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

FORM 10-K

(Mark one)

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

For the fiscal year ended **December 31, 2019**

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

For the transition period from _____ to _____

Commission file number **000-05576**

SPHERIX INCORPORATED
(Exact name of Registrant as specified in its Charter)

Delaware	**52-0849320**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
One Rockefeller Plaza, 11th Floor, New York, NY 10020	**703-992-9325**
(Address of principal executive offices)	(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock ($0.0001 par value per share)	SPEX	The NASDAQ Capital Market

Securities 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 definition of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

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

The aggregate market value of the voting stock held by non-affiliates of the registrant as of the last business day of the registrant's most recently completed second fiscal quarter ended June 30, 2019: $5,730,248 based upon the closing sale price of our common stock of $2.50 on that date. Common stock held by each officer and director and by each person known to own in excess of 5% of outstanding shares of our common stock has been excluded in that such persons may be deemed to be affiliates. The determination of affiliate status in not necessarily a conclusive determination for other purposes.

There were 4,825,549 shares of the Registrant's common stock outstanding as of January 30, 2020.

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PART I

SPECIAL CAUTIONARY NOTICE REGARDING FORWARD LOOKING STATEMENTS

This Annual Report on Form 10-K 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"). Forward looking statements are often identified by the words "will," "may," "believes," "estimates," "expects," "intends," "plans," "projects" and words of similar import. Such words and expressions are intended to identify such forward-looking statements, but are not intended to constitute the exclusive means of identifying such statements. Such forward looking statements involve known and unknown risks, uncertainties and other factors, including those described in "Risk Factors" below that may cause our actual results, performance or achievements, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward looking statements. Given these uncertainties, prospective investors are cautioned not to place undue reliance on such forward-looking statements.

All references in this Annual Report on Form 10-K to "we," "us," "our" and the "Company" refer to Spherix Incorporated, a Delaware corporation, and its consolidated subsidiaries unless the context requires otherwise.

Item 1. BUSINESS.

General

Spherix Incorporated was initially formed in 1967 and is currently a biotechnology company seeking to develop small-molecule anti-cancer therapeutics. The Company recently purchased the rights to patented technology from leading universities and researchers and we are currently in the process of developing innovative therapeutic drugs through partnerships with world renowned educational institutions, including The University of Texas at Austin and Wake Forest University. Our diverse pipeline of therapeutics includes therapies for pancreatic cancer, acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL).

Prior to the closing on December 5, 2019 of the acquisition of assets and rights from CBM BioPharma, Inc., a Delaware corporation ("CBM"), and since July 2013, the Company focused its efforts on owning, developing, acquiring and monetizing intellectual property assets. Since March 2016, the Company has received limited funds from its intellectual property monetization. In addition to its patent monetization efforts, since the fourth quarter of 2017, the Company has been transitioning to focus its efforts as a technology and biotechnology development company. These efforts have focused on biotechnology research and blockchain technology research. The Company's biotechnology research development includes investments in: (i) Hoth Therapeutics Inc. ("Hoth"), a development stage biopharmaceutical company focused on unique targeted therapeutics for patients suffering from indications such as atopic dermatitis, also known as eczema, and (ii) DatChat, Inc. ("DatChat"), a privately held personal privacy platform focused on encrypted communication, internet security and digital rights management.

As a result of the Company's biotechnology research development and associated investments and acquisitions, our business portfolio now focuses on the treatment of three different cancers, including pancreatic cancer, acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL). Our AML and ALL compounds, developed at the Wake Forest University, are next generation targeted therapeutics designed to overcome multiple resistance mechanisms observed with the current standard of care. DHA-dFdC, our pancreatic drug developed at the University of Texas at Austin, is a new compound which we hope to become the next generation of chemotherapy treatment for advanced pancreatic cancer. The Company believes that DHA-dFdC overcomes tumor cell resistance to current chemotherapeutic drugs and is well tolerated in preclinical toxicity tests. Preclinical studies have also indicated that DHA-dFdC inhibits pancreatic cancer cell growth (up to 100,000-fold more potent that gemcitabine, a current standard therapy), has documented efficacy against pancreatic tumors in a clinically relevant transgenic mouse model and has demonstrated activities against other cancers, including leukemia, lung and melanoma.

CBM BioPharma, Inc. Transaction

On October 10, 2018, the Company entered into that certain Agreement and Plan of Merger, dated as of October 10, 2018, by and among the Company, Spherix Delaware Merger Sub Inc., a Delaware corporation, Scott Wilfong, as the CBM stockholder representative, and CBM, pursuant to which all shares of capital stock of CBM would be converted into the right to receive an aggregate of 15,000,000 shares of the Company's common stock, with CBM continuing as the surviving corporation in the merger.

