

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

FORM 10-K

(Mark one)

ANNUAL REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2023

TRANSITION REPORT UNDER 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

(State or other jurisdiction of
incorporation or organization)

9717 Key West Avenue, Suite 100
Rockville, MD

(Address of principal executive offices)

06-1614015

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

20850

(Zip Code)

(240) 813-1260

(Registrant's telephone number, including area code)

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

Securities registered or to be registered pursuant to Section 12(g) of the Act: None.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES NO

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. YES NO

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
Non-accelerated filer
Emerging growth company

Accelerated filer
Smaller reporting 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 has filed a report on and attestation to its management’s assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant’s executive officers during the relevant recovery period pursuant to § 240.10D-1(b).

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

The aggregate market value of the voting common stock held by non-affiliates of the registrant June 30, 2023, was \$5,681,755 (based upon the last reported sale price of \$8.20 per share on June 30, 2023), on The Nasdaq Capital Market.

As of May 31, 2024, 1,343,739 shares of common stock of the registrant were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

OPGEN, INC.

ANNUAL REPORT ON FORM 10-K

For the Year Ended December 31, 2023

TABLE OF CONTENTS

	Page
<u>PART I</u>	
Item 1. Business	1
Item 1A. Risk Factors	3
Item 1B. Unresolved Staff Comments	9
Item 1C. Cybersecurity	9
Item 2. Properties	10
Item 3. Legal Proceedings	10
Item 4. Mine Safety Disclosures	10
<u>PART II</u>	
Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	11
Item 6. [Reserved]	11
Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations	12
Item 7A. Quantitative and Qualitative Disclosures About Market Risk	25
Item 8. Financial Statements and Supplementary Data	25
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	25
Item 9A. Controls and Procedures	26
Item 9B. Other Information	26
Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	26
<u>PART III</u>	
Item 10. Directors, Executive Officers and Corporate Governance	27
Item 11. Executive Compensation	34
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	39
Item 13. Certain Relationships and Related Person Transactions, and Director Independence	46
Item 14. Principal Accounting Fees and Services	47
<u>PART IV</u>	
Item 15. Exhibits and Financial Statement Schedules	49
Item 16. Form 10-K Summary	56
Signatures	57
Consolidated Financial Statements	F-1

INFORMATION REGARDING FORWARD-LOOKING STATEMENTS

This annual report on Form 10-K for the year ended December 31, 2023 (the “Annual Report”) 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 Annual Report, we refer to OpGen, Inc. as the “Company,” “OpGen,” “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 I, 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 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;
- our ability to execute upon and achieve the benefits of the strategic direction under the Company’s new leadership and Board;
- our ability to identify and realize the benefits of potential strategic transactions;
- adverse effects on our business condition and results of operations from general economic and market conditions and overall fluctuations in the United States and international markets, including deteriorating market conditions due to investor concerns regarding inflation;
- our use of proceeds from capital financing transactions;
- compliance with the U.S. 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. Any forward-looking statement made by us in this Annual Report speaks only as of the date on which it is made. We disclaim any duty to update any of these forward-looking statements after the date of this Annual Report to confirm these statements to actual results or revised expectations.

These factors 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 I, Item 1A of this Annual 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 Annual 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® and Acuitas®. All other trademarks, servicemarks or trade names referred to in this Annual Report are the property of their respective owners. Solely for convenience, the trademarks and trade names in this Annual 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

Item 1. Business

Please refer to the Glossary at the end of this Business section for definitions or descriptions of scientific, diagnostic, healthcare, regulatory, and OpGen-specific terms used in this Annual Report.

Overview

OpGen, Inc. (“OpGen” or the “Company”) was incorporated in Delaware in 2001. On April 1, 2020, OpGen completed its business combination transaction with Curetis N.V., a public company with limited liability under the laws of the Netherlands. As part of the transaction, the Company acquired all the shares of Curetis GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany (“Curetis”), and certain other assets and liabilities of Curetis GmbH, including all its shares of Ares Genetics GmbH (“Ares Genetics”). From inception through November 2023, the Company operated as a precision medicine company harnessing the power of molecular diagnostics and informatics to help combat infectious disease. The Company, along with its subsidiaries, Curetis and Ares Genetics, developed and commercialized 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.

During the year ended December 31, 2023, the Company implemented certain cash management initiatives, including restructuring its U.S. operations by reducing headcount from 24 to 5 and has since continued scaling down operations at OpGen’s U.S. headquarters to the core functions of a U.S. Nasdaq listed company with only minimal distribution, marketing, and sales support, allowing the Company to conserve cash and focus on the functions needed to pursue potential strategic alternatives. However, on November 6, 2023, Curetis filed a petition for insolvency with the district court of Stuttgart, Germany, and Ares Genetics filed a petition for insolvency with the commercial court in Vienna, Austria. The insolvency proceedings of Curetis and Ares Genetics were adjudicated under the insolvency laws of Germany and Austria, respectively.

The insolvency administrators assumed control over the assets and liabilities of Curetis and Ares Genetics, respectively, which eliminated the authority and power of the Company and its officers to act on behalf of the subsidiaries. The loss of control required that the Company no longer include Curetis and Ares Genetics in its consolidated financial statements. Prior to the insolvency filings, Curetis and Ares Genetics had been included in the Company’s consolidated financial statements. Upon deconsolidation of Curetis and Ares Genetics, the Company recognized gains on deconsolidation of subsidiaries at the subsidiary levels of \$46.6 million for Curetis and \$7.7 million for Ares Genetics, which was offset by a loss on deconsolidation of subsidiary for the Company of \$67.3 million. The deconsolidation charges to operations represent the excess of the carrying value over the fair value of the Company’s interest in and intercompany payables to and receivables from Curetis and Ares Genetics as of the insolvency filing date.

Since the insolvency filings and through the three months ended March 31, 2024, the Company continues to sell the Curetis Unyvero products to its existing customers in the United States via drop shipments from Curetis directly to customer locations. The Unyvero tests are sold to hospitals, laboratories, and public health organizations as products and on a fee-for-service basis. When hospital and health system clients purchase our products, we bill them directly for the purchase of test kits and consumables. As of December 31, 2023, OpGen had an installed base of approximately 28 Unyvero A50 Analyzers across the United States in different types of hospitals and laboratories, including installations for clinical studies. The sale of Ares Genetics’ related products and services was discontinued during the first quarter of 2024 due to the sale of the Ares Genetics assets to a strategic acquiror by its insolvency administrator in Austria.

In March 2024, the Company entered into a securities purchase agreement (the “March 2024 Purchase Agreement”) with David E. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Convertible Preferred Stock (“Series E Preferred Stock”) to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million (the “March 2024 Private Placement”). In connection with the transactions contemplated by the March 2024 Purchase Agreement, the members of the Board of Directors, prior to the closing of such transactions, resigned and a new Board of Directors was appointed, of which Mr. Lazar was appointed Chairman. The focus of OpGen going forward, under new leadership and a new Board of Directors, will be on the identification of a privately held company to complete a reverse merger or similar strategic transaction.

On January 5, 2023, the Company effected a reverse stock split of its issued and outstanding shares of common stock at a ratio of 1 post-reverse-split share for every 20 pre-reverse-split shares. The common stock continues to be traded on The Nasdaq Capital Market under the symbol “OPGN” and began trading on a split-adjusted basis on January 5, 2023. All share amounts and per share prices in this Annual Report have been adjusted to reflect the reverse stock split.

On May 9, 2024, the Company held a special meeting of stockholders to vote on certain matters, including the removal of certain restrictions applicable to the voting of Mr. Lazar’s shares of Series E Preferred Stock. Following approval of the proposals at such special meeting, subject to limited exceptions, Mr. Lazar may vote his shares without restrictions.

On May 20, 2024, the Company effected a reverse stock split of its issued and outstanding shares of common stock at a ratio of 1 post-reverse-split share for every 10 pre-reverse-split shares. The common stock continues to be traded on The Nasdaq Capital Market under the symbol “OPGN” and began trading on a split-adjusted basis on May 20, 2024. All share amounts and per share prices in this Annual Report have been adjusted to reflect the reverse stock split.

Glossary

The following scientific, healthcare, regulatory and OpGen-specific terms are used throughout this Annual Report:

“Annual Report” means this Annual Report on Form 10-K.

“ATM offering” means an at-the-market public offering.

“EIB” means European Investment Bank.

“NOL” means net operating loss.

“SEC” means the U.S. Securities and Exchange Commission.

“Securities Act” means the Securities Act of 1933, as amended.

Corporate Information

OpGen, Inc. was incorporated in Delaware in 2001. The Company’s headquarters are located at 9717 Key West Avenue, Suite 100, in Rockville, Maryland, through the end of the second quarter of 2024. The Company operates in one business segment.

Available Information

The Company maintains a website at www.opgen.com. Our Code of Conduct is available on our website. We are not incorporating our website into this Annual Report. Our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, and amendments to those reports, filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, are available free of charge on our website as soon as practicable after electronic filing of such material with, or furnishing it to, the SEC. This information may be read at the SEC website at <http://www.sec.gov>.

Item 1A. Risk Factors

The following are significant factors known to us that could materially harm our business, financial condition or operating results or could cause our actual results to differ materially from our anticipated results or other expectations, including those expressed in any forward-looking statement made in this Annual Report. The risks described are not the only risks we face. Additional risks and uncertainties not currently known to us, or that we currently deem to be immaterial, may also adversely affect our business, financial condition and operating results. If any of these risks actually occur, our business, financial condition, and operating results could suffer significantly.

Risks Related to Our Business

We have only a modest amount of cash, which is not sufficient to support our plan of operations for the long-term.

We have obtained short-term financing as a result of the March 2024 Private Placement; however, such financing provided the Company limited capital and there can be no assurance that additional financing will be available to us, or if available, will be on terms satisfactory to us in the longer-term. If we are unable to obtain funds when we need them or if we cannot obtain funds on terms favorable to us within the longer-term, we may not be able to maintain our operations as a going concern.

We scaled down operations, will not generate significant revenues unless we complete a business combination with an operating company, and need additional capital to fund our activities.

We continue to implement cash management initiatives, included scaled down operations to the core functions of a U.S. Nasdaq listed company with only minimal distribution, marketing, and sales support, allowing the Company to conserve cash and focus on the functions needed to pursue potential strategic alternatives. As we have transitioned our business model, unless we complete a business combination with an operating company, we will not generate significant new revenues in the future and we will continue to incur expenses related to identifying and acquiring an operating company and compliance with our reporting obligations under applicable federal securities laws. We will need to raise additional funds, and such funds may not be available on commercially acceptable terms, if at all. If we cannot raise funds on acceptable terms, we may not be able to continue to execute our plan to acquire an operating company and in the extreme case, we may need to liquidate the Company.

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, 2023 and 2022 contains 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, 2023 and 2022, we had net losses of \$32.7 million and \$37.3 million, respectively. From our inception through December 31, 2023, we had an accumulated deficit of \$305.5 million. The reports of our independent registered public accounting firm on our financial statements for the years ended December 31, 2023 and 2022 each contain explanatory language that substantial doubt exists about our ability to continue as a going concern. We completed a number of financings in 2022 and 2023. We completed an at-the-market offering which raised net proceeds of approximately \$0.99 million in 2022, a registered direct financing in October 2022, which raised net proceeds of approximately \$3.04 million, a registered direct financing in January 2023, which raised net proceeds of approximately \$6.9 million, a best-efforts public offering in May 2023, which raised net proceeds of approximately \$3.0 million, a preferred stock purchase agreement in October 2023 for up to \$1.0 million in proceeds, and a warrant inducement agreement in October 2023, which raised net proceeds of \$2.057 million. Additionally, we entered into a securities purchase agreement for the sale of preferred stock in March 2024, which is expected to raise proceeds of approximately \$3.0 million. We cannot assure you that we can continue to raise the capital necessary to fund our business. Failure to achieve profitable operations may require us to seek additional financing when none is available or is only available on unfavorable terms.

We have substantial amount of debt which must be liquidated prior to entering an acquisition of an operating company.

We have made significant progress in negotiating our debt with our creditors. As part of the March 2024 Purchase Agreement, the Company entered into settlement agreements (the “Settlement Agreements”) with each of the European Investment Bank (“EIB”) and Curetis GmbH, the Company’s subsidiary (“Curetis”), and Curetis’ trustee in insolvency, pursuant to which the parties agreed to settle outstanding liabilities amongst the parties. Pursuant to the settlement agreements and March 2024 Purchase Agreement, following the final closing of the transactions contemplated by the March 2024 Purchase Agreement, the Company will pay \$2.0 million of the proceeds to settle all outstanding debt of the Company to each of EIB and Curetis. The settlement agreement with EIB also terminated that certain Guarantee and Indemnity Agreement, dated as of July 9, 2020, by and between the EIB and the Company, pursuant to which the Company had guaranteed all of Curetis’ debt to EIB. If we are unable to pay and settle such outstanding liabilities in accordance with the terms of the settlement agreements, the Company will continue to have substantial debt to the EIB, and we will not have capital to pay such debt in accordance with its terms, which would have a material adverse effect and, if the EIB exercises its rights and remedies under our guarantee agreement, would likely force us to seek bankruptcy protection.

We may not be able to acquire an operating company and if we complete such an acquisition, we expect that we will need to raise additional capital.

Assuming we transition our business model as expected, our sole business objective, following liquidation of our debts, will be to seek to identify strategic opportunities. As of the date of this report, we have commenced the process of identifying strategic opportunities, but there can be no assurance that we will be able to complete such a transaction.

In the event we complete such a transaction, we expect that we will need to raise substantial additional capital. We intend to rely on external sources of financing to meet any capital requirements and to obtain such funding through the debt and equity markets. We cannot provide any assurances that we will be able to obtain additional funding when it is required or that it will be available to us on commercially acceptable terms, if at all. If we fail to obtain such necessary funding, any such transaction may not be successful.

Our Board of Directors has sole discretion to identify and evaluate transaction candidates and complete transactions without the approval of our stockholders.

We have not developed any specific transaction guidelines and we are not obligated to follow any particular operating, financial, geographic or other criteria in evaluating candidates for potential transactions or business combinations. We will target companies that we believe will provide the best potential long-term financial return for our stockholders and we will determine the purchase price and other terms and conditions of such transactions without review or approval of our stockholders. Accordingly, our stockholders will not have the opportunity to evaluate the relevant economic, financial, and other information that our Board will use and consider in deciding whether or not to enter into a particular transaction.

We will not generate any significant revenue or earnings in the near future unless and until we merge with or acquire an operating business.

Upon settlement of our debts to EIB, if such an event occurs, we will have limited assets and operations. As a result, we do not expect to generate any significant revenue or realize significant revenue unless and until we successfully complete a strategic transaction.

There is competition for those private companies suitable for a merger transaction of the type being contemplated by management.

There is currently a very competitive market for business opportunities, which could reduce the likelihood of consummating a successful business combination. We expect to be an insignificant participant in the business of seeking mergers with, joint ventures with, and acquisitions of small private and public entities. A large number of established and well-financed entities, including small public companies, venture capital firms, and special purpose acquisition companies, or “SPACs”, are active in mergers and acquisitions of companies that may be desirable target candidates for us. Nearly all these entities have significantly greater financial resources, technical expertise and managerial capabilities than we do. As a result, we may be unable to effectively compete with such entities in identifying possible business opportunities and successfully completing a business combination. These competitive factors may reduce the likelihood of us identifying and consummating a successful business combination.

Security breaches, loss of data and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

In the ordinary course of our business, we collect and store sensitive data, which may include legally protected health information and personally identifiable information about our customers and their patients. We also store sensitive intellectual property and other proprietary business information, including that of our customers. We manage and maintain our applications and data utilizing a combination of on-site systems and cloud-based data center systems. These applications and data encompass a wide variety of business-critical information, including research and development information, commercial information and business and financial information. We face four primary risks relative to protecting this critical information: loss of access risk, inappropriate disclosure risk, inappropriate modification risk and the risk of our being unable to identify and audit our controls over the first three risks.

We are highly dependent on information technology networks and systems, including the Internet, to securely process, transmit and store this critical information. Security breaches of this infrastructure, including physical or electronic break-ins, computer viruses, phishing attempts, ransomware attacks or other attacks by hackers and similar breaches, can create system disruptions, shutdowns or unauthorized disclosure or modification of confidential information. The secure processing, storage, maintenance, and transmission of this critical information is vital to our operations and business strategy, and we devote significant resources to protecting such information. Although we take measures to protect sensitive information from unauthorized access or disclosure, our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance or other disruptions.

A security breach or privacy violation that leads to disclosure or modification of or prevents access to consumer information (including personally identifiable information or protected health information) could harm our reputation, compel us to comply with disparate state breach notification laws, require us to verify the correctness of database contents and otherwise subject us to liability under laws that protect personal data, resulting in increased costs or loss of revenue. If we are unable to prevent such security breaches or privacy violations or implement satisfactory remedial measures, our operations could be disrupted, and we may suffer loss of reputation, financial loss and other regulatory penalties because of lost or misappropriated information, including sensitive consumer data. In addition, these breaches and other inappropriate access can be difficult to detect, and any delay in identifying them may lead to increased harm, as described above.

Any such breach or interruption could compromise our networks, and the information stored there could be inaccessible or could be accessed by unauthorized parties, publicly disclosed, lost or stolen. Any such interruption in access, improper access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, such as the federal Health Insurance Portability and Accountability Act, or HIPAA, and regulatory penalties. Unauthorized access, loss or dissemination could also disrupt our operations, including our ability to collect, process, and prepare Company financial information as well as manage the administrative aspects of our business, all of which could adversely affect our business.

In addition, the interpretation and application of consumer, health-related, privacy and data protection laws in the United States and elsewhere are often uncertain, contradictory and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business.

We are subject to risks with respect to counterparties, and failure of such counterparties to meet their obligations could cause us to suffer losses or negatively impact our results of operations and cash flows.

We have entered into various contracts that are material to the operation of our business that subject us to counterparty risks. The ability and willingness of our counterparties to perform their obligations under any contract will depend on a number of factors that are beyond our control and may include, among other things, general economic conditions, the condition of such counterparty's industry and the overall financial condition of the counterparty. A prolonged period of difficult industry conditions could lead to changes in a counterparty's liquidity and increase our exposure to counterparty risk. If our counterparties are unable or unwilling to perform, it could negatively impact our results of operations and cash flows.

Risks Related to Our Securities and Public Company Status

If we are unable to maintain effective internal control over financial reporting, investors may lose confidence in the accuracy and completeness of our reported financial information and the market price of our common stock may be negatively affected.

As a public company, we are required to maintain internal control over financial reporting and to report any material weaknesses in such internal control. Section 404 of the Sarbanes-Oxley Act of 2002 requires that we evaluate and determine the effectiveness of our internal control over financial reporting and provide a management report on internal control over financial reporting. If we have a material weakness in our internal control over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated.

When we are no longer a smaller reporting company, our independent registered public accounting firm will be required to issue an attestation report on the effectiveness of our internal control over financial reporting. Even if our management concludes that our internal control over financial reporting is effective, our independent registered public accounting firm may conclude that there are material weaknesses with respect to our internal controls or the level at which our internal controls are documented, designed, implemented, or reviewed.

When we are no longer a smaller reporting company, if our auditors were to express an adverse opinion on the effectiveness of our internal control over financial reporting because we had one or more material weaknesses, investors could lose confidence in the accuracy and completeness of our financial disclosures, which could cause the price of our common stock to decline. Internal control deficiencies could also result in a restatement of our financial results in the future.

We cannot assure you that we will be able to continue to comply with the Nasdaq Minimum Bid Price Rule, the Periodic Filing Rule, or other continued listing standards of the Nasdaq Capital Market. If we are unable to maintain compliance with such standards, we could be subject to delisting or other adverse action, which could negatively impact the trading of our common stock.

As previously disclosed, we requested a hearing by the Nasdaq Hearings Panel of The Nasdaq Stock Market LLC to appeal the Nasdaq listing staff's determination to delist the Company's securities as a result of the failure of the Company's common stock to comply with the minimum bid price requirement of Nasdaq Listing Rule 5550(a)(2). In response to the Company's request, on February 9, 2024, the Company received written notification from Nasdaq notifying the Company that the Panel had granted the Company's request for an additional period, during which the Company will remain listed on Nasdaq, to regain compliance with the Bid Price Rule. Pursuant to the Notice, the Panel granted the Company an additional period until June 3, 2024 to regain compliance. The extension is subject to certain conditions specified by the Panel in the Notice. Thereafter, Nasdaq notified the Company that it failed to comply with Nasdaq Listing Rule 5250(c)(1) for failing to timely file this Annual Report and the Company's Quarterly Report on Form 10-Q for the three-month period ended March 31, 2024. The Panel again granted the Company's request for additional time to cure such delinquencies, provided that the Company file this Annual Report by June 3, 2024 and the Quarterly Report on Form 10-Q by July 8, 2024.

While the Company intends to comply with such conditions and rules, there can be no assurance that the Company will be able to regain or remain in compliance with the applicable Nasdaq listing requirements on an ongoing basis or that the Panel will afford the Company additional time to achieve compliance. If we are unable to satisfy these requirements or standards, we could be subject to delisting, which would have a negative effect on the price of our common stock and would impair your ability to sell or purchase our common stock when you wish to do so.

The 2024 Reverse Stock Split may decrease the liquidity of the shares of our common stock.

The liquidity of the shares of our common stock may be affected adversely by the 2024 Reverse Stock Split given the reduced number of shares outstanding after the 2024 Reverse Stock Split, especially if the market price of our common stock does not increase as a result of the 2024 Reverse Stock Split. In addition, the 2024 Reverse Stock Split may increase the number of stockholders who own odd lots (less than 100 shares) of our common stock, creating the potential for such stockholders to experience an increase in the cost of selling their shares and greater difficulty effecting such sales.

Following the 2024 Reverse Stock Split, the resulting market price of our common stock may not attract new investors, including institutional investors, and may not satisfy the investing requirements of those investors. Consequently, the trading liquidity of our common stock may not improve.

There can be no assurance that the 2024 Reverse Stock Split will result in a share price that will attract new investors, including institutional investors. In addition, there can be no assurance that the market price of our common stock will satisfy the investing requirements of those investors. As a result, the trading liquidity of our common stock may not necessarily improve.

The market price of our common stock and the trading volume of our common stock has been, and may continue to be, highly volatile, and such volatility could cause the market price of our common stock to decrease.

During 2023, the market price of our common stock fluctuated from a low of \$1.70 per share to a high of \$34.60 per share, and our stock price continues to fluctuate. The market price and trading volume of our common stock may continue to fluctuate significantly in response to numerous factors, some of which are beyond our control, such as:

- our ability to consummate a strategic transaction;
- the trading volume of our common stock;
- variations in our and our competitors' results of operations;
- changes in earnings estimates or recommendations by securities analysts, if our common stock is covered by analysts;
- successes or challenges in our collaborative arrangements or alternative funding sources;
- adverse effects on our business condition and results of operations from general economic and market conditions and overall fluctuations in the United States and international markets, including deteriorating market conditions due to investor concerns regarding inflation;
- adverse developments affecting the financial services industry, including events or concerns involving liquidity, defaults or non-performance by financial institutions that could adversely affect our business, financial condition or results of operations;
- future issuances of common stock or other securities;
- the addition or departure of key personnel;
- announcements by us or our competitors of acquisitions, investments or strategic alliances; and
- general market conditions and other factors, including factors unrelated to our operating performance.

Further, the stock market in general, and the market for health care and life sciences companies in particular, has recently experienced extreme price and volume fluctuations. The volatility of our common stock is further exacerbated due to its low trading volume. Continued market fluctuations could result in extreme volatility in the price of our common stock, which could cause a decline in the value of our common stock and the loss of some or all of your investment.

Trading of our common stock is limited, and trading restrictions imposed on us by applicable regulations may further reduce trading in our common stock, making it difficult for our stockholders to sell their shares; and future sales of common stock could reduce our stock price.

Trading of our common stock is currently conducted on the NASDAQ Capital Market. The liquidity of our common stock is limited, including in terms of the number of shares that can be bought and sold at a given price and reduction in security analysts' and the media's coverage of us, if any. These factors may result in different prices for our common stock than might otherwise be obtained in a more liquid market and could also result in a larger spread between the bid and ask prices for our common stock. In addition, in the absence of a large market capitalization, our common stock is less liquid than the stock of companies with broader public ownership, and, as a result, the trading prices of our common stock may be more volatile. In the absence of an active public trading market, an investor may be unable to liquidate his or her investment in our common stock. Trading of a relatively small volume of our common stock may have a greater impact on the trading price of our stock. We cannot predict the prices at which our common stock will trade in the future, if at all.

The exercise of outstanding common stock purchase warrants and stock options will have a dilutive effect on the percentage ownership of our capital stock by existing stockholders.

As of December 31, 2023, we had outstanding warrants to acquire 1,095,517 shares of our common stock, and stock options to purchase 9,624 shares of our common stock. A significant number of such warrants have exercise prices above our common stock's recent trading prices, but the holders have the right to effect a cashless exercise of such warrants. If a significant number of such warrants and stock options are exercised by the holders, the percentage of our common stock owned by our existing stockholders will be diluted.

We have never paid dividends on our capital stock, and we do not anticipate paying dividends in the foreseeable future.

We have never paid dividends on any of our capital stock and currently intend to retain any future earnings to fund the growth of our business. We may also enter into credit agreements or other borrowing arrangements in the future that will restrict our ability to declare or pay cash dividends on our common stock. Any determination to pay dividends in the future will be at the discretion of our Board of Directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our Board of Directors may deem relevant. As a result, capital appreciation, if any, of our common stock will be the sole source of gain, if any, for the foreseeable future.

Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.

The global credit and financial markets have recently experienced extreme volatility and disruptions, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, instability in inflation in U.S. and foreign markets, increases in unemployment rates and uncertainty about economic stability. The financial markets and the global economy may also be adversely affected by the current or anticipated impact of military conflict, including the conflicts between Russia and Ukraine and Israel and Hamas, terrorism or other geopolitical events. Sanctions imposed by the United States and other countries in response to such conflicts may also adversely impact the financial markets and the global economy, and any economic countermeasures by affected countries and others could exacerbate market and economic instability. There can be no assurance that further deterioration in credit and financial markets and confidence in economic conditions will not occur. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or continued unpredictable and unstable market conditions, including instability in inflation. If the current equity and credit markets deteriorate, it may make any necessary debt or equity financing more difficult, more costly and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance, and stock price.

We may be subject to litigation or government investigations for a variety of claims, which could adversely affect our operating results, harm our reputation, or otherwise negatively impact our business.

We may be subject to litigation or government investigations. These may include claims, lawsuits, and proceedings involving securities laws, fraud and abuse, healthcare compliance, product liability, labor and employment, wage and hour, commercial and other matters. Any such litigation or investigations could result in substantial costs and a diversion of management's resources and attention. In addition, any adverse determination could expose us to significant liabilities, which could have a material adverse effect on our business, financial condition, and results of operations.

Item 1B. Unresolved Staff Comments

None.

Item 1C. Cybersecurity

Risk Management and Strategy

Following the March 2024 Private Placement, our focus has been on the identification of a privately held company to complete a reverse merger or similar strategic transaction. While we continue to maintain minimal distribution, marketing, and sales support, we have scaled down operations to the core functions of a U.S. Nasdaq listed company to conserve cash and focus on the functions needed to pursue potential strategic alternatives. We have implemented risk management processes to manage the risks associated with reliance on vendors, critical service providers, and other third-parties that may lead to a service disruption or an adverse cybersecurity incident. This includes an assessment of vendors during the selection/onboarding process and a review of SOC 1 reports on an annual basis.

In addition, we maintain policies over areas such as information security, access on/offboarding, and access and account management, to help govern the processes put in place by management designed to protect our IT assets, data, and services from threats and vulnerabilities. We partner with industry recognized IT providers leveraging third-party technology and expertise. These third-party service providers are a key part of our current cybersecurity risk management and provide services including, maintenance of an IT assets inventory, periodic vulnerability scanning, identity access management controls including restricted access of privileged accounts, network integrity safeguarded by employing web-based software, including endpoint protection, endpoint detection and response, and remote monitoring management on all devices, industry-standard encryption protocols and critical data backups. Our outsourced information technology consultant conducts proactive patching and monitoring of all of our existing systems and has implemented systems and procedures to mitigate cybersecurity risks that we believe are appropriate for a company of our size, stage of growth and financial condition. In addition, we carry insurance with coverage for cyber events that we believe is suitable for a company of our size, stage of growth and financial condition.

Governance

Management is responsible for the day-to-day management of the risks we face, while our Board of Directors and Audit Committee has responsibility for the oversight of risk management, including risks from cybersecurity threats. In its risk oversight role, our Board of Directors has the responsibility to satisfy itself that the risk management processes designed and implemented by management are appropriate and functioning as designed. The Board of Directors has delegated to the Audit Committee of the Board of Directors the responsibility for the oversight of information technology, including cybersecurity risks. Member(s) of management assigned with cybersecurity oversight responsibility and/or third-party consultants providing cyber risk services brief the Audit Committee on cyber vulnerabilities identified through the risk management process, emerging threat landscape and new cyber risks, and provide updates on our processes to prevent, detect, and mitigate cybersecurity incidents.

We face risks from cybersecurity threats that could have a material adverse effect on its business, financial condition, results of operations, cash flows or reputation. We acknowledge that the risk of cyber incident is prevalent in the current threat landscape and that a future cyber incident may occur in the normal course of its business. We proactively seek to detect and investigate unauthorized attempts and attacks against our IT assets, data, and services, and to prevent their occurrence and recurrence where practicable through changes or updates to internal processes and tools and changes or updates to service delivery; however, potential vulnerabilities to known or unknown threats will remain.

As of the date of this Annual Report, we are not aware of any cybersecurity threats, and have not experienced any cybersecurity incidents, that have materially affected us, including our business strategy, results of operations or financial condition.

For additional information concerning risks related to cybersecurity, see Item 1A. Risk Factors: Security breaches, loss of data and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

Item 2. Properties

The Company leased 10,100 square feet of office and laboratory space at our headquarters in Rockville, Maryland. The original lease term expires in February 2032. Effective April 1, 2024, the Company entered into a lease assignment agreement where the Company assigned the lease to a third party. The Company's security deposit will remain with the landlord and be repaid over time as agreed upon with the assignee of the lease. The Company previously leased 12,770 square feet of space at its facility in Woburn, Massachusetts, under an operating lease that expired in January 2022, which the Company had sublet to a third party from February 2021 to January 2022.

Rent expenses under the Company's facility operating leases for the years ended December 31, 2023 and 2022 were \$618,764 and \$594,569, respectively, which for 2023 includes the rent expenses of Curetis and Ares Genetics through the insolvency filing date.

Item 3. Legal Proceedings

From time to time, we may be a party to litigation or subject to claims incident to the ordinary course of business. Although the results of litigation and claims cannot be predicted with certainty, we do not believe we are party to any claim or litigation; the outcome of which, if determined adversely to us, would individually or in the aggregate be reasonably expected to have a material adverse effect on our business. Regardless of the outcome, litigation can have an adverse impact on us due to defense and settlement costs, diversion of management resources and other factors.

On November 6, 2023, Curetis filed a petition for insolvency with the district court of Stuttgart, Germany, and Ares Genetics filed a petition for insolvency with the commercial court in Vienna, Austria. The insolvency proceedings of Curetis and Ares Genetics were adjudicated under the insolvency laws of Germany and Austria, respectively. The insolvency administrator for each entity assumed control over the assets and liabilities of Curetis and Ares Genetics, respectively, which eliminated the authority and power of the Company and its officers to act on behalf of the subsidiaries. As part of the insolvency proceedings, in April 2024, the insolvency administrator for Curetis sold all of Curetis' assets to Camtech Pte Ltd., a Singaporean family office. In April 2024, the insolvency administrator for Ares Genetics sold all of Ares Genetics' assets to bioMerieux S.A.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock has traded on The Nasdaq Capital Market under the symbol "OPGN" since May 5, 2015. Prior to such time, there was no public market for our common stock.

Stockholder Information

As of December 31, 2023, there were approximately 18 stockholders of record of our common stock, which does not include stockholders that beneficially own shares held in a "nominee" or in "street" name.

Sales of Unregistered Securities

None other than as disclosed in the Company's Current Reports on Form 8-K.

Issuer Purchases of Equity Securities

None.

Item 6. [Reserved]

Item 7. 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 our audited consolidated financial statements and the accompanying notes thereto included elsewhere in this Annual Report. 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 in the section titled “Risk Factors” included under Part I, Item 1A of this Annual Report.

Overview

OpGen, Inc. (“OpGen” or the “Company”) was incorporated in Delaware in 2001. On April 1, 2020, OpGen completed its business combination transaction with Curetis N.V., a public company with limited liability under the laws of the Netherlands. As part of the transaction, the Company acquired all the shares of Curetis GmbH, a private limited liability company organized under the laws of the Federal Republic of Germany (“Curetis”), and certain other assets and liabilities of Curetis GmbH including all its shares of Ares Genetics GmbH (“Ares Genetics”). From inception through November 2023, the Company operated as a precision medicine company harnessing the power of molecular diagnostics and informatics to help combat infectious disease. The Company, along with its subsidiaries, Curetis and Ares Genetics, developed and commercialized 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.

During the year ended December 31, 2023, the Company implemented certain cash management initiatives, including restructuring its U.S. operations by reducing headcount from 24 to 5 and has since continued scaling down operations at OpGen’s U.S. headquarters to the core functions of a U.S. Nasdaq listed company with only minimal distribution, marketing, and sales support, allowing the Company to conserve cash and focus on the functions needed to pursue potential strategic alternatives. However, on November 6, 2023, Curetis filed a petition for insolvency with the district court of Stuttgart, Germany, and Ares Genetics filed a petition for insolvency with the commercial court in Vienna, Austria. The insolvency proceedings of Curetis and Ares Genetics were adjudicated under the insolvency laws of Germany and Austria, respectively.

The insolvency administrators assumed control over the assets and liabilities of Curetis and Ares Genetics, respectively, which eliminated the authority and power of the Company and its officers to act on behalf of the subsidiaries. The loss of control required that the Company no longer include Curetis and Ares Genetics in its consolidated financial statements. Prior to the insolvency filings, Curetis and Ares Genetics had been included in the Company’s consolidated financial statements. Upon deconsolidation of Curetis and Ares Genetics, the Company recognized gains on deconsolidation of subsidiaries at the subsidiary levels of \$46.6 million for Curetis and \$7.7 million for Ares Genetics, which was offset by a loss on deconsolidation of subsidiary for the Company of \$67.3 million. The deconsolidation charges to operations represent the excess of the carrying value over the fair value of the Company’s interest in and intercompany payables to and receivables from Curetis and Ares Genetics as of the insolvency filing date.

