE 13A-14(A)/15D-14(A)

I, Timothy C. Dec, certify that:

1. I have reviewed this quarterly report on Form 10-Q of OpGen, Inc.;

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

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

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

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

    b. 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: November 16, 2020

/s/ Timothy C. Dec

Timothy C. Dec
Chief Financial Officer (principal financial officer and principal 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 on Form 10-Q of OpGen, Inc. (the "Company") for the quarterly period ended September 30, 2020 (the "Report") as filed with the Securities and Exchange Commission on the date hereof, the undersigned Chief Executive Officer and Chief Financial Officer of the Company hereby certify 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.

This certification is provided solely pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

Date: November 16, 2020

By: /s/ Oliver Schacht
Oliver Schacht
Chief Executive Officer
(principal executive officer)

Date: November 16, 2020

By: /s/ Timothy C. Dec
Timothy C. Dec
Chief Financial Officer
(principal financial officer and principal accounting officer)

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.