On May 15, 2019, the Company restructured the terms of the CBM merger and chose to proceed with purchasing substantially all of the assets, properties and rights (the "Acquisition") of CBM. On December 5, 2019, the Company completed the Acquisition of CBM, pursuant to that certain Asset Purchase Agreement, dated as of May 15, 2019, by and between the Company and CBM, as amended by that certain Amendment No. 1 to Asset Purchase Agreement, dated as of May 30, 2019, and Amendment No. 2 to Asset Purchase Agreement, dated as of December 5, 2019 (collectively, the "CBM Purchase Agreement"). As consideration for the Acquisition, the Company agreed to pay to CBM consideration consisting of (i) $1,000,000 in cash (the "Cash Consideration") and (ii) an aggregate of 1,939,058 shares (the "Stock Consideration") of the Company's common stock valued at a price per share of $3.61. The Cash Consideration will become payable to CBM upon the consummation by the Company of the first sale of the Company's common stock or any other equity or equity-linked financing of the Company to investors in or more transactions, after the date of the CBM Purchase Agreement, for which the Company receives aggregate gross proceeds of greater than $2,000,000 (a "Qualified Financing"). Upon the consummation of the Qualified Financing, the Company will retain the first $2,000,000 of the gross proceeds from the Qualified Financing and CBM will receive 100% of the gross proceeds of such Qualified Financing received by the Company in excess of $2,000,000 as well as the gross proceeds of any subsequent equity financings by the Company until the Cash Consideration amount is satisfied in full. Additionally, at closing, 7% or 135,734 shares of common stock of the Stock Consideration was deposited with VStock, the Company's transfer agent, to be held in escrow for six months post-closing to satisfy certain indemnification obligations pursuant to the terms and conditions of the CBM Purchase Agreement, and 93% or 1,803,324 shares of the Stock Consideration was issued and delivered to CBM.

Among the assets that Spherix acquired from CBM in the Acquisition are two drug candidates for the treatment of two cancers, acute myeloid leukemia ("AML") and pancreatic cancer.

KPC34

Developed at the Wake Forest School of Medicine, CBM's AML drug candidate ("KPC34") is designed to bypass the resistant mechanisms in AML cancer cells. In preclinical studies in mice, KPC34 has shown to be a superior treatment to gemcitabine, the current state of the art treatment for AML and has served to double the mean survival time of mice versus the current standard of care treatments. KPC34 has also been shown to be more effective in AML relapse cases in mice, notably increasing the lifespan of mice treated with the drug.

KPC34 is able to be orally administered, which may be critical for patients that are unable to tolerate repeated cycles of chemotherapy. Because of the low AML patient population, FDA orphan drug status will be sought for KPC34.

License Agreement with Wake Forest University

On April 17, 2018, CBM entered into a license agreement (the "WF Agreement") with Wake Forest University Health Sciences ("WF"). The WF Agreement granted to CBM an exclusive, royalty-bearing license to WF's and The University of North Carolina at Chapel Hill's patents relating to the KPC34 drug candidate (the "WF Patent Rights"). The WF Agreement also granted to CBM the right to sublicense.

CBM paid WF an upfront license fee of $10,000 and will owe an additional $10,000 per year to WF beginning on the third anniversary of the WF Agreement. In addition, CBM is obligated to pay to WF a single-digit royalty fee and certain other milestone and other payments upon sales milestones. The aggregate milestone payments under the WF Agreement are up to $1,400,000. In addition, as consideration for entering into the WF Agreement, CBM issued WF 5,000 shares of common stock to WF, which equaled 2% of CBM's issued and outstanding capital stock at the effective date of the WF Agreement.

The term of the WF Agreement continues until the expiration of the last of the WF Patent Rights to expire or the expiration of market exclusivity via orphan drug status or new chemical entity status (or their non-U.S. equivalents), or until the WF Agreement is earlier terminated. CBM may terminate the WF Agreement upon 90 days' prior written notice. Either party may terminate the WF Agreement upon a breach of the WF Agreement that has not been cured in 90 days. Additionally, the WF Agreement will automatically terminate in the event CBM becomes insolvent, makes an assignment for the benefit of creditors, or if a petition for bankruptcy is filed.

On November 13, 2019, WF, the Company and CBM entered into an assignment of agreement, whereby CBM assigned all of its rights, title and interest to, and obligations under the WF Agreement to the Company.

DHA-dFdC

Developed at the University of Texas at Austin, CBM's pancreatic cancer drug candidate ("DHA-dFdC") has shown positive results in preclinical studies, inhibiting pancreatic tumor growth in clinically relevant transgenic mouse models. Pancreatic cancer is a deadly disease that affects millions of people around the world.

DHA-dFdC has been shown to be well tolerated in preclinical toxicity tests, has demonstrated activities against other cancers (e.g. leukemia, lung, melanoma) and may stimulate immunogenic cell death to activate host antitumor immunity.

Patent License Agreement with the University of Texas at Austin

On April 12, 2018, CBM entered into a patent license agreement (the "UT Agreement") with the University of Texas at Austin on behalf of the Board of Regents of the University of Texas System. The UT Agreement granted to CBM an exclusive, royalty-bearing license to certain patent applications related to nucleobase analogue derivatives and their applications, and specifically to the DHA-dFdC drug candidate (the "UT Patent Rights"). The UT Agreement also granted to CBM the right to sublicense.

On November 13, 2019, the University of Texas at Austin, the Company and CBM entered into an assignment of agreement, whereby CBM assigned all of its rights, title and interest to, and obligations under the UT Agreement to the Company.