Since the insolvency filings and through the three months ended March 31, 2024, the Company continues to sell the Curetis Unyvero products to its existing customers in the United States via drop shipments from Curetis directly to customer locations. The Unyvero tests are sold to hospitals, laboratories, and public health organizations as products and on a fee-for-service basis. When hospital and health system clients purchase our products, we bill them directly for the purchase of test kits and consumables. As of December 31, 2023, OpGen had an installed base of approximately 28 Unyvero A50 Analyzers across the United States in different types of hospitals and laboratories, including installations for clinical studies. The sale of Ares Genetics’ related products and services was discontinued during the first quarter of 2024 due to the sale of the Ares Genetics assets to a strategic acquiror by its insolvency administrator in Austria.

In March 2024, the Company entered into a securities purchase agreement (the “March 2024 Purchase Agreement”) with David E. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Convertible Preferred Stock (“Series E Preferred Stock”) to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million. In connection with the transactions contemplated by the March 2024 Purchase Agreement, the members of the Board of Directors, prior to the closing of such transactions, resigned and a new Board of Directors was appointed, of which Mr. Lazar was appointed Chairman. The focus of OpGen going forward under new leadership and a new Board of Directors will be on the identification of a privately held company to complete a reverse merger or similar strategic transaction.

On May 9, 2024, the Company held a special meeting of stockholders to vote on certain matters, including the removal of certain restrictions applicable to the voting of Mr. Lazar’s shares of Series E Preferred Stock. Following approval of the proposals at such special meeting, subject to limited exceptions, Mr. Lazar may vote his shares without restrictions.

Following receipt of approval from stockholders at a special meeting of stockholders held on November 30, 2022, the Company filed an amendment to its Amended and Restated Certificate of Incorporation to effect a one-for-twenty reverse stock split of the issued and outstanding shares of common stock on January 5, 2023. All share amounts and per share prices in this Annual Report have been adjusted to reflect the reverse stock split.

Following receipt of approval from stockholders at a special meeting of stockholders held on May 9, 2024, the Company filed an amendment to its Amended and Restated Certificate of Incorporation to effect a one-for-ten reverse stock split of the issued and outstanding shares of common stock on May 20, 2024. All share amounts and per share prices in this Annual Report have been adjusted to reflect the reverse stock split.

The Company’s headquarters are located at 9717 Key West Avenue, Suite 100, in Rockville, Maryland, through the end of the second quarter of 2024. The Company operates in one business segment.

Financing Transactions

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 arrangements. The following financing transactions took place during 2022 and 2023:

- On June 24, 2022, the Company entered into an At-the-Market, or ATM, Offering Agreement (the “2022 ATM Agreement”) with H.C. Wainwright & Co., LLC (“Wainwright”), as a sales agent, 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 \$10.65 million of shares of the Company’s common stock through Wainwright. As of December 31, 2022, the Company sold 8,574 shares under the 2022 ATM Agreement totaling \$1.03 million in gross proceeds and \$0.99 million in net proceeds. The Company did not sell any shares under the 2022 ATM Agreement in 2023.
- On October 3, 2022, the Company closed a registered direct offering of shares of common stock and Series C Mirroring Preferred Stock pursuant to a securities purchase agreement entered into with a certain institutional investor. In the offering, the Company agreed to issue and sell to the investor (i) 26,800 shares of the Company’s common stock, par value \$0.01 per share, (ii) 33,810 shares of the Company’s Series C Mirroring Preferred Stock, par value \$0.01 per share and stated value of \$0.01 per share, and (iii) pre-funded warrants to purchase an aggregate of 21,500 shares of common stock. Each share of common stock was sold at a price of \$70.00 per share, each share of preferred stock was sold at a price of \$0.01 per share, and each pre-funded warrant was sold at an offering price of \$68.00 per share underlying such pre-funded warrants, for aggregate gross proceeds of \$3.34 million before deducting the placement agent’s fees and the offering expenses, and net proceeds of \$3.04 million. Under the purchase agreement, the Company also agreed to issue and sell to the investor, in a concurrent private placement, warrants to purchase an aggregate of 48,300 shares of common stock. In connection with the offering, the Company also entered into a warrant amendment agreement with the investor pursuant to which the Company agreed to amend certain existing warrants to purchase up to 74,150 shares of common stock that were previously issued to the investor in 2018 and 2021, with exercise prices ranging from \$410.00 to \$13,000.00 per share as a condition to their purchase of the securities in the offering, as follows: (i) lower the exercise price of the investor’s existing warrants to \$75.40 per share, (ii) provide that the existing warrants, as amended, will not be exercisable until six months following the closing date of the offering, and (iii) extend the original expiration date of the existing warrants by five and one-half years following the close of the offering. The increase in fair value resulting from the warrant modifications is accounted for as an equity issuance cost, resulting in a debit and credit to additional paid in capital for approximately \$1.8 million. As of December 31, 2022, all 21,500 pre-funded warrants were exercised and all 33,810 shares of the Company’s Series C Mirroring Preferred Stock were automatically cancelled and ceased to be outstanding following receipt of stockholder approval for the Company’s reverse stock split on November 30, 2022. In connection with the Company’s best-efforts public offering consummated in May 2023, the Company amended the exercise price of the existing warrants to \$7.785 per share.

- On January 11, 2023, the Company closed a best-efforts public offering pursuant to a securities purchase agreement with a certain institutional investor for the purchase of (i) 32,121 shares of the Company's common stock, par value \$0.01 per share, (ii) pre-funded warrants to purchase up to an aggregate of 226,500 shares of common stock (the "Pre-funded Warrants"), (iii) Series A-1 common warrants to purchase an aggregate of 258,621 shares of common stock (the "Series A-1 Warrants"), and (iv) Series A-2 common warrants to purchase an aggregate of 258,621 shares of common stock (the "Series A-2 Warrants," and together with the Series A-1 Warrants, the "Common Warrants"). Each share of common stock and accompanying Common Warrants were sold at a price of \$29.00 per share and accompanying Common Warrants, and each Pre-funded Warrant and accompanying Common Warrants were sold at an offering price of \$28.90 per share underlying such Pre-funded Warrants and accompanying Common Warrants, for aggregate gross proceeds of approximately \$7.5 million before deducting the placement agent's fees and the offering expenses, and net proceeds of approximately \$6.9 million. The Common Warrants have an exercise price of \$26.50 per share. The Series A-1 Warrants were immediately exercisable upon issuance and will expire five years following the issuance date. The Series A-2 Warrants were immediately exercisable upon issuance and will expire eighteen months following the issuance date. Subject to certain ownership limitations described in the Pre-funded Warrants, the Pre-funded Warrants were immediately exercisable and could be exercised at a nominal consideration of \$0.10 per share of common stock any time until all the Pre-funded Warrants are exercised in full. All Pre-funded Warrants were exercised by February 15, 2023. In connection with the Company's best-efforts public offering consummated in May 2023, the Company amended the exercise price of the Common Warrants to \$7.785 per share.
- On May 4, 2023, the Company closed a best-efforts public offering pursuant to a securities purchase agreement with a certain institutional investor, pursuant to which the Company issued and sold to the Investor (i) 60,500 shares of the Company's common stock, par value \$0.01 per share, (ii) pre-funded warrants to purchase up to an aggregate of 389,083 shares of common stock, and (iii) common warrants to purchase up to an aggregate of 449,583 shares of common stock. Each share of common stock and accompanying common warrant was sold at a price of \$7.785 per share and accompanying common warrant, and each pre-funded warrant and accompanying common warrant was sold at an offering price of \$7.685 per share underlying such pre-funded warrant and accompanying common warrant, for aggregate gross proceeds of approximately \$3.5 million and net proceeds of approximately \$3.0 million. The common warrants have an exercise price of \$7.785 per share and will be exercisable beginning on the date of stockholder approval of the exercisability of the warrants under Nasdaq rules or may be exercised through October 26, 2023, pursuant to the Warrant Inducement Agreement entered into on October 12, 2023. Pursuant to amendment agreements entered into by the Company and Holder on October 26, 2023 and February 7, 2024, the Company agreed to initially extend the offer period until December 31, 2023, and subsequently extend the offer period until April 30, 2024. In order to permit the exercise of the Existing Warrants pursuant to the rules of the Nasdaq Capital Market, the Holder agreed to pay as additional consideration \$0.25 per share of common stock issued upon exercise of the Existing Warrants. The common warrants not exercised as part of the Inducement Agreement will expire on the five-year anniversary of the date of such stockholder approval. Each pre-funded warrant has an exercise price per share of common stock equal to \$0.10 per share and may be exercised at any time until the pre-funded warrants are exercised in full. In connection with the offering, the Company also entered into a warrant amendment agreement with the investor pursuant to which the Company amended certain existing warrants to purchase up to 639,691 shares of common stock that were previously issued in 2018, 2021, 2022 and 2023 to the investor, with exercise prices ranging from \$26.50 to \$75.40 per share, in consideration for their purchase of the securities in the offering, as follows: (i) lower the exercise price of the existing warrants to \$7.785 per share, (ii) provide that the existing warrants, as amended, will not be exercisable until the receipt of stockholder approval for the exercisability of the common warrants in the offering, and (iii) extend the original expiration date of the existing warrants by five years following the receipt of such stockholder approval. The increase in fair value resulting from the warrant modifications is accounted for as an equity issuance cost, resulting in a debit and credit to additional paid in capital of approximately \$0.3 million. As of December 31, 2023, the Holder exercised 200,000 shares of Common Stock under the Existing Warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company. Pursuant to the Amendment on February 7, 2024, the Company and the Holder agreed to extend the offer period until April 30, 2024; however, no additional warrants were exercised during the extended warrant inducement offer period. Since the warrant inducement period was not extended beyond April 30, 2024, the Company is required to hold a stockholders' meeting to obtain approval for the exercisability of the existing common warrants within 70 days of the end of the extension period.

- On June 26, 2023, the Company announced that its subsidiary Curetis and the European Investment Bank (“EIB”) agreed in principle to certain terms relating to the repayment of the second tranche of Curetis’ loan from the EIB pursuant to that certain Finance Contract, dated December 12, 2016, as amended, by and between Curetis and the EIB (the “Finance Contract”). The second tranche had a principal balance of €3 million plus accumulated and deferred interest. The second tranche was drawn down in June 2018 and matured on June 22, 2023. On July 4, 2023, the EIB and Curetis entered into a Standstill Agreement (the “Standstill Agreement”) pursuant to which the EIB agreed that, with respect to each default or event of default relating to such second tranche, the EIB would not take any action or exercise any right under the Finance Contract until the earlier of a restructuring of the second tranche and November 30, 2023. As a condition to entering into the Standstill Agreement, Curetis paid the EIB a partial payment of interest on the second tranche of €1 million on June 22, 2023. In addition, Curetis agreed to certain undertakings during the standstill period, including the delivery of a rolling cash flow forecast and to cause a third-party restructuring expert to prepare and deliver a restructuring opinion to the EIB. On November 20, 2023, Curetis received a termination notice from the EIB terminating the Standstill Agreement effective as of November 20, 2023. The EIB’s termination notice stated that the termination of the Standstill Agreement was as a result of and in connection with certain defaults of the Standstill Agreement arising from, among other related reasons, Curetis’ and Ares’ entry into insolvency proceedings. On December 4, 2023, the Company received a notice from the EIB stating that Curetis is in default of the Finance Contract as a result of, among other things, Curetis’ failure to repay when due certain outstanding indebtedness under the Finance Contract. In its notice, the EIB stated that, as of November 16, 2023, the aggregate amount of principal, accrued interest and all other amounts owed by Curetis to the EIB under the Finance Contract was approximately 9.66 million euro and that interest will continue to accrue in accordance with the Finance Contract until all amounts owed are paid in full. Pursuant to that certain Guarantee and Indemnity Agreement, dated July 9, 2020 (the “Guaranty”), between the EIB and the Company, the EIB demanded that the Company, as guarantor, immediately repay the EIB all amounts owed to the EIB under the Finance Contract and reserved all of its other rights and remedies in connection with the Finance Contract. As of the year ended December 31, 2023, the Guaranty remained unpaid and outstanding, with the liability reflected on the Company’s financial statements, which was previously on Curetis’ balance sheet. In connection with the Company’s entry into the March 2024 Purchase Agreement with David E. Lazar on March 25, 2024, the Company entered into settlement agreements with each of the EIB and Curetis and Curetis’ trustee in insolvency, pursuant to which the parties agreed to settle outstanding liabilities amongst the parties. Pursuant to the settlement agreements, following the final closing of the transactions contemplated by the March 2024 Purchase Agreement, the Company will pay \$2.0 million of the proceeds to settle all outstanding debt of the Company to each of EIB and Curetis. The settlement agreement with EIB also terminated the Guaranty.

- On October 11, 2023, the Company entered into a Preferred Stock Purchase Agreement (the “Purchase Agreement”) with a single investor (the “Investor”), pursuant to which the Company agreed to issue and sell to the Investor in a private placement (the “Private Placement”) 1,000 shares of the Company’s Series D Preferred Stock, par value \$0.01 per share (the “Preferred Stock”). Each share of preferred stock was agreed to sell at a price of \$1,000 per share for expected aggregate gross proceeds of \$1.0 million before deducting offering expenses. The Private Placement was conducted in connection with the negotiation of a potential strategic transaction involving the Company and the Investor. The Company intended to use the proceeds of the Private Placement to fund the Company’s operations while it pursued a potential strategic transaction with the Investor. Pursuant to the Purchase Agreement, the Company filed a certificate of designation (the “Certificate of Designation”) with the Secretary of State of the State of Delaware designating the rights, preferences and limitations of the shares of preferred stock on October 11, 2023. The Certificate of Designation provides that the shares of preferred stock have a stated value of \$1,000 per share and are convertible into shares of common stock, par value \$0.01 per share of the Company at a price of \$4.09 per share, subject to adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications, or similar events affecting the common stock. The preferred stock may be converted at any time at the option of the holder. Notwithstanding the foregoing, the Certificate of Designation provides that in no event will the preferred stock be convertible into common stock in a manner that would result in the holder, its permitted transferees and affiliates holding more than 19.99% (together with any shares of common stock otherwise held by the Investor, its permitted transferees and their affiliates) of the then issued and outstanding common stock (the “Ownership Limitation”), prior to the date that the Company’s stockholders approve the issuance of shares of common stock to the holder upon conversion of the preferred stock (the “stockholder approval”). Upon receipt of stockholder approval, the shares of preferred stock will automatically be converted into shares of common stock without further action of the holder thereof. The Investor funded \$250,000 of the expected aggregate gross proceeds of \$1.0 million before deducting offering expenses on November 14, 2023. On December 13, 2023, in coordination with the Investor, the Company issued to the Investor 250 shares of Series D Preferred Stock in consideration for the partial payment. As of December 31, 2023, all 250 Series D Preferred Shares remain outstanding and the remaining \$750,000 of the purchase price remains unpaid. The Company reserves all rights and remedies arising from the Investor’s failure to close the transaction and the Investor will continue to be in breach of the Purchase Agreement until the remaining amount is paid in full.
- On October 12, 2023, the Company entered into a warrant inducement agreement (the “Inducement Agreement”) with a holder (the “Holder”) of certain existing warrants (the “Existing Warrants”) to purchase shares of common stock, par value \$0.01 per share, of the Company. Pursuant to the Inducement Agreement, the Holder agreed to exercise for cash their Existing Warrants to purchase up to 1,089,274 shares of the Company’s common stock at an exercise price of \$7.785 per share, the exercise price per share of the Existing Warrants, during the period from the date of the Inducement Agreement until 7:30 a.m., Eastern Time, on October 26, 2023. Pursuant to amendment agreements entered into by the Company and Holder on October 26, 2023 and February 7, 2024, the Company agreed to initially extend the offer period until December 31, 2023, and subsequently extend the offer period until April 30, 2024. In order to permit the exercise of the Existing Warrants pursuant to the rules of the Nasdaq Capital Market, the Holder agreed to pay as additional consideration \$0.25 per share of common stock issued upon exercise of the Existing Warrants. In consideration of the Holder’s agreement to exercise the Existing Warrants in accordance with the Inducement Agreement, the Company agreed to issue new warrants (the “Inducement Warrants”) to purchase shares of common stock equal to 100% of the number of shares of common stock issued upon exercise of the Existing Warrants (the “Inducement Warrant Shares”). The Inducement Warrants will have an exercise price of \$3.36 per share and will be exercisable on the six-month anniversary of the date of issuance and expire on the five-year anniversary of the Inducement Warrant’s first becoming exercisable. As of December 31, 2023, the Holder exercised 200,000 shares of Common Stock under the Existing Warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company. The Holder did not exercise any additional Existing Warrants after December 31, 2023. Since the warrant inducement period was not extended beyond April 30, 2024, the Company is required to hold a stockholders’ meeting to obtain approval for the exercisability of the existing common warrants within 70 days of the end of the extension period.

In addition, subsequent to December 31, 2023, on March 25, 2024, the Company entered into the March 2024 Purchase Agreement with David E. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Convertible Preferred Stock (“Series E Preferred Stock”) to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million. The proceeds of the transaction will be used to repay and settle outstanding indebtedness and liabilities of the Company and for other general corporate and operating purposes. On March 25, 2024, Mr. Lazar paid \$200,000 at the initial closing of the transactions under the March 2024 Purchase Agreement in exchange for 200,000 shares of Series E Preferred Stock. Mr. Lazar subsequently paid \$200,000 and \$150,000 on April 5, 2024 and April 23, 2024, respectively, in exchange for an additional 350,000 shares of Series E Preferred Stock. Mr. Lazar is expected to fund the remaining \$2.45 million in early June 2024, at which time he will receive the remaining 2.45 million shares of Series E Preferred Stock.

Financial Overview

Revenue

During the years ended December 31, 2023 and 2022, we recognized three types of revenues: product sales, laboratory services and collaboration revenue. We generated product revenues from sales of our products, including through our distribution partners, such as our Unyvero instruments and consumables. We also generated revenue from sales by OpGen’s subsidiary, Ares Genetics, of its AI-powered prediction models and solutions. Revenues generated from our laboratory services relate to services that we and our subsidiaries provide to customers. Lastly, our collaboration revenues consist of revenue received from research and development collaborations that we have entered into with third parties, such as our collaboration agreement with FIND.

Cost of Products, Cost of Services, and Operating Expenses

Our cost of products consists of product and inventory costs, including materials costs and overhead, and other costs related to the recognition of revenue. Cost of services relate to the material and labor costs associated with providing our services. Research and development expenses consist primarily of expenses incurred in connection with our clinical and pre-clinical research activities. Selling, general and administrative expenses consist of public company costs, salaries, and related costs for administrative, sales, and business development personnel.

Results of Operations for the Years Ended December 31, 2023 and 2022

Revenues

	Years Ended December 31,	
	2023	2022
<i>Revenue</i>		
Product sales	\$ 2,400,053	\$ 1,893,862
Laboratory services	153,719	172,633
Collaboration revenue	864,548	540,798
Total revenue	<u>\$ 3,418,320</u>	<u>\$ 2,607,293</u>

The Company’s total revenue for the year ended December 31, 2023 increased 31%, from \$2.6 million to \$3.4 million, when compared to the same period in 2022. This increase is primarily attributable to:

- Product Sales: the increase in revenue of approximately 27% in 2023 compared to 2022 is primarily attributable to the Company completing a one-time sale of 25 sets of Unyvero instruments to a strategic partner in Q4 2023;

- Laboratory Services: the decrease in revenue of approximately 11% in 2023 compared to 2022 is primarily attributable to the insolvency filings of Curetis and Ares Genetics in early November 2023, resulting in just over 10 months of revenue activity in 2023 compared to 12 months in 2022; and
- Collaboration Revenue: the increase in revenue of approximately 60% in 2023 compared to 2022 is primarily attributable to extensions and expansions of the Company's collaboration with FIND in 2023.

Operating expenses

	Years Ended December 31,	
	2023	2022
Cost of products sold	\$ 3,084,075	\$ 3,319,586
Cost of services	424,939	104,405
Research and development	4,732,851	8,173,435
General and administrative	8,081,664	8,884,084
Sales and marketing	2,783,268	4,344,656
Loss on deconsolidation of subsidiaries	12,979,061	-
Impairment of right-of-use asset	849,243	-
Impairment of property and equipment	1,231,874	-
Impairment of intangible assets	-	5,407,699
Goodwill impairment charge	-	6,940,549
Total operating expenses	\$ 34,166,975	\$ 37,174,414

The Company's total operating expenses for the year ended December 31, 2023 decreased 8%, from \$37.2 million to \$34.2 million, when compared to the same period in 2022. This decrease is primarily attributable to:

- Costs of products sold: expenses for the year ended December 31, 2023 decreased approximately 7% when compared to the same period in 2022. The decrease in cost of products sold is primarily attributable to increases of only \$1.3 million in inventory reserves for obsolescence, expirations, and slow-moving inventory in 2023 compared to \$1.7 million in 2022;
- Costs of services: expenses for the year ended December 31, 2023 increased approximately 307% when compared to the same period in 2022. The increase in cost of services is primarily attributable to additional expenses from the Company's collaboration with FIND in 2023;
- Research and development: expenses for the year ended December 31, 2023 decreased approximately 42% when compared to the same period in 2022. The decrease in research and development expenses is primarily attributable to the completion of clinical trials for Unyvero UTI in 2022, slower than anticipated project developments in 2023, understaffing across the Company, and the shortened operating period for Curetis and Ares Genetics due to the insolvency filings in November 2023;
- General and administrative: expenses for the year ended December 31, 2023 decreased approximately 9% when compared to the same period in 2022, primarily due to a reduction in payroll related costs resulting from the Company's cash management activities;
- Sales and marketing: expenses for the year ended December 31, 2023 decreased approximately 36% when compared to the same period in 2022, primarily due to the Company's reduction in force at its Rockville, MD office and the shortened operating period for Curetis and Ares Genetics due to the insolvency filings in November 2023;

- Loss on deconsolidation of subsidiaries: loss on deconsolidation of subsidiaries for the year ended December 31, 2023 represents the loss incurred by the Company associated with the insolvency filings of Curetis and Ares Genetics in November 2023;
- Impairment of right-of-use asset: impairment of right-of-use asset for the year ended December 31, 2023 represents the impairment of the Company's right-of-use lease asset at its Rockville, MD office;
- Impairment of property and equipment: impairment of property and equipment for the year ended December 31, 2023 represents the impairment of the Company's property and equipment at its Rockville, MD office;
- Impairment of intangible assets: impairment of intangible assets for the year ended December 31, 2022 represents the impairment of the Company's infinite-lived intangible asset, which was deemed necessary since the contracted and expected future cash flows associated with these assets did not support the carrying amount; and
- Goodwill impairment charge: goodwill impairment charge for the year ended December 31, 2022 represents the impairment of the Company's goodwill primarily due to decreases in the Company's stock price and market capitalization.

Other income (expense)

	Years Ended	
	December 31,	
	2023	2022
Interest expense	\$ (1,838,933)	\$ (3,256,410)
Foreign currency transaction (losses) gains	(289,306)	379,622
Change in fair value of derivative financial instruments	65,876	113,741
Interest and other income	142,488	46,935
Total other expense	\$ (1,919,875)	\$ (2,716,112)

Other expense for the year ended December 31, 2023 decreased to a net expense of \$1.9 million from a net expense of \$2.7 million in the same period in 2022. The decrease was primarily due to a reduction in interest expense as the Company repaid a portion of the outstanding debt.

Liquidity and Capital Resources

At December 31, 2023, the Company had cash and cash equivalents of \$1.2 million, compared to \$7.4 million at December 31, 2022. The Company has funded its operations primarily through external investor financing arrangements and has raised significant funds in 2023 and 2022, including:

On June 24, 2022, we entered into the 2022 ATM Agreement with H.C. Wainwright, as a sales agent, 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 \$10.65 million of shares of the Company's common stock through the sales agent. As of December 31, 2022, the Company sold 8,574 shares under the 2022 ATM Offering totaling \$1.03 million in gross proceeds and \$0.99 million in net proceeds. The Company did not sell any shares under the 2022 ATM Agreement in 2023.

On October 3, 2022, we closed a registered direct offering for the purchase of 26,800 shares of the Company's common stock, 33,810 shares of the Company's Series C Mirroring Preferred Stock, and pre-funded warrants to purchase an aggregate of 21,500 shares of common stock. The offering raised aggregate gross proceeds of \$3.34 million before deducting the placement agent's fees and the offering expenses, and net proceeds of \$3.04 million.

On January 11, 2023, we closed a best-efforts public offering for the purchase of (i) 32,121 shares of common stock, (ii) pre-funded warrants to purchase up to an aggregate of 226,500 shares of common stock, (iii) Series A-1 common warrants to purchase an aggregate of 258,621 shares of common stock, and (iv) Series A-2 common warrants to purchase an aggregate of 258,621 shares of common stock. The offering raised aggregate gross proceeds of approximately \$7.5 million before deducting the placement agent's fees and the offering expenses, and net proceeds of approximately \$6.9 million.

On May 4, 2023, we closed a best-efforts public offering for the purchase of (i) 60,500 shares of the Company's common stock, par value \$0.01 per share, (ii) pre-funded warrants to purchase up to an aggregate of 389,083 shares of common stock, and (iii) common warrants to purchase up to an aggregate of 449,583 shares of common stock. The offering raised aggregate gross proceeds of approximately \$3.5 million and net proceeds of approximately \$3.0 million.

On October 6, 2023, Curetis received a payment of €0.75 million related to the sale of certain Unyvero A50 systems by Curetis to a strategic partner. Such purchase of systems and payment was made in connection with the negotiation of a potential strategic transaction involving Curetis and the Company's subsidiary, Ares Genetics, with such strategic partner; however, the potential strategic transaction was unsuccessful.

On October 11, 2023, we entered into a Preferred Stock Purchase Agreement with a single investor for 1,000 shares of the Company's Series D Preferred Stock, par value \$0.01 per share, where each share of preferred stock was agreed to sell at a price of \$1,000 per share for aggregate gross proceeds of \$1.0 million before deducting offering expenses. The investor funded \$250,000 of the expected aggregate gross proceeds of \$1.0 million before deducting offering expenses on November 14, 2023. On December 13, 2023, in coordination with the investor, the Company issued to the investor 250 shares of Series D Preferred Stock in consideration for the partial payment. As of December 31, 2023, all 250 Series D Preferred Shares remain outstanding and the remaining \$750,000 of the purchase price remains unpaid. The private placement was conducted in connection with the negotiation of a potential strategic transaction involving the Company and the investor. The Company's discussions with this investor have ceased.

On October 12, 2023, we entered into a warrant inducement agreement with a holder of certain existing warrants to purchase shares of common stock, par value \$0.01 per share, of the Company. Pursuant to the Inducement Agreement, the holder agreed to exercise for cash their existing warrants to purchase up to 1,089,274 shares of the Company's common stock at an exercise price of \$7.785 per share, the exercise price per share of the existing warrants, during the period from the date of the Inducement Agreement until 7:30 a.m., Eastern Time, on October 26, 2023; however, on October 26, 2023, and subsequently on February 7, 2024, the Company and the holder agreed to initially extend the offer period through December 31, 2023, and later through April 30, 2024. As of December 31, 2023, the holder exercised 200,000 shares of Common Stock under the existing warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company. The Holder did not exercise any additional Existing Warrants after December 31, 2023.

On November 6, 2023, Curetis filed a petition for insolvency with the district court of Stuttgart, Germany, and Ares Genetics filed a petition for insolvency with the commercial court in Vienna, Austria, Reference Number 38 S 175/23x. The insolvency proceedings of Curetis and Ares Genetics were adjudicated under the insolvency laws of Germany and Austria, respectively. The insolvency administrators assumed control over the assets and liabilities of Curetis and Ares Genetics, respectively, which eliminated the authority and power of the Company and its officers to act on behalf of the subsidiaries. The German and Austrian insolvency administrators both successfully completed asset sales of the assets of Curetis and Ares Genetics, but the Company does not anticipate receiving any proceeds from such sales as the proceeds will be allocated amongst each entity's creditors.

To meet its capital needs, the Company entered into a securities purchase agreement (the “March 2024 Purchase Agreement”) with David E. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Convertible Preferred Stock (“Series E Preferred Stock”) to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million. Although Mr. Lazar is expected to provide the Company with \$3.0 million in total funding, the Company believes that current cash will only be sufficient to fund operations into the third quarter of 2024. This has led management to conclude that there is substantial doubt about the Company’s ability to continue as a going concern. In the event the Company does not receive additional funding from the individual investor or other investors or find a reverse merger partner or other strategic transaction partner before or during the third quarter of 2024, the Company will not have sufficient cash flows and liquidity to finance its business operations. Accordingly, in such circumstances, the Company would be compelled to immediately reduce general and administrative expenses until it is able to obtain sufficient financing. If such sufficient financing is not received on a timely basis, the Company would then need to pursue a plan to seek to be acquired by another entity, cease operations and/or seek bankruptcy protection. There can be no assurance that the Company will be able to identify or execute on any of these alternatives on acceptable terms or that any of these alternatives will be successful.

On March 10, 2023, the Company learned that Silicon Valley Bank (“SVB”) was closed by the California Department of Financial Protection and Innovation, which appointed the Federal Deposit Insurance Corporation (“FDIC”) as receiver, due to the sudden and massive financial collapse of the bank. On March 12, 2023, the Secretary of the Treasury, the chair of the Federal Reserve Board and the chairman of the FDIC released a joint statement related to the FDIC’s resolution of the SVB receivership (the “Statement”). The Statement provided that “[d]epositors will have access to all of their money starting Monday, March 13.” At the time, the Company had most of its cash and cash equivalents held in deposit accounts at SVB, which the Statement said the Company would have access to starting on March 13, 2023. While we regained access to our accounts at Silicon Valley Bank (now a division of First Citizens Bank) and created additional banking relationships to diversify our holdings, future disruptions of financial institutions where we bank or have credit arrangements, or disruptions of the financial services industry in general, could adversely affect our ability to access our cash and cash equivalents. If we are unable to access our cash and cash equivalents as needed, our financial position and ability to operate our business will be adversely affected.

Sources and uses of cash

The following table summarizes the net cash provided by (used in) operating activities, investing activities and financing activities for the periods indicated:

	Years Ended December 31,	
	2023	2022
Net cash used in operating activities	\$ (14,319,542)	\$ (20,449,698)
Net cash used in investing activities	(800,412)	(590,772)
Net cash provided by (used in) financing activities	8,373,314	(6,735,681)

Net cash used in operating activities

Net cash used in operating activities in 2023 consisted primarily of our net loss of \$32.7 million, reduced by certain non-cash items, including loss on deconsolidation of subsidiaries of \$13.0 million, depreciation and amortization expense of \$1.3 million, non-cash interest of \$1.7 million, impairment of property and equipment of \$1.2 million, impairment of right-of-use asset of \$0.8 million, and change in inventory reserve of \$0.8 million, partially offset by the net change in operating assets and liabilities of \$1.0 million. Net cash used in operating activities in 2022 consisted primarily of our net loss of \$37.3 million, reduced by certain non-cash items, including depreciation and amortization expense of \$1.6 million, non-cash interest of \$2.4 million, change in inventory reserve of \$1.6 million, share-based compensation of \$1.0 million, impairment of intangible assets of \$5.4 million, and goodwill impairment charge of \$6.9 million, partially offset by the net change in operating assets and liabilities of \$2.0 million.

Net cash used in investing activities

Net cash used in investing activities in 2022 and 2023 consisted of purchases of property and equipment.

Net cash provided by (used in) financing activities

Net cash provided by financing activities in 2023 of \$8.4 million consisted primarily of net proceeds from the January 2023 Offering of \$6.9 million, the May 2023 Offering of \$3.0 million, and the October 2023 Warrant Inducement of \$2.1 million, partially offset by payments on debt of \$3.9 million. Net cash used in financing activities in 2022 of \$6.7 million consisted primarily of payments on debt of \$10.8 million, partially offset by net proceeds from the October 2022 Offering of \$3.1 million and ATM offerings of \$1.0 million.

Contractual Commitments

OpGen's subsidiary, Curetis, has contractual commitments under its 2016 senior, unsecured loan financing facility of up to €25.0 million with the European Investment Bank ("EIB"). Following the consummation of our business combination with Curetis in April 2020, the Company guaranteed Curetis' obligations under the loan financing facility. Curetis drew down three tranches under the facility: €10.0 million in April 2017, €3.0 million in June 2018, and €5.0 million in June 2019. The first tranche had, and second tranche has, a floating interest rate of EURIBOR plus 4% payable after each 12-month-period from the draw-down-date and an additional 6% interest per annum that is deferred and payable at maturity together with the principal. The third tranche originally had a 2.1% PPI. Upon maturity of the third tranche, the EIB would have been 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 an amendment between the Company and the EIB on July 9, 2020, the parties adjusted the PPI percentage applicable to the third EIB tranche of €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. This right constitutes an embedded derivative, which is separated and measured at fair value with changes being accounted for through income or loss.

As of December 31, 2023, the outstanding borrowings under all tranches were €9.8 million (approximately \$10.9 million), including deferred interest payable at maturity of €1.5 million (approximately \$1.7 million).

On May 23, 2022, the Company and the EIB entered into a Waiver and Amendment Letter (the "2022 EIB Amendment"), which amended the EIB loan facility. The 2022 EIB Amendment restructured the first tranche of approximately €13.4 million (including accumulated and deferred interest) of the Company's indebtedness with the EIB. Pursuant to the 2022 EIB Amendment, the Company repaid €5.0 million to the EIB in April 2022. The Company also agreed, among other things, to amortize the remainder of the debt tranche over a twelve-month period beginning in May 2022. As a result, the Company paid twelve monthly installments totaling approximately €8.4 million through April 2023, at which point the first tranche was repaid in full. The 2022 EIB Amendment also provided for the increase of the PPI of the third tranche under the loan facility from 0.3% to 0.75% beginning in June 2024.

On July 4, 2023, the Company entered into a Standstill Agreement, by and among Curetis, as borrower, the Company and Ares Genetics, as guarantors, and the EIB, as lender, relating to that certain Finance Contract, originally dated December 12, 2016, as amended, by and between Curetis and EIB. Pursuant to the Standstill Agreement, the EIB agreed that, with respect to each default or event of default relating to €3 million in principal plus accumulated interest that (i) was due and payable on June 22, 2023 under the Finance Contract and (ii) continues to exist as of the date of the Standstill Agreement, the EIB would not take any action or exercise any right under the Finance Contract, including, but not limited to, any right of acceleration or termination, until the earlier of the entry into a definitive agreement for the restructuring of the second tranche and November 30, 2023. As a condition of entering into such standstill agreement, Curetis paid the EIB a partial payment of interest on the second tranche of €1 million on June 22, 2023. In addition, Curetis agreed to certain undertakings during the standstill period, including the delivery of a rolling cash flow forecast and to cause a third-party restructuring expert to prepare and deliver a restructuring opinion to the EIB. On November 20, 2023, Curetis received a termination notice from the EIB terminating the Standstill Agreement effective as of November 20, 2023. The EIB's termination notice stated that the termination of the Standstill Agreement was as a result of and in connection with certain defaults of the Standstill Agreement arising from, among other related reasons, Curetis' and Ares' entry into insolvency proceedings.

On December 4, 2023, the Company received a notice from the EIB stating that Curetis is in default of the Finance Contract as a result of, among other things, Curetis' failure to repay when due certain outstanding indebtedness under the Finance Contract. In its notice, the EIB stated that, as of November 16, 2023, the aggregate amount of principal, accrued interest and all other amounts owed by Curetis to the EIB under the Finance Contract was approximately 9.66 million euro and that interest will continue to accrue in accordance with the Finance Contract until all amounts owed are paid in full. Pursuant to that certain Guarantee and Indemnity Agreement, dated July 9, 2020 (the "Guaranty"), between the EIB and the Company, the EIB demanded that the Company, as guarantor, immediately repay the EIB all amounts owed to the EIB under the Finance Contract and reserved all of its other rights and remedies in connection with the Finance Contract. In connection with the Company's entry into the March 2024 Purchase Agreement with David E. Lazar on March 25, 2024, the Company entered into settlement agreements with each of the EIB and Curetis and Curetis' trustee in insolvency, pursuant to which the parties agreed to settle outstanding liabilities amongst the parties. Pursuant to the settlement agreements, following the final closing of the transactions contemplated by the March 2024 Purchase Agreement, the Company will pay \$2.0 million of the proceeds to settle all outstanding debt of the Company to each of EIB and Curetis. The settlement agreement with the EIB also terminated the Guaranty.

Funding requirements

Going forward, our primary use of cash is to fund operating expenses, including those costs for general administrative and corporate purposes. Our future funding requirements will depend on the costs required to comply with our obligations as a public company. We cannot assure you that additional financing will not be required in the future to support our operations. We intend to use financing opportunities strategically to continue to strengthen our financial position.

Critical Accounting Estimates

This Management's Discussion and Analysis of Financial Condition and Results of Operations is based on our audited 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 audited 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 of the accompanying audited 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.

Revenue Recognition

During the years ended December 31, 2022 and 2023, the Company derived revenues from (i) the sale of Unyvero Application cartridges, Unyvero Systems, Acuitas AMR Gene Panel test products, and SARS CoV-2 tests, (ii) providing laboratory services, and (iii) providing collaboration services including funded software arrangements, license arrangements, and the FIND NGO collaboration on our Unyvero A30 platform.

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.

Valuation of Inventory

The Company's inventory includes Unyvero system instruments, Unyvero cartridges, reagents and components for Unyvero, and supplies used for the Company's laboratory services. The Company periodically reviews inventory quantities on hand and analyzes the provision for excess and obsolete inventory based primarily on product expiration dating and its estimated sales forecast, which is based on sales history and anticipated future demand. The Company's estimates of future product demand may not be accurate, and it may understate or overstate the provision required for excess and obsolete inventory. Accordingly, any significant unanticipated changes in demand could have a significant impact on the value of the Company's inventory and results of operations. Based on the Company's assumptions and estimates, inventory reserves for obsolescence, expirations, and slow-moving inventory were \$1,280,805 at December 31, 2023.

Impairment of Long-Lived Assets

Property and equipment is 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. During the year ended December 31, 2023, the Company determined that its operating right-of-use lease asset for its Rockville, MD office was impaired due to the Company's inability to support the lease given its financial position. As a result, the Company recorded an impairment charge in the amount of \$849,243. In addition, for the year ended December 31, 2023, the Company determined that its property and equipment, including leasehold improvements and computer and networking equipment, at its Rockville, MD office was impaired. As a result, the Company recorded an impairment charge in the amount of \$1,231,874.

Finite-lived intangible assets include trademarks, developed technology, software and customer relationships. 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. All the Company's finite-lived intangible assets with net balances were held by Curetis and Ares Genetics. As a result of the insolvency filings for Curetis and Ares Genetics and the associated deconsolidation of all balance sheet balances related to these entities, the Company does not have any finite-lived intangible asset balances as of December 31, 2023.

Acquired In-Process Research & Development (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. During the Company's annual impairment test for its IPR&D intangible asset in 2022, it was determined that the infinite-lived intangible asset was impaired because although the Company had an ongoing collaboration utilizing the intangible asset, the contracted cash flow associated with this collaboration and projected future cash flows did not support the carrying amount. As a result, the Company recorded an impairment charge in the amount of \$5,407,699 for the year ended December 31, 2022.

Goodwill represented 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. The Company conducts an impairment test of goodwill on an annual basis as of December 31 of each year 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. As circumstances changed during the year ended December 31, 2022, that would, more likely than not, reduce the Company's fair value below its net equity value, the Company performed qualitative and quantitative analyses, assessing trends in market capitalization, current and future cash flows, revenue growth rates, and the impact of global unrest and the COVID-19 pandemic on the Company and its performance. Based on the analysis performed, and primarily due to changes in the Company's stock price and market capitalization in the third quarter of 2022, it was determined that goodwill was impaired. As a result, the Company recorded a goodwill impairment charge in the full amount of \$6,940,549 for the year ended December 31, 2022.

Share-Based Compensation

Share-based payments to employees, directors and consultants are recognized at fair value. The resulting fair value is recognized ratably over the requisite service period, which is generally the vesting period of the option. The estimated fair value of equity instruments issued to non-employees is recorded at fair value on the earlier of the performance commitment date or the date the services required are completed.

For all time-vesting awards granted, expense is amortized using the straight-line attribution method. For awards that contain a performance condition, expense is amortized using the accelerated attribution method. Share-based compensation expense recognized is based on the value of the portion of stock-based awards that is ultimately expected to vest during the period. The fair value of share-based payments is estimated, on the date of grant, using the Black-Scholes model. Option valuation models, including the Black-Scholes model, require the input of highly subjective estimates and assumptions, and changes in those estimates and assumptions can materially affect the grant-date fair value of an award. These assumptions include the fair value of the underlying and the expected life of the award.

See additional discussion of the use of estimates relating to share-based compensation, and a discussion of management's methodology for developing each of the assumptions used in such estimates, in Note 3 of the accompanying consolidated financial statements.

Recent Accounting Pronouncements

We have reviewed all recently issued standards and have determined that, other than as disclosed in Note 3 of our consolidated financial statements appearing elsewhere in this filing, such standards will not have a material impact on our consolidated financial statements or do not otherwise apply to our operations.

Off-Balance Sheet Arrangements

As of December 31, 2023 and 2022, the Company did not have any off-balance sheet arrangements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

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

Item 8. Financial Statements

The Company's consolidated financial statements and the report of our independent registered public accounting firm are included in this Annual Report as indicated in Part IV, Item 15.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

The Company's management evaluated, with the participation of the Company's principal executive and principal financial officer, the effectiveness of the Company's disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of December 31, 2023. We maintain disclosure controls and 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, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow for timely decisions regarding disclosure. Based on their evaluation, management has concluded that the Company's disclosure controls and procedures were effective as of December 31, 2023.

Changes in Internal Control over Financial Reporting

For the year ended December 31, 2023, there have been no changes in the Company's internal controls over financial reporting that have materially affected, or are reasonably likely to materially affect, the Company's internal controls over financial reporting.

Management's Annual Report on Internal Control over Financial Reporting

The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act). The Company's internal control system was designed to provide reasonable assurance regarding the preparation and fair presentation of published financial statements. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. Under the supervision and with the participation of management, including the then-appointed Company's Chief Executive Officer and Chief Financial Officer, the Company assessed the effectiveness of internal control over financial reporting as of December 31, 2023. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in its statement "Internal Control-Integrated Framework (2013)."

Based on this assessment, management has concluded that, as of December 31, 2023, internal control over financial reporting is effective based on these criteria.

This Annual Report does not include an attestation report of the Company's independent registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by the Company's independent registered public accounting firm pursuant to the rules of the SEC that permit the Company to provide only management's report in this Annual Report.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Our executive officers are appointed by the Board and serve until their successors have been elected and qualified or until their earlier resignation or removal by the Board. There are no family relationships among any of the directors and executive officers of the Company. Incumbent directors are elected to serve until our next annual meeting and until each director's successor is duly elected and qualified. No director or executive officer has been involved in any legal proceeding during the past ten years that is material to an evaluation of his ability or integrity.

The following table sets forth information regarding the Company's directors and officers as of the date hereof.

Name	Age	Positions
David Lazar	33	Chairman of the Board and Chief Executive Officer
Avraham Ben-Tzvi	53	Director
Matthew McMurdo	52	Director
David Natan	70	Director

David E. Lazar has served as the Chief Executive Officer of Titan Pharmaceuticals Inc. listed on the Nasdaq (TTNP) since August 2022, where he also served as a director and board chairman from August 2022 until October 2023. On December 28, 2023, Mr. Lazar was appointed Chief Executive Officer and to the Board of Directors of Minim, Inc. (NASDAQ: MINM). Mr. Lazar has successfully served as a custodian to numerous public companies across a wide range of industries, including without limitation, C2E Energy, Inc. (OTCMKTS: OOGI), China Botanic Pharmaceutical Inc. (OTCMKTS: CBPI), One 4 Art Ltd., Romulus Corp., Moveix, Inc., Arax Holdings Corp. (OTCMKTS: ARAT), ESP Resources, Inc. (OTCMKTS: ESPIQ), Adorbs, Inc., Exobox Technologies Corp. (OTCMKTS: EXBX), Petrone Worldwide, Inc. (OTCMKTS: PFWIQ), Superbox, Inc. (OTCMKTS: SBOX), Sino Green Land Corp. (OTCMKTS: SGLA), SIPP International Industries, Inc. (OTCMKTS: SIPN), Cereplast, Inc. (OTCMKTS: CERPQ), Energy 1 Corp. (OTCMKTS: EGO), ForU Holdings, Inc. (OTCMKTS: FORU), China Yanyuan Yuhui National Education Group, Inc. (OTCMKTS: YYYH), Pan Global Corp. (OTCMKTS: PGL), Shengtang International, Inc. (OTCMKTS: SHNL), Alternaturals, Inc. (OTCMKTS: ANAS), USA Recycling Industries, Inc. (OTCMKTS: USRI), Tele Group Corp., Xenocis Holdings, Inc. (OTCMKTS: XNNHQ), Richland Resources International Group, Inc. (OTCMKTS: RIGG), AI Technology Group, Inc., Reliance Global Group, Inc. (NASDAQ: RELI), Melt, Inc., Ketdarina Corp., 3D MarkerJet, Inc. (OTCMKTS: MRJT), Lvpai Group Ltd., Gushen, Inc., FHT Future Technology Ltd., Inspired Builders, Inc., Houmu Holdings Ltd. (OTCMKTS: HOMU), Born, Inc. (OTCMKTS: BRRN), Changsheng International Group Ltd., Sollensys Corp. (OTCMKTS: SOLS), Guozi Zhongyu Capital Holdings Co. (OTCMKTS: GZCC) and Cang Bao Tian Xia International Art Trade Center, Inc. Mr. Lazar currently serves as an Advisor to PROMAX Investments LLC, a position he has held since July 2022, and as an Ambassador at Large for the Arab African Council for Integration and Development, since March 2022.

Avraham Ben-Tzvi is the founder of ABZ Law Office, a boutique Israeli law firm specializing in corporate & securities laws, commercial law & contracts, and various civil law matters, as well as providing outsourced general counsel services for publicly traded as well as private companies and corporations, which he established in January 2017. Mr. Ben-Tzvi served as Chief Legal Officer and General Counsel of Purple Biotech Ltd. (formerly Kitov Pharma Ltd.) (NASDAQ/TASE: PPBT), a clinical-stage company advancing first-in-class therapies to overcome tumor immune evasion and drug resistance, from November 2015 until April 2020. Prior to that, Mr. Ben-Tzvi served as General Counsel and Company Secretary at Medigus Ltd. (NASDAQ/TASE: MDGS), a minimally invasive endosurgical tools medical device and miniaturized imaging equipment company, from April 2014 until November 2015. Prior to that he served as an attorney at one of Israel's leading international law firms where, amongst other corporate and commercial work, he advised companies and underwriters on various offerings by Israeli companies listing in the US and on various SEC related filings. Prior to becoming a lawyer, Mr. Ben-Tzvi worked in several business development, corporate finance and banking roles at companies in the financial services, lithium battery manufacturing and software development industries. Since December 2023, Mr. Ben-Tzvi has been serving as a member of the Board of Directors of Minim, Inc. (NASDAQ: MINM), a company which delivers smart software-driven communications products under the globally recognized Motorola brand and Minim® trademark. Since August 2022, Mr. Ben-Tzvi has been serving as a member of the Board of Directors of Titan Pharmaceuticals, Inc. (NASDAQ: TTNP), a pharmaceutical company, where he is also Chair of the Nominating Committee. Mr. Ben-Tzvi is a licensed attorney and member of the Israel Bar Association, and he is also licensed as a Notary by the Israeli Ministry of Justice. Based on Mr. Ben-Tzvi's extensive legal experience and knowledge in the fields of civil-commercial law and corporate and securities law, and his previous public company and commercial business experience, our Board believes that Mr. Ben-Tzvi has the appropriate set of skills to serve as a member of the Board.

David Natan currently serves as President and Chief Executive Officer of Natan & Associates, LLC, a consulting firm offering chief financial officer services to public and private companies in a variety of industries, since 2007. From February 2010 to May 2020, Mr. Natan served as Chief Executive Officer of ForceField Energy, Inc. (OTCMKTS: FNRG), a company focused on the solar industry and LED lighting products. From February 2002 to November 2007, Mr. Natan served as Executive Vice President of Reporting and Chief Financial Officer of PharmaNet Development Group, Inc., a drug development services company, and, from June 1995 to February 2002, as Chief Financial Officer and Vice President of Global Technovations, Inc., a manufacturer and marketer of oil analysis instruments and speakers and speaker components. Prior to that, Mr. Natan served in various roles of increasing responsibility with Deloitte & Touche LLP, a global consulting firm. Mr. Natan currently serves as a member of the Board of Directors and Chair of the Audit Committee of NetBrands Inc. f/k/a Global Diversified Marketing Group, Inc. (OTCMKTS: NBND), a manufacturer, marketer and distributor of food and snack products, since February 2021 and serves as a member of the Board of Directors and Chair of the Audit Committee of Sunshine Biopharma, Inc. (NASDAQ: SBFM), a pharmaceutical and nutritional supplement company, since February 2022. Additionally in November 2023, Mr. Natan was appointed to the Board of Directors and Audit Committee Chair of Minim, Inc. (NASDAQ: MINM). In December 2022, Mr. Natan was appointed to the Board of Directors and Audit Committee Chair of Vivakor Inc. (NASDAQ: VIVK) and served until December 2023. Previously, Mr. Natan served as Chairman of the Board of Directors of ForceField Energy, Inc., from April 2015 to May 2020, and as a member of the Board of Directors of Global Technovations, Inc., from December 1999 to December 2001. Mr. Natan holds a B.A. in Economics from Boston University. Based on Mr. Natan's extensive experience, our Board believes that Mr. Natan has the appropriate set of skills to serve as a member of the Board.

Matthew C. McMurdo has served as Managing Member of McMurdo Law Group, LLC, a corporate law practice, since 2010. Previously, Mr. McMurdo was a Partner at Nannarone & McMurdo, LLP, a boutique law firm, from 2008 to 2010. In addition, Mr. McMurdo served as General Counsel of Berkley Asset Management LLC, the general partner of a real estate fund focused on opportunistic and distressed real estate assets, from 2011 to 2013. Mr. McMurdo was Of-Counsel at Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., from 2007 to 2008 and an associate at Greenberg Traurig, LLP from 2006 to 2007. On December 28, 2023, Mr. McMurdo was appointed to the Board of Directors of Minim Inc (NASDAQ: MINM), where he serves on the compensation and nominating committees. Mr. McMurdo holds a B.S. in Finance from Lehigh University and a J.D., cum laude, from Benjamin N. Cardozo School of Law. Based on Mr. McMurdo's extensive experience and knowledge in the fields of corporate and securities law, and his previous public company and commercial business experience, our Board believes that Mr. McMurdo has the appropriate set of skills to serve as a member of the Board.

Corporate Governance

Board and Board Committees

The Company's Bylaws provide that the Board, by resolution adopted by a majority of the whole Board, may designate one or more other committees, with each such committee to consist of two or more directors. As of the date of this Proxy Statement, the Board consists of four members.

The Board annually elects from its members the Audit and Compensation Committees. The Board may also from time to time appoint ad hoc committees. Currently, the Board has not appointed a Nominating and Corporate Governance Committee. The Board believes the nominating and corporate governance responsibilities are best handled at this time by the full Board given its size.

During its fiscal year ended December 31, 2023, the Board held 25 meetings. Each director attended at least 75% of the aggregate of all meetings of the Board and the Committees on which each such director served held during 2023. The Board encourages all directors to attend the Company's annual meeting of stockholders.

Each of the standing Committees of the Board operates pursuant to a written Committee Charter. Copies of these Charters can be obtained free of charge from the Corporate Governance portion of the Investors section of the Company's website, www.opgen.com.

Director Independence

An "independent director" is defined generally as a person other than an executive officer or employee of the company or its subsidiaries or any other individual having a relationship which, in the opinion of the company's Board of Directors, would interfere with the director's exercise of independent judgment in carrying out the responsibilities of a director. The Board has determined that, upon their appointments, Messrs. Ben-Tzvi, McMurdo and Natan will be "independent" directors as defined in the applicable Nasdaq listing standards and applicable SEC rules. Our independent directors will conduct regularly scheduled meetings at which only independent directors are present.

While Nasdaq listing standards generally require that a majority of the Board be independent, under NASDAQ Rule 4350(c), a controlled company (as defined by Nasdaq listing standards) is exempt from certain independent director requirements set forth in this rule. Following the Company's special meeting of stockholders on May 9, 2024, the Company became a controlled company and may rely on such exemption.

Audit Committee

The current members of our audit committee are: David Natan (Chair), Matthew McMurdo, and Avraham Ben-Tzvi. Each member of the audit committee is expected to be financially literate, and Mr. Natan qualifies as an "audit committee financial expert" as defined in applicable SEC rules and has accounting or related financial management expertise. During its fiscal year ended December 31, 2023, the former audit committee held 11 meetings. We have adopted an audit committee charter that details the purposes and responsibilities of the committee, including:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;
- approving auditing and permissible non-audit services, and the terms of such services, to be provided by our independent registered public accounting firm;
- reviewing the audit plan with the independent registered public accounting firm and members of management responsible for preparing our financial statements;
- reviewing and discussing with management and the independent registered public accounting firm our annual and quarterly financial statements and related disclosures as well as critical accounting policies and practices used by us;

- reviewing the adequacy of our internal control over financial reporting;
- establishing policies and procedures for the receipt and retention of accounting-related complaints and concerns;
- reviewing the Company's periodic reports to be filed with the SEC;
- recommending, based upon the Audit Committee's review and discussions with management and the independent registered public accounting firm, whether our audited financial statements shall be included in our Annual Report on Form 10-K;
- monitoring the integrity of our financial statements and our compliance with legal and regulatory requirements as they relate to our financial statements and accounting matters;
- preparing the Audit Committee report required by SEC rules to be included in our annual proxy statement;
- overseeing our compliance with applicable legal and regulatory requirements;
- reviewing all related person transactions for potential conflict of interest situations and approving all such transactions; and
- reviewing quarterly earnings releases.

Compensation Committee

The current members of our compensation committee are: Matthew McMurdo (Chair), David Natan, and Avraham Ben-Tzvi. During its fiscal year ended December 31, 2023, the former compensation committee held 4 meetings. We have adopted a compensation committee charter that details the purposes and responsibilities of the committee, including:

- annually reviewing and recommending to our Board corporate goals and objectives, and determining the achievement thereof, relevant to the compensation of our Chief Executive Officer and other executive officers;
- evaluating the performance of our Chief Executive Officer in light of such corporate goals and objectives and recommending to our Board the compensation of our Chief Executive Officer;
- determining, or reviewing and recommending to our Board for approval, the compensation of our other executive officers;
- reviewing and establishing our overall management compensation philosophy and policy;
- overseeing and administering our compensation and similar plans;
- evaluating and assessing potential current compensation advisors in accordance with the independence standards identified in the applicable Nasdaq Stock Market rules;
- retaining and approving the compensation of any compensation advisors;
- reviewing and approving, or reviewing and recommending to our Board for approval, our policies and procedures for the grant of equity-based awards;

- determining or reviewing and making recommendations to our Board with respect to director compensation;
- preparing the compensation committee report required by SEC rules to be included in our annual proxy statement;
- reviewing and discussing with management the compensation discussion and analysis to be included in our annual proxy statement or Annual Report on Form 10-K; and
- reviewing and discussing with our Board corporate succession plans for the Chief Executive Officer and other key officers.

Nomination of Directors

The full Board acts to evaluate, on an annual basis, the composition of the Board and the skills, qualifications, business attributes and experience of the existing Board members. The specific process for identifying and evaluating new directors, including stockholder-recommended nominees, if any, will vary based on an assessment of the then-current needs of the Board and the Company. The Board will determine the desired profile of a new director, the competencies we are seeking, including experience in one or more areas of need, as determined by the Board. Candidates will be evaluated in light of the target criteria chosen.

Procedures for Nominating a Director Candidate

The Board considers nominations by stockholders who recommend candidates for election to the Board. The Board evaluates nominees recommended by stockholders in the same manner as it evaluates other nominees. A stockholder seeking to recommend a prospective candidate for the Board's consideration may do so by writing to the Corporate Secretary c/o OpGen, Inc., 9717 Key West Ave, Suite 100, Rockville, MD 20850.

With respect to the 2024 Annual Meeting of Stockholders, recommendations for director candidates must be received not later than the close of business on the tenth day following the earlier of the day on which notice of the date of the meeting was mailed and public disclosure was made. Recommendations submitted for consideration by the Board in preparation for the 2025 Annual Meeting of Stockholders must be received after the close of business on 120th day prior to the first anniversary of the date on notice of the 2025 Annual Meeting of Stockholders is first made available to our stockholders, and no later than the close of business on the 90th day prior to the first anniversary of the date on which such notice is first made available to our stockholders in connection with such meeting. However, if we change the date of the 2025 Annual Meeting by 30 days from the anniversary of the 2024 Annual Meeting of Stockholders, recommendations for director candidates must be received not later than the close of business on the tenth day following the earlier of the day on which notice of the date of the meeting was mailed and public disclosure was made.

Each notice of recommendation must contain the information required under our Bylaws, including: (a) for each person whom the stockholder proposes to nominate for election or reelection as a director, all information relating to such person that is required to be disclosed in solicitations of proxies for elections of directors, or is otherwise required, in each case pursuant to Regulation 14A under the Exchange Act (including such person's written consent to being named in the proxy statement as a nominee and to serving as a director if elected); (b) as to the stockholder giving the notice, (i) the name and address, as they appear on the Company's books, of such stockholder and (ii) the class and number of shares of the Company which are owned beneficially and of record by such stockholder of record and by the beneficial owner, if any, on whose behalf the nomination is made; and (c) as to the beneficial owner, if any, on whose behalf the nomination is made, (i) the name and address of such person and (ii) the class and number of shares of the Company which are beneficially owned by such person. At the request of the Board, any person nominated by the Board for election as a director shall furnish to the Secretary of the Company that information required to be set forth in a stockholder's notice of nomination which pertains to the nominee.

Board Diversity

Although the Board does not have a formal diversity policy, in addition to the considerations described above, the Board considers race and gender diversity in selection of qualified candidates as well as the overall skills and experience of such candidates. The following Board Diversity Matrix provides certain information regarding the diversity of our current Board members based on such members' self-identification.

Board Diversity Matrix (as of April 15, 2024)

Total Number of Directors	4	
Gender	Female	Male
Directors	0	4
Demographic Background		
African American or Black	0	0
Alaskan Native or Native American	0	0
Asian	0	0
Hispanic or Latinx	0	0
Native Hawaiian or Pacific Islander	0	0
White	0	2
Two or More Races or Ethnicities	0	2
LGBTQ+	0	0
Did Not Disclose Demographic Background	0	0

Board Leadership Structure and Role in Risk Oversight

The Board assesses this leadership structure to ensure the interests of the Company and its stockholders are best served. The Board does not currently have a lead independent director. The Board determines what leadership structure it deems appropriate based on factors such as the experience of the applicable individuals, the current business environment of the Company or other relevant factors. Currently, Mr. Lazar serves as the Company's chairman.

The Board is responsible for oversight of the Company's risk management practices, while management is responsible for the day-to-day risk management processes. The Board receives periodic reports from management regarding the most significant risks facing the Company. We believe that this division of responsibilities is the most effective approach for addressing the risks facing the Company, and the Company's Board leadership structure will support this approach.

Board Role in Risk Management

Our Board oversees the management of risks inherent in the operation of our business and the implementation of our business strategies. Our Board performs this oversight role by using several different levels of review. In connection with its reviews of the operations and corporate functions of our Company, our Board addresses the principal risks associated with those operations and corporate functions. This includes risks relating to healthcare and regulatory matters and compliance needs of the organization. In addition, our Board reviews the risks associated with our Company's business strategies periodically throughout the year as part of its consideration of undertaking any such business strategies.

Each of our Board committees also oversees the management of our risk that falls within the committee's areas of responsibility. In performing this function, each committee has full access to management, as well as the ability to engage advisors. In connection with its risk management role, our Audit Committee meets privately with representatives from our independent registered public accounting firm. The Audit Committee oversees the operation of our risk management program, including the identification of the principal risks associated with our business and periodic updates to such risks, and reports to our Board regarding these activities.

The Compensation Committee assesses the impact risks inherent in the annual and long-term incentive plans could have on the Company. After review, the Compensation Committee does not believe that the Company's executive compensation practices or programs are likely to have a material adverse effect on the Company.

Delinquent Section 16(a) Reports

Section 16(a) of the Securities Exchange Act of 1934, as amended, requires the Company's officers and directors and persons who own more than 10% of the Company's outstanding common stock to file with the SEC initial reports of ownership and reports of changes in ownership of common stock and any other equity securities of the Company. Directors, officers, and greater than 10% stockholders are required by SEC regulations to furnish the Company with copies of all Section 16(a) forms they file. Based solely on a review of the Company's records and written representations by the persons required to file such reports, all filing requirements of Section 16(a) were satisfied with respect to the 2023 fiscal year.

Code of Ethics

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A current copy of the code is posted on the Corporate Governance section of our website, which is located at www.opgen.com. If we make any substantive amendments to, or grant any waivers from, the code of business conduct and ethics for any officer, we will disclose the nature of such amendment or waiver on our website or in a Current Report on Form 8-K.

Insider Trading Policies

We have adopted an insider trading policy governing the purchase, sale, and other dispositions of our securities by directors, officers, and employees. A copy of the insider trading policy is attached as an exhibit to this Annual Report.

Communications with the Board of Directors

Stockholders who want to communicate with members of the Board, including the independent directors, individually or as a group, should address their communications to the Board, the Board members or the Board committee, as the case may be, and send them to c/o Chair of the Audit Committee, OpGen, Inc., 9717 Key West Ave, Suite 100, Rockville, MD 20850. The Chair of the Audit Committee will forward all such communications directly to such Board members. Any such communications may be made on an anonymous and confidential basis.

There have been no changes to the procedures by which interested parties may communicate with the Board.

Item 11. Executive Compensation

We are currently a “smaller reporting company” as defined by Item 10 of the Regulation S-K promulgated under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and have elected to provide certain scaled disclosures permitted under the Exchange Act for smaller reporting companies.

Summary Compensation Table for 2023 and 2022

Our named executive officers for 2023 are Oliver Schacht, Ph.D., our former Chief Executive Officer, Albert Weber, our former Chief Financial Officer, and Johannes Bacher, our former Chief Operating Officer. This table below provides disclosure, for the years ended December 31, 2023 and 2022 for our named executive officers. In connection with the transactions contemplated by the March 2024 Private Placement, in March 2024, each of Messrs. Schacht, Weber and Bacher resigned as officers of the Company, and Mr. Lazar was appointed as our Chief Executive Officer.

Named Executive Officer and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards (1) (\$)	Option Awards (1) (\$)	Non-Equity Incentive Plan Compensation	All Other Compensation (\$)	Total (\$)
						(2)(3) (\$)		
Oliver Schacht, Ph.D. Chief Executive Officer	2023	\$ 353,484	\$ -	\$ 11,000	\$ -	\$ -	\$ -	\$ 364,484
	2022	\$ 408,000	\$ -	\$ 60,750	\$ 52,047	\$ -	\$ -	\$ 520,797
Albert Weber Chief Financial Officer	2023	\$ 244,200	\$ -	\$ 11,000	\$ -	\$ -	\$ 15,900 ⁽⁴⁾	\$ 271,100
	2022	\$ 300,000	\$ -	\$ -	\$ 195,892	\$ -	\$ 17,500 ⁽⁴⁾	\$ 513,392
Johannes Bacher Chief Operating Officer	2023	\$ 244,200	\$ -	\$ 11,000	\$ -	\$ -	\$ -	\$ 255,200
	2022	\$ 300,000	\$ -	\$ 36,450	\$ 31,228	\$ -	\$ -	\$ 367,678

- (1) The “Stock Awards” column reflects the grant date fair value for all restricted stock units awarded under the Amended and Restated 2015 Incentive Plan (the “Plan”) during 2023 and 2022, respectively. The “Option Awards” column reflects the grant date fair value for all stock option awards granted under the 2015 and 2022 Incentive Plans during 2023 and 2022, respectively. These amounts are determined in accordance with FASB Accounting Standards Codification 718 (ASC 718), without regard to any estimate of forfeiture for service vesting. Assumptions used in the calculation of the amounts in these columns for 2023 and 2022 are will be included in a footnote to the Company’s condensed consolidated audited financial statements for the year ended December 31, 2023 and 2022.
- (2) Represents annual incentive bonuses paid under an annual performance-based cash incentive plan. Corporate performance goals are established by the Compensation Committee for each year. The incentive bonuses are determined by the Compensation Committee based on the achievement of corporate performance goals. In lieu of cash incentive bonuses, Mr. Schacht and Mr. Bacher agreed to receive the value of their approved 2021 bonuses in the form of 1,247 and 644 restricted stock units, respectively, which were granted on March 31, 2022, with a value of \$150.00 per share, the closing price of the Company’s common stock on March 31, 2022. The restricted stock units vested completely on the one-year anniversary of the grant.
- (3) The named executive officers were eligible to receive performance-based cash bonuses for the fiscal year ended December 31, 2023 and 2022. The Compensation Committee determined not to grant any such bonuses to the named executed officers for the fiscal years ended December 31, 2023 and 2022.
- (4) Mr. Weber’s “All Other Compensation” for 2022 and 2023 represents reimbursement for commuting expenses incurred by Mr. Weber in 2022 and 2023, respectively, for travel to the Company’s offices in Germany.

Agreements with Our Named Executive Officers

Prior to the initial closing of the March 2024 Private Placement in March 2024, the Company was party to an Executive Employment Agreement with Oliver Schacht, Ph.D., the Company's Chief Executive Officer. Mr. Schacht's employment agreement provided that Mr. Schacht would receive an annual base salary of \$408,000 per year and will be eligible to receive an annual bonus of up to \$285,600, or seventy percent (70%) of the base salary. The annual bonus opportunity was based on key performance metrics established by the Board of the Company. Mr. Schacht was also entitled to participate in the Company's standard equity incentive and benefits plans. In connection with certain cash management initiatives, the Company temporarily reduced Mr. Schacht's compensation under his employment agreement to \$244,800 in September 2023, which was subsequently increased to \$300,000 in January 2024.

In connection with the transactions contemplated by the March 2024 Private Placement, Mr. Schacht resigned at the Initial Closing, and the Company and Mr. Schacht entered into a new employment agreement that superseded his existing employment agreement and pursuant to which Mr. Schacht would continue as an employee for a transition period.

Prior to January 2024, the Company's subsidiary, Curetis GmbH, was party to employment agreements with each of Mr. Bacher and Mr. Weber. Mr. Bacher's employment agreement provided that Mr. Bacher would receive a base salary of \$300,000 per year and would be eligible to receive an annual bonus of up to forty-five percent (45%) of the base salary. The annual bonus opportunity was based on key performance metrics established by the Board and the Compensation Committee. Mr. Bacher was also entitled to participate in the Company's 2015 Equity Incentive Plan. In connection with certain cash management initiatives, the Company temporarily reduced Mr. Bacher's compensation under his employment agreement to \$180,000 in September 2023.

Mr. Weber's employment agreement provided that Mr. Weber would receive a base salary of \$300,000 per year and would be eligible to receive an annual bonus of up to forty-five percent (45%) of the base salary. The annual bonus opportunity was based on key performance metrics established by the Board and the Compensation Committee. Mr. Weber was also entitled to participate in the Company's 2015 Equity Incentive Plan. In connection with certain cash management initiatives, the Company temporarily reduced Mr. Weber's compensation under his employment agreement to \$180,000 in September 2023.

Following January 2024, as a result of Curetis GmbH's, the Company's subsidiary, insolvency proceedings, the Company entered into consulting agreements with each of Mr. Bacher and Mr. Weber to ensure that they would continue to be compensated at the same rates as under their employment agreements while they continue to serve as officers of the Company. Following the initial closing of the March 2024 Private Placement, Mr. Bacher and Mr. Weber resigned as officers of the Company, and their consulting agreements terminated in April 2024.

In April 2024, in connection with Mr. Lazar's appointment as our Chief Executive Officer, the Company entered into an employment agreement with Mr. Lazar. Pursuant to the employment agreement, the Company engaged Mr. Lazar to act as its Chief Executive Officer ("CEO") and, effective April 1, 2024, is paid a base salary of \$406,000 per annum, which shall be deferred and accrued until the Company's compensation committee determines that the Company is sufficiently liquid to pay the accrued salary. Under the employment agreement, Mr. Lazar will also be eligible for annual bonuses of up to 100% of his then current base salary (payable in cash or restricted stock) and an annual grant of incentive equity awards in an amount equal to 100% of his then current base salary. The employment agreement has a three (3) year term. Mr. Lazar is also entitled to a bonus upon a change of control of the Company payable in a lump-sum amount equal to three percent (3%) of the increased valuation of the Company resulting from the change of control. Such bonus is payable in cash, restricted stock or a combination thereof.