H.C. Wainwright & Co., LLC At The Market Offering

On August 9, 2019, the Company entered into that certain At The Market Offering Agreement, dated as of August 9, 2019, by and between the Company and H.C. Wainwright & Co., LLC, as agent ("H.C. Wainwright") (the "ATM Agreement"), pursuant to which the Company may offer and sell, from time to time through H.C. Wainwright, shares of the Company's common stock, having an aggregate offering price of up to $1.2 million (the "HCW Shares"). The offer and sale of the HCW Shares is made pursuant to a shelf registration statement on Form S-3 and the related prospectus (File No. 333-222488). Pursuant to the ATM Agreement, H.C. Wainwright may sell the HCW Shares by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415 of the Securities Act, including sales made by means of ordinary brokers' transactions, including on The NASDAQ Capital Market, at market prices or as otherwise agreed with H.C. Wainwright. H.C. Wainwright will use commercially reasonable efforts consistent with its normal trading and sales practices to sell the HCW Shares from time to time, based upon instructions from the Company, including any price or size limits or other customary parameters or conditions the Company may impose.

The Company is not obligated to make any sales of the HCW Shares under the ATM Agreement. The offering of HCW Shares pursuant to the ATM Agreement will terminate upon the earliest of (a) the sale of all of the HCW Shares subject to the ATM Agreement, (b) the termination of the ATM Agreement by H.C. Wainwright or the Company, as permitted therein, or (c) August 9, 2022. The Company will pay H.C. Wainwright a commission rate equal to 3.0% of the aggregate gross proceeds from each sale of HCW Shares and have agreed to provide H.C. Wainwright with customary indemnification and contribution rights. The Company will also reimburse H.C. Wainwright for certain specified expenses in connection with entering into the ATM Agreement. As of the date hereof, the Company has sold a total of 532,070 shares of common stock for aggregate gross proceeds of $1.2 million at an average selling price of $2.17 per share, resulting in net proceeds of $1.1 million after deducting commissions and other transaction costs.

DatChat Securities Purchase Agreement

On March 12, 2018, the Company entered into that certain Agreement and Plan of Merger, dated as of March 12, 2018, by and among the Company, Spherix Merger Subsidiary Inc., a Nevada corporation, Darin Myman, as the representative of the stockholders of the Company, and DatChat, as amended by that certain First Amendment to Agreement and Plan of Merger, dated as of May 3, 2018 (collectively, the "Merger Agreement"). DatChat developed a secure messaging application that utilizes blockchain technology. After further negotiations, the Company determined not to pursue a merger with DatChat and on August 8, 2018, entered into that certain Securities Purchase Agreement, dated as of August 8, 2018, by and between the Company and DatChat (the "DatChat Purchase Agreement"), pursuant to which the Company and DatChat agreed to terminate the Merger Agreement and release and discharge and hold harmless each of the other parties with respect to the transaction contemplated by the Merger Agreement.

Pursuant to a share purchase agreement, dated as of May 15, 2019, the Company purchased (i) 50,000 shares of common stock of CBM and (ii) certain securities and uncertificated rights of DatChat from an existing shareholder of CBM and DatChat for an aggregate purchase price of $350,000. The investment represents a 20% interest in CBM, and the securities and rights of DatChat that were purchased from the existing shareholder of CBM include: (a) a senior convertible note issued by DatChat with outstanding principal of $300,000, with an initial conversion rate of $0.20 per share (b) a warrant to purchase 2,250,000 shares of DatChat common stock at an initial exercise price of $0.20 per share, (c) an option to acquire an additional $300,000 senior convertible note and a warrant to purchase 1,500,000 shares of DatChat common stock, (d) a contingent option to purchase 500,000 shares of DatChat common stock from an existing DatChat stockholder, and (e) a contingent option to put 200,000 shares of DatChat common stock, subject to certain terms and conditions. The transaction closed on May 22, 2019.

Acquisition of shares of Hoth Therapeutics, Inc.

On June 30, 2017, the Company entered into that certain Securities Purchase Agreement, dated as of June 30, 2017, by and between the Company and Hoth (the "Hoth Purchase Agreement"), for the purchase of an aggregate of 1,700,000 shares of common stock, par value $0.0001 per share, of Hoth, for a purchase price of $675,000. Hoth is a development stage biopharmaceutical company focused on unique targeted therapeutics for patients suffering from indications such as atopic dermatitis, also known as eczema. Hoth's primary asset is a sublicense agreement with Chelexa Biosciences, Inc. ("Chelexa") pursuant to which Chelexa has granted Hoth an exclusive sublicense to use its BioLexa Platform, a proprietary, patented, drug compound platform developed at the University of Cincinnati. Hoth intends to develop BioLexa's applications in the aesthetic dermatology field to help treat and reduce post-procedure infections, accelerate healing and improve clinical outcomes for patients undergoing procedures. Hoth will be implementing FDA testing procedures for BioLexa. In addition to the Purchase Agreement, the Company and Hoth entered into a Registration Rights Agreement, pursuant to which Hoth is obligated to register for resale on a registration statement on Form S-1 under the Securities Act, all of the shares. Further, the Company, Hoth and Hoth's existing shareholders have entered into a Shareholders Agreement, pursuant to which Spherix shall have a right to appoint one director to the board of directors of Hoth for so long as the Company holds at least 10% of the issued and outstanding common stock of Hoth.