Outstanding Equity Awards at Fiscal Year-End Table

The following table shows the outstanding equity awards held by the named executive officers as of December 31, 2023.

Name	OPTION AWARDS					STOCK AWARDS				
	Number of Securities Underlying Unexercised Options Exercisable	Number of Securities Underlying Unexercised Options Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Options	Option Exercise Price (\$)	Option Expiration Date	Number of Shares of Stock that have not Vested	Market Value of Shares of Stock that have not Vested (\$ (3))	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights that have not Vested	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or other Rights that have not Vested (\$ (3))	
Oliver Schacht ⁽⁴⁾	48	-	-	14,736.00	6/16/2026	187	785.40	-	-	
	28	-	-	1,712.00	6/16/2026	1,000	4,200.00	-	-	
	2,559 ⁽¹⁾	591 ⁽¹⁾	-	424.00	9/29/2030	-	-	-	-	
	388	-	-	382.00	3/02/2031	-	-	-	-	
	188 ⁽²⁾	187 ⁽²⁾	-	162.00	3/01/2032	-	-	-	-	
Johannes Bacher ⁽⁵⁾	48	-	-	14,736.00	6/16/2026	112	470.40	-	-	
	20	-	-	1,712.00	6/16/2026	1,000	4,200.00	-	-	
	853 ⁽¹⁾	197 ⁽¹⁾	-	424.00	9/29/2030	-	-	-	-	
	213	-	-	382.00	3/02/2031	-	-	-	-	
	113 ⁽²⁾	112 ⁽²⁾	-	162.00	3/01/2032	-	-	-	-	
Albert Weber ⁽⁶⁾	459 ⁽¹⁾	591 ⁽¹⁾	-	216.00	1/02/2032	1,000	4,200.00	-	-	

(1) The vesting schedule is vesting over four years with twenty-five percent (25%) vesting on the first anniversary of the date of grant and six and one-quarter percent (6.25%) vesting on the last day of each fiscal quarter over the next three years.

(2) The vesting schedule is vesting over two years with fifty percent (50%) vesting on the first anniversary of the date of grant and fifty percent (50%) vesting on the second anniversary of the date of grant.

(3) Calculated based on the closing price of the common stock on the Nasdaq Capital Market on December 29, 2023 (the last trading day of 2023) of \$4.20 per share.

- (4) Mr. Schacht's awards on July 1, 2016 (48 shares) and July 1, 2019 (28 shares) were Curetis ESOP shares assumed by OpGen as part of OpGen's business combination with Curetis N.V. in April 2020. These awards vested over three years with thirty three percent (33%) vesting on the first anniversary of the date of grant and one twenty-fourth (4.2%) vesting monthly over the following two years. Mr. Schacht was granted stock option awards on September 30, 2020 (3,150) which vest over four years with twenty-five percent (25%) vesting on the first anniversary of the date of grant and six and one-quarter percent (6.25%) vesting on the quarterly anniversary of the first vesting date thereafter over the next three years. Mr. Schacht was granted stock option awards on March 3, 2021 (388) which vest over two years with fifty percent (50%) vesting annually. Mr. Schacht was granted restricted stock units on March 3, 2021 (388) which vest over two years with fifty percent (50%) vesting annually. Mr. Schacht was granted stock option awards on March 2, 2022 (375) which vest over two years with fifty percent (50%) vesting annually. Mr. Schacht was granted restricted stock units on March 2, 2022 (375) which vest over two years with fifty percent (50%) vesting annually, though the second fifty percent (50%) is not exercisable until December 31, 2024. Mr. Schacht was granted restricted stock units on March 2, 2023 (1,000) which vest over two years with fifty percent (50%) vesting annually, though the first fifty percent (50%) is not exercisable until December 31, 2024. Mr. Schacht received his 2021 non-equity incentive cash performance bonus in the form of restricted stock units on March 31, 2022 (1,247), which vested on March 31, 2023.
- (5) Mr. Bacher's awards on July 1, 2016 (48 shares) and July 1, 2019 (20 shares) were Curetis ESOP shares assumed by OpGen as part of OpGen's business combination with Curetis N.V. in April 2020. These awards vested over three years with thirty three percent (33%) vesting on the first anniversary of the date of grant and one twenty-fourth percent (4.2%) vesting monthly over the following two years. Mr. Bacher was granted stock option awards on September 30, 2020 (1,050) which vest over four years with twenty-five percent (25%) vesting on the first anniversary of the date of grant and six and one-quarter percent (6.25%) vesting on the quarterly anniversary of the first vesting date thereafter over the next three years. Mr. Bacher was granted stock option awards on March 3, 2021 (213), which vest over two years with fifty percent (50%) vesting annually. Mr. Bacher was granted restricted stock units on March 3, 2021 (213) which vest over two years with fifty percent (50%) vesting annually. Mr. Bacher was granted stock option awards on March 2, 2022 (225) which vest over two years with fifty percent (50%) vesting annually. Mr. Bacher was granted restricted stock units on March 2, 2022 (225) which vest over two years with fifty percent (50%) vesting annually, though the second fifty percent (50%) is not exercisable until December 31, 2024. Mr. Bacher was granted restricted stock units on March 2, 2023 (1,000) which vest over two years with fifty percent (50%) vesting annually, though the first fifty percent (50%) is not exercisable until December 31, 2024. Mr. Bacher received his 2021 bonus in the form of restricted stock units on March 31, 2022 (644), which vested on March 31, 2023.
- (6) Mr. Weber was granted stock option awards on January 3, 2022 (1,050), which vest over four years with twenty-five percent (25%) vesting on the first anniversary of the date of grant and six and one-quarter percent (6.25%) vesting on the last day of each fiscal quarter over the next three years. Mr. Weber was granted restricted stock units on March 2, 2023 (1,000) which vest over two years with fifty percent (50%) vesting annually, though the first fifty percent (50%) is not exercisable until December 31, 2024.

Director Compensation

Prior to the initial closing of the March 2024 Private Placement, our Board of Directors adopted a non-employee director compensation plan providing for certain cash and equity compensation to be provided to the Company's non-employee directors for their service on the Board and its committees. Pursuant to such plan, each non-employee director received an annual cash retainer of \$25,000, or, with respect to the Chairman of the Board, \$75,000, plus additional annual cash compensation for the Board and committee chairs (\$15,000 for Audit Committee and \$12,000 for Compensation Committee) and for committee members (\$7,000 for Audit Committee and \$6,000 for Compensation Committee). In addition, new non-employee directors received an initial equity grant and each non-employee director received an annual equity grant. Under such program, each non-employee director received an initial grant of between 1,500 and 3,000 restricted stock units and an annual grant to non-employee directors of 1,500 restricted stock units. All such awards are made under the Company's 2015 Equity Incentive Plan. For a portion of 2023, consistent with the Company's cash management efforts, the Company reduced its director compensation plan by forty percent (40%). Mr. Schacht did not receive additional compensation for his service on the Board. See "Summary Compensation Table" for his 2023 compensation.

Following the initial closing of the March 2024 Private Placement, the Company entered into director agreements with each of Messrs. Ben-Tzvi, Lazar, McMurdo and Natan. Pursuant to the director agreements, each director will be entitled to receive from the Company a cash fee of \$12,500 per quarter (pro-rated for any partial quarter) plus a one-time fee of \$50,000 upon signing their director agreements. Such cash fees will accrue until such time as the Company raises sufficient capital to pay the accrued but unpaid cash fees or the director elects to convert such unpaid fees into shares of common stock of the Company. The cash director fee would convert at a rate of \$4.00 per share for each \$1.00 of accrued and unpaid fee that is converted. In addition to the quarterly cash fee, under the director agreements, each director was granted 100,000 shares of restricted common stock.

Compensation for the non-employee directors for the year ended December 31, 2023 was:

Name	Fees Earned or Paid in		All Other Compensation (\$)	Total (\$)
	Cash (\$)	Stock Awards (\$) (1)		
Mario Crovetto ⁽²⁾	\$ 39,433	\$ 932	\$ -	\$ 40,365
R. Donald Elsey ⁽²⁾	\$ 34,667	\$ 932	\$ -	\$ 35,599
Dr. Prabhavathi Fernandes ⁽²⁾	\$ 32,933	\$ 932	\$ -	\$ 33,865
William E. Rhodes, III ⁽²⁾	\$ 78,433	\$ 932	\$ -	\$ 79,365
Yvonne Schlaeppli ⁽²⁾	\$ 30,767	\$ 932	\$ -	\$ 31,699

(1) The "Stock Awards" column reflects the grant date fair value for all restricted stock awards granted under the 2015 Stock Options Plan during 2023. These amounts are determined in accordance with FASB Accounting Standards Codification 718 (ASC 718), without regard to any estimate of forfeiture for service vesting.

(2) As of December 31, 2023, the non-employee directors held the following vested stock options: Rhodes (267), Crovetto (267), Elsey (250), Fernandes (267) and Schlaeppli (0).

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The number of shares of the Company's Common Stock outstanding at the close of business on April 15, 2024 was 1,262,491 shares. In addition, as of April 15, 2024, there were 250 shares of Series D Preferred Stock outstanding and 400,000 shares of Series E Preferred Stock outstanding. Each share of Series D Preferred Stock is convertible into 244.40 shares of Common Stock, and each share of Series E Preferred Stock is convertible into 2.40 shares of Common Stock, in each case, subject to applicable ownership limitations that restrict a holder's ability to convert in excess of designated percentages. The following table sets forth the beneficial ownership of the Company's common stock, as of April 15, 2024, by each Company director and executive officer, and by all directors and executive officers as a group. Beneficial ownership is determined in accordance with Rule 13d-3 under the Exchange Act. In computing the number of shares beneficially owned by a person or a group and the percentage ownership of that person or group, shares of our common stock subject to options and warrants currently exercisable or exercisable within 60 days after April 15, 2024 are deemed outstanding, but are not deemed outstanding for the purpose of computing the percentage ownership of any other person. To the knowledge of the directors and executive officers of the Company, as of April 15, 2024, there are no persons and/or companies who or which beneficially own, directly or indirectly, shares representing more than 5% of the voting rights attached to all outstanding shares of the Company, other than as set forth below. Unless otherwise indicated, the address of each beneficial owner listed below is c/o OpGen, Inc., 9717 Key West Ave, Suite 100, Rockville, MD 20850.

Name and Address of Beneficial Owner	Number of Shares of common stock	Percentage Beneficially Owned
5% Stockholders		
David Lazar ⁽¹⁾	970,000	42.48%
Directors and Officers		
David Lazar ⁽¹⁾	970,000	42.48%
Avraham Ben-Tzvi ⁽²⁾	10,000	*
Matthew McMurdo ⁽³⁾	10,000	*
David Natan ⁽⁴⁾	10,000	*
All directors and officers as a group (4 persons)	1,000,000	43.80%

* Less than one percent of shares outstanding.

- (1) Consists of: (i) 400,000 shares of Series E Preferred Stock; and (ii) 10,000 shares of restricted stock that were issued upon Mr. Lazar's appointment to the Board. Each share of Series E Preferred Stock converts into 2.40 shares of Common Stock; provided, that Mr. Lazar may not vote shares of Series E Preferred Stock representing, or convert shares of Series E Preferred Stock that would result in, Mr. Lazar or his transferees voting or holding, in excess of the Ownership Limitation.
- (2) Consists of 10,000 shares of restricted stock that were issued upon Mr. Ben-Tzvi's appointment to the Board.
- (3) Consists of 10,000 shares of restricted stock that were issued upon Mr. McMurdo's appointment to the Board.
- (4) Consists of 10,000 shares of restricted stock that were issued upon Mr. Natan's appointment to the Board.

Change of Control

As disclosed above, in March 2024, the Company entered into the March 2024 Purchase Agreement with Mr. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Preferred Stock to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million. On March 25, 2024, Mr. Lazar paid \$200,000 at the initial closing of the transactions under the March 2024 Purchase Agreement in exchange for 200,000 shares of Series E Preferred Stock. Mr. Lazar subsequently paid \$200,000 and \$150,000 on April 5, 2024 and April 23, 2024, respectively, in exchange for an additional 350,000 shares of Series E Preferred Stock. Mr. Lazar is expected to fund the remaining \$2.45 million in early June 2024, at which time he will receive the remaining 2.45 million shares of Series E Preferred Stock for an aggregate of 3.0 million shares of Series E Preferred Stock. Each share of Series E Preferred Stock is convertible in 2.4 shares of common stock. Accordingly, following the final closing, upon conversion of all his shares of Series E Preferred Stock, Mr. Lazar will be entitled to receive 7.2 million shares of common stock, which would represent approximately 85% of the total outstanding shares of common stock of the Company.

Equity Compensation Plan Information

The following table shows, as of December 31, 2023, the Company's equity compensation plans under which the Company's equity securities are authorized for issuance:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (1)	Weighted average exercise price of outstanding options, warrants and rights (2)	Number of securities remaining available for future issuance (3)
Equity compensation plans approved by security holders	1,112,417	\$ 20.97	11,852
Equity compensation plans not approved by security holders	1,050	216.00	-
Total	1,113,467	\$ 21.15	11,852

(1) Includes 8,326 outstanding restricted stock units for which there is no exercise price.

(2) Includes the weighted-average exercise price of stock options and warrants only.

(3) Does not include 48,057 shares of common stock that became available under the 2015 Plan on January 1, 2024 as a result of the evergreen provision of the plan.

2008 Plan

Our 2008 Stock Option and Restricted Stock Plan, as amended, or 2008 Plan, was approved by our Board and stockholders in April 2008; subsequent increases in the number of shares available for awards under the 2008 Plan were approved by our Board and stockholders in January 2009, February 2011, March 2012, December 2012, April 2014 and October 2014. As of December 31, 2022, a total of 290 shares of our common stock are reserved for issuance under the 2008 Plan.

The 2008 Plan provided for the grant of stock options and restricted stock awards. The Compensation Committee determined the time or times at which a stock option will vest or become exercisable and the terms on which such option will remain exercisable. The Compensation Committee determined the conditions and restrictions and purchase price, if any, for grants or sales or restricted stock to plan participants. The Compensation Committee may also at any time accelerate the vesting or exercisability of an award.

Under the 2008 Plan, in the event of any dissolution or liquidation of the Company, the sale of all or substantially all of the Company's assets, or the merger or consolidation of the Company where the Company is not the surviving entity or which results in the acquisition of all or substantially all of the Company's then outstanding common stock, the Compensation Committee may: (a) provide for the assumption or substitution of some or all of the outstanding awards; (b) provide for a cash-out payment; or (c) in the case there is no assumption, substitution or cash-out, provide that all awards not exercised or awards providing for the future delivery of common stock will terminate upon the closing of the transaction.

Following our 2015 Equity Incentive Plan, or 2015 Plan, becoming effective, no further grants have been or will be made under our 2008 Plan.

2015 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 grants of restricted stock, restricted stock units, stock appreciation rights, dividend equivalents and stock payments to employees, non-employee directors and consultants. The 2015 Plan was amended by the Compensation Committee in February 2017 to revise the provisions with respect to net settlement of awards in response to change in regulations, and to establish standard periods for exercise of vested stock options following termination of service events.

Administration. The Compensation Committee administers the 2015 Plan, including the determination of the recipient of an award, the number of shares or amount of cash subject to each award, whether an option is to be classified as an incentive stock option or non-qualified stock option, and the terms and conditions of each award, including the exercise and purchase prices and the vesting and duration of the award. Our Board may appoint one or more separate committees of our Board, each consisting of one or more members of our Board, to administer our 2015 Plan with respect to employees who are not subject to Section 16 of the Exchange Act. Subject to applicable law, our Board may also authorize one or more officers to designate employees, other than employees who are subject to Section 16 of the Exchange Act, to receive awards under our 2015 Plan and/or determine the number of such awards to be received by such employees subject to limits specified by our Board.

Authorized shares. Under our 2015 Plan, the aggregate number of shares of our common stock authorized for issuance may not exceed (1) 271 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 the number of shares subject to vesting restrictions under the 2008 Plan on 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 are 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 (i) 4% of the outstanding shares of our common stock on the last day of the immediately preceding fiscal year, and (ii) another lesser amount determined by our Board. As of December 31, 2023, 11,852 shares remain available for future awards under the 2015 Plan.

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. No more than 800 shares may be delivered upon the exercise of incentive stock options granted under the 2015 Plan.

Types of Awards

Stock options. A stock option is the right to purchase a certain number of shares of stock, at a certain exercise price, in the future. Under our 2015 Plan, incentive stock options and non-qualified options must be granted with an exercise price of at least 100% of the fair market value of our common stock on the date of grant. Incentive stock options granted to any holder of more than 10% of our voting shares must have an exercise price of at least 110% of the fair market value of our common stock on the date of grant. The stock option agreement specifies the date when all or any installment of the option is to become exercisable. 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 optionee, (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.

Restricted stock. Restricted stock is a share award that may be subject to vesting conditioned upon continued service, the achievement of performance objectives or the satisfaction of any other condition as specified in a restricted stock agreement. Participants who are granted restricted stock awards generally have all of the rights of a stockholder with respect to such stock, other than the right to transfer such stock prior to vesting.

Restricted stock units. Restricted stock units give recipients the right to acquire a specified number of shares of stock at a future date upon the satisfaction of certain conditions, including any vesting arrangement, established by our Compensation Committee and as set forth in a restricted stock unit agreement. Unlike restricted stock, the stock underlying restricted stock units will not be issued until the restricted stock units have vested and are settled, and recipients of restricted stock units generally will have no voting or dividend rights prior to the time the vesting conditions are satisfied and the award is settled.

Dividend equivalents. At our Compensation Committee’s discretion, performance-based restricted stock or restricted stock unit awards may provide for the right to dividend equivalents. Subject to the terms of the 2015 Plan, our Compensation Committee will determine the terms and conditions of any stock unit award, which will be set forth in a stock unit agreement to be entered into between us and each recipient.

Stock appreciation rights. Stock appreciation rights typically will provide for payments to the recipient based upon increases in the price of our common stock over the exercise price of the stock appreciation right. The exercise price of a stock appreciation right will be determined by our Compensation Committee, which shall not be less than the fair market value of our common stock on the date of grant. Our Compensation Committee may elect to pay stock appreciation rights in cash or in common stock or in a combination of cash and common stock.

Performance-based awards. Awards under our 2015 Plan may be made subject to the attainment of performance goals.

Other Plan Features

No Transfer. Unless the agreement evidencing an award expressly provides otherwise, no award granted under the 2015 Plan may be transferred in any manner (prior to the vesting and lapse of any and all restrictions applicable to shares issued under such award), 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.

Adjustments. In the event of a recapitalization, stock split or similar capital transaction, our Compensation Committee will make appropriate and equitable adjustments to the number of shares reserved for issuance under the 2015 Plan, the limitations regarding the total number of shares underlying awards given to an individual participant in any calendar year, 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 option or stock appreciation right.

Change in Control. If we are involved in a merger or other reorganization, 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 us if we are 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.

Termination or Amendment. Our Board may amend or terminate the 2015 Plan at any time, subject to stockholder approval where required by applicable law. Any amendment or termination may not materially impair the rights of holders of outstanding awards without their consent. No incentive stock option may be granted after the tenth anniversary of the date the 2015 Plan was adopted by our Board.

Effective Date. The 2015 Plan was initially adopted by our Board and subsequently approved by our stockholders in April 2015. The 2015 Plan became effective on May 4, 2015. Awards may be granted under the 2015 Plan until April 1, 2025.

Amended and Restated Stock Option Plan

In connection with the consummation of the Company's business combination transaction with Curetis N.V., on April 1, 2020, the Company assumed and adopted the 2016 Stock Option Plan, as amended, of Curetis N.V., the former parent company of Curetis GmbH. The Company assumed the 2016 Stock Option Plan as the Amended and Restated Stock Option Plan of the Company (the "A&R Plan"). In connection with the foregoing, the Company assumed all awards thereunder that were outstanding as of April 1, 2020 and converted such awards into options to purchase shares of common stock of the Company pursuant to the terms of the applicable award.

The A&R Plan provides for the grant of stock options, which are the right to purchase a certain number of shares of stock, at a certain exercise price, in the future. The stock option agreement specifies the date when all or any installment of the option is to become exercisable. The Compensation Committee administers the A&R Plan, including taking all actions required or advisable for the administration and proper implementation of the A&R Plan; interpreting the A&R Plan unless specifically provided otherwise in the A&R Plan; and making all other decisions necessary or advisable to enable the administration and proper implementation of the A&R Plan. Under the A&R Plan, the aggregate number of shares of our common stock authorized for issuance shall not exceed 677. Following the assumption of the A&R Plan, no further grants have been or will be made under the A&R Plan.

Under the A&R Plan, in the event of a "change in control", as defined in the A&R Plan, all the outstanding options will vest fully at the date of the change in control. However, in the event of a change in control due to a sale, merger, sale of substantially all of the assets or consolidation of the Company, all the outstanding options will be addressed in the applicable acquisition agreement. Such agreement may at the sole discretion of the Compensation Committee and without the approval or the advice of the optionees being required, provide the following: (1) the continuation of the outstanding options by the Company (if the Company is the company that continues to exist); (2) the take-over of the A&R Plan and the outstanding options by the acquiring company or the company that continues to exist, or its parent company; (3) the replacement of the outstanding options by new option rights with conditions that are equivalent to the conditions of the outstanding options by the acquiring company or the company that continues to exist, or its parent company; or (4) the cancellation of each outstanding option in return for payment to the optionee of an amount per option equal to the difference between the fair market value of the common stock of the Company at the time of the closing under the purchase, merger, or consolidation agreement less the option price.

Except as expressly provided for under the A&R Plan, the awards granted under the A&R Plan may not be sold, assigned, transferred, pledged, mortgaged or otherwise disposed of. The Compensation Committee and the Board may alter, amend or terminate the Plan or any part thereof at any time and from time to time, provided, however, that no such alteration or amendment shall adversely affect the rights relating to any options granted or shares acquired upon exercise of options prior to that time.

2020 Stock Options Plan

The 2020 Stock Options Plan was approved by stockholders at the 2020 Annual Meeting of Stockholders and were granted on the date thereof. The 2020 Stock Options were granted with an exercise price equal to the fair market value of the common stock on the date of grant, or \$424.00. No shares remain available for future awards under the 2020 Stock Options Plan. The following sets forth the principal terms of, and constitutes, the 2020 Stock Options Plan.

Administration. The Compensation Committee will administer the 2020 Stock Options Plan, including, whether, for U.S. taxpayer employees, an option is to be classified as an incentive stock option or non-qualified stock option.

Authorized shares. The aggregate number of shares of our common stock authorized for issuance under the 2020 Stock Options Plan is 6,500 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 2,500 shares may be delivered upon the exercise of incentive stock options granted under the 2020 Stock Options Plan.

Stock options. A stock option is the right to purchase a certain number of shares of stock, at a certain exercise price, in the future. Under our 2020 Stock Options Plan, incentive stock options and non-qualified options must be granted with an exercise price of at least 100% of the fair market value of our common stock on the date of grant. Incentive stock options granted to any holder of more than 10% of our voting shares must have an exercise price of at least 110% of the fair market value of our common stock on the date of grant. The stock option agreement specifies the date when all or any installment of the option is to become exercisable. 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 optionee, (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.

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.

Adjustments. In the event of a recapitalization, stock split or similar capital transaction, the Compensation Committee will make appropriate and equitable adjustments to the number of shares reserved for issuance under the 2020 Stock 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.

Change in Control. If we are involved in a merger or other reorganization, 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 us if we are 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.

Termination or Amendment. The 2020 Stock Options Plan can be terminated by the Board of Directors or Compensation 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.

Effective Date. The 2020 Stock Options Plan became effective upon approval by the stockholders at the 2020 Annual Meeting of Stockholders. The 2020 Stock Options Plan will terminate upon the expiration or termination of the last outstanding award.

Awards to Non-Employee Directors. The 2020 Stock Options granted to the members of the Board 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 is 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.

Awards to Executive Officers. The 2020 Stock Options granted to the executive officers 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 executive officer continues providing services to the Company on each such vesting date. The term of such stock options is ten (10) years after the date of grant; provided, however, that any unvested stock options will expire if the executive officer ceases providing services to the Company, and a departing officer will have ninety (90) days to exercise vested stock options after the executive officer ceases providing services to the Company.

2022 Inducement Plan

In connection with the appointment of the Company's former CFO, Mr. Weber, OpGen granted him an inducement grant of stock options to purchase an aggregate of 1,050 shares of OpGen's common stock with a grant date of January 3, 2022. The equity award was granted pursuant to Nasdaq Listing Rule 5635(c)(4) inducement grant exception as a component of Mr. Weber's employment compensation and was granted as an inducement material to his acceptance of employment with OpGen. The options have an exercise price of \$216.00. The option award vests over a four-year period with 25% vesting on the first anniversary of the date of grant, January 3, 2023, and in equal quarterly installments on each quarterly anniversary thereafter. The award is subject to Mr. Weber's continued service with OpGen through the applicable vesting dates.

Item 13. Certain Relationships and Related Person Transactions, and Director Independence

Certain Relationships and Related Person Transactions

Other than compensation for our directors and named executive officers that are described elsewhere in this Annual Report and for the transactions described below, there were and are no transactions or series of similar transactions, during or after our last two fiscal years, to which we were a party or will be a party, in which: (i) the amounts involved exceeded or will exceed the lesser of \$120,000 or one percent of the average of the Company's total assets at year-end for the past two completed fiscal years; and (ii) any of our directors, executive officers or holders of more than 5% of our capital stock, or any member of the immediate family of the foregoing persons, had or will have a direct or indirect material interest.

In March 2024, we entered into a securities purchase agreement with David E. Lazar, a private investor, pursuant to which he agreed to purchase 3,000,000 shares of Series E Convertible Preferred Stock (the "Series E Preferred Stock") of the Company at a price of \$1.00 per share for aggregate gross proceeds of \$3,000,000 (the "March 2024 Private Placement"). The final closing and aggregate purchase price is expected to be paid in early June 2024, upon consummation of certain conditions. Each share of Series E Preferred Stock is convertible into 2.40 shares of common stock (as adjusted for the 2024 Reverse Stock Split). Upon conversion of all of the shares of Series E Preferred Stock, the Series E Preferred Stock would represent approximately 85% of the Company's total outstanding shares of common stock as of May 15, 2024. Upon the initial closing of the transaction, Mr. Lazar was appointed as our Chief Executive Officer and to our Board. Mr. Lazar's compensation for service as our Chief Executive Officer is described in Item 11 of this Annual Report on Form 10-K, which information is incorporated herein by reference.

Policies for Approval of Related Person Transactions

We have adopted a written policy that transactions with directors, officers, and holders of 5% or more of our voting securities and their affiliates, each, a related person, must be approved by our Audit Committee.

Director Independence

Information concerning the independence of the members of our Board of Directors is described in Item 11 of this Annual Report on Form 10-K and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

Independent Registered Public Accounting Firm

Our Audit Committee previously appointed UHY LLP as the Company's independent registered public accounting firm for the fiscal year ended December 31, 2023 and related interim periods after CohnReznick LLP, the Company's independent registered public accounting firm for the fiscal year ended December 31, 2022, notified the Company that CohnReznick would decline to stand for re-appointment after completion of the audit for the fiscal year ended December 31, 2022. CohnReznick had served as the Company's independent registered public accounting firm since 2014. In light of such determination by CohnReznick, the Company conducted a competitive selection process where the Audit Committee invited several public accounting firms to participate. Following the completion of such process, the Audit Committee selected UHY in March 2023 to serve as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2023 and related interim periods. As previously disclosed in April 2024, UHY notified the Company that it would resign as the Company's independent registered public accounting firm effective as of April 22, 2024.

In light of such resignation, on April 23, 2024, the Board appointed and engaged Beckles & Co., Inc. ("Beckles") to serve as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2023 and upcoming interim period.

During the period of UHY's engagement, which commenced in March 2023, UHY did not provide any report on the financial statements of the Company. During the fiscal years ended December 31, 2023 and 2022 and the subsequent interim period through April 22, 2024, there were no: (1) disagreements with UHY on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedures, which disagreements, if not resolved to their satisfaction, would have caused them to make reference in connection with their opinion to the subject matter of the disagreement, or (2) reportable events under Item 304(a)(1)(v) of Regulation S-K. During the Company's fiscal years ended December 31, 2022 and December 31, 2021 and the subsequent interim period through January 18, 2023, there were no: (i) disagreements with CohnReznick on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedures, which disagreement, if not resolved to their satisfaction, would have caused them to make reference to the subject matter of the disagreement in their reports on the Company's consolidated financial statements, or (ii) reportable events under Item 304(a)(1)(v) of Regulation S-K. CohnReznick's audit report on the Company's consolidated financial statements as of and for the fiscal years ended December 31, 2022 and 2021 did not contain an adverse opinion or a disclaimer of opinion, and was not qualified or modified as to uncertainty, audit scope or accounting principles, except that the reports contained an explanatory paragraph stating that there was substantial doubt about the Company's ability to continue as a going concern.

Audit Fees

The following table presents the aggregate fees billed to the Company by UHY and CohnReznick for its audits of the Company's consolidated annual financial statements and other services for the years ended December 31, 2023 and 2022, respectively.

	<u>2023</u>	<u>2022</u>
Audit Fees ⁽¹⁾	\$ 729,104	\$ 603,439
Audit Related Fees	-	-
Tax Fees	-	-
All Other Fees	-	-
Total Fees	<u>\$ 729,104</u>	<u>\$ 603,439</u>

(1) Audit Fees consist of fees billed for professional services performed by UHY and CohnReznick for the audit of our consolidated annual financial statements for the years ended December 31, 2023 and 2022, respectively, the review of our quarterly financial statements on Form 10-Q, filing of Registration Statements on Forms S-1, S-3, and S-8, and associated Consent Letters and related services that are normally provided in connection with statutory and regulatory filings or engagements.

Policy on Audit Committee Pre-Approval

Our Audit Committee has a policy in place that requires its review and pre-approval of all audit and permissible non-audit services provided by our independent registered public accounting firm. The services requiring pre-approval by the audit committee may include audit services, audit-related services, tax services and other services. All such audit and permissible non-audit services were pre-approved in accordance with this policy during the fiscal year ended December 31, 2023. The Audit Committee considers whether the provision of each non-audit service is compatible with maintaining the independence of our independent registered public accounting firm. The responsibility to pre-approve audit and non-audit services may be delegated by the Audit Committee to one or more members of the Audit Committee; provided that any decisions made by such member or members must be presented to the full Audit Committee at its next scheduled meeting.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) Financial Statements.

The consolidated balance sheets of the Company as of December 31, 2023 and 2022, the related consolidated statements of operations and comprehensive loss, stockholders' equity and cash flows for the years then ended, the related notes to the consolidated financial statements and the reports of Beckles & Co., Inc., independent registered public accounting firm, and CohnReznick LLP, independent registered public accounting firm, are filed herewith following the signature page.

(a)(2) Financial Statement Schedules.

Not applicable.

(a)(3) Exhibits: See below

(b) Exhibits

EXHIBIT INDEX

Exhibit Number	Description
3.1.1	<u>Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 of Current Report on Form 8-K, File No. 001-37367, filed on May 13, 2015).</u>
3.1.2	<u>Certificate of Correction to Amended and Restated Certificate of Incorporation of the Registrant, dated June 6, 2016 (incorporated by reference to Exhibit 3.1 of Current Report on Form 8-K, filed on June 6, 2016).</u>
3.1.3	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Registrant dated and filed with the Delaware Secretary of State on January 17, 2018 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on January 17, 2018).</u>
3.1.4	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of OpGen, Inc., filed with the Secretary of the State of Delaware on August 28, 2019 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on August 28, 2019).</u>
3.1.5	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of OpGen, Inc., filed with the Secretary of the State of Delaware on December 8, 2021 (incorporated by reference to Appendix A to the Registrant's definitive proxy statement filed on October 29, 2021).</u>
3.1.6	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of OpGen, Inc., filed with the Secretary of the State of Delaware on December 9, 2021 (incorporated by reference to Appendix B to the Registrant's definitive proxy statement filed on October 29, 2021).</u>
3.1.7	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of OpGen, Inc., filed with the Secretary of the State of Delaware on January 4, 2023 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on January 4, 2023).</u>
3.2	<u>Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Form S-1, File No. 333-202478, filed on March 3, 2015).</u>
3.3	<u>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).</u>
3.4	<u>Amendment to the Amended and Restated Bylaws of OpGen, Inc., dated October 15, 2021 (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed on October 15, 2021).</u>
3.5	<u>Form of Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on October 15, 2021).</u>
3.6	<u>Certificate of Designation of Preferences, Rights and Limitations of Series C Mirroring Preferred Stock (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on October 3, 2022).</u>
3.7	<u>Certificate of Designation of Preferences, Rights and Limitations of Series D Preferred Stock (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on October 11, 2023).</u>

Exhibit Number	Description
4.1	Form of Common Stock Certificate of the Registrant (incorporated by reference to Exhibit 4.1 to the Registrant's Annual Report on Form 10-K, filed on March 24, 2020).
4.2	Form of 2015 Warrant to Purchase Common Stock of the Registrant (incorporated by reference to Exhibit 4.6 of Form S-1/A, File No. 333-202478, filed on March 20, 2015).
4.3	Form of Underwriters' Warrant to Purchase Common Stock of the Registrant (incorporated by reference to Exhibit 4.2 of Current Report on Form 8-K, File No. 001-37367, filed on May 13, 2015).
4.4	Form of Warrant to Purchase Common Stock (issued to jVen Capital, LLC and Merck Global Health Innovation Fund) (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K Amendment No. 2, filed on July 10, 2017).
4.5	Form of Offered Warrant to Purchase Common Stock of the Registrant (incorporated by reference to Exhibit 4.8 of Form S-1/A, File No. 333-202478, filed on April 23, 2015).
4.6	Form of 2016 Warrant to Purchase Common Stock of the Registrant (incorporated by reference to Exhibit 4.1 of Current Report on Form 8-K, filed on May 17, 2016).
4.7	Form of Common Stock Purchase Warrant for July 2017 Public Offering (incorporated by reference to Exhibit 4.4 to the Registrant's Form S-1, Amendment No. 2, File No. 333-218392, filed on July 11, 2017).
4.8	Form of Placement Agent Warrant for July 2017 Public Offering (incorporated by reference to Exhibit 4.5 to the Registrant's Form S-1, File No. 333-218392, filed on July 11, 2017).
4.9	Form of Common Stock Purchase Warrant for February 2018 Public Offering (incorporated by reference to Exhibit 4.3 to the Registrant's Form S-1/A, File No. 333-222140, filed on January 31, 2018).
4.10	Form of Placement Agent Warrant for February 2018 Public Offering (incorporated by reference to Exhibit 4.5 to the Registrant's Form S-1/A, File No. 333-222140, filed on January 31, 2018).
4.11	Form of Underwriter's Warrant for October 2019 Public Offering (incorporated by reference to Exhibit 4.10 to the Registrant's Form S-1/A, File No. 333-233775, filed on October 11, 2019).
4.12	Form of Common Stock Purchase Warrant for October 2019 Public Offering (incorporated by reference to Exhibit 4.11 to the Registrant's Form S-1/A, File No. 333-233775, filed on October 15, 2019).
4.13	Form of Common Stock Purchase Warrant for 2020 PIPE (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on November 24, 2020).
4.14	Form of Pre-Funded Common Stock Purchase Warrant for 2020 PIPE (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K, filed on November 24, 2020).
4.15	Form of Common Stock Purchase Warrant for 2021 Offering (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K, filed on February 10, 2021).
4.16	Form of Pre-Funded Common Stock Purchase Warrant for 2021 Offering (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on February 10, 2021).

Exhibit Number	Description
4.17	Form of New Warrant (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on March 9, 2021).
4.18	Form of Common Stock Purchase Warrant for October 2021 Offering (incorporated by reference to Exhibit 4.1 to the Registrant's Form 8-K, filed on October 15, 2021).
4.19	Form of Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on October 3, 2022).
4.20	Form of Pre-Funded Common Stock Warrant (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K filed on October 3, 2022).
4.21	Form of Pre-Funded Warrant (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on January 11, 2023).
4.22	Form of Series A-1 and Series A-2 Warrants (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on January 11, 2023).
4.23	Description of the Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934 (incorporated by reference to Exhibit 4.23 on the Company's Annual Report on Form 10-K filed on March 30, 2023).
4.24	Form of Pre-funded Warrant (incorporated by reference to Exhibit 4.20 to the Company's Registration Statement on Form S-1/A (File No. 333-268648) filed on January 5, 2023).
4.25	Form of Series A-1 and Series A-2 Warrants (incorporated by reference to Exhibit 4.21 to the Company's Registration Statement on Form S-1/A (File No. 333-268648) filed on January 5, 2023).
4.26	Form of Pre-funded Warrant (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on May 4, 2023).
4.27	Form of Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on May 4, 2023).
4.28	Form of Inducement Warrant (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on October 16, 2023).
10.1	Form of Indemnification Agreement between the Registrant and each of its directors and executive officers (incorporated by reference to Exhibit 10.2 of Form S-1, File No. 333-202478, filed on March 3, 2015).
10.2 !	2015 Equity Incentive Plan, as amended and restated on March 29, 2018 (incorporated by reference to Exhibit 10.4 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2017, filed on March 29, 2018).
10.3 !	Amended and Restated Stock Option Plan, as assumed and adopted April 1, 2020 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K dated April 2, 2020).
10.4 !	Non-Employee Director Compensation Policy (incorporated by reference to Exhibit 10.3 on the Company's Annual Report on Form 10-K filed on March 30, 2023).

Exhibit Number	Description
10.5	<u>Warrant Agreement, dated as of May 8, 2015, between the Registrant and Philadelphia Stock Transfer, Inc., as warrant agent (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on May 13, 2015).</u>
10.6 !	<u>Form of Stock Option Agreement under the 2015 Equity Incentive Plan for employees and consultants (incorporated by reference to Exhibit 10.9.1 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 24, 2017).</u>
10.7 !	<u>Form of Stock Option Agreement under the 2015 Equity Incentive Plan for non-employee directors (initial grant) (incorporated by reference to Exhibit 10.9.2 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 24, 2017).</u>
10.8 !	<u>Form of Stock Option Agreement under the 2015 Equity Incentive Plan for non-employee directors (annual grant) (incorporated by reference to Exhibit 10.9.3 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 24, 2017).</u>
10.9 !	<u>Form of Restricted Stock Unit Award Agreement under 2015 Equity Incentive Plan (incorporated by reference to Exhibit 10.10 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed March 24, 2017).</u>
10.10 !	<u>OpGen, Inc. Retention Plan for Executives (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on September 25, 2018).</u>
10.11 !	<u>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).</u>
10.12 !	<u>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).</u>
10.13 !	<u>Executive Employment Agreement by and between the Company and Albert Weber, dated as of November 11, 2021 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on November 4, 2021).</u>
10.14 !	<u>2020 Stock Options Plan, dated September 30, 2020 (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q filed on November 16, 2020).</u>
10.15 !	<u>Form of Director Grant to the 2020 Stock Options Plan (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q filed on November 16, 2020).</u>
10.16	<u>Form of Employee Grant to the 2020 Stock Options Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q filed on November 16, 2020).</u>
10.17	<u>Form of Securities Purchase Agreement, dated February 9, 2021, by and between OpGen, Inc. and the purchaser party thereto for 2021 Offering (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on February 10, 2021).</u>
10.18	<u>Placement Agent Agreement, dated February 9, 2021, by and between OpGen, Inc. and A.G.P./Alliance Global Partners for 2021 Offering (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, filed on February 10, 2021).</u>
10.19	<u>Form of Warrant Exercise Agreement, dated as of March 9, 2021, by and between OpGen, Inc. and the Holder (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on March 9, 2021).</u>

Exhibit Number	Description
10.20	<u>Letter Agreement, dated as of March 9, 2021, by and between A.G.P./Alliance Global Partners and OpGen Inc. (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, filed on March 9, 2021).</u>
10.21	<u>Form of Securities Purchase Agreement, dated September 30, 2022, by and between OpGen, Inc. and the Investor (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on October 3, 2022).</u>
10.22	<u>Form of Warrant Amendment Agreement, dated September 30, 2022, by and between OpGen, Inc. and the Investor (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on October 3, 2022).</u>
10.23	<u>Waiver and Amendment Letter, dated May 23, 2022 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on May 24, 2022).</u>
10.24	<u>At the Market Offering Agreement, dated June 24, 2022, by and between OpGen, Inc. and H.C. Wainwright & Co., LLC (incorporated by reference to Exhibit 1.1 to the Registrant's Current Report on Form 8-K filed on June 24, 2022).</u>
10.25	<u>Form of Securities Purchase Agreement, dated January 6, 2023, by and between OpGen, Inc. and the investor party thereto (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on January 11, 2023).</u>
10.26	<u>Amendment and Restatement Agreement, dated as of July 9, 2020, by and among Curetis GmbH, as borrower, the Company, as guarantor, Ares Genetics GmbH, as guarantor, and European Investment Bank (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on July 13, 2020).</u>
10.27 #	<u>Finance Contract, as amended and restated pursuant to the First Amendment and Restatement Agreement dated May 20, 2019 and the Second Amendment and Restatement Agreement dated as of July 9, 2020, by and between the European Investment Bank and Curetis GmbH (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on July 13, 2020).</u>
10.28	<u>Guarantee and Indemnity Agreement, dated as of July 9, 2020, by and between European Investment Bank and the Company (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K filed on July 13, 2020).</u>
10.29	<u>Guarantee and Indemnity Agreement, dated as of July 9, 2020, by and between European Investment Bank and Ares Genetics (incorporated by reference to Exhibit 10.4 to the Registrant's Current Report on Form 8-K filed on July 13, 2020).</u>
10.30	<u>Form of Securities Purchase Agreement (incorporated by reference to Exhibit 10.55 to the Company's Registration Statement on Form S-1/A (File No. 333-268648) filed on January 5, 2023).</u>
10.31	<u>Form of Securities Purchase Agreement, dated May 1, 2023, between OpGen, Inc. and the purchaser party thereto (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 4, 2023).</u>
10.32	<u>Form of Warrant Amendment Agreement, dated May 1, 2023, between OpGen, Inc. and the purchaser party thereto (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on May 4, 2023).</u>
10.33	<u>Standstill Agreement, dated July 4, 2023, by and between OpGen, Inc. and the Investor (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on July 4, 2023).</u>
10.34	<u>Finance Contract, as amended and restated pursuant to the First Amendment and Restatement Agreement dated May 20, 2019 and the Second Amendment and Restatement Agreement dated as of July 9, 2020, by and between the European Investment Bank and Curetis GmbH (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on July 13, 2020).</u>

Exhibit Number	Description
10.35	<u>Guarantee and Indemnity Agreement, dated as of July 9, 2020, by and between European Investment Bank and the Company (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K filed on July 13, 2020).</u>
10.36	<u>Guarantee and Indemnity Agreement, dated as of July 9, 2020, by and between European Investment Bank and Ares Genetics (incorporated by reference to Exhibit 10.4 to the Registrant's Current Report on Form 8-K filed on July 13, 2020).</u>
10.37	<u>Standstill Agreement, dated July 4, 2023, by and among Curetis GmbH, as borrower, OpGen, Inc. and Ares Genetics GmbH, as guarantors, and the European Investment Bank, as lender (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 5, 2023).</u>
10.38	<u>Exclusive International Distributor Agreement, dated as of September 25, 2015, between Curetis AG and Beijing Clear Biotech Co. Ltd (incorporated by reference to Exhibit 10.32 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.39	<u>Amendment 1 to the Exclusive International Distributor Agreement, dated as of October 11, 2018, between Curetis GmbH and Beijing Clear Biotech (incorporated by reference to Exhibit 10.32.2 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.40	<u>Non-Exclusive Patent License and Research Collaboration Agreement, dated as of October 5, 2015, between Acumen Research Laboratories Pte Ltd and Curetis AG (incorporated by reference to Exhibit 10.33 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.41	<u>Exclusive International Distributor Agreement, dated as of October 5, 2015, between Curetis AG and Acumen Research Laboratories Pte Ltd (incorporated by reference to Exhibit 10.34.1 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.42	<u>Amendment 1 to the Exclusive International Distributor Agreement, dated as of November 15, 2015, between Curetis GmbH and Acumen Research Laboratories Pte Ltd (incorporated by reference to Exhibit 10.34.2 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.43	<u>Technology Transfer, Technical Cooperation and License Agreement, dated as of September 7, 2016, by and between Curetis GmbH and Siemens Technology Accelerator GmbH (incorporated by reference to Exhibit 10.35.1 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.44	<u>First Amendment Agreement to the Technology Transfer, Technical Cooperation and License Agreement, dated as of May 17, 2018, by and between Ares Genetics GmbH and Siemens Technology Accelerator GmbH (incorporated by reference to Exhibit 10.35.2 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.45	<u>Technology Purchase Agreement, dated as of December 13, 2016, between Systec Elektronik und Software GmbH, Carpegen GmbH and Curetis GmbH (incorporated by reference to Exhibit 10.38 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.46	<u>Services Frame Agreement, dated as of December 14, 2018, between Ares Genetics GmbH and Sandoz International GmbH (incorporated by reference to Exhibit 10.39.1 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.47	<u>Work Order Agreement, dated as of December 14, 2018, between Ares Genetics GmbH and Sandoz International GmbH (incorporated by reference to Exhibit 10.39.2 to the Registrant's Form S-4/A filed on December 20, 2019).</u>
10.48	<u>License Agreement, dated as of February 18, 2019, between Ares Genetics GmbH and QIAGEN GmbH and the QIAGEN Affiliates (incorporated by reference to Exhibit 10.40.1 to the Registrant's Form S-4/A filed on December 20, 2019).</u>

Exhibit Number	Description
10.49	First Amendment to License Agreement, dated as of September 18, 2019, between Ares Genetics GmbH and QIAGEN GmbH (incorporated by reference to Exhibit 10.40.2 to the Registrant's Form S-4/A filed on December 20, 2019).
10.50	Lease Agreement, dated as of November 11, 2020, between the Registrant and Key West MD Owner, LLC (the "Landlord") (incorporated by reference to Exhibit 10.6 to the Registrants Quarterly Report on Form 10-Q filed on November 16, 2020).
10.51	Standstill Agreement, dated July 4, 2023, by and between Curetis GmbH, Ares Genetics GmbH, OpGen, Inc. and the European Investment Bank (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 5, 2023).
10.52	Form of Securities Purchase Agreement, dated October 11, 2023, between OpGen, Inc. and the investor thereto (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 11, 2023).
10.53	Form of Warrant Inducement Agreement, dated October 12, 2023, between OpGen, Inc. and the warrant holder thereto (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 16, 2023).
10.54	Form of Amendment Agreement to Warrant Inducement Agreement, dated October 26, 2023, between OpGen, Inc. and the warrant holder thereto (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 26, 2023).
19 *	Insider Trading Policy
21.1 *	Subsidiaries of the Registrant
23.1 *	Consent of Beckles & Co., Inc.
23.2 *	Consent of CohnReznick LLP
24.1	Power of Attorney (included on signature page hereto)
31.1 *	Certification pursuant to Rule 13a-14(a)/15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1 *	Certification pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
97.1 *	Clawback Policy
101 *	Interactive data files pursuant to Rule 405 of Regulation S-T; (i) the Balance Sheets, (ii) the Statements of Operations and Comprehensive Loss, (iii) the Statements of Stockholders' Equity, (iv) Statements of Cash Flows and (v) the Notes to the Financial Statements

* Filed herewith

! Denotes management compensation plan or contract

Subject to confidential treatment request for certain portions of the agreement

(c) Not applicable.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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/ David E. Lazar
David E. Lazar
Chief Executive Officer and Chairman

Date: June 3, 2024

POWER OF ATTORNEY

We, the undersigned officers and directors of OpGen, Inc., hereby severally constitute and appoint David E. Lazar, our true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution in her or him for her or him and in her or his name, place and stead, and in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as she or he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or her or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ David E. Lazar</u> David E. Lazar	Chief Executive Officer and Chairman (principal executive officer, principal financial officer, and principal accounting officer)	June 3, 2024
<u>/s/ Avraham Ben-Tzvi</u> Avraham Ben-Tzvi, Adv.	Director	June 3, 2024
<u>/s/ David Natan</u> David Natan	Director	June 3, 2024
<u>/s/ Matthew McMurdo</u> Matthew McMurdo, Esq.	Director	June 3, 2024

OPGEN, INC.

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm (PCAOB ID 7116)	F-2
Report of Independent Registered Public Accounting Firm (PCAOB ID 596)	F-4
Consolidated Balance Sheets	F-5
Consolidated Statements of Operations and Comprehensive Loss	F-6
Consolidated Statements of Stockholders' Equity	F-7
Consolidated Statements of Cash Flows	F-8
Notes to Consolidated Financial Statements	F-9

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors of OpGen, Inc.

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of OpGen, Inc. and Subsidiaries (the “Company”) as of December 31, 2023, and the related consolidated statements of operations and comprehensive loss, stockholders’ equity and cash flows for the year then ended and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2023, and the results of its operations and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Prior Period Financial Statements

The financial statements of the Company as of December 31, 2022, were audited by other auditors whose report dated March 30, 2023 expressed an unmodified opinion on those statements.

The Company’s Ability to Continue as a Going Concern

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the financial statements, the Company has incurred recurring losses from operations since inception and has stated that substantial doubt exists about the Company’s ability to continue as a going concern. Management’s evaluation of the events and conditions and management’s plans regarding these matters are also described in Note 2. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“PCAOB”) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audit we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue Recognition on Collaboration Agreements

As described in Note 11 to the consolidated financial statements, the Company recognizes revenue arising from a collaboration and license agreement with FIND, which totaled \$0.6 million for the year ended December 31, 2023. The promised goods and services represent multiple distinct performance obligations and the entire transaction price was allocated to these performance obligations and recognized over-time. When management concludes that a contract should be recognized over-time, management must then determine the period over which revenue should be recognized and the method by which to measure revenue. Management generally recognizes revenue as deliverables are accepted, but at times, management uses a cost-based input method, which measures the extent of progress towards completion based on the ratio of actual costs incurred to the total estimated costs expected upon satisfying the performance obligation.

The principal considerations for our determination that performing procedures relating to revenue recognition for the collaboration and license agreement with FIND recognized under an input method is a critical audit matter due to the significant judgment by management when determining the total estimated costs expected upon satisfying the performance obligation, which in turn led to significant auditor judgment, subjectivity and effort in performing procedures to evaluate the total estimated costs expected upon satisfying the performance obligation.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included understanding the design and implementation of internal controls relating to the revenue arising from the collaboration and license agreement with FIND, including controls over the total estimated costs expected upon satisfying the performance obligations. These procedures also included, among others, evaluating and testing management's process for determining the total estimated costs expected upon satisfying the performance obligations, which included testing actual costs incurred and evaluating the reasonableness of estimated costs to satisfy the performance obligations. Evaluating the reasonableness of estimated costs to satisfy the performance obligation involved assessing management's ability to reasonably estimate costs to satisfy the performance obligation by (i) evaluating the appropriateness of changes to management's estimates of total costs to satisfy the performance obligations; (ii) performing a comparison of management's prior period cost estimates to actual costs incurred; and (iii) evaluating whether the cost estimates used by management were reasonable considering consistency with industry and company-specific data.

/s/ Beckles & Co., Inc.

We have served as the Company's auditor since 2024.

West Palm Beach, Florida
June 3, 2024

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors of OpGen, Inc.

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of OpGen, Inc. and Subsidiaries (the “Company”) as of December 31, 2022, and the related consolidated statements of operations and comprehensive loss, stockholders’ equity and cash flows for the year then ended and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022, and the results of its operations and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

The Company’s Ability to Continue as a Going Concern

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the financial statements, the Company has incurred recurring losses from operations since inception and has stated that substantial doubt exists about the Company’s ability to continue as a going concern. Management’s evaluation of the events and conditions and management’s plans regarding these matters are also described in Note 2. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“PCAOB”) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audit, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ CohnReznick LLP

We served as the Company’s auditor from 2014 to 2022.

Tysons, Virginia

March 30, 2023, except for the effects of the reverse stock split discussed in Note 12, as to which the date is May 20, 2024

OpGen, Inc.
Consolidated Balance Sheets
As of December 31,

	2023	2022
Assets		
Current assets		
Cash and cash equivalents	\$ 1,151,823	\$ 7,440,030
Accounts receivable, net	103,316	514,372
Inventory, net	-	1,345,137
Prepaid expenses and other current assets	324,735	1,355,949
Total current assets	1,579,874	10,655,488
Property and equipment, net	-	3,457,531
Finance lease right-of-use assets, net	138	3,500
Operating lease right-of-use assets	-	1,459,413
Intangible assets, net	-	7,440,974
Strategic inventory	-	2,300,614
Other noncurrent assets	302,262	495,629
Total assets	\$ 1,882,274	\$ 25,813,149
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	\$ 111,149	\$ 420,821
Accrued compensation and benefits	127,601	1,097,654
Accrued liabilities	135,476	1,526,204
Deferred revenue	25,926	142,061
Short-term notes payable	10,873,867	7,023,901
Short-term finance lease liabilities	280	3,364
Short-term operating lease liabilities	147,943	377,626
Total current liabilities	11,422,242	10,591,631
Note payable	-	4,850,686
Derivative liabilities	-	99,498
Long-term finance lease liabilities	-	280
Long-term operating lease liabilities	2,021,616	2,566,138
Other long-term liabilities	-	129,368
Total liabilities	13,443,858	18,237,601
Commitments and Contingencies (Note 9)		
Stockholders' (deficit) equity		
Preferred stock, \$0.01 par value; 10,000,000 shares authorized; 250 and 0 shares issued and outstanding at December 31, 2023 and 2022, respectively	2,500	-
Common stock, \$0.01 par value; 100,000,000 shares authorized; 1,282,686 and 289,992 shares issued and outstanding at December 31, 2023 and 2022, respectively	12,827	2,900
Additional paid-in capital	293,991,529	281,193,260
Accumulated deficit	(305,493,302)	(272,824,772)
Accumulated other comprehensive loss	(75,138)	(795,840)
Total stockholders' (deficit) equity	(11,561,584)	7,575,548
Total liabilities and stockholders' (deficit) equity	\$ 1,882,274	\$ 25,813,149

See accompanying notes to consolidated financial statements.

OpGen, Inc.
Consolidated Statements of Operations and Comprehensive Loss
For The Years Ended December 31,

	2023	2022
Revenue		
Product sales	\$ 2,400,053	\$ 1,893,862
Laboratory services	153,719	172,633
Collaboration revenue	864,548	540,798
Total revenue	3,418,320	2,607,293
Operating expenses		
Cost of products sold	3,084,075	3,319,586
Cost of services	424,939	104,405
Research and development, net	4,732,851	8,173,435
General and administrative	8,081,664	8,884,084
Sales and marketing	2,783,268	4,344,656
Impairment of right-of-use asset	849,243	-
Impairment of property and equipment	1,231,874	-
Impairment of intangible assets	-	5,407,699
Goodwill impairment charge	-	6,940,549
Loss on deconsolidation of subsidiaries	12,979,061	-
Total operating expenses	34,166,975	37,174,414
Operating loss	(30,748,655)	(34,567,121)
Other income (expense)		
Interest and other income, net	142,488	46,935
Interest expense	(1,838,933)	(3,256,410)
Foreign currency transaction (losses) gains	(289,306)	379,622
Change in fair value of derivative financial instruments	65,876	113,741
Total other expense	(1,919,875)	(2,716,112)
Loss before income taxes	(32,668,530)	(37,283,233)
Provision for income taxes	-	-
Net loss	\$ (32,668,530)	\$ (37,283,233)
Basic and diluted net loss per share attributable to common stockholders	(41.47)	(152.70)
Weighted average shares outstanding - basic and diluted	787,832	244,158
Net loss	\$ (32,668,530)	\$ (37,283,233)
Other comprehensive gain (loss) - foreign currency translation	720,702	(1,381,466)
Comprehensive loss	\$ (31,947,828)	\$ (38,664,699)

See accompanying notes to consolidated financial statements.

OpGen, Inc.
Consolidated Statements of Stockholders' Equity
For the Years Ended December 31, 2023 and 2022

	Common Stock		Preferred Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total
	Number of Shares	Amount	Number of Shares	Amount				
Balances at December 31, 2021	232,252	\$ 2,323	-	\$ -	\$276,170,670	\$ 585,626	\$ (235,541,539)	\$ 41,217,080
Offering of common stock and warrants, net of issuance costs	48,300	483	-	-	3,082,045	-	-	3,082,528
At the market offering, net of offering costs	8,574	86	-	-	989,618	-	-	989,704
Issuance of RSUs	866	8	-	-	(8)	-	-	-
Stock compensation expense	-	-	-	-	950,935	-	-	950,935
Foreign currency translation	-	-	-	-	-	(1,381,466)	-	(1,381,466)
Net loss	-	-	-	-	-	-	(37,283,233)	(37,283,233)
Balances at December 31, 2022	289,992	\$ 2,900	-	\$ -	\$281,193,260	\$ (795,840)	\$ (272,824,772)	\$ 7,575,548
Offering of common stock and warrants, net of issuance costs	908,204	9,082	-	-	12,032,086	-	-	12,041,168
Offering of preferred stock, net of issuance costs	-	-	250	2,500	247,500	-	-	250,000
Issuance of RSUs	3,465	35	-	-	(35)	-	-	-
Stock compensation expense	-	-	-	-	235,974	-	-	235,974
Cash bonus taken in the form of stock compensation	-	-	-	-	283,554	-	-	283,554
Share cancellation	(220)	(2)	-	-	2	-	-	-
Share issuance	81,245	812	-	-	(812)	-	-	-
Foreign currency translation	-	-	-	-	-	720,702	-	720,702
Net loss	-	-	-	-	-	-	(32,668,530)	(32,668,530)
Balances at December 31, 2023	1,282,686	\$ 12,827	250	\$ 2,500	\$293,991,529	\$ (75,138)	\$ (305,493,302)	\$ (11,561,584)

See accompanying notes to consolidated financial statements.

OpGen, Inc.
Consolidated Statements of Cash Flows
For the Years Ended December 31,

	2023	2022
Cash flows from operating activities		
Net loss	\$ (32,668,530)	\$ (37,283,233)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation and amortization	1,318,597	1,642,781
Noncash interest expense	1,741,422	2,359,219
Change in inventory reserve	797,840	1,582,026
Stock compensation expense	235,974	950,935
Loss on sale of equipment	10,288	16,000
Cash bonus taken in the form of stock compensation	283,554	-
Loss on deconsolidation of subsidiaries	12,979,061	-
Change in fair value of derivative financial instruments	(64,259)	(113,740)
Impairment of right-of-use asset	849,243	-
Impairment of property and equipment	1,231,874	-
Impairment of intangible assets	-	5,407,699
Goodwill impairment charge	-	6,940,549
Changes in operating assets and liabilities		
Accounts receivable	39,115	587,761
Inventory	748,445	(728,548)
Other assets	(259,173)	151,456
Accounts payable	(24,158)	(814,299)
Accrued compensation and other liabilities	(1,612,944)	(1,287,874)
Deferred revenue	74,109	139,570
Net cash used in operating activities	(14,319,542)	(20,449,698)
Cash flows from investing activities		
Purchases of property and equipment	(800,412)	(590,772)
Net cash used in investing activities	(800,412)	(590,772)
Cash flows from financing activities		
Proceeds from issuance of common stock and warrants, net of issuance cost	12,041,168	-
Proceeds from at the market offering, net of issuance costs	-	989,704
Proceeds from issuance of common stock and pre-funded warrants in registered direct offering, net of issuance costs	-	3,082,528
Proceeds from issuance of preferred stock, net of issuance costs	250,000	-
Payments on debt	(3,914,490)	(10,764,763)
Payments on finance lease obligations	(3,364)	(43,150)
Net cash provided by (used in) financing activities	8,373,314	(6,735,681)
Effects of exchange rates on cash	265,066	(920,376)
Net decrease in cash, cash equivalents and restricted cash	(6,481,574)	(28,696,527)
Cash and cash equivalents and restricted cash at beginning of year	7,935,659	36,632,186
Cash and cash equivalents and restricted cash at end of year	\$ 1,454,085	\$ 7,935,659
Supplemental disclosure of cash flow information		
Cash paid for interest	\$ 1,424,140	\$ 1,079,113
Supplemental disclosures of noncash investing and financing activities		
Right-of-use assets acquired through operating leases	\$ 801,321	\$ -
Purchased equipment not yet paid for	\$ 108,715	\$ -
Property and equipment transferred to inventory	\$ -	\$ 152,243

See accompanying notes to consolidated financial statements.

OpGen, Inc.
Notes to 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 (the “Purchaser”). Pursuant to the Implementation Agreement, the Purchaser acquired all 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”). As of December 31, 2022, Crystal GmbH has been dissolved and merged into Curetis GmbH. As of November 6, 2023, Curetis filed a petition for insolvency with the district court of Stuttgart, Germany, and Ares Genetics filed a petition for insolvency with the commercial court in Vienna, Austria, and insolvency administrators in the respective jurisdictions assumed control over the assets and liabilities of these entities. For the years ended December 31, 2023 and 2022, the Company’s headquarters were in Rockville, Maryland and the Company’s principal operations were in Rockville, Maryland. The Company operates in one business segment.

OpGen Overview

From inception through November 2023, OpGen operated as a precision medicine company harnessing the power of molecular diagnostics and informatics to help combat infectious disease. The Company, along with its subsidiaries, Curetis and Ares Genetics, developed and commercialized 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.

During the year ended December 31, 2023, the Company implemented certain cash management initiatives, including restructuring its U.S. operations by reducing headcount from 24 to 5 and has since continued scaling down operations at OpGen’s U.S. headquarters to the core functions of a U.S. Nasdaq listed company with only minimal distribution, marketing, and sales support, allowing the Company to conserve cash and focus on the functions needed to pursue potential strategic alternatives. However, on November 6, 2023, Curetis filed a petition for insolvency with the district court of Stuttgart, Germany, and Ares Genetics filed a petition for insolvency with the commercial court in Vienna, Austria. The insolvency proceedings of Curetis and Ares Genetics were adjudicated under the insolvency laws of Germany and Austria, respectively.

The insolvency administrators assumed control over the assets and liabilities of Curetis and Ares Genetics, respectively, which eliminated the authority and power of the Company and its officers to act on behalf of the subsidiaries. The loss of control required that the Company no longer include Curetis and Ares Genetics in its consolidated financial statements. Prior to the insolvency filings, Curetis and Ares Genetics had been included in the Company’s consolidated financial statements. Upon deconsolidation of Curetis and Ares Genetics, the Company recognized gains on deconsolidation of subsidiaries at the subsidiary levels of \$46.6 million for Curetis and \$7.7 million for Ares Genetics, which was offset by a loss on deconsolidation of subsidiary for the Company of \$67.3 million. The deconsolidation charges to operations represent the excess of the carrying value over the fair value of the Company’s interest in and intercompany payables to and receivables from Curetis and Ares Genetics as of the insolvency filing date.

In March 2024, the Company entered into a securities purchase agreement (the “March 2024 Purchase Agreement”) with David E. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Convertible Preferred Stock (“Series E Preferred Stock”) to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million. In connection with the transactions contemplated by the March 2024 Purchase Agreement, the members of the Board of Directors prior to the closing of such transactions resigned, and a new Board of Directors was appointed, of which Mr. Lazar was appointed Chairman. The focus of OpGen going forward under new leadership and a new Board of Directors will be on the identification of a privately held company to complete a reverse merger or similar strategic transaction (see Note 12).

Note 2 - Going Concern and Management's Plans

The accompanying 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 and negative operating cash flows. The Company has funded its operations primarily through external investor financing arrangements and significant actions taken by the Company, including the following:

- On October 12, 2023, the Company entered into a warrant inducement agreement (the "Inducement Agreement") with a holder (the "Holder") of certain existing warrants (the "Existing Warrants") to purchase shares of common stock, par value \$0.01 per share, of the Company. Pursuant to the Inducement Agreement, the Holder agreed to exercise for cash their Existing Warrants to purchase up to 1,089,274 shares of the Company's common stock at an exercise price of \$7.785 per share, the exercise price per share of the Existing Warrants, during the period from the date of the Inducement Agreement until 7:30 a.m., Eastern Time, on October 26, 2023. Pursuant to amendment agreements entered into by the Company and Holder on October 26, 2023 and February 7, 2024, the Company agreed to initially extend the offer period until December 31, 2023, and subsequently extend the offer period until April 30, 2024 (see Note 12). In order to permit the exercise of the Existing Warrants pursuant to the rules of the Nasdaq Capital Market, the Holder agreed to pay as additional consideration \$0.25 per share of common stock issued upon exercise of the Existing Warrants. In consideration of the Holder's agreement to exercise the Existing Warrants in accordance with the Inducement Agreement, the Company agreed to issue new warrants (the "Inducement Warrants") to purchase shares of common stock equal to 100% of the number of shares of common stock issued upon exercise of the Existing Warrants (the "Inducement Warrant Shares"). The Inducement Warrants will have an exercise price of \$3.36 per share and will be exercisable on the six-month anniversary of the date of issuance and expire on the five-year anniversary of the Inducement Warrant's first becoming exercisable. As of December 31, 2023, the Holder exercised 200,000 shares of Common Stock under the existing warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company.
- On October 11, 2023, the Company entered into a Preferred Stock Purchase Agreement (the "Purchase Agreement") with a single investor (the "Investor"), pursuant to which the Company agreed to issue and sell to the Investor in a private placement (the "Private Placement") 1,000 shares of the Company's Series D Preferred Stock, par value \$0.01 per share (the "Preferred Stock"). Each share of preferred stock was agreed to sell at a price of \$1,000 per share for expected aggregate gross proceeds of \$1.0 million before deducting offering expenses. The Private Placement was conducted in connection with the negotiation of a potential strategic transaction involving the Company and the Investor. The Company intended to use the proceeds of the Private Placement to fund the Company's operations while it pursued a potential strategic transaction with the Investor. Pursuant to the Purchase Agreement, the Company filed a certificate of designation (the "Certificate of Designation") with the Secretary of State of the State of Delaware designating the rights, preferences and limitations of the shares of preferred stock on October 11, 2023. The Certificate of Designation provides that the shares of preferred stock have a stated value of \$1,000 per share and are convertible into shares of common stock, par value \$0.01 per share of the Company at a price of \$4.09 per share, subject to adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications, or similar events affecting the common stock. The preferred stock may be converted at any time at the option of the holder. Notwithstanding the foregoing, the Certificate of Designation provides that in no event will the preferred stock be convertible into common stock in a manner that would result in the holder, its permitted transferees and affiliates holding more than 19.99% (together with any shares of common stock otherwise held by the Investor, its permitted transferees and their affiliates) of the then issued and outstanding common stock (the "Ownership Limitation"), prior to the date that the Company's stockholders approve the issuance of shares of common stock to the holder upon conversion of the preferred stock (the "stockholder approval"). Upon receipt of stockholder approval, the shares of preferred stock will automatically be converted into shares of common stock without further action of the holder thereof. The Investor funded \$250,000 of the expected aggregate gross proceeds of \$1.0 million before deducting offering expenses on November 14, 2023. On December 13, 2023, in coordination with the Investor, the Company issued to the Investor 250 shares of Series D Preferred Stock in consideration for the partial payment. As of December 31, 2023, all 250 Series D Preferred Shares remain outstanding and the remaining \$750,000 of the purchase price remains unpaid. The Company reserves all rights and remedies arising from the Investor's failure to close the transaction and the Investor will continue to be in breach of the Purchase Agreement until the remaining amount is paid in full.