On February 14, 2019, the Company purchased an aggregate of 35,714 shares of the common stock of Hoth in connection with Hoth's initial public offering, which was consummated on February 20, 2019, at a purchase price of $5.60 per share, for an aggregate purchase price of $200,000. Hoth's common stock commenced trading on The NASDAQ Capital Market, on February 15, 2019 under the ticker symbol "HOTH". The Company entered into a lock-up agreement with Hoth pursuant to which the Company has agreed not to sell any shares of Hoth common stock or common stock equivalents until February 20, 2022, which is the 36 month anniversary of the consummation of Hoth's initial public offering, (the "Spherix Securities") provided, however (i) Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, up to an aggregate of 10% of the initially issued Spherix Securities, provided further that the recipients of the Spherix Securities shall not be permitted to resell such Spherix Securities until six months after the date of the Initial Public Offering, (ii) beginning 12 months after the date of Hoth's initial public offering, Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, up to an additional 10% of the initially issued Spherix Securities, (iii) beginning 24 months after the date of Hoth's initial public offering, Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, up to an additional 10% of the initially issued Spherix Securities and (iv) beginning 36 months after the date of the Hoth initial public offering, Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, the Spherix Securities without any restrictions.

On October 2, 2019, the Board of Directors of the Company (the "Board of Directors") approved a distribution to the Company's stockholders of approximately 100,000 shares of Hoth held by the Company. Accordingly, each of the Company's stockholders received one (1) share of Hoth common stock for every twenty-nine (29) shares of Company common stock held as of 5 p.m. Eastern Time on October 21, 2019, the dividend record date. The Company did not distribute fractional shares of Hoth common stock, and any fractional shares were rounded down to the nearest whole share.

Mellow Scooters Investment

On November 23, 2018, the Company entered into that certain Security Purchase Agreement, dated as of November 23, 2018, by and between the Company and Mellow Scooters, LLC ("Mellow Scooters"), a leading-edge company that enables anyone to own and operate a personal fleet of electric scooters and dockless bicycles to generate revenue. Mellow Scooters agreed to sell 250 units to the Company, representing 25% of its issued and outstanding limited liability company membership interests for a subscription price of $106,000. The $106,000 consisted of (a) a cash payment of $30,000, (b) the forgiveness of prior advances made to Mellow Scooters by the Company, and (c) an obligation of the Company to pay certain specific future expenses of Mellow Scooters (amounts in clauses (b) and (c) not to exceed a maximum of $76,000 in the aggregate).

TheBit Daily LLC Investment

On March 23, 2018, the Company purchased 8.0% of the issued and outstanding limited liability company membership interests of TheBit Daily LLC, a development stage media and education platform focused on the blockchain and cryptocurrency space, for a subscription price of $25,000.

Our principal executive offices are located at One Rockefeller Plaza, 11th Floor, New York, New York 10020, our telephone number is (703) 992-9325, and our Internet website address www.spherix.com.

Our common stock trades on the NASDAQ Capital Market under the symbol "SPEX".

Available Information

Our principal Internet address is www.spherix.com. We make available free of charge on www.spherix.com our annual, quarterly and current reports, and amendments to those reports, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission ("SEC"). The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at http://www.sec.gov.

Competition

The biopharmaceutical industry is characterized by rapidly advancing technologies, strong emphasis on proprietary products and significant competition. CBM faces potential competition from many sources, including major pharmaceutical, specialty pharmaceutical and biotechnology companies, academic institutions and government agencies and public and private research institutions. Any product candidates that CBM successfully develops and commercializes will compete with any existing therapies and new therapies that may become available in the future.

Intellectual Property and Patent Rights

Our success depends, in part, on our ability to obtain, maintain, and enforce patents and other proprietary protections of our commercially important technologies and product candidates, to operate without infringing the proprietary rights of others, and to maintain trade secrets or other proprietary know-how, both in the U.S. and other countries. We were assigned licenses that CBM had with Wake Forest University Health Sciences ("Wake Forest") and The University of Texas at Austin ("UTA") that include rights to eight patents and patent applications as follows:

- a License Agreement with Wake Forest relating to all fields of use, expressly including human therapeutic and diagnostic uses, of the inventions claimed in five licensed patents, which are listed below. The patents cover many novel compounds showing promise in the treatment of several cancer types, including acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL), and several types of viral infections, including human immunodeficiency virus (HIV), hepatitis viruses and herpes viruses. The lead compound CBM is currently pursuing is KPC34, which has been shown to be effective against AML and ALL. The licensed patents include patent claims covering the compound KPC34. CBM is in the process of drafting and finalizing requests for Orphan Drug Designation to the FDA for KPC34 for each of the AML and ALL indications. The following patent rights are included under the license agreement with Wake Forest:
    - U.S. Patent 6,670,341 titled "Compositions and methods for double-targeting virus infections and targeting cancer cells" issued December 30, 2003
    - U.S. Patent 7,026,469 titled "Compositions and methods for double-targeting virus infections and targeting cancer cells" issued April 11, 2006
    - U.S. Patent 7,309,696 titled "Novel phospholipid conjugates double-targeting HIV" issued December 18, 2007
    - U.S. Patent 7,638,528 titled "Compositions and methods for targeting cancer cells" issued December 29, 2009
    - U.S. Patent 8,138,200 titled "Compositions and methods for double-targeting virus infections and targeting cancer cells" issued March 20, 2012
- a Patent License Agreement with UTA relating to all fields of use of the inventions disclosed in the three patent applications listed below. The lead compound, which has been designated as Gem-DHA, a.k.a., DHA-dFdC, has been shown to be effective against pancreatic cancer in mice. Specifically, the data show that the drug halts tumor growth and significantly increases in life expectancy. Surprisingly, the data show that Gem-DHA preferentially concentrates itself in the pancreas relative to other organs. The Patent Office recently issued a Notice of Allowance and Issue Fee due in pending U.S. Application Serial No. 15/115,393 and the allowed claims include claims that specifically cover the lead compound Gem-DHA. The following patent rights are included under the license agreement with UTA:
    - U.S. Patent 61/933,035 titled "Nucleobase Analogue Derivatives and their applications" filed January 29, 2014
    - U.S. Patent 7,026,469 titled "Compositions and methods for double-targeting virus infections and targeting cancer cells" issued April 11, 2006
    - U.S. Patent 7,309,696 titled "Novel phospholipid conjugates double-targeting HIV" issued December 18, 2007

Employees

As of December 31, 2019, we have three full-time employees, none of which are represented by a labor union or covered by a collective bargaining agreement.

Government Regulation

The Company has transitioned to a highly regulated industry that is subject to significant federal, state, local and foreign regulation. The Company's present and future business has been, and will continue to be, subject to a variety of laws including, the Federal Food, Drug, and Cosmetic Act, or FDC Act, and the Public Health Service Act, among others.

Government authorities in the United States, at the federal, state and local levels, and in other countries and jurisdictions, including the European Union, extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, and import and export of pharmaceutical products. The processes for obtaining marketing approvals in the United States and in foreign countries and jurisdictions, along with subsequent compliance with applicable statutes and regulations and other regulatory authorities, require the expenditure of substantial time and financial resources.

In the United States, the FDA approves and regulates drugs under the Federal Food, Drug, and Cosmetic Act (the "FDCA") and the implementing regulations promulgated thereunder. The failure to comply with requirements under the FDCA and other applicable laws at any time during the product development process, approval process or after approval may subject an applicant and/or sponsor to a variety of administrative or judicial sanctions, including refusal by the FDA to approve pending applications, withdrawal of an approval, imposition of a clinical hold, issuance of warning letters and other types of letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement of profits, or civil or criminal investigations and penalties brought by the FDA and the Department of Justice or other governmental entities.

An applicant seeking approval to market and distribute a new drug product in the United States must typically undertake the following:

- completion of preclinical laboratory tests, animal studies and formulation studies in compliance with the FDA's Good Laboratory Practice regulations;
- submission to the FDA of an IND application, which must take effect before human clinical trials may begin;
- approval by an independent institutional review board, representing each clinical site before each clinical trial may be initiated;
- performance of adequate and well-controlled human clinical trials in accordance with good clinical practices to establish the safety and efficacy of the proposed drug product for each indication;
- preparation and submission to the FDA of an NDA requesting marketing for one or more proposed indications;
- review by an FDA advisory committee, where appropriate or if applicable;
- satisfactory completion of one or more FDA inspections of the manufacturing facility or facilities at which the product, or components thereof, are produced to assess compliance with current good manufacturing practices, requirements and to assure that the facilities, methods and controls are adequate to preserve the product's identity, strength, quality and purity;
- payment of user fees and securing FDA approval of the NDA;
- compliance with any post-approval requirements, including the potential requirement to implement a risk evaluation and mitigation strategy and the potential requirement to conduct post-approval studies.

Orphan Drug Act in the United States

The Orphan Drug Act provides incentives to manufacturers to develop and market drugs for rare diseases and conditions affecting fewer than 200,000 persons in the U.S. at the time of application for orphan drug designation. Orphan drug designation must be requested before submitting a BLA. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. If a product that has orphan drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the holder of the approval is entitled to a seven-year exclusive marketing period in the U.S. for that product except in very limited circumstances. For example, a drug that the FDA considers to be clinically superior to, or different from, another approved orphan drug, even though for the same indication, may also obtain approval in the U.S. during the seven-year exclusive marketing period. In addition, holders of exclusivity for orphan drugs are expected to assure the availability of sufficient quantities of their orphan drugs to meet the needs of patients. Failure to do so could result in the withdrawal of marketing exclusivity for the drug.