- On June 26, 2023, the Company announced that its subsidiary Curetis and the European Investment Bank (“EIB”) agreed in principle to certain terms relating to the repayment of the second tranche of Curetis’ loan from the EIB pursuant to that certain Finance Contract, dated December 12, 2016, as amended, by and between Curetis and the EIB (the “Finance Contract”). The second tranche had a principal balance of €3 million plus accumulated and deferred interest. The second tranche was drawn down in June 2018 and matured on June 22, 2023. On July 4, 2023, the EIB and Curetis entered into a Standstill Agreement (the “Standstill Agreement”) pursuant to which the EIB agreed that, with respect to each default or event of default relating to such second tranche, the EIB would not take any action or exercise any right under the Finance Contract until the earlier of a restructuring of the second tranche and November 30, 2023. As a condition to entering into the Standstill Agreement, Curetis paid the EIB a partial payment of interest on the second tranche of €1 million on June 22, 2023. In addition, Curetis agreed to certain undertakings during the standstill period, including the delivery of a rolling cash flow forecast and to cause a third-party restructuring expert to prepare and deliver a restructuring opinion to the EIB. On November 20, 2023, Curetis received a termination notice from the EIB terminating the Standstill Agreement effective as of November 20, 2023. The EIB’s termination notice stated that the termination of the Standstill Agreement was as a result of and in connection with certain defaults of the Standstill Agreement arising from, among other related reasons, Curetis’ and Ares’ entry into insolvency proceedings. On December 4, 2023, the Company received a notice from the EIB stating that Curetis is in default of the Finance Contract as a result of, among other things, Curetis’ failure to repay when due certain outstanding indebtedness under the Finance Contract. In its notice, the EIB stated that, as of November 16, 2023, the aggregate amount of principal, accrued interest and all other amounts owed by Curetis to the EIB under the Finance Contract was approximately 9.66 million euro and that interest will continue to accrue in accordance with the Finance Contract until all amounts owed are paid in full. Pursuant to that certain Guarantee and Indemnity Agreement, dated July 9, 2020 (the “Guaranty”), between the EIB and the Company, the EIB demanded that the Company, as guarantor, immediately repay the EIB all amounts owed to the EIB under the Finance Contract and reserved all of its other rights and remedies in connection with the Finance Contract. As of the year ended December 31, 2023, the Guaranty remained unpaid and outstanding, with the liability reflected on the Company’s financial statements, which was previously on Curetis’ balance sheet. In connection with the Company’s entry into the March 2024 Purchase Agreement with David E. Lazar on March 25, 2024, the Company entered into settlement agreements with each of the EIB and Curetis and Curetis’ trustee in insolvency, pursuant to which the parties agreed to settle outstanding liabilities amongst the parties. Pursuant to the settlement agreements, following the final closing of the transactions contemplated by the March 2024 Purchase Agreement, the Company will pay \$2.0 million of the proceeds to settle all outstanding debt of the Company to each of EIB and Curetis. The settlement agreement with EIB also terminated the Guaranty (see Note 12).
- On May 4, 2023, the Company closed a best-efforts public offering pursuant to a securities purchase agreement with a certain institutional investor, pursuant to which the Company issued and sold to the Investor (i) 60,500 shares of the Company’s common stock, par value \$0.01 per share, (ii) pre-funded warrants to purchase up to an aggregate of 389,083 shares of common stock, and (iii) common warrants to purchase up to an aggregate of 449,583 shares of common stock. Each share of common stock and accompanying common warrant was sold at a price of \$7.785 per share and accompanying common warrant, and each pre-funded warrant and accompanying common warrant was sold at an offering price of \$7.685 per share underlying such pre-funded warrant and accompanying common warrant, for aggregate gross proceeds of approximately \$3.5 million and net proceeds of approximately \$3.0 million. The common warrants have an exercise price of \$7.785 per share and will be exercisable beginning on the date of stockholder approval of the exercisability of the warrants under Nasdaq rules or may be exercised through October 26, 2023, pursuant to the Warrant Inducement Agreement entered into on October 12, 2023. Pursuant to amendment agreements entered into by the Company and Holder on October 26, 2023 and February 7, 2024, the Company agreed to initially extend the offer period until December 31, 2023, and subsequently extend the offer period until April 30, 2024 (see Note 12). In order to permit the exercise of the Existing Warrants pursuant to the rules of the Nasdaq Capital Market, the Holder agreed to pay as additional consideration \$0.25 per share of common stock issued upon exercise of the Existing Warrants. The common warrants not exercised as part of the Inducement Agreement will expire on the five-year anniversary of the date of such stockholder approval. Each pre-funded warrant has an exercise price per share of common stock equal to \$0.10 per share and may be exercised at any time until the pre-funded warrants are exercised in full. In connection with the offering, the Company also entered into a warrant amendment agreement with the investor pursuant to which the Company amended certain existing warrants to purchase up to 639,691 shares of common stock that were previously issued in 2018, 2021, 2022 and 2023 to the investor, with exercise prices ranging from \$26.50 to \$75.40 per share, in consideration for their purchase of the securities in the offering, as follows: (i) lower the exercise price of the existing warrants to \$7.785 per share, (ii) provide that the existing warrants, as amended, will not be exercisable until the receipt of stockholder approval for the exercisability of the common warrants in the offering, and (iii) extend the original expiration date of the existing warrants by five years following the receipt of such stockholder approval. The increase in fair value resulting from the warrant modifications is accounted for as an equity issuance cost, resulting in a debit and credit to additional paid in capital of approximately \$0.3 million. As of December 31, 2023, the Holder exercised 200,000 shares of Common Stock under the existing warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company.

- On January 11, 2023, the Company closed a best-efforts public offering pursuant to a securities purchase agreement with a certain institutional investor for the purchase of (i) 32,121 shares of the Company's common stock, par value \$0.01 per share, (ii) pre-funded warrants to purchase up to an aggregate of 226,500 shares of common stock (the "Pre-funded Warrants"), (iii) Series A-1 common warrants to purchase an aggregate of 258,621 shares of common stock (the "Series A-1 Warrants"), and (iv) Series A-2 common warrants to purchase an aggregate of 258,621 shares of common stock (the "Series A-2 Warrants," and together with the Series A-1 Warrants, the "Common Warrants"). Each share of common stock and accompanying Common Warrants were sold at a price of \$29.00 per share and accompanying Common Warrants, and each Pre-funded Warrant and accompanying Common Warrants were sold at an offering price of \$28.90 per share underlying such Pre-funded Warrants and accompanying Common Warrants, for aggregate gross proceeds of approximately \$7.5 million before deducting the placement agent's fees and the offering expenses, and net proceeds of approximately \$6.9 million. The Common Warrants have an exercise price of \$26.50 per share. The Series A-1 Warrants were immediately exercisable upon issuance, and will expire five years following the issuance date. The Series A-2 Warrants were immediately exercisable upon issuance, and will expire eighteen months following the issuance date. Subject to certain ownership limitations described in the Pre-funded Warrants, the Pre-funded Warrants were immediately exercisable and could be exercised at a nominal consideration of \$0.10 per share of common stock any time until all the Pre-funded Warrants are exercised in full. All Pre-funded Warrants were exercised by February 15, 2023. In connection with the Company's best-efforts public offering consummated in May 2023, the Company amended the exercise price of the Common Warrants to \$7.785 per share.
- On October 3, 2022, the Company closed a registered direct offering of shares of common stock and Series C Mirroring Preferred Stock pursuant to a securities purchase agreement entered into with a certain institutional investor. In the offering, the Company agreed to issue and sell to the investor (i) 26,800 shares of the Company's common stock, par value \$0.01 per share, (ii) 33,810 shares of the Company's Series C Mirroring Preferred Stock, par value \$0.01 per share and stated value of \$0.01 per share, and (iii) pre-funded warrants to purchase an aggregate of 21,500 shares of common stock. Each share of common stock was sold at a price of \$70.00 per share, each share of preferred stock was sold at a price of \$0.01 per share, and each pre-funded warrant was sold at an offering price of \$68.00 per share underlying such pre-funded warrants, for aggregate gross proceeds of \$3.34 million before deducting the placement agent's fees and the offering expenses, and net proceeds of \$3.04 million. Under the purchase agreement, the Company also agreed to issue and sell to the investor, in a concurrent private placement, warrants to purchase an aggregate of 48,300 shares of common stock. In connection with the offering, the Company also entered into a warrant amendment agreement with the investor pursuant to which the Company agreed to amend certain existing warrants to purchase up to 74,150 shares of common stock that were previously issued to the investor in 2018 and 2021, with exercise prices ranging from \$410.00 to \$13,000.00 per share as a condition to their purchase of the securities in the offering, as follows: (i) lower the exercise price of the investor's existing warrants to \$75.40 per share, (ii) provide that the existing warrants, as amended, will not be exercisable until six months following the closing date of the offering, and (iii) extend the original expiration date of the existing warrants by five and one-half years following the close of the offering. The increase in fair value resulting from the warrant modifications is accounted for as an equity issuance cost, resulting in a debit and credit to additional paid in capital for approximately \$1.8 million. As of December 31, 2022, all 21,500 pre-funded warrants were exercised and all 33,810 shares of the Company's Series C Mirroring Preferred Stock were automatically cancelled and ceased to be outstanding following receipt of stockholder approval for the Company's reverse stock split on November 30, 2022. In connection with the Company's best-efforts public offering consummated in May 2023, the Company amended the exercise price of the existing warrants to \$7.785 per share.

- On June 24, 2022, the Company entered into an At-the-Market, or ATM, Offering Agreement (the “2022 ATM Agreement”) with H.C. Wainwright & Co., LLC (“Wainwright”), as a sales agent, 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 \$10.65 million of shares of the Company’s common stock through Wainwright. As of December 31, 2022, the Company sold 8,574 shares under the 2022 ATM Agreement totaling \$1.03 million in gross proceeds and \$0.99 million in net proceeds. The Company did not sell any shares under the 2022 ATM Agreement in 2023.

To meet its capital needs, the Company entered into a securities purchase agreement (the “March 2024 Purchase Agreement”) with David E. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Convertible Preferred Stock (“Series E Preferred Stock”) to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million. Although Mr. Lazar is expected to provide the Company with \$3.0 million in total funding, the Company believes that current cash will only be sufficient to fund operations into the third quarter of 2024. This has led management to conclude that there is substantial doubt about the Company’s ability to continue as a going concern. In the event the Company does not receive additional funding from the individual investor or other investors or find a reverse merger partner or other strategic transaction partner before or during the third quarter of 2024, the Company will not have sufficient cash flows and liquidity to finance its business operations. Accordingly, in such circumstances, the Company would be compelled to immediately reduce general and administrative expenses until it is able to obtain sufficient financing. If such sufficient financing is not received on a timely basis, the Company would then need to pursue a plan to seek to be acquired by another entity, cease operations and/or seek bankruptcy protection. There can be no assurance that the Company will be able to identify or execute on any of these alternatives on acceptable terms or that any of these alternatives will be successful.

The accompanying consolidated financial statements do not include any adjustments related to the recoverability and classification of assets or the amounts and classification of liabilities that may result from the possible inability of the Company to continue as a going concern.

Note 3 - Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”). The consolidated financial statements consolidate the operations of all controlled subsidiaries; all intercompany activity is eliminated.

Foreign Currency

Curetis and Ares Genetics are located in Holzgerlingen, Germany and Vienna, Austria, respectively, each of which use currencies other than the U.S. dollar as their functional currency. As a result, all assets and liabilities of these entities 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 December 31, 2023 and 2022.

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 consolidated financial statements, estimates are used for, but not limited to, liquidity assumptions, revenue recognition, inducement expense related to warrant repricing, 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, 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 equivalent, 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.

For additional fair value disclosures, see Note 5.

Cash and 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. On March 10, 2023, the Company learned that Silicon Valley Bank (“SVB”), the Company’s primary bank at the time (now a division of First Citizens Bank), was closed by the California Department of Financial Protection and Innovation, which appointed the Federal Deposit Insurance Corporation as receiver. The Company did not experience any losses in such accounts, but since the Company was exposed to credit risk with the failure of SVB, management diversified the Company’s holdings to minimize credit risk in the future.

At December 31, 2023 and 2022, the Company had funds totaling \$302,262 and \$495,629, 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 consolidated balance sheets.

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

	December 31, 2023	December 31, 2022
Cash and cash equivalents	\$ 1,151,823	\$ 7,440,030
Restricted cash	302,262	495,629
Total cash and cash equivalents and restricted cash in the consolidated statements of cash flows	<u>\$ 1,454,085</u>	<u>\$ 7,935,659</u>

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 90 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 \$0 as of December 31, 2023 and 2022.

At December 31, 2023, the Company had accounts receivable from three customers which individually represented 39%, 26%, and 10% of total accounts receivable, respectively. At December 31, 2022, the Company had accounts receivable from two customers which individually represented 41% and 21% of total accounts receivable, respectively. For the year ended December 31, 2023, revenue earned from three customers represented 24%, 19%, and 13% of total revenues, respectively. For the year ended December 31, 2022, revenue earned from three customers represented 32%, 14%, and 11% of total revenues, respectively.

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:

	December 31,	
	2023	2022
Raw materials and supplies	\$ -	\$ 1,011,476
Work-in-process	-	37,445
Finished goods	-	2,596,830
Total	<u>\$ -</u>	<u>\$ 3,645,751</u>

Inventory includes Unyvero system instruments, Unyvero cartridges, reagents and components for Unyvero and Acuitas kits, and reagents and supplies used for the Company's laboratory services.

The Company periodically reviews inventory quantities on hand and analyzes the provision for excess and obsolete inventory based primarily on product expiration dating and its estimated sales forecast, which is based on sales history and anticipated future demand. The Company's estimates of future product demand may not be accurate, and it may understate or overstate the provision required for excess and obsolete inventory. Accordingly, any significant unanticipated changes in demand could have a significant impact on the value of the Company's inventory and results of operations. Based on the Company's assumptions and estimates, inventory reserves for obsolescence, expirations, and slow-moving inventory were \$1,280,805 and \$1,694,843 at December 31, 2023 and December 31, 2022, respectively. Due to the insolvency proceedings and deconsolidation of the Company's subsidiaries, the Company reserved for the full value of its inventory at December 31, 2023 given the uncertainty surrounding the net realizable value and future demand for the Company's products.

The Company classifies finished goods inventory it does not expect to sell or use in clinical studies within 12 months of the consolidated balance sheets date as strategic inventory, a non-current asset.

Long-lived assets

Property and equipment

Property and equipment is stated at cost and depreciated on a straight-line basis over the estimated useful lives of the related assets. The estimated service lives range from three to ten years. Depreciation expense for property and equipment was \$584,230 and \$830,757 for the years ended December 31, 2023 and 2022, respectively. Property and equipment consisted of the following at December 31, 2023 and 2022:

	December 31,	
	2023	2022
Laboratory and manufacturing equipment	\$ 614,036	\$ 4,712,668
Office furniture and equipment	207,164	707,054
Computers and network equipment	245,983	431,787
Leasehold improvements	397,666	1,667,302
	<u>1,464,849</u>	<u>7,518,811</u>
Less accumulated depreciation	<u>(1,464,849)</u>	<u>(4,061,280)</u>
Property and equipment, net	<u>\$ -</u>	<u>\$ 3,457,531</u>

Property and equipment is 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. During the year ended December 31, 2023, the Company determined that its property and equipment, including leasehold improvements and computer and networking equipment, at its Rockville, MD office was impaired due to the Company's financial condition and the impairment of the Company's ROU lease asset. As a result, the Company recorded an impairment charge in the amount of \$1,231,874. During the year ended December 31, 2022, 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. Given the deconsolidation of Curetis and Ares Genetics following their insolvency filings, the ROU assets associated with these entities are removed from the consolidated balance sheet for the year ended December 31, 2023. During the year ended December 31, 2023, the Company determined that its operating right-of-use lease asset for its Rockville, MD office was impaired due to the Company’s inability to support the lease given its financial position. As a result, the Company recorded an impairment charge in the amount of \$849,243. The Company did not identify any impaired ROU assets for the year ended December 31, 2022.

Intangible assets and goodwill

Intangible assets and goodwill consist of finite-lived and indefinite-lived intangible assets and goodwill.

Finite-lived and indefinite-lived intangible assets

Intangible assets include trademarks and tradenames, developed technology and software, in-process research & development (“IPR&D”), and distributor relationships and consisted of the following as of December 31, 2023 and 2022:

	Subsidiary	Cost	December 31, 2023			December 31, 2022		
			Accumulated Amortization, Deconsolidation, and Impairment	Effect of Foreign Exchange Rates	Net Balance	Accumulated Amortization, Deconsolidation, and Impairment	Effect of Foreign Exchange Rates	Net Balance
Trademarks and tradenames	Curetis	\$ 1,768,000	\$ (1,766,880)	\$ (1,120)	\$ -	\$ (469,011)	\$ (62,520)	\$ 1,236,469
Distributor relationships	Curetis	2,362,000	(2,360,505)	(1,495)	-	(417,728)	(83,525)	1,860,747
A50 – Developed technology	Curetis	349,000	(348,779)	(221)	-	(132,273)	(12,342)	204,385
Ares – Developed technology	Ares Genetics	5,333,000	(5,329,624)	(3,376)	-	(1,010,495)	(183,132)	4,139,373
A30 – Acquired in-process research & development	Curetis	5,706,000	(5,702,388)	(3,612)	-	(5,407,699)	(298,301)	-
		<u>\$15,518,000</u>	<u>\$ (15,508,176)</u>	<u>\$ (9,824)</u>	<u>\$ -</u>	<u>\$ (7,437,206)</u>	<u>\$ (639,820)</u>	<u>\$ 7,440,974</u>

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. During the Company's annual impairment test for its IPR&D intangible asset in 2022, it was determined that the infinite-lived intangible asset was impaired because although the Company had an ongoing collaboration utilizing the intangible asset, the contracted cash flow associated with this collaboration and projected future cash flows did not support the carrying amount. As a result, the Company recorded an impairment charge in the amount of \$5,407,699 for the year ended December 31, 2022.

Intangible assets, other than IPR&D as discussed above, 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. All the Company's finite-lived intangible assets with net balances were held by Curetis and Ares Genetics. As a result of the insolvency filings for Curetis and Ares Genetics and the associated deconsolidation of all balance sheet balances related to these entities, the Company does not have any finite-lived intangible asset balances as of December 31, 2023.

Total amortization expense of intangible assets was \$624,240 and \$725,060 for the years ended December 31, 2023 and 2022, respectively. Due to the removal of the Curetis and Ares Genetics' intangible assets, the Company does not anticipate any future amortization associated with these intangible assets.

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 December 31, 2022 was \$0.

The changes in the carrying amount of goodwill as of December 31, 2022, and since December 31, 2021, were as follows:

Balance as of December 31, 2021	\$ 7,453,007
Changes in currency translation	(512,458)
Goodwill impairment charge	(6,940,549)
Balance as of December 31, 2022	<u>\$ -</u>

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 year ended December 31, 2022, since the Company identified circumstances that would, more likely than not, reduce the Company's fair value below its net equity value, the Company performed qualitative and quantitative analyses, assessing trends in market capitalization, current and future cash flows, revenue growth rates, and the impact of global unrest and the COVID-19 pandemic on the Company and its performance. Based on the analysis performed, and primarily due to changes in the Company's stock price and market capitalization in the third quarter of 2022, it was determined that goodwill was impaired. As a result, the Company recorded a goodwill impairment charge in the full amount of \$6,940,549 for the year ended December 31, 2022.

Revenue recognition

During the years ended December 31, 2022 and 2023, the Company derived revenues from (i) the sale of Unyvero Application cartridges, Unyvero Systems, Acuitas AMR Gene Panel test products, and SARS CoV-2 tests, (ii) providing laboratory services, and (iii) providing collaboration services including funded software arrangements, license arrangements, and the FIND NGO collaboration on our Unyvero A30 platform.

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.

Government grant agreements and research incentives

From time to time, the Company may enter into arrangements with governmental entities for the purposes of obtaining funding for research and development activities. The Company recognized funding from grants and research incentives received through its subsidiary, Ares Genetics, from Austrian government agencies in the consolidated statements of operations and comprehensive loss in the period during which the related qualifying expenses are incurred, provided that the conditions under which the grants or incentives were provided have been met. For grants under funding agreements and for proceeds under research incentive programs, the Company recognizes grant and incentive income in an amount equal to the estimated qualifying expenses incurred in each period multiplied by the applicable reimbursement percentage. The Company classifies government grants received under these arrangements as a reduction to the related research and development expense incurred. The Company analyzes each arrangement on a case-by-case basis. For the year ended December 31, 2023, the Company recognized \$301,575 as a reduction of research and development expense related to Ares Genetics' government grant arrangements. For the year ended December 31, 2022, the Company recognized \$424,304 as a reduction of research and development expense related to government grant arrangements. As of December 31, 2023 and 2022, the Company had earned but not yet received \$0 and \$401,436, respectively related to these agreements and incentives included in prepaid expenses and other current assets.

Research and development costs, net

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, development materials, 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. A discussion of management's methodology for developing each of the assumptions used in the Black-Scholes model is as follows:

Fair value of common stock

The Company uses the quoted market price of its common stock as its fair value.

Expected volatility

Through 2020, since OpGen did not have sufficient history to estimate the expected volatility of its common stock price, expected volatility was based on the volatility of peer public entities that were similar in size and industry. Beginning in 2021, for stock options with an expected term where there is sufficient history available, expected volatility is based on the volatility of OpGen's common stock.

Expected dividend yield

The Company has never declared or paid dividends on its common stock and has no plans to do so in the foreseeable future.

Risk-free interest rate

The risk-free interest rate is the U.S. Treasury rate for the day of each option grant during the year, having a term that most closely resembles the expected term of the option.

Expected term

The expected term of a stock option grant is the period of time that the options granted are expected to remain unexercised. Options granted have a maximum term of 10 years. The Company estimates the expected term of the option to be 5.75 years for options with a standard two-year vesting period and 6.25 years for options with a standard four-year vesting period, using the simplified method. Over time, management will track actual terms of the options and adjust their estimate accordingly so that estimates will approximate actual behavior for similar options.

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 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 \$241,110,447 and \$232,682,072 at December 31, 2023 and 2022, respectively. Despite the NOL carryforwards, which started expiring in 2022, the Company may have 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, (iii) restricted stock units representing the right to acquire shares of common stock, and (iv) convertible preferred stock which have been excluded from the computation of diluted loss per share, was 1.2 million shares and 0.1 million shares as of December 31, 2023 and 2022, respectively.

Adopted accounting pronouncements

In June 2016, the Financial Accounting Standards Board, or FASB, issued Accounting Standards Codification (ASC) Update No. 2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments. The purpose of Update No. 2016-13 is to replace the incurred loss impairment methodology for financial assets measured at amortized cost with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information, including forecasted information, to develop credit loss estimates. Update No. 2016-13 did not have a material impact on the Company’s financial position or results of operations.

In May 2021, the FASB issued ASU No. 2021-04, *Earnings Per Share (Topic 260), Debt — Modifications and Extinguishments (Subtopic 470-50), Compensation — Stock Compensation (Topic 718), and Derivatives and Hedging — Contracts in Entity’s Own Equity (Subtopic 815-40)* (“ASU 2021-04”). ASU 2021-04 clarifies and reduces diversity in an issuer’s accounting for modifications or exchanges of freestanding equity-classified written call options, including warrants, that remain equity-classified after modification or exchange. ASU 2021-04 requires an entity to treat a modification or an exchange of a freestanding equity-classified written call option that remains equity-classified after the modification or exchange as an exchange of the original instrument for a new instrument and provides guidance on measuring and recognizing the effect of a modification or an exchange. The Company adopted ASU 2021-04 on January 1, 2022. The adoption did not have a material impact on the Company’s consolidated financial statements and related disclosures.

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 - Revenue from Contracts with Customers

Disaggregated Revenue

The Company provided diagnostic test products and laboratory services to hospitals, clinical laboratories and other healthcare providing customers, and entered into collaboration agreements with government agencies, non-governmental organizations, and healthcare providers. The revenues by type of service consist of the following:

	Years Ended December,	
	2023	2022
Product sales	\$ 2,400,053	\$ 1,893,862
Laboratory services	153,719	172,633
Collaboration revenue	864,548	540,798
Total revenue	<u>\$ 3,418,320</u>	<u>\$ 2,607,293</u>

Revenues by geography are as follows:

	Years Ended December,	
	2023	2022
Domestic	\$ 678,093	\$ 520,614
International	2,740,227	2,086,679
Total revenue	<u>\$ 3,418,320</u>	<u>\$ 2,607,293</u>

Deferred revenue

Changes in deferred revenue for the period were as follows:

Balance at December 31, 2021	\$ -
New deferrals, net of amounts recognized in the period	142,061
Balance at December 31, 2022	142,061
Contracts with customers	74,109
Recognized in the current period	(144,196)
Currency translation adjustment	(46,048)
Balance at December 31, 2023	<u>\$ 25,926</u>

Contract assets

The Company had no contract assets as of December 31, 2023 and 2022, which are generated when contractual billing schedules differ from revenue recognition timing. 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 December 31, 2023 and 2022.

Note 5 - 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.

During the year ended December 31, 2023, 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 2016, Curetis entered into a contract for an up to €25.0 million senior, unsecured loan financing facility from the EIB (see Note 6). In June 2019, Curetis drew down a third tranche of €5.0 million from the EIB. In return for the EIB waiving the condition precedent of a minimum cumulative equity capital raised of €15.0 million to disburse this €5.0 million tranche, the parties agreed on a 2.1% participation percentage interest (“PPI”). Upon maturity of the tranche, the 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 €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. On May 23, 2022, the Company entered into a Waiver and Amendment Letter which increased the PPI to 0.75% upon maturity. This right constituted 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.

Following Curetis' insolvency filing, on November 20, 2023, Curetis received a termination notice from the EIB terminating the Standstill Agreement effective as of November 20, 2023. On December 4, 2023, the Company received a notice from the EIB stating that Curetis is in default of the Finance Contract as a result of, among other things, Curetis' failure to repay when due certain outstanding indebtedness under the Finance Contract. Pursuant to that certain Guarantee and Indemnity Agreement, dated July 9, 2020, between the EIB and the Company, the EIB demanded that the Company, as guarantor, immediately repay the EIB all amounts owed to the EIB under the Finance Contract and reserved all its other rights and remedies in connection with the Finance Contract. The Company determined the fair value of the PPI using the Monte Carlo simulation model as of December 31, 2023, but as the EIB demanded that OpGen immediately repay the aggregate amount of principal, accrued interest and all other amounts owed, the Company included the PPI component along with the principal and interest in short-term notes payable as of December 31, 2023.

The fair value of level 3 liabilities measured at fair value on a recurring basis for the years ended December 31, 2023 and 2022 was as follows:

Description	Balance at December 31, 2022	Change in Fair Value	Effect of Foreign Exchange Rates	Balance at December 31, 2023
Participation percentage interest liability	\$ 99,498	\$ (65,876)	\$ (33,622)	\$ -
Total revenue	<u>\$ 99,498</u>	<u>\$ (65,876)</u>	<u>\$ (33,622)</u>	<u>\$ -</u>

Description	Balance at December 31, 2021	Change in Fair Value	Effect of Foreign Exchange Rates	Balance at December 31, 2022
Participation percentage interest liability	\$ 228,589	\$ (113,741)	\$ (15,350)	\$ 99,498
Total revenue	<u>\$ 228,589</u>	<u>\$ (113,741)</u>	<u>\$ (15,350)</u>	<u>\$ 99,498</u>

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 year ended December 31, 2023, the Company recorded impairment expense of \$1,231,874 related to its property and equipment (see Note 3) and \$849,243 related to its right-of-use lease asset (see Note 3). During the year ended December 31, 2022, the Company recorded impairment expense of \$6,940,549 related to its goodwill (see Note 3) and \$5,407,699 related to its indefinite-lived intangible asset (see Note 3).

Note 6 - Debt

The following table summarizes the Company's long-term debt and short-term borrowings as December 31, 2023 and 2022:

	December 31,	
	2023	2022
EIB	\$ 10,873,867	\$ 13,489,178
Total debt obligations	10,873,867	13,489,178
Unamortized debt discount	-	(1,614,591)
Carrying value of debt	10,873,867	11,874,587
Less current portion	(10,873,867)	(7,023,901)
Long-term debt	\$ -	\$ 4,850,686

EIB Loan Facility

In 2016, Curetis entered into a contract for an up to €25.0 million senior, unsecured loan financing facility from the EIB. The funding could be drawn in up to five tranches within 36 months of entry into the contract, under the EIB amendment, and each tranche was to be repaid upon maturity five years after draw-down.

In April 2017, Curetis drew down a first tranche of €10.0 million from this facility. This tranche had 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, a second tranche of €3.0 million was drawn down. The terms and conditions are analogous to the first one. In June 2019, Curetis drew down a third tranche of €5.0 million from the EIB. In line with all prior tranches, the majority of interest is also deferred until repayment upon maturity. In return for the EIB waiving the condition precedent of a minimum cumulative equity capital raised of €15.0 million to disburse this €5.0 million third tranche, the parties agreed on a 2.1% PPI. Upon maturity of the tranche, the 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 the EIB on July 9, 2020, the parties adjusted the PPI percentage applicable to the third EIB tranche of €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. This right constituted an embedded derivative, which is separated and measured at fair value with changes being accounted for through income or loss. The EIB debt was measured and recognized at fair value as of the acquisition date. The fair value of the EIB debt was approximately €14.4 million (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.

On May 23, 2022, the Company and the EIB entered into a Waiver and Amendment Letter (the "2022 EIB Amendment") relating to the amendment of the EIB loan facility, between the EIB and Curetis, pursuant to which Curetis borrowed an aggregate amount of €18.0 million in three tranches. The 2022 EIB Amendment restructured the first tranche of approximately €13.4 million (including accumulated and deferred interest) of the Company's outstanding indebtedness with the EIB. Pursuant to the 2022 EIB Amendment, the Company repaid €5.0 million to the EIB in April 2022. The Company also agreed, among other things, to amortize the remainder of the debt tranche over the twelve-month period beginning in May 2022. Accordingly, the Company agreed to pay a monthly amount of approximately €0.7 million through April 2023. The Amendment also provided for an increase of the PPI applicable to the third tranche under the loan facility from 0.3% to 0.75%. The terms of the second and third tranches of the Company's indebtedness of €3.0 million and €5.0 million, respectively, plus accumulated deferred interest, remained unchanged pursuant to the 2022 EIB Amendment. The second tranche became due and payable by the Company to the EIB in June 2023, and the third tranche will become due and payable in June 2024. As the effective borrowing rate under the amended agreement is less than the effective borrowing rate under the previous agreement, a concession is deemed to have been granted under ASC 470-60. As a concession has been granted, the agreement was accounted for as a troubled debt restructuring under ASC 470-60. The amendment did not result in a gain on restructuring as the future undiscounted cash outflows required under the amended agreement exceed the carrying value of the debt immediately prior to the amendment.

On June 26, 2023, the Company announced that its subsidiary Curetis and the European Investment Bank (“EIB”) agreed in principle to certain terms relating to the repayment of the second tranche of Curetis’ loan from the EIB pursuant to that certain Finance Contract, dated December 12, 2016, as amended, by and between Curetis and the EIB (the “Finance Contract”). The second tranche had a principal balance of €3 million plus accumulated and deferred interest. The second tranche was drawn down in June 2018 and matured on June 22, 2023. On July 4, 2023, the EIB and Curetis entered into a Standstill Agreement pursuant to which the EIB agreed that, with respect to each default or event of default relating to such second tranche, the EIB would not take any action or exercise any right under the Finance Contract until the earlier of a restructuring of the second tranche and November 30, 2023. As a condition to entering into the Standstill Agreement, Curetis paid the EIB a partial payment of interest on the second tranche of €1 million on June 22, 2023. In addition, Curetis agreed to certain undertakings during the standstill period, including the delivery of a rolling cash flow forecast and to cause a third-party restructuring expert to prepare and deliver a restructuring opinion to the EIB. EIB could terminate the Standstill Agreement upon notice to Curetis if, among other customary termination rights, Curetis or the guarantors fail to comply with any undertakings in the Standstill Agreement, the third party expert determines that there are no prospects for a successful restructuring of the second tranche and that it therefore will be unable to issue a restructuring opinion, or the cash flow forecast shows a negative liquidity shortfall during the specified period.

On November 20, 2023, Curetis received a termination notice from the EIB terminating the Standstill Agreement effective as of November 20, 2023. The EIB’s termination notice stated that the termination of the Standstill Agreement was as a result of and in connection with certain defaults of the Standstill Agreement arising from, among other related reasons, Curetis’ and Ares’ entry into insolvency proceedings. On December 4, 2023, the Company received a notice from the EIB stating that Curetis is in default of the Finance Contract as a result of, among other things, Curetis’ failure to repay when due certain outstanding indebtedness under the Finance Contract. In its notice, the EIB stated that, as of November 16, 2023, the aggregate amount of principal, accrued interest and all other amounts owed by Curetis to the EIB under the Finance Contract was approximately 9.66 million euro and that interest will continue to accrue in accordance with the Finance Contract until all amounts owed are paid in full. Pursuant to that certain Guarantee and Indemnity Agreement, dated July 9, 2020 (the “Guaranty”), between the EIB and the Company, the EIB demanded that the Company, as guarantor, immediately repay the EIB all amounts owed to the EIB under the Finance Contract and reserved all of its other rights and remedies in connection with the Finance Contract. As of the year ended December 31, 2023, the Guaranty remained unpaid and outstanding, with the liability reflected on the Company’s financial statements, which was previously on Curetis’ balance sheet.

In connection with the Company’s entry into the March 2024 Purchase Agreement with David E. Lazar on March 25, 2024, the Company entered into settlement agreements with each of the EIB and Curetis and Curetis’ trustee in insolvency, pursuant to which the parties agreed to settle outstanding liabilities amongst the parties. Pursuant to the settlement agreements, following the final closing of the transactions contemplated by the March 2024 Purchase Agreement, the Company will pay \$2.0 million of the proceeds to settle all outstanding debt of the Company to each of EIB and Curetis. The settlement agreement with EIB also terminated the Guaranty (see Note 12).

As of December 31, 2023, the outstanding borrowings under all tranches were €9.8 million (approximately \$10.9 million), including deferred interest payable at maturity of €1.5 million (approximately \$1.7 million).

Total interest expense (including amortization of debt discounts and financing fees) on all debt instruments was \$1,838,933 and \$3,256,410 for the years ended December 31, 2023 and 2022, respectively.

Note 7 - Stockholders' Equity

As of December 31, 2023, the Company had 100,000,000 shares of authorized common stock and 1,282,686 shares issued and outstanding, and 10,000,000 shares of authorized preferred stock, of which 250 were issued and outstanding.

Following receipt of approval from stockholders at a special meeting of stockholders held on November 30, 2022, 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 shares, and the reverse stock split was effective January 5, 2023. All share amounts and per share prices in this Annual Report have been adjusted to reflect the reverse stock split.

Following receipt of approval from stockholders at a special meeting of stockholders held on May 9, 2024, 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 ten shares, and the reverse stock split was effective May 20, 2024. All share amounts and per share prices in this Annual Report have been adjusted to reflect the reverse stock split (see Note 12).

On June 24, 2022, the Company entered into an At-the-Market, or ATM, Offering Agreement (the "2022 ATM Agreement") with H.C. Wainwright & Co., LLC ("Wainwright"), as a sales agent, 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 \$10.65 million of shares of the Company's common stock through Wainwright. As of December 31, 2022, the Company sold 8,574 shares under the 2022 ATM Agreement totaling \$1.03 million in gross proceeds and \$0.99 million in net proceeds. The Company did not sell any shares under the 2022 ATM Agreement in 2023.