Orphan Designation and Exclusivity in the European Union

Products authorized as "orphan medicinal products" in the EU are entitled to certain exclusivity benefits. In accordance with Article 3 of Regulation (EC) No. 141/2000 of the European Parliament and of the Council of 16 December 1999 on orphan medicinal products, a medicinal product may be designated as an orphan medicinal product if: (1) it is intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition; (2) either (a) such condition affects no more than five in 10,000 persons in the European Union when the application is made, or (b) the product, without the incentives derived from orphan medicinal product status, would not generate sufficient return in the European Union to justify investment; and (3) there exists no satisfactory method of diagnosis, prevention or treatment of such condition authorized for marketing in the EU, or if such a method exists, the product will be of significant benefit to those affected by the condition.

An application for orphan drug designation must be submitted before the application for marketing authorization. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process.

Products authorized in the EU as orphan medicinal products are entitled to 10 years of market exclusivity. The 10-year market exclusivity may be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan designation, for example, if the product is sufficiently profitable not to justify maintenance of market exclusivity. Additionally, marketing authorization may be granted to a similar product during the 10-year period of market exclusivity for the same therapeutic indication at any time if:

- The second applicant can establish in its application that its product, although similar to the orphan medicinal product already authorized, is safer, more effective or otherwise clinically superior;

- The holder of the marketing authorization for the original orphan medicinal product consents to a second orphan medicinal product application; or

- The holder of the marketing authorization for the original orphan medicinal product cannot supply enough orphan medicinal product.

Healthcare Reform in the United States

In the United States and some non-United States jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could, among other things, affect our ability to profitably sell any product candidates for which we obtain marketing approval.

Among policy makers and payors in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. For example, in the United States, in March 2010, the Patient Protection and Affordable Care Act (the "ACA"), was passed, which substantially changed the way healthcare is financed by both the government and private insurers. Among the ACA's provisions of importance to our business are the following:

- implementation of a 2.3% excise tax imposed on manufacturers and importers for certain sales of medical devices, which, due to subsequent legislation will not go into effect until January 1, 2020;

- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for individuals with income at or below 133% of the federal poverty level, thereby potentially increasing manufacturers' Medicaid rebate liability;

- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;

- establishment of a Center for Medicare Innovation at CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending that began on January 1, 2011.

There have been judicial and Congressional challenges to certain aspects of the ACA, as well as recent efforts by the current administration to repeal or replace certain aspects of the ACA and we expect such challenges and amendments to continue. For example, the Tax Cuts and Jobs Act of 2017 includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." Additionally, on January 22, 2018, the Executive Office of the President of the United States signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain ACA-mandated fees, including the 2.3% excise tax imposed on manufacturers and importers for certain sales of medical devices, the so-called "Cadillac" tax on certain high cost employer-sponsored insurance plans, and the annual fee imposed on certain health insurance providers based on market share.

In addition, other legislative changes have been proposed and adopted in the U.S. since the ACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, led to aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect in April 2013 and, due to subsequent legislative amendments to the statute, including the Bipartisan Budget Act of 2018, will remain in effect through 2027 unless additional action is taken by Congress. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Further, recently, there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several U.S. Congressional inquiries and proposed and enacted federal legislation designed to bring transparency to product pricing and reduce the cost of products and services under government healthcare programs. Additionally, individual states in the U.S. have also become increasingly active in passing legislation and implementing regulations designed to control product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures. Moreover, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what products to purchase and which suppliers will be included in their healthcare programs.

Regulation in the European Union

In the European Union (the "EU"), for example, there is a centralized approval procedure that authorizes marketing of a product in all countries of the EU, which includes most major countries in Europe. If this procedure is not used, approval in one country of the EU can be used to obtain approval in another country of the EU under two simplified application processes, the mutual recognition procedure or the decentralized procedure, both of which rely on the principle of mutual recognition. After receiving regulatory approval through any of the European registration procedures, pricing and reimbursement approvals are also required in most countries.

Other Regulations

We are also subject to numerous federal, state and local laws relating to such matters as safe working conditions, manufacturing practices, environmental protection, fire hazard control, and disposal of hazardous or potentially hazardous substances and biological materials. We may incur significant costs to comply with such laws and regulations now or in the future.

Item 1A. RISK FACTORS.

Risks Related to Our Business

Because we have a limited operating history to evaluate our company, the likelihood of our success must be considered in light of the problems, expenses, difficulties, complications and delays frequently encountered by an early-stage company.

Since we have a limited operating history in our current business of technology and biotechnology development, it will make it difficult for investors and securities analysts to evaluate our business and prospects. You must consider our prospects in light of the risks, expenses and difficulties we face as an early stage company with a limited operating history. Investors should evaluate an investment in our securities in light of the uncertainties encountered by early stage companies in an intensely competitive industry. There can be no assurance that our efforts will be successful or that we will be able to become profitable.

Our cancer treatment business is pre-revenue, pre-development and subject to the risks of an early stage biotechnology company.

Since the Company's primary focus for the foreseeable future will likely be our cancer treatment business, shareholders should understand that we are primarily an early stage biotechnology company with no history of revenue-generating operations, and our only assets consist of our proprietary drug and the know-how of our officers. Therefore we are subject to all the risks and uncertainties inherent in a new business, in particular new businesses engaged in the early detection of certain cancers. DHA-dFdC is in its early stages of development, and we still must establish and implement many important functions necessary to commercialize the biotechnology.