On October 3, 2022, the Company closed a registered direct offering of shares of common stock and Series C Mirroring Preferred Stock pursuant to a securities purchase agreement entered into with a certain institutional investor. In the offering, the Company agreed to issue and sell to the investor (i) 26,800 shares of the Company's common stock, par value \$0.01 per share, (ii) 33,810 shares of the Company's Series C Mirroring Preferred Stock, par value \$0.01 per share and stated value of \$0.01 per share, and (iii) pre-funded warrants to purchase an aggregate of 21,500 shares of common stock. Each share of common stock was sold at a price of \$70.00 per share, each share of preferred stock was sold at a price of \$0.01 per share, and each pre-funded warrant was sold at an offering price of \$68.00 per share underlying such pre-funded warrants, for aggregate gross proceeds of \$3.34 million before deducting the placement agent's fees and the offering expenses, and net proceeds of \$3.04 million. Under the purchase agreement, the Company also agreed to issue and sell to the investor, in a concurrent private placement, warrants to purchase an aggregate of 48,300 shares of common stock. In connection with the offering, the Company also entered into a warrant amendment agreement with the investor pursuant to which the Company agreed to amend certain existing warrants to purchase up to 74,150 shares of common stock that were previously issued to the investor in 2018 and 2021, with exercise prices ranging from \$410.00 to \$13,000.00 per share as a condition to their purchase of the securities in the offering, as follows: (i) lower the exercise price of the investor's existing warrants to \$75.40 per share, (ii) provide that the existing warrants, as amended, will not be exercisable until six months following the closing date of the offering, and (iii) extend the original expiration date of the existing warrants by five and one-half years following the close of the offering. The increase in fair value resulting from the warrant modifications is accounted for as an equity issuance cost, resulting in a debit and credit to additional paid in capital for approximately \$1.8 million. As of December 31, 2022, all 21,500 pre-funded warrants were exercised and all 33,810 shares of the Company's Series C Mirroring Preferred Stock were automatically cancelled and ceased to be outstanding following receipt of stockholder approval for the Company's reverse stock split on November 30, 2022. In connection with the Company's best-efforts public offering consummated in May 2023, the Company amended the exercise price of the existing warrants to \$7.785 per share.

On January 11, 2023, the Company closed a best-efforts public offering pursuant to a securities purchase agreement with a certain institutional investor for the purchase of (i) 32,121 shares of the Company's common stock, par value \$0.01 per share, (ii) pre-funded warrants to purchase up to an aggregate of 226,500 shares of common stock (the "Pre-funded Warrants"), (iii) Series A-1 common warrants to purchase an aggregate of 258,621 shares of common stock (the "Series A-1 Warrants"), and (iv) Series A-2 common warrants to purchase an aggregate of 258,621 shares of common stock (the "Series A-2 Warrants," and together with the Series A-1 Warrants, the "Common Warrants"). Each share of common stock and accompanying Common Warrants were sold at a price of \$29.00 per share and accompanying Common Warrants, and each Pre-funded Warrant and accompanying Common Warrants were sold at an offering price of \$28.90 per share underlying such Pre-funded Warrants and accompanying Common Warrants, for aggregate gross proceeds of approximately \$7.5 million before deducting the placement agent's fees and the offering expenses, and net proceeds of approximately \$6.9 million. The Common Warrants have an exercise price of \$26.50 per share. The Series A-1 Warrants were immediately exercisable upon issuance, and will expire five years following the issuance date. The Series A-2 Warrants were immediately exercisable upon issuance, and will expire eighteen months following the issuance date. Subject to certain ownership limitations described in the Pre-funded Warrants, the Pre-funded Warrants were immediately exercisable and could be exercised at a nominal consideration of \$0.10 per share of common stock any time until all the Pre-funded Warrants are exercised in full. All Pre-funded Warrants were exercised by February 15, 2023. In connection with the Company's best-efforts public offering consummated in May 2023, the Company amended the exercise price of the Common Warrants to \$7.785 per share.

On May 4, 2023, the Company closed a best-efforts public offering pursuant to a securities purchase agreement with a certain institutional investor, pursuant to which the Company issued and sold to the Investor (i) 60,500 shares of the Company's common stock, par value \$0.01 per share, (ii) pre-funded warrants to purchase up to an aggregate of 389,083 shares of common stock, and (iii) common warrants to purchase up to an aggregate of 449,583 shares of common stock. Each share of common stock and accompanying common warrant was sold at a price of \$7.785 per share and accompanying common warrant, and each pre-funded warrant and accompanying common warrant was sold at an offering price of \$7.685 per share underlying such pre-funded warrant and accompanying common warrant, for aggregate gross proceeds of approximately \$3.5 million and net proceeds of approximately \$3.0 million. The common warrants have an exercise price of \$7.785 per share and will be exercisable beginning on the date of stockholder approval of the exercisability of the warrants under Nasdaq rules or may be exercised through October 26, 2023, pursuant to the Warrant Inducement Agreement entered into on October 12, 2023. Pursuant to amendment agreements entered into by the Company and Holder on October 26, 2023 and February 7, 2024, the Company agreed to initially extend the offer period until December 31, 2023, and subsequently extend the offer period until April 30, 2024 (see Note 12). In order to permit the exercise of the Existing Warrants pursuant to the rules of the Nasdaq Capital Market, the Holder agreed to pay as additional consideration \$0.25 per share of common stock issued upon exercise of the Existing Warrants. The common warrants not exercised as part of the Inducement Agreement will expire on the five-year anniversary of the date of such stockholder approval. Each pre-funded warrant has an exercise price per share of common stock equal to \$0.10 per share and may be exercised at any time until the pre-funded warrants are exercised in full. In connection with the offering, the Company also entered into a warrant amendment agreement with the investor pursuant to which the Company amended certain existing warrants to purchase up to 639,691 shares of common stock that were previously issued in 2018, 2021, 2022 and 2023 to the investor, with exercise prices ranging from \$26.50 to \$75.40 per share, in consideration for their purchase of the securities in the offering, as follows: (i) lower the exercise price of the existing warrants to \$7.785 per share, (ii) provide that the existing warrants, as amended, will not be exercisable until the receipt of stockholder approval for the exercisability of the common warrants in the offering, and (iii) extend the original expiration date of the existing warrants by five years following the receipt of such stockholder approval. The increase in fair value resulting from the warrant modifications is accounted for as an equity issuance cost, resulting in a debit and credit to additional paid in capital of approximately \$0.3 million. As of December 31, 2023, the Holder exercised 200,000 shares of Common Stock under the existing warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company.

On October 11, 2023, the Company entered into a Preferred Stock Purchase Agreement (the “Purchase Agreement”) with a single investor (the “Investor”), pursuant to which the Company agreed to issue and sell to the Investor in a private placement (the “Private Placement”) 1,000 shares of the Company’s Series D Preferred Stock, par value \$0.01 per share (the “Preferred Stock”). Each share of preferred stock was agreed to sell at a price of \$1,000 per share for expected aggregate gross proceeds of \$1.0 million before deducting offering expenses. The Private Placement was conducted in connection with the negotiation of a potential strategic transaction involving the Company and the Investor. The Company intended to use the proceeds of the Private Placement to fund the Company’s operations while it pursued a potential strategic transaction with the Investor. Pursuant to the Purchase Agreement, the Company filed a certificate of designation (the “Certificate of Designation”) with the Secretary of State of the State of Delaware designating the rights, preferences and limitations of the shares of preferred stock on October 11, 2023. The Certificate of Designation provides that the shares of preferred stock have a stated value of \$1,000 per share and are convertible into shares of common stock, par value \$0.01 per share of the Company at a price of \$4.09 per share, subject to adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications, or similar events affecting the common stock. The preferred stock may be converted at any time at the option of the holder. Notwithstanding the foregoing, the Certificate of Designation provides that in no event will the preferred stock be convertible into common stock in a manner that would result in the holder, its permitted transferees and affiliates holding more than 19.99% (together with any shares of common stock otherwise held by the Investor, its permitted transferees and their affiliates) of the then issued and outstanding common stock (the “Ownership Limitation”), prior to the date that the Company’s stockholders approve the issuance of shares of common stock to the holder upon conversion of the preferred stock (the “stockholder approval”). Upon receipt of stockholder approval, the shares of preferred stock will automatically be converted into shares of common stock without further action of the holder thereof. The Investor funded \$250,000 of the expected aggregate gross proceeds of \$1.0 million before deducting offering expenses on November 14, 2023. On December 13, 2023, in coordination with the Investor, the Company issued to the Investor 250 shares of Series D Preferred Stock in consideration for the partial payment. As of December 31, 2023, all 250 Series D Preferred Shares remain outstanding and the remaining \$750,000 of the purchase price remains unpaid. The Company reserves all rights and remedies arising from the Investor’s failure to close the transaction and the Investor will continue to be in breach of the Purchase Agreement until the remaining amount is paid in full.

On October 12, 2023, the Company entered into a warrant inducement agreement (the “Inducement Agreement”) with a holder (the “Holder”) of certain existing warrants (the “Existing Warrants”) to purchase shares of common stock, par value \$0.01 per share, of the Company. Pursuant to the Inducement Agreement, the Holder agreed to exercise for cash their Existing Warrants to purchase up to 1,089,274 shares of the Company’s common stock at an exercise price of \$7.785 per share, the exercise price per share of the Existing Warrants, during the period from the date of the Inducement Agreement until 7:30 a.m., Eastern Time, on October 26, 2023. Pursuant to amendment agreements entered into by the Company and Holder on October 26, 2023 and February 7, 2024, the Company agreed to initially extend the offer period until December 31, 2023, and subsequently extend the offer period until April 30, 2024 (see Note 12). In order to permit the exercise of the Existing Warrants pursuant to the rules of the Nasdaq Capital Market, the Holder agreed to pay as additional consideration \$0.25 per share of common stock issued upon exercise of the Existing Warrants. In consideration of the Holder’s agreement to exercise the Existing Warrants in accordance with the Inducement Agreement, the Company agreed to issue new warrants (the “Inducement Warrants”) to purchase shares of common stock equal to 100% of the number of shares of common stock issued upon exercise of the Existing Warrants (the “Inducement Warrant Shares”). The Inducement Warrants will have an exercise price of \$3.36 per share and will be exercisable on the six-month anniversary of the date of issuance and expire on the five-year anniversary of the Inducement Warrant’s first becoming exercisable. As of December 31, 2023, the Holder exercised 200,000 shares of Common Stock under the existing warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company.

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) 271 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. Following Board of Director approval, 11,600 shares were automatically added to the 2015 Plan in 2023. 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 December 31, 2023, 11,852 shares remain available for issuance under the 2015 Plan.

For the years ended December 31, 2023 and 2022, the Company recognized share-based compensation expense as follows:

	Years Ended	
	December 31,	
	2023	2022
Cost of services	\$ (442)	\$ 10,092
Research and development	(10,647)	302,021
General and administrative	333,863	497,128
Sales and marketing	(86,800)	141,694
	<u>\$ 235,974</u>	<u>\$ 950,935</u>

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

As of December 31, 2023, the Company had unrecognized expense related to its stock options of \$0.3 million, which will be recognized over a weighted average period of 1.2 years.

A summary of the status of options granted is presented below as of and for the years ended December 31, 2023 and 2022:

	Number of Options	Weighted- Average Exercise Price	Weighted- Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value
Outstanding at December 31, 2021	8,567	\$ 1,376.00	8.5	\$ -
Granted	2,813	\$ 156.10		
Exercised	-	\$ -		
Forfeited	(324)	\$ 311.10		
Expired	(295)	\$ 6,417.80		
Outstanding at December 31, 2022	10,761	\$ 934.50	7.9	\$ -
Granted	-	\$ -		
Exercised	-	\$ -		
Forfeited	(420)	\$ 299.80		
Expired	(717)	\$ 1,012.10		
Outstanding at December 31, 2023	9,624	\$ 1,064.84	6.8	\$ -
Vested and expected to vest	9,624	\$ 1,064.84	6.8	\$ -
Exercisable at December 31, 2023	7,433	\$ 1,378.72	5.1	\$ -

The total fair value of options vested in the years ended December 31, 2023 and 2022 was \$646,606 and \$571,282, respectively. The fair value of each option grant was estimated at the date of grant using the Black-Scholes option pricing model based on the assumptions below:

	Years Ended December 31,	
	2023	2022
Annual dividend	-	-
Expected life (in years)	-	5.75 – 6.25
Risk free interest rate	-	1.46% – 4.24%
Expected volatility	-	117.2% – 119.8%

Restricted stock units

A summary of the status of restricted stock units granted is presented below as of and for the years ended December 31, 2023 and 2022:

	Number of Units	Weighted- Average Grant Date Fair Value
Unvested at December 31, 2021	1,432	\$ 406.00
Granted	3,903	\$ 149.40
Vested	(867)	\$ 1,793.50
Forfeited	(177)	\$ 223.30
Unvested at December 31, 2022	4,291	\$ 173.30
Granted	10,500	\$ 1.06
Vested	(3,465)	\$ 181.63
Forfeited	(2,550)	\$ 19.70
Unvested at December 31, 2023	<u>8,326</u>	<u>\$ 20.55</u>

As of December 31, 2023, there were approximately \$66,000 of unrecognized compensation costs related to restricted stock units, which is expected to be recognized over a weighted average period of 1.0 years.

Stock purchase warrants

At December 31, 2023 and 2022, the following warrants to purchase shares of common stock were outstanding:

Issuance	Exercise Price	Expiration	Outstanding at December 31,	
			2023 (1)	2022 (1)
February 2015	\$ 660,000.00	February 2025	3	3
February 2018	\$ 16,250.00	February 2023	-	47
February 2018	\$ 13,000.00	February 2023	-	385
October 2019	\$ 400.00	October 2024	1,770	1,770
October 2019	\$ 520.00	October 2024	1,175	1,175
November 2020	\$ 504.40	May 2026	1,211	1,211
February 2021	\$ 780.00	August 2026	2,084	2,084
October 2022	\$ 75.40	April 2028	-	122,450
May 2023	\$ 7.785	(2)	889,274	-
October 2023	\$ 3.36	April 2029	200,000	-
			<u>1,095,517</u>	<u>129,125</u>

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

- Warrants to purchase fractional shares of common stock resulting from the reverse stock splits effected on January 5, 2023 and May 20, 2024 were rounded up to the next whole share of common stock on a holder by holder basis.
- Warrants will be exercisable beginning on the date of stockholder approval of the exercisability of the warrants under Nasdaq rules or, pursuant to the Warrant Inducement Agreement entered into on October 12, 2023, as amended on October 26, 2023 and February 7, 2024 (the "Inducement Agreement"), upon the payment of additional consideration of \$0.25 per share of common stock issued upon exercise of any existing warrants (see Note 12). The warrants not exercised as part of the Inducement Agreement will expire on the five-year anniversary of the date of such stockholder approval.

Note 8 - Income Taxes

The Company's loss before income taxes was \$32.7 million and \$37.3 million for the years ended December 31, 2023 and 2022, respectively.

The Company's provision for income taxes consists of the following for the years ended December 31, 2023 and 2022:

	December 31,	
	2023	2022
Current income tax provision		
Federal	\$ -	\$ -
State	-	-
Foreign	-	-
Total	-	-
Deferred income tax provision		
Federal	-	-
State	-	-
Foreign	-	-
Total	-	-
Total provision for income taxes	\$ -	\$ -

At December 31, 2023 and 2022, the Company had deferred tax assets of \$110,664,601 and \$106,624,343, respectively, primarily due to NOL carryforwards, research and development ("R&D") credits, and the deconsolidation of subsidiaries. The Company's net deferred tax assets at December 31, 2023 and 2022 have been offset by a valuation allowance of \$110,358,421 and \$106,060,462, respectively. The valuation allowance has been recorded due to the uncertainty of realization of the deferred tax assets. The Company's deferred tax assets and liabilities as of December 31, 2023 and 2022 are as follows:

	December 31,	
	2023	2022
Deferred tax assets:		
NOL carryforward	\$ 89,055,237	\$ 102,095,463
R&D credit carryforward	2,559,479	2,559,479
Share-based compensation	729,693	724,265
Interest expense	-	-
ROU liabilities	553,374	586,067
Deconsolidation of subsidiary	17,161,363	-
Accruals and other	605,455	659,069
Total deferred tax assets	110,664,601	106,624,343
Valuation allowance	(110,358,421)	(106,060,462)
Deferred tax liabilities:		
Intangible assets	-	-
ROU assets	(35)	(220,040)
Depreciation	(306,145)	(343,841)
Net	\$ -	\$ -

The difference between the Company's expected income tax provision (benefit) from applying federal statutory tax rates to the pre-tax loss and actual income tax provision (benefit) relates to the effect of the following:

	<u>2023</u>	<u>2022</u>
Federal income tax benefit at statutory rates	21.0%	21.0%
Permanent adjustment	(0.1)%	(0.5)%
Provision to return adjustment	0.2%	0.5%
State income tax benefit, net of federal benefit	10.7%	2.2%
Foreign rate differential	(11.6)%	3.8%
Lost or expired NOLs	(7.0)%	(28.4)%
Blended state tax rate change effect on deferrals	0.0%	1.3%
Change in valuation allowance	(13.2)%	0.1%
	<u>0.0%</u>	<u>0.0%</u>

Management followed the guidance in ASC 740, which states that "a cumulative loss in recent years is a significant piece of negative evidence that is difficult to overcome" and concluded that the Company's net deferred tax assets were not realizable as of December 31, 2023 and 2022. Accordingly, a valuation allowance of \$110.4 million and \$106.1 million has been recorded to offset the net deferred tax assets.

The Company has federal NOL carryforwards of \$241,110,447 and \$232,682,072 at December 31, 2023 and 2022, respectively. The NOL carryforwards incurred prior to 2018 began expiring in 2023. In December 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act"), most of the provisions of which took effect starting in 2018. Under the Tax Act, the amount of post 2017 NOLs that we are permitted to deduct in any taxable year is limited to 80% of our taxable income in such year, where taxable income is determined without regard to the NOL deduction itself. In addition, the Tax Act generally eliminates the ability to carry back any NOL to prior taxable years, while allowing post 2017 unused NOLs to be carried forward indefinitely. Utilization of the NOL carryforwards may be subject to an annual limitation as provided by Section 382 of the Code, defined earlier. There can be no assurance that the NOL carryforwards will ever be fully utilized. 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, as amended. The Company will continue to monitor this matter going forward. There can be no assurance that the NOL carryforwards will ever be fully utilized.

On March 27, 2020, the United States enacted the CARES Act. The CARES Act is an emergency economic stimulus package that includes spending and tax breaks to strengthen the United States economy and fund a nationwide effort to curtail the effect of COVID-19. While the CARES Act provides sweeping tax changes in response to the COVID-19 pandemic, some of the more significant provisions which are expected to impact the Company's financial statements include removal of certain limitations on utilization of net operating losses, increasing the loss carryback period for certain losses to five years, and increasing the ability to deduct interest expense, as well as amending certain provisions of the previously enacted Tax Cuts and Jobs Act. The Company doesn't believe that the CARES Act will have a material impact on its financial position, results of operations, or cash flows.

The Tax Act amended IRC Section 174 to require capitalization of all research and development ("R&D") costs incurred in tax years beginning after December 31, 2021. These costs are required to be amortized over five years if the R&D activities are performed in the U.S., or over 15 years if the activities were performed outside the U.S. The Company capitalized approximately \$23 thousand of R&D expenses incurred as of December 31, 2023.

Note 9 - Commitments and Contingencies

Registration and other stockholder rights

In connection with the various investment transactions, the Company entered into certain registration rights agreements with stockholders, pursuant to which the investors were granted certain demand registration rights and/or piggyback and/or resale registration rights in connection with subsequent registered offerings of the Company's common stock.

Note 10 - Leases

The following table presents the Company's ROU assets and lease liabilities as of December 31, 2023 and 2022:

Lease Classification	December 31, 2023	December 31, 2022
ROU Assets:		
Operating	\$ -	\$ 1,459,413
Financing	138	3,500
Total ROU assets	\$ 138	\$ 1,462,913
Liabilities		
Current:		
Operating	\$ 147,943	\$ 377,626
Finance	280	3,364
Noncurrent:		
Operating	2,021,616	2,566,138
Finance	-	280
Total lease liabilities	\$ 2,169,839	\$ 2,947,408

Maturities of lease liabilities as of December 31, 2023 by year are as follows:

Maturity of Lease Liabilities	Operating	Finance	Total
2024	\$ 358,348	\$ 280	\$ 358,628
2025	368,179	-	368,179
2026	378,279	-	378,279
2027	388,682	-	388,682
2028	399,388	-	399,388
Thereafter	1,338,300	-	1,338,300
Total lease payments	3,231,176	280	3,231,456
Less: Interest	(1,061,617)	-	(1,061,617)
Present value of lease liabilities	\$ 2,169,559	\$ 280	\$ 2,169,839

Consolidated statements of operations classification of lease costs as of the years ended December 31, 2023 and 2022 are as follows:

Lease Cost	Classification	Years ended December 31,	
		2023	2022
Operating	Operating expenses	\$ 582,001	\$ 605,139
Finance:			
Amortization	Operating expenses	3,362	86,967
Interest expense	Other expenses	-	1,701
Total lease costs		\$ 585,363	\$ 693,807

Other lease information as of December 31, 2023 is as follows:

Other Information	Total
Weighted average remaining lease term (in years)	
Operating leases	8.2
Finance leases	0.1
Weighted average discount rate:	
Operating leases	10.0%
Finance leases	1.0%

Supplemental cash flow information as of the years ended December 31, 2023, and 2022 is as follows:

Supplemental Cash Flow Information	2023	2022
Cash paid for amounts included in the measurement of lease liabilities		
Cash used in operating activities		
Operating leases	\$ 582,001	\$ 605,139
Finance leases	\$ -	\$ 1,701
Cash used in financing activities		
Finance leases	\$ 3,364	\$ 43,150
ROU assets obtained in exchange for lease obligations:		
Operating leases	\$ 801,321	\$ -

Note 11 - License Agreements, Research Collaborations and Development Agreements

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 framework agreement, which had an initial term of 36 months and was subsequently extended to January 31, 2025, Ares Genetics and Sandoz intended 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, aimed 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 have already developed resistance against multiple treatment options. In the longer-term, the platform was expected to enable surveillance for antimicrobial resistant pathogens to inform antimicrobial stewardship and the development of novel anti-infectives that are less prone to encounter resistance and thereby preserve antibiotics as an effective treatment option. Following Ares Genetics' insolvency filing, the Company will no longer benefit from this framework agreement.

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 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 original 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 had 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. The contract was subsequently amended in May 2021 to a non-exclusive license and a flat annual license fee as well as a royalty percentage on potential future panel-based products that are developed by Qiagen. Following the insolvency filings of Curetis and Ares Genetics, the Company will no longer benefit from this strategic licensing agreement.

Siemens

In 2016, Ares Genetics acquired the GEAR assets from Siemens Technology Accelerator GmbH ("STA"), providing the original foundation to ARESdb. Under the agreement with STA, Ares Genetics incurs royalties on revenues from licensed product sales or sublicensing proceeds. Royalty rates under the Siemens agreement range from 1.3% to 40% depending on the specifics of the licenses and rights provided by Ares Genetics to third parties and whether such third parties may have been originally introduced by Siemens to Ares Genetics. The total net royalty expense related to this agreement was \$7,318 and \$9,546 for the years ended December 31, 2023 and 2022, respectively. Following Ares Genetics' insolvency filing, the Company will no longer generate licensed product sales or sublicense revenues nor incur royalty expenses related to the Siemens GEAR assets.

Foundation for Innovative New Diagnostics (FIND)

On September 20, 2022, Curetis GmbH and FIND entered into a research and development collaboration agreement for a total amount due to Curetis of €0.7 million to develop a simple to use molecular diagnostic test for identification of pathogens and antibiotic resistances in positive blood cultures for deployment in low- and middle-income countries ("LMICs"). On April 4, 2023, the Company entered into an amendment to its research and development collaboration agreement with FIND to expand the deliverables in exchange for an additional €0.13 million in milestone payments ("Amendment 1"). The additional deliverables were completed by June 30, 2023. Following successful completion of the feasibility phase of the collaboration, including the additional deliverables, FIND and Curetis, on August 1, 2023, extended the research and development collaboration agreement through May 31, 2024, to include AMR assay and cartridge development, analytical testing, and software development for an additional €0.5 million ("Amendment 2"). The Company recognized revenues of \$0.6 million and \$0.3 million from the FIND collaboration for the years ended December 31, 2023 and 2022, respectively. Following Curetis' insolvency filing, the Company will no longer benefit from this collaboration agreement.

Note 12 - Subsequent Events

The Company evaluates subsequent events and transactions that occur after the balance sheet date up to the date that the consolidated financial statements are issued.

Other than as disclosed in this Note 12 and as was disclosed in Notes 1, 2, 6, and 7 to the accompanying consolidated financial statements, there have been no subsequent events that require adjustment or disclosure in the accompanying consolidated financial statements.

On February 7, 2024, the Company and a holder (the "Holder") of certain existing warrants (the "Existing Warrants") to purchase shares of common stock, par value \$0.01 per share (the "Common Stock"), of the Company agreed to amend (the "Amendment") that certain warrant inducement agreement entered into by the Company and the Holder on October 12, 2023 and amended on October 26, 2023 (as amended, the "Inducement Agreement"). Pursuant to the Inducement Agreement, the Holder agreed to exercise for cash their Existing Warrants to purchase up to 1,089,274 shares of the Company's Common Stock at an exercise price of \$7.785 per share, the exercise price per share of the Existing Warrants, during the period from the date of the Inducement Agreement until December 31, 2023. As of December 31, 2023, the Holder exercised 200,000 shares of Common Stock under the Existing Warrants pursuant to the Inducement Agreement for aggregate gross proceeds to the Company of \$2.057 million before deducting financial advisory fees and other expenses payable by the Company. The Holder did not exercise any additional Existing Warrants after December 31, 2023. Except for the extension of the offer period pursuant to the Amendment, the terms and conditions of the Inducement Agreement remain unchanged. Since the warrant inducement period was not extended beyond April 30, 2024, the Company is required to hold a stockholders' meeting to obtain approval for the exercisability of the existing common warrants within 70 days of the end of the extension period.

As previously disclosed, on December 11, 2023, the Company requested a hearing by the Nasdaq Hearings Panel (the "Panel") of The Nasdaq Stock Market LLC ("Nasdaq") to appeal the Nasdaq listing staff's (the "Staff") determination to delist the Company's securities as a result of the failure of the Company's common stock to comply with the minimum bid price requirement of Nasdaq Listing Rule 5550(a)(2) (the "Bid Price Rule"). In response to the Company's request, on February 9, 2024, the Company received written notification (the "Notice") from Nasdaq notifying the Company that the Panel had granted the Company's request for an additional period, during which the Company will remain listed on Nasdaq, to regain compliance with the Bid Price Rule. Pursuant to the Notice, the Panel granted the Company an additional period until June 3, 2024 to regain compliance. The extension is subject to certain conditions specified by the Panel in the Notice. While the Company intends to comply with such conditions, there can be no assurance that the Company will be able to regain or remain in compliance with the applicable Nasdaq listing requirements on an ongoing basis or that the Panel will afford the Company additional time to achieve compliance.

On March 25, 2024, the then-current members of the Board of Directors (the "Board") approved an increase in the size of the Board and appointed Mr. Lazar to the Board. On March 25, 2024, in connection with the initial closing of the transactions contemplated by the March 2024 Purchase Agreement noted below, the then-current members of the Board of Directors (the "Board") of the Company voted to appoint Avraham Ben-Tzvi, David Natan, and Matthew C. McMurdo as new, independent directors. The then-current members of the Board thereafter resigned effective as of March 25, 2024. The initial term as director for Messrs. Ben-Tzvi, Natan, McMurdo, and Lazar will expire at the Company's 2025 annual meeting of stockholders. At the time of the election, none of the new directors were appointed to any committees of the Board of Directors. The Board deemed Mr. Ben-Tzvi, Mr. Natan, and Mr. McMurdo as independent pursuant to Rule 5605 of the Nasdaq Listing Requirements. The Board intends to engage Mr. Lazar as an executive officer of the Company, and thereby does not deem him independent.

On March 25, 2024, the Company entered into a securities purchase agreement (the “March 2024 Purchase Agreement”) with David E. Lazar, pursuant to which the Company agreed to sell 3,000,000 shares of Series E Convertible Preferred Stock (“Series E Preferred Stock”) to Mr. Lazar at a price of \$1.00 per share for aggregate gross proceeds of \$3.0 million. In connection with the transactions contemplated by the March 2024 Purchase Agreement, the members of the Board of Directors prior to the closing of such transactions resigned, and a new Board of Directors was appointed, of which Mr. Lazar was appointed Chairman. On March 25, 2024, Mr. Lazar paid \$200,000 at the initial closing of the transactions under the March 2024 Purchase Agreement in exchange for 200,000 shares of Series E Preferred Stock. Mr. Lazar subsequently paid \$200,000 and \$150,000 on April 5, 2024 and April 23, 2024, respectively, in exchange for an additional 350,000 shares of Series E Preferred Stock. Mr. Lazar is expected to fund the remaining \$2.45 million in early June 2024, at which time he will receive the remaining 2.45 million shares of Series E Preferred Stock. Each share of Series E Preferred Stock is convertible into 2.4 shares of the Company’s common stock (“Common Stock”); provided, that, in no event, will the Series E Preferred Stock be convertible into Common Stock in a manner that would result in Mr. Lazar or his transferees or their affiliates holding more than the lesser of (i) 19.99% (together with any other shares of Common Stock otherwise held by them or their affiliates) and (ii) such lower percentage as may be required by applicable stock exchange rules of the then issued and outstanding Common Stock (the “Ownership Limitation”), prior to the date that the Company’s stockholders approve the issuance of shares of Common Stock to Mr. Lazar upon conversion of the Series E Preferred Stock. In connection with the transactions contemplated by the March 2024 Purchase Agreement, the Company entered into settlement agreements (the “Settlement Agreements”) with each of the European Investment Bank (“EIB”) and Curetis GmbH, the Company’s subsidiary (“Curetis”), and Curetis’ trustee in insolvency, pursuant to which the Company settled outstanding liabilities amongst the parties. Pursuant to the settlement agreements and the March 2024 Purchase Agreement, following the final closing of transactions contemplated by the March 2024 Purchase Agreement, the Company will pay \$2.0 million of the proceeds to settle all outstanding debt of the Company to each of EIB and Curetis. The settlement agreement with EIB also terminated that certain Guarantee and Indemnity Agreement, dated as of July 9, 2020, by and between the EIB and the Company, pursuant to which the Company had guaranteed all of Curetis’ debt to EIB.

On March 26, 2024, the Company entered into an Inducement Offer to Amend Common Stock Purchase Warrants (the “Offer”) with an investor (the “Investor”). Pursuant to the Offer, the investor agreed to waive certain rights that would otherwise have been triggered under their warrants as a result of the transactions contemplated by the March 2024 Purchase Agreement, in exchange for the Company entering into the March 2024 Purchase Agreement.

Effective April 1, 2024, the Company entered into a lease assignment agreement where the Company assigned, transferred, set over and conveyed to an assignee all its estate, right, title and interest in and to the lease at its Rockville, Maryland headquarters. The Company’s security deposit will remain with the landlord and be repaid over time as agreed upon with the assignee.

On April 11, 2024, the Company entered into an Employment Agreement with David E. Lazar. Pursuant to the Employment Agreement, the Company engaged Mr. Lazar to act as its Chief Executive Officer (“CEO”). Mr. Lazar will have the customary powers and responsibilities of a CEO of a corporation of the size and type of the Company. Effective April 1, 2024, Mr. Lazar shall be paid a base salary of \$406,000 per annum, which shall be deferred and accrued until the Company’s compensation committee determines that the Company is sufficiently liquid to pay the accrued salary. Under the Agreement, Mr. Lazar will also be eligible for certain annual bonuses, annual incentive bonuses, and special bonuses. The Agreement has a three (3) year term. Mr. Lazar also serves as the Chairman of the Board of Directors of the Company.

On April 18, 2024, the Company received a notice from The Nasdaq Stock Market LLC (“Nasdaq”) stating that the Company was delinquent in filing its Annual Report on Form 10-K for the fiscal year ended December 31, 2023 (the “Form 10-K”) and was therefore not in compliance with Nasdaq Listing Rule 5250(c)(1). The notice indicated that such delinquency serves as an additional basis for delisting the Company’s securities in addition to the failure to comply with the Minimum Bid Price Rule described previously. In accordance with the notice, the Company submitted its response to the Nasdaq Hearings Panel regarding such delinquency and the Company’s plan to cure such delinquency by June 3, 2024, the additional period to regain compliance granted by such Nasdaq Hearings Panel. The Company plans to file its Form 10-K as soon as practicable; however, no assurance can be given as to the definitive date on which such reports will be filed or the final decision of the Nasdaq Hearings Panel regarding a delisting of the Company’s securities. As with the prior notices, the most recent notice from Nasdaq has no immediate effect on the listing of the Company’s securities on The Nasdaq Capital Market.

On April 22, 2024, UHY LLP (“UHY”), the Company’s then-current independent public accounting firm, notified the Company that UHY would resign as the Company’s auditor effective as of April 22, 2024. During the period of UHY’s engagement, which commenced in March 2023, UHY did not provide any report on the financial statements of the Company. During the fiscal years ended December 31, 2023 and 2022 and the subsequent interim period through April 22, 2024, there were no: (1) disagreements with UHY on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedures, which disagreements, if not resolved to their satisfaction, would have caused them to make reference in connection with their opinion to the subject matter of the disagreement, or (2) reportable events under Item 304(a)(1)(v) of Regulation S-K. In light of such resignation, on April 23, 2024, the Company engaged Beckles & Co., Inc. (“Beckles”) to serve as the Company’s independent registered public accounting firm for the fiscal year ending December 31, 2023 and upcoming interim period. The appointment of Beckles as the Company’s independent registered public accounting firm was approved by the Company’s Board of Directors.

On April 23, 2024, the Company entered into a letter agreement with Camtech Pte Ltd, a Singaporean family office (“Camtech”), for the sale of certain of the Company’s inventory and customer contracts for its Unyvero products. The transaction was entered into following the prior acquisition by Camtech in April 2024 of the assets from the Company’s subsidiary, Curetis GmbH (“Curetis”), as part of Curetis’ insolvency proceedings. The purchase price for the transaction is \$218,000, and the transaction closed in May 2024. As part of such letter agreement, the Company also offered Camtech the opportunity to purchase its remaining Unyvero inventory and assets for up to an additional \$176,000. Until such sale for the remaining inventory is completed, the Company will maintain commercial operations and service support for the Unyvero systems. The foregoing transactions are part of the Company’s planned exit from its Unyvero business, as the Company continues to seek strategic alternatives.