Accordingly, you should consider the Company's prospects in light of the costs, uncertainties, delays and difficulties frequently encountered by companies in their pre-revenue and pre-development generating stages, particularly those in the biotechnology field. Shareholders should carefully consider the risks and uncertainties that a business with no operating history will face. In particular, shareholders should consider that there is a significant risk that we will not be able to:

- demonstrate the effectiveness of DHA-dFdC;
- implement or execute our current business plan, or that our current business plan is sound;
- raise sufficient funds in the capital markets or otherwise to fully effectuate our business plan;
- maintain our management team, including the members of our scientific advisory board;
- conduct the required clinical studies;
- determine that the processes and technologies that we have developed or will develop are commercially viable; and/or
- attract, enter into or maintain contracts with potential commercial partners such as licensors of technology and suppliers.

Any of the foregoing risks may adversely affect the Company and result in the failure of our business. In addition, we expect to encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors. At some point, we will need to transition from a company with a research and development focus to a company capable of supporting commercial activities. We may not be able to reach such achievements, which would have a material adverse effect on our Company.

We continue to incur operating losses and may not achieve profitability.

Our loss from operations for the years ended December 31, 2019 and 2018 was $5.7 million and $6.9 million, respectively. Our net loss for the year ended December 31, 2019 was $4.2 million and our net income for the year ended December 31, 2018 was $2.0 million. Our accumulated deficit was $144.3 million at December 31, 2019. We recognized $9,000 and $28,000 in revenue in 2019 and 2018, respectively. Our ability to become profitable depends upon our ability to generate revenue from biotechnology products. We do not know when, or if, we will generate any revenue from such biotechnology products. Even though our revenue may increase, we expect to incur significant additional losses while we grow and expand our business. We cannot predict if and when we will achieve profitability. Our failure to achieve and sustain profitability could negatively impact the market price of our common stock.

We expect to need additional capital to fund our growing operations and if we are unable to obtain sufficient capital, we may be forced to limit the scope of our operations.

We expect that for our business to grow we will need additional working capital. If adequate additional debt and/or equity financing is not available on reasonable terms or at all, we may not be able to continue to expand our business or pay our outstanding obligations, and we will have to modify our business plans accordingly. These factors would have a material adverse effect on our future operating results and our financial condition.

If we reach a point where we are unable to raise needed additional funds to continue as a going concern, we will be forced to cease our activities and dissolve the Company. In such an event, we will need to satisfy various creditors and other claimants, severance, lease termination and other dissolution-related obligations and we may not have sufficient funds to pay to our stockholders.

If we fail to maintain an effective system of internal controls over financial reporting, we may not be able to accurately report our financial results or prevent fraud and our business may be harmed and our stock price may be adversely impacted.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and to effectively prevent fraud. Any inability to provide reliable financial reports or to prevent fraud could harm our business. The Sarbanes-Oxley Act of 2002 requires management to evaluate and assess the effectiveness of our internal control over financial reporting. In order to continue to comply with the requirements of the Sarbanes-Oxley Act, we are required to continuously evaluate and, where appropriate, enhance our policies, procedures and internal controls. If we fail to maintain the adequacy of our internal controls over financial reporting, we could be subject to litigation or regulatory scrutiny and investors could lose confidence in the accuracy and completeness of our financial reports. We cannot assure you that in the future we will be able to fully comply with the requirements of the Sarbanes-Oxley Act or that management will conclude that our internal control over financial reporting is effective. If we fail to fully comply with the requirements of the Sarbanes-Oxley Act, our business may be harmed and our stock price may decline.

Our assessment, testing and evaluation of the design and operating effectiveness of our internal control over financial reporting resulted in our conclusion that, as of December 31, 2019, our internal control over financial reporting was not effective, due to our lack of segregation of duties, and lack of controls in place to ensure that all material transactions and developments impacting the financial statements are reflected. We can provide no assurance as to conclusions of management with respect to the effectiveness of our internal control over financial reporting in the future.

Our independent auditors have expressed substantial doubt about our ability to continue as a going concern.

Due to our net losses, negative cash flow and negative working capital, in their report on our audited financial statements for the years ended December 31, 2019 and 2018, our independent auditors included an explanatory paragraph regarding substantial doubt about our ability to continue as a going concern.

We may seek to internally develop additional new inventions and intellectual property, which would take time and be costly. Moreover, the failure to obtain or maintain intellectual property rights for such inventions would lead to the loss of our investments in such activities.

Part of our business may include the internal development of new inventions or intellectual property that we will seek to monetize. For example, in December 2019, we acquired substantially all of the assets of CBM, including the acquisition of certain licensing rights with respect to patents and other intellectual property related to pioneering drug compounds that were developed at the University of Wake Forest and the University of Texas at Austin, in the areas of acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), acral lentiginous melanoma and pancreatic cancer (collectively, the "University Developments"). Should we choose to assist in the development of the University Developments and/or internally develop any other inventions or intellectual property, such aspect of our business will require significant capital and will take time to achieve. Such activities may also distract our management team from its present business initiatives, which could have a material and adverse effect on our business. There is also the risk that our initiatives in this regard would not yield any viable new inventions or technology, which would lead to a loss of our investments in time and resources in such activities.