On May 9, 2024, the Company held a special meeting of stockholders (the “Special Meeting”). The Company’s stockholders voted on three proposals, each of which was described in the Company’s proxy statement for the Special Meeting dated May 9, 2024. At the Special Meeting, shares of the Company’s capital stock representing 14,795,642 votes out of a total of 26,435,902 votes of the Company’s capital stock, as of April 26, 2024, the record date for the Special Meeting, were represented in person or by proxy at the Special Meeting. All three of the following proposals were voted upon and approved at the Special Meeting. Proposal 1 approved (i) the issuance to David E. Lazar of the common stock issuable upon the conversion of the Company’s Series E Preferred Stock in excess of applicable beneficial ownership limitations, the issuance of which would result in a “change of control” under the rules of The Nasdaq Capital Market and (ii) an amendment of the Certificate of Designation for the Series E Preferred Stock removing such ownership limitations. Proposal 2 approved the amendment to the Company’s Amended and Restated Certificate of Incorporation, as amended (the “Charter”), to effect a reverse stock split at a ratio not less than two-to-one and not more than ten-to-one, such ratio and the implementation and timing of such reverse stock split to be determined in the discretion of our Board of Directors. Proposal 3 approved of an adjournment of the Special Meeting to a later date, if necessary or appropriate, to permit further solicitation and vote of proxies in the event that there are insufficient votes for, or otherwise in connection with, Proposals 1 and 2. Following the approval of the amendment of the Certificate of Designation, the Company filed the amendment with the Secretary of State of the State of Delaware on May 9, 2024. Except for the removal of the Ownership Limitation, the amendment does not make any other changes to the Certificate of Designation.

On May 16, 2024, the Company entered into an Amendment Agreement (the “Amendment Agreement”) with the European Investment Bank (the “EIB”) relating to the previously disclosed settlement agreement, dated March 25, 2024, by and between the Company and the EIB (the “Settlement Agreement”). As previously disclosed, in connection with the sale and issuance of shares of preferred stock of the Company to David E. Lazar (the “Private Placement”), the Company entered into the Settlement Agreement with the EIB, which provided, among other things, for the settlement of outstanding liabilities between the EIB, the Company and the Company’s subsidiary, Curetis GmbH (“Curetis”), and the termination of the Company’s guarantee of Curetis’ debt to EIB. Pursuant to the Settlement Agreement, the Company agreed to pay a portion of the proceeds (the “Settlement Amount”) of the Private Placement to the EIB upon the final closing of the Private Placement. As a result of the delay of the final closing of the Private Placement due to the delay in filing the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2023, the Company and the EIB entered into the Amendment Agreement in order to extend the timing for the payment of the Settlement Amount to June 3, 2024.

On May 16, 2024, the Company announced that it intended to effect a reverse stock split (the “Reverse Stock Split”) of its issued and outstanding shares of common stock, par value \$0.01 per share (the “Common Stock”), at a ratio of 1 post-reverse-split share for every 10 pre-reverse-split shares (the “Reverse Split Ratio”). The Common Stock will continue to be traded on The Nasdaq Capital Market under the symbol “OPGN” and began trading on a split-adjusted basis when the markets opened on Monday, May 20, 2024, under a new CUSIP number, 68373L505. The Company filed an Amendment to the Company’s Amended and Restated Certificate of Incorporation, as amended, with the Secretary of State of the State of Delaware on May 17, 2024, and the Reverse Stock Split became effective in accordance with the terms of the Amendment on May 20, 2024 (the “Effective Time”). The Reverse Stock Split impacts all holders of OpGen’s common stock proportionally and will not impact any stockholders’ percentage ownership of common stock (except to the extent the Reverse Stock Split results in any stockholder owning a fractional share). No fractional shares will be issued in connection with the Reverse Stock Split. Stockholders of record who would otherwise be entitled to receive a fractional share will receive a whole share in lieu of the fractional share.

On May 20, 2024, the Company received a notice from The Nasdaq Stock Market LLC (“Nasdaq”) stating that the Company was delinquent in filing its Quarterly Report on Form 10-Q for the period ended March 31, 2024 (the “Form 10-Q”) and was therefore not in compliance with Nasdaq Listing Rule 5250(c)(1). The notice indicated that such delinquency serves as an additional basis for delisting the Company’s securities in addition to the failure to comply with the Minimum Bid Price Rule as well as the failure to timely file its Annual Report on Form 10-K for the fiscal year ended December 31, 2023. In accordance with the notice, the Company submitted its response to the Nasdaq Hearings Panel regarding such delinquency and the Company’s plan to cure such delinquency. On May 29, 2024, the Nasdaq Hearings Panel granted the Company’s request for continued listing subject to the Company filing its Form 10-Q by July 8, 2024. The Company plans to file its Form 10-Q as soon as practicable; however, no assurance can be given as to the definitive date on which such report will be filed.

OPGEN, INC.

INSIDER TRADING POLICY**I. Purpose**

This Insider Trading Policy (the “Policy”) provides guidelines with respect to transactions in the securities of OpGen, Inc. (the “Company”) and the handling of confidential information about the Company and the companies with which the Company does business. The Company’s Board of Directors has adopted this Policy to promote compliance with federal and state securities laws that prohibit certain persons who are aware of material nonpublic information about a company from: (i) trading in securities of that company; or (ii) providing material nonpublic information to other persons who may trade on the basis of that information.

II. Persons Subject to the Policy

This Policy applies to all officers, all members of the Board of Directors and all employees of the Company and its affiliates and subsidiaries. The Company may also determine that other persons should and will be subject to this Policy, such as contractors or consultants who have access to material nonpublic information.

This Policy also applies to your family members who reside with you (including a spouse, a child, a child away at college, stepchildren, grandchildren, parents, stepparents, grandparents, siblings and in-laws), anyone else who lives in your household, and any family members who do not live in your household but whose transactions in the Company’s securities (collectively referred to in this Policy as “Company Securities”) are directed by you or are subject to your influence or control, such as parents or children who consult with you before they trade in Company Securities (collectively referred to as “Family Members”). You are responsible for the transactions of these other persons and therefore should make them aware of the need to confer with you before they trade in Company Securities, and you should treat all such transactions for the purposes of this Policy and applicable securities laws as if the transactions were for your own account. This Policy does not, however, apply to personal securities transactions of Family Members where the purchase or sale decision is made by a third party not controlled by, influenced by or related to you or your Family Members.

III. Transactions Subject to the Policy

This Policy applies to transactions in Company Securities, including (but not limited to) the Company’s common stock, options to purchase common stock, preferred stock, convertible debt and warrants, or any other type of securities that the Company has or may issue, as well as derivative securities that are not issued by the Company, such as exchange-traded put or call options or swaps relating to the Company Securities. In addition, this Policy applies to transactions in securities of other companies as described below in more detail under the heading “Statement of Policy.”

This Policy applies to transactions by any entities that you influence or control, including any corporations, partnerships or trusts (collectively referred to as “Controlled Entities”), and transactions by these Controlled Entities should be treated for the purposes of this Policy and applicable securities laws as if they were for your own account.

IV. Individual Responsibility

Persons subject to this Policy have ethical and legal obligations to maintain the confidentiality of information about the Company and to not engage in transactions in Company Securities while in possession of material nonpublic information. Each individual is responsible for making sure that he or she complies with this Policy, and that any Family Members or Controlled Entities whose transactions are subject to this Policy, as discussed below, also comply with this Policy. In all cases, the responsibility for determining whether an individual is in possession of material nonpublic information rests with that individual, and any action on the part of the Company, the legal counsel to the Company or any other employee or director pursuant to this Policy (or otherwise) does not in any way constitute legal advice or insulate an individual from liability under applicable securities laws. You could be subject to severe legal penalties and disciplinary action by the Company for any conduct prohibited by this Policy or applicable securities laws, as described below in more detail under the heading “Consequences of Violations.”

V. Statement of Policy

It is the policy of the Company that no person subject to this Policy, who is aware of material nonpublic information relating to the Company may, directly, or indirectly through family members or other persons or entities:

1. engage in transactions in Company Securities, except as otherwise specified in this Policy under the headings “Transactions Not Subject to the Policy,” “Transactions Not Involving a Purchase or Sale” and “Rule 10b5-1 Plans;”
2. recommend the purchase or sale of any Company Securities;
3. disclose material nonpublic information to persons within the Company, also including its affiliates and subsidiaries, whose jobs do not require them to have that information, or outside of the Company and its affiliates and subsidiaries to other persons, including, but not limited to, family, friends, business associates, investors and expert consulting firms, unless any such disclosure is made in accordance with the Company’s policies regarding the protection or authorized external disclosure of information regarding the Company; or
4. assist anyone engaged in the above activities.

In addition, it is the policy of the Company that no person subject to this Policy who, in the course of working for the Company or its affiliates and subsidiaries, learns of material nonpublic information about a company with which the Company does business, including a customer, supplier or competitor of the Company, may engage in any of the activities set forth above with respect to such company’s securities until the information becomes public or is no longer material.

Furthermore, short-term trading of Company Securities may be distracting to a person and may unduly focus such person on the Company’s short-term stock market performance instead of the Company’s long-term business objectives. In addition, directors and officers are subject to short swing profit forfeiture for purchases and sales (or sales and purchases) within a six-month period. For these reasons, it is the policy of the Company that any director or officer of the Company, also including its affiliates and subsidiaries, who purchases Company Securities in the open market may not sell any Company Securities of the same class during the six months following the purchase (or vice versa).

There are no exceptions to this Policy, except as specifically noted herein. Transactions that may be necessary or justifiable for independent reasons (such as the need to raise money for an emergency expenditure), or small transactions, are not excepted from this Policy. The securities laws do not recognize any mitigating circumstances, and, in any event, even the appearance of an improper transaction must be avoided to preserve the Company’s reputation for adhering to the highest standards of conduct.

VI. Definition of Material Nonpublic Information

Material Information. Information is considered “material” if a reasonable investor would consider that information important in making a decision to buy, hold or sell securities. Any information that could be expected to affect the Company’s stock price, whether it is positive or negative, should be considered material. Determining whether information is material is not always straightforward; rather, materiality is based on an assessment of all of the facts and circumstances and is often evaluated by enforcement authorities with the benefit of hindsight. While it is not possible to define all categories of material information, some examples of information that ordinarily would be regarded as material are (non-exhaustive):

- Projections of future earnings or losses, or other earnings guidance;
- Changes to previously announced earnings guidance, or the decision to suspend earnings guidance;
- Development of significant new products or discoveries;
- Results of significant clinical trials;
- The gain or loss of a significant customer or supplier;
- Major marketing changes;
- A pending or proposed merger, acquisition or tender offer;
- A pending or proposed acquisition or disposition of a significant asset or entities;
- Pending or threatened significant litigation, or the resolution of such litigation;
- A pending or proposed joint venture;
- A change in dividend policy, the declaration of a stock split, or an offering of additional securities;
- Bank borrowings or other financing transactions out of the ordinary course;
- The establishment of a repurchase program for Company Securities;
- A change in the Company’s pricing or cost structure;
- A change in management;
- A Company restructuring;
- Significant related party transactions; and
- A change in auditors or notification that the auditor’s reports may no longer be relied upon.

When Information is Considered Public. Information that has not been disclosed to the public is generally considered to be nonpublic information. In order to establish that the information has been disclosed to the public, it may be necessary to demonstrate that the information has been widely disseminated. Information generally would be considered widely disseminated if it has been disclosed through the Dow Jones “broad tape,” newswire services, publication in a widely available newspaper, magazine or news website, or public disclosure documents filed with the Securities and Exchange Commission (“SEC”) that are available on the SEC’s website. By contrast, information would likely not be considered widely disseminated if it is available only to the Company’s employees, or if it is only available to a select group of analysts, brokers and institutional investors.

Once information is widely disseminated, it is still necessary to afford the investing public with sufficient time to absorb the information. As a general rule, information should not be considered fully absorbed by the marketplace until *after the second business day after* the day on which the information is released. If, for example, the Company were to make an announcement at the close of business on a Monday, a person covered by this Policy should not trade in Company Securities until Thursday. Depending on the particular circumstances, the Company may determine that a longer or shorter period should apply to the release of specific material nonpublic information.

VII. Special and Prohibited Transactions

The Company has determined that there is a heightened legal risk and/or the appearance of improper or inappropriate conduct if persons subject to this Policy engage in certain types of transactions. It therefore is the Company’s policy that any persons covered by this Policy may not engage in any of the following transactions, or should otherwise consider the Company’s preferences as described below:

Short Sales. Section 16(c) of the Securities Exchange Act of 1934 (the “Exchange Act”) prohibits officers and directors from engaging in short sales. In addition, short sales of Company Securities (*i.e.*, the sale of a security that the seller does not own) may evidence an expectation on the part of the seller that the securities will decline in value, and therefore have the potential to signal to the market that the seller lacks confidence in the Company’s prospects. In addition, short sales may reduce a seller’s incentive to seek to improve the Company’s performance. For these reasons, short sales of Company Securities are prohibited (Short sales arising from certain types of hedging transactions are governed by the paragraph below entitled “Hedging Transactions”).

Publicly Traded Options. Given the relatively short term of publicly traded options, transactions in options may create the appearance that a director or officer is trading based on material nonpublic information and focus a director’s or officer’s attention on short-term performance at the expense of the Company’s long-term objectives. Accordingly, transactions in put options, call options or other derivative securities, on an exchange or in any other organized market, are prohibited by this Policy (Option positions arising from certain types of hedging transactions are governed by the next paragraph below.).

Hedging Transactions. Hedging or monetization transactions can be accomplished through a number of possible mechanisms, including through the use of financial instruments such as prepaid variable forwards, equity swaps, collars and exchange funds. Such hedging transactions may permit a director or officer to continue to own Company Securities obtained through employee benefit plans or otherwise, but without the full risks and rewards of ownership. When that occurs, the director or officer may no longer have the same objectives as the Company’s other shareholders. Therefore, directors, officers and other persons designated by the CEO or CFO (or any other person designated as subject to this Policy) are prohibited from engaging in any such transactions.

Margin Accounts and Pledged Securities. Securities held in a margin account as collateral for a margin loan may be sold by the broker without the customer’s consent if the customer fails to meet a margin call. Similarly, securities pledged (or hypothecated) as collateral for a loan may be sold in foreclosure if the borrower defaults on the loan. Because a margin sale or foreclosure sale may occur at a time when the pledgor is aware of material nonpublic information or otherwise is not permitted to trade in Company Securities, directors, officers and other persons designated by the CEO or CFO (and any other person designated as subject to this Policy) are prohibited from holding Company Securities in a margin account or otherwise pledging Company Securities as collateral for a loan. Pledges of Company Securities arising from certain types of hedging transactions are governed by the paragraph above captioned “Hedging Transactions”.

Standing and Limit Orders. Standing and limit orders (except standing and limit orders under approved Rule 10b5-1 Plans, as described below) create heightened risks for insider trading violations similar to the use of margin accounts. There is no control over the timing of purchases or sales that result from standing instructions to a broker, and as a result the broker could execute a transaction when a director, officer, or other employee (or any other person designated as subject to this Policy) is in possession of material nonpublic information. The Company therefore discourages placing standing or limit orders on Company Securities. If a person subject to this Policy determines that they must use a standing order or limit order, the order should be limited to short duration and should otherwise comply with the restrictions and procedures outlined below under the heading “Additional Procedures”.

VIII. Transactions Not Subject to the Policy

Transactions Under Company Plans: This Policy does not apply in the case of the following transactions, except as specifically noted.

Stock Option Exercises. This Policy does not apply to the exercise of a stock option acquired pursuant to the Company’s stock option and incentive plans, nor to the exercise of a tax withholding right pursuant to which a person has elected to have the Company withhold shares subject to an option to satisfy tax withholding requirements. This Policy does apply, however, to any sale of stock as part of a broker-assisted cashless exercise of an option, or any other market sale for the purpose of generating the cash needed to pay the exercise price of an option.

Restricted Stock Awards/RSUs. This Policy does not apply to the vesting of restricted stock or restricted stock units (“RSUs”), nor to the exercise of a tax withholding right pursuant to which a person has elected to have the Company withhold shares of stock to satisfy tax withholding requirements upon the vesting of any restricted stock or RSUs. The Policy does not apply to any market sale of shares to cover withholding or related tax obligations under vesting restricted stock or RSUs.

401(k) Plan. This Policy does not apply to purchases of Company Securities in any Company 401(k) plan resulting from your periodic contribution of money to the plan pursuant to your payroll deduction election. This Policy does or can, in the future, apply to certain elections you may make under a 401(k) plan, including: (a) an election to increase or decrease the percentage of your periodic contributions that will be allocated to the Company stock fund; (b) an election to make an intra-plan transfer of an existing account balance into or out of the Company stock fund; (c) an election to borrow money against a 401(k) plan account if the loan will result in a liquidation of some or all of your Company stock fund balance; and (d) an election to pre-pay a plan loan if the pre-payment will result in allocation of loan proceeds to the Company stock fund.

Other Similar Transactions. Any other purchase of Company Securities from the Company or sales of Company Securities to the Company are not subject to this Policy.

Transactions not involving a Purchase or Sale: Bona fide gifts are not transactions subject to this Policy, unless the person making the gift has reason to believe that the recipient intends to sell the Company Securities while the director, officer, or other employee (or any other person designated as subject to this Policy) is aware of material nonpublic information. Further, transactions in mutual funds that are invested in Company Securities are not transactions subject to this Policy.

IX. Additional Procedures

The Company has established additional procedures to assist the Company in the administration of this Policy, to facilitate compliance with laws prohibiting insider trading while in possession of material nonpublic information, and to avoid the appearance of any impropriety. These additional procedures are applicable only to those individuals described below.

Pre-Clearance Procedures. When being an insider, any person subject to this Policy, as well as the Family Members and Controlled Entities of such persons, may not engage in any transaction in Company Securities without first obtaining pre-clearance of the transaction from the CFO. A request for pre-clearance should be submitted to the CFO in writing at least two business days in advance of the proposed transaction. The CFO is under no obligation to approve a transaction submitted for pre-clearance and may determine not to permit the transaction. If a person seeks pre-clearance and permission to engage in the transaction is denied, then he or she should refrain from initiating any transaction in Company Securities and should not inform any other person of the restriction. If permission to trade is given, the trade must be affected within five business days unless otherwise agreed by the CFO.

When a request for pre-clearance is made, the requestor should carefully consider whether he or she may be aware of any material nonpublic information about the Company and should describe fully those circumstances to the CFO. The requestor should also indicate whether he or she has affected any non-exempt “opposite-way” transactions within the past six months and should be prepared to report the proposed transaction on an appropriate Form 4 or Form 5. The requestor should also be prepared to comply with SEC Rule 144 and file Form 144, if necessary, at the time of any sale.

Quarterly Blackout Period. No person subject to this Policy may buy or sell Company Securities during the “Quarterly Blackout Period,” beginning two (2) weeks before the last day of each quarter of the Company’s fiscal year and ending on the close of business of the third full trading day after the public announcement of the Company’s quarterly results. An exercise of a stock option is not prohibited during a Quarterly Blackout Period (but the sale of the shares acquired on exercise is prohibited). Likewise, purchases pursuant to any Company employee stock purchase plan are not prohibited (but the subsequent sale of such shares is prohibited, as is the sale of shares held in a 401(k) plan).

Event-Specific Blackout Period. From time to time, an event may occur that is material to the Company and is known by only a few directors, officers and/or employees. So long as the event remains material and nonpublic, the persons designated by the EC may not trade in Company Securities. In addition, the Company’s financial results may be sufficiently material in a particular fiscal quarter that, in the judgment of the CEO or CFO, designated persons should refrain from trading in Company Securities even sooner than the Quarterly Blackout Period described above. In such situations (an “Event-Specific Blackout Period”), the EC or any other employee designated by them will notify these persons that they may not trade in Company Securities. The existence of an Event-Specific Blackout Period or extension of a Quarterly Blackout Period will not be announced to the Company as a whole and should not be communicated to any other person.

Even if you are not designated as a person who may not trade during an Event-Specific Blackout Period, you should not trade while aware of material nonpublic information. Exceptions will not be granted during an Event-Specific Blackout Period. The existence or non-existence of a blackout period does not alter the general prohibitions against trading based on material nonpublic information, which are applicable at all times.

X. Rule 10b5-1 Plans

Rule 10b5-1 under the Exchange Act provides a defense from insider trading liability under Rule 10b-5. In order to be eligible to rely on this defense, a person subject to this Policy must enter into a Rule 10b5-1 plan for transactions in Company Securities that meets certain conditions specified in the rule (a “Rule 10b5-1 Plan”). If the plan meets the requirements of Rule 10b5-1, Company Securities may be purchased or sold without regard to certain insider trading restrictions. To comply with the Policy, a Rule 10b5-1 Plan must be acknowledged and authorized by the CEO or CFO and meet the requirements of Rule 10b5-1. In general, a Rule 10b5-1 Plan must be entered into at a time when the person entering into the plan is not aware of material nonpublic information. Once the plan is adopted, the person must not exercise any influence over the amount of securities to be traded, the price at which they are to be traded or the date of the trade. The plan must either specify the amount, pricing and timing of transactions in advance or delegate discretion on these matters to an independent third party.

Any Rule 10b5-1 Plan must be submitted for approval ten days prior to the entry into the Rule 10b5-1 Plan. No further pre-approval of transactions conducted pursuant to the Rule 10b5-1 Plan will be required.

XI. Post-Termination Transactions

This Policy continues to apply to transactions in Company Securities even after a person's termination of service to the Company or its respective affiliates or subsidiaries. If an individual is in possession of material nonpublic information when his or her service terminates, that individual may not trade in Company Securities until that information has become public or is no longer material.

XII. Consequences of Violations

The purchase or sale of securities while aware of material nonpublic information, or the disclosure of material nonpublic information to others who then trade in Company Securities, is prohibited by federal and state laws. Insider trading violations are pursued vigorously by the SEC, U.S. Attorneys and state enforcement authorities as well as the laws and authorities of foreign jurisdictions. Insider trading is a criminal offense, not merely a misdemeanor, and the punishment for insider trading violations are therefore severe and could include significant fines and even imprisonment. While the regulatory authorities concentrate their efforts on the individuals who trade, or who tip inside information to others who trade, the US federal securities laws, as well as the corresponding laws of other countries, also impose potential liability on companies and other "controlling persons" if they fail to take reasonable steps to prevent insider trading by company personnel.

In addition, an individual's failure to comply with this Policy may subject the individual to Company-imposed sanctions, including and up to, without limitation, removal from one's position and dismissal for cause, whether or not a person's failure to comply with the Policy results in a violation of law. Needless to say, a violation of law, or even an SEC investigation that does not result in prosecution, can tarnish a person's reputation and irreparably damage a career.

XIII. Administration of the Policy

The Company's CEO and CFO, and in such person's absence, the Company's Controller or another employee designated by the CEO, shall be responsible for administration of this Policy. All determinations and interpretations by the CEO and CFO shall be final and not subject to further review.

Any person who has a question about this Policy or its application to any proposed transaction may obtain additional guidance from the CFO. Just drop by at his office, give him a call on his phone or send him an email to CFO@opgen.com.

XIV. Certification

All persons subject to this Policy must certify their understanding of, and intent to comply with, this Policy by signing and returning the respective certification or (electronic) training record to the respective HR-dept. Certification is necessary upon joining OpGen-group or after material changes were made to the policy.

CERTIFICATION

I certify that:

1. I have read and understand OpGen Inc.'s Insider Trading Policy (the "Policy"). I understand that the Chief Financial Officer is available to answer any questions I have regarding the Policy.
2. Since I have been affiliated with the Company, I have complied with the Policy.
3. I will continue to comply with the Policy for as long as I am subject to the Policy.

Print name: _____

Signature: _____

Date: _____

OPGEN, INC.

The following is a list of subsidiaries of OpGen, Inc. as of December 31, 2023:

Name	Jurisdiction of Incorporation
Curetis GmbH (in insolvency)	Germany
Ares Genetics GmbH (in insolvency)	Austria

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in Registration Statements No. 333-265421, No. 333-265420, No. 333-256821, No. 333-246354, No. 333-237513, No.333-231511, No. 333-224035, No. 333-216932, No. 333-216929, No. 333-210489 and No. 333-205864 on Form S-8, Registration Statements No. 333-275516, No. 333-258646, No. 333-256820, No. 333-250983, No. 333-239240, No. 333-236106, No. 333-213356 and No. 333-211996 on Form S-3, and Registration Statements No. 333-271190, 333-268648, 333-233775 and 333-222140 on Form S-1 of OpGen, Inc. of our report, dated June 3, 2024, which includes an explanatory paragraph related to OpGen, Inc.'s ability to continue as a going concern, with respect to our audit of the consolidated financial statements of OpGen, Inc. as of December 31, 2023 and for the year then ended, which report is included in this Annual Report on Form 10-K of OpGen, Inc. for the year ended December 31, 2023.

/s/ Beckles & Co., Inc.

West Palm Beach, Florida
June 3, 2024

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in Registration Statements No. 333-265421, No. 333-265420, No. 333-256821, No. 333-246354, No. 333-237513, No.333-231511, No. 333-224035, No. 333-216932, No. 333-216929, No. 333-210489, and No. 333-205864 on Form S-8 and Registration Statements No. 333-275516, No. 333-258646, No. 333-256820, No. 333-250983, No. 333-239240, No. 333-236106, No. 333-213356 and No. 333-211996 on Form S-3 of OpGen, Inc. of our report, which includes an explanatory paragraph related to OpGen, Inc.'s ability to continue as a going concern, dated March 30, 2023 (except for the effects of the reverse stock split discussed in Note 12, as to which the date is May 20, 2024), on our audit of the consolidated financial statements of OpGen, Inc. as of December 31, 2022 and for the year then ended, included in this Annual Report on Form 10-K of OpGen, Inc. for the year ended December 31, 2023.

/s/ CohnReznick LLP

Tysons, Virginia
June 3, 2024

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

I, David E. Lazar, Chief Executive Officer of OpGen, Inc., certify that:

1. I have reviewed this Annual Report on Form 10-K 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 and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's Board of Directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are 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: June 3, 2024

/s/ David E. Lazar

David E. Lazar

Chief Executive Officer and Chairman

(principal executive officer, principal financial officer, and
principal accounting officer)

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

In connection with the Annual Report on Form 10-K of OpGen, Inc. (the "Company") for the year ended December 31, 2023 (the "Report") as filed with the Securities and Exchange Commission on the date hereof, the undersigned Chief Executive Officer of the Company hereby certifies 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: June 3, 2024

/s/ David E. Lazar

David E. Lazar

Chief Executive Officer and Chairman

(principal executive 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.

OPGEN, INC.
COMPENSATION RECOUPMENT POLICY

1. Restatement. In the event of any required accounting restatement of the financial statements of OpGen, Inc. (the “Company”) due to the material noncompliance of the Company with any financial reporting requirement under the applicable U.S. federal securities laws, including any required accounting restatement to correct an error in previously issued financial statements that is material to the previously issued financial statements, or that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period (a “Restatement”), the Company will recover reasonably promptly from any person who is or was an “Executive Officer,” as such term is defined in Rule 10D-1 adopted under the Securities Exchange Act of 1934, as amended (the “Exchange Act”) and Rule 5608 of the Nasdaq listing rules, of the Company (each, a “Covered Person”) the amount of any “Erroneously Awarded Incentive-Based Compensation” (as defined below). This Policy is effective as of October 2, 2023, the effective date of Rule 5608 of the Nasdaq listing rules (the “Effective Date”).

2. Amount. The amount of Incentive-Based Compensation (as defined below) that must be recovered from a Covered Person pursuant to the immediately preceding paragraph is the amount of “Recoverable Incentive-Based Compensation” (as defined below) received by a Covered Person that exceeds the amount of Recoverable Incentive-Based Compensation that otherwise would have been received had it been determined based on the restated amounts, computed without regard to any taxes paid (referred to as the “Erroneously Awarded Incentive-Based Compensation”). For Recoverable Incentive-Based Compensation based on stock price or total shareholder return, where the amount of Erroneously Awarded Incentive-Based Compensation is not subject to mathematical recalculation directly from the information in a Restatement, the amount must be based on a reasonable estimate of the effect of the Restatement on the stock price or total shareholder return, as applicable, upon which the Recoverable Incentive-Based Compensation was received, and the Company must maintain documentation of that reasonable estimate and provide such documentation to the Nasdaq Stock Market LLC (“Nasdaq”). For the purposes of this Policy, Recoverable Incentive-Based Compensation will be deemed to be received in the fiscal period during which the financial reporting measure specified in the applicable Incentive-Based Compensation award is attained, even if the payment or grant occurs after the end of that period.

3. Definitions:

(a) “Incentive-Based Compensation” means any compensation that is granted, earned or vested based wholly or in part upon the attainment of a “financial reporting measure,” which means a measure that is determined and presented in accordance with Generally Accepted Accounting Principles which are used in preparing the Company’s financial statements, and any measure that is derived wholly or in part from such measures. Stock price and total shareholder return are also financial reporting measures for this purpose. For avoidance of doubt, a financial reporting measure need not be presented within the Company’s financial statements or included in a filing with the Securities and Exchange Commission.

(b) “Recoverable Incentive-Based Compensation” means all Incentive-Based Compensation received on or after the Effective Date of this Policy set forth above by a Covered Person: (i) after beginning service as an executive officer; (ii) who served as an Executive Officer at any time during the performance period for the Incentive-Based Compensation; (iii) while the Company has a class of securities listed on a national securities exchange or a national securities association; and (iv) during the three completed fiscal years immediately preceding the date that the Company is required to prepare a Restatement, including any applicable transition period that results from a change in the Company’s fiscal year within or immediately following those three completed fiscal years. For this purpose, the Company is deemed to be required to prepare a Restatement on the earlier of: (i) the date the Board of Directors of the Company (the “Board”), or the Company’s officers authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare a Restatement; and (ii) the date a court, regulator or other legally authorized body directs the Company to prepare a Restatement. The Company’s obligation to recover Erroneously Awarded Incentive-Based Compensation is not dependent on if or when the restated financial statements are filed with the Securities and Exchange Commission.

4. Recovery. The Company must recover the Erroneously Awarded Incentive-Based Compensation from Covered Persons unless the Board determines that recovery is impracticable because: (i) the direct expense to a third party to assist in enforcing this Policy would exceed the amount of Erroneously Awarded Incentive-Based Compensation; provided that, the Company must make a reasonable attempt to recover the Erroneously Awarded Incentive-Based Compensation before concluding that recovery is impracticable, document such reasonable attempt to recover the Erroneously Awarded Incentive-Based Compensation and provide such documentation to Nasdaq; or (ii) recovery would likely cause an otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of the Company, to fail to meet the applicable requirements of 26 U.S.C. 401(a)(13) or 26 U.S.C. 411(a) and regulations thereunder.

5. No Indemnification. In no event will the Company indemnify any Covered Person for any amounts that are recovered under this Policy. This Policy is in addition to (and not in lieu of) any right of repayment, forfeiture or right of offset against any employees that is required pursuant to any statutory repayment requirement (regardless of whether implemented at any time prior to or following the adoption or amendment of this Policy), including Section 304 of the Sarbanes-Oxley Act of 2002. Any amounts paid to the Company pursuant to Section 304 of the Sarbanes-Oxley Act of 2002 will be considered in determining any amounts recovered under this Policy.

6. Other Company Rights. The application and enforcement of this Policy does not preclude the Company from taking any other action to enforce a Covered Person's obligations to the Company, including termination of employment or institution of legal proceedings. Nothing in this Policy restricts the Company from seeking recoupment under any other compensation recoupment Policy or any applicable provisions in plans, agreements, awards or other arrangements that contemplate the recoupment of compensation from a Covered Person. If a Covered Person fails to repay Erroneously Awarded Incentive-Based Compensation that is owed to the Company under this Policy, the Company must take all appropriate action to recover any Erroneously Awarded Incentive-Based Compensation from the Covered Person, and the Covered Person will be required to reimburse the Company for all expenses (including legal expenses) incurred by the Company in recovering the Erroneously Awarded Incentive-Based Compensation.

7. Binding Effect. The terms of this Policy will be binding and enforceable against all Covered Persons subject to this Policy and their beneficiaries, heirs, executors, administrators or other legal representatives. If any provision of this Policy or the application of such provision to any Covered Person is adjudicated to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability will not affect any other provisions of this Policy, and the invalid, illegal or unenforceable provisions will be deemed amended to the minimum extent necessary to render any such provision (or the application of such provision) valid, legal or enforceable.

8. Acknowledgement by Employee. Each Covered Person must sign and return to the Company, within 30 calendar days following the later of (i) the Effective Date of this Policy first set forth above or (ii) the date the individual becomes a Covered Person, the Acknowledgement Form attached hereto as Exhibit A, pursuant to which the Covered Person agrees to be bound by, and to comply with, the terms and conditions of this Policy.

9. Interpretation. This Policy will be interpreted in a manner that is consistent with Rule 10D-1 under the Exchange Act, Rule 5608 of the Nasdaq listing rules and any related rules or regulations adopted by the Securities and Exchange Commission or Nasdaq (the "Applicable Rules") as well as any other applicable law. To the extent the Applicable Rules require recovery of incentive-based compensation in additional circumstances beyond those specified above, nothing in this Policy will be deemed to limit or restrict the right or obligation of the Company to recover incentive-based compensation to the fullest extent required by the Applicable Rules.

Adopted as of [____], 2023

**EXHIBIT A
OPGEN, INC.
COMPENSATION RECOUPMENT POLICY
ACKNOWLEDGEMENT FORM**

By signing below, the undersigned acknowledges and confirms that the undersigned has received and reviewed a copy of the OpGen, Inc. (the "Company") Compensation Recoupment Policy (the "Policy").

By signing this Acknowledgement Form, the undersigned acknowledges and agrees that the undersigned is and will continue to be subject to the Policy and that the Policy will apply both during and after the undersigned's employment with the Company. Further, by signing below, the undersigned agrees to abide by the terms of the Policy, including, without limitation, by returning any Erroneously Awarded Incentive-Based Compensation (as defined in the Policy) to the Company to the extent required by, and in a manner consistent with, the Policy.

The undersigned expressly agrees that the Company may deduct from the undersigned's paycheck or other compensation otherwise to the undersigned any Erroneously Awarded Incentive-Based Compensation

COVERED PERSON

Signature

Print Name

Date