Our ability to raise additional capital may be adversely affected by certain of our agreements.

Our ability to raise additional capital for use in our operating activities may be adversely impacted by the terms of a securities purchase agreement, dated as of July 15, 2015 (the "Securities Purchase Agreement"), between us and the investors who purchased securities in our July 2015 offering of our common stock and warrants for the purchase of our common stock. The Securities Purchase Agreement provides that, until the warrants issued thereunder are no longer outstanding, we will not effect or enter into a variable rate transaction, which includes issuances of securities whose prices or conversion prices may vary with the trading prices of or quotations for the shares of our common Stock at any time after the initial issuance of such securities, as well as the entry into agreements where our stock would be issued at a future-determined price. These warrants may remain outstanding as late as January 22, 2021, when the warrants expire in accordance with their terms. These restrictions may have an adverse impact on our ability to raise additional capital, or to use our cash to make certain payments that we are contractually obligated to make.

We may also identify targets with patent or other intellectual property assets that cost more than we are prepared to spend with our own capital resources. We may incur significant costs to organize and negotiate a structured acquisition that does not ultimately result in an acquisition of any patent assets or, if consummated, proves to be unprofitable for us. Acquisitions involving issuance of our securities could be dilutive to existing stockholders and could be at prices lower than those prices reflected in the trading markets. These higher costs could adversely affect our operating results and, if we incur losses, the value of our securities will decline. The integration of acquired assets may place a significant burden on management and our internal resources. The diversion of management attention and any difficulties encountered in the integration process could harm our business.

As we are targeting technology companies in the development stage, their patents and technologies are in the early stages of adoption. Demand for some of these technologies will likely be untested and may be subject to fluctuation based upon the rate at which our licensees or others adopt our patents and technologies in their products and services. As a result, there can be no assurance as to whether technologies we acquire or develop will have value that can be realized through licensing or other activities.

We are exploring and evaluating strategic alternatives and there can be no assurance that we will be successful in identifying, or completing any strategic alternative or that any such strategic alternative will yield additional value for shareholders.

Our management and Board of Directors has commenced a review of strategic alternatives which could result in, among other things, a sale, a merger, consolidation or business combination, asset divestiture, partnering or other collaboration agreements, or potential acquisitions or recapitalizations, in one or more transactions, or continuing to operate with our current business plan and strategy. There can be no assurance that the exploration of strategic alternatives will result in the identification or consummation of any transaction. In addition, we may incur substantial expenses associated with identifying and evaluating potential strategic alternatives. The process of exploring strategic alternatives may be time consuming and disruptive to our business operations and if we are unable to effectively manage the process, our business, financial condition and results of operations could be adversely affected. We also cannot assure you that any potential transaction or other strategic alternative, if identified, evaluated and consummated, will provide greater value to our shareholders than that reflected in the current stock price. Any potential transaction would be dependent upon a number of factors that may be beyond our control, including, among other factors, market conditions, industry trends, the interest of third parties in our business and the availability of financing to potential buyers on reasonable terms.

We may be unsuccessful at integrating future acquisitions.

If we find appropriate opportunities in the future, we may acquire businesses to strategically increase the number of patents in our portfolio and pursue monetization. For example, in December 2019, we acquired substantially all of the assets of CBM, including the acquisition of certain licensing rights with respect to patents and other intellectual property related to pioneering drug compounds that were developed at the University of Wake Forest and the University of Texas at Austin, in the areas of acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), acral lentiginous melanoma and pancreatic cancer. There can be no guarantee that we will be able to successfully integrate the business or assets of CBM into the Company.

As we acquire businesses or substantial stakes in certain businesses, the process of integration may produce unforeseen operating difficulties and expenditures, fail to result in expected synergies or other benefits and absorb significant attention of our management that would otherwise be available for the ongoing development of our business. In addition, in the event of any future acquisitions, we may record a portion of the assets we acquire as goodwill, other indefinite-lived intangible assets or finite-lived intangible assets. We do not amortize goodwill and indefinite-lived intangible assets, but rather review them for impairment on an annual basis or whenever events or changes in circumstances indicate that their carrying value may not be recoverable. The recoverability of goodwill and indefinite-lived intangible assets is dependent on our ability to generate sufficient future earnings and cash flows. Changes in estimates, circumstances or conditions, resulting from both internal and external factors, could have a significant impact on our fair valuation determination, which could then have a material adverse effect on our business, financial condition and results of operations. We cannot guarantee that we will be able to identify suitable acquisition opportunities, consummate any pending or future acquisitions or that we will realize any anticipated benefits from any such acquisitions.

Our pre-acquisition stockholders have a reduced ownership and voting interest after the acquisition of CBM's assets and exercise less influence over our management and policies than they did prior to the acquisition.

Our pre-acquisition stockholders had the right to vote in the election of our Board of Directors on other matters affecting us. As a result of the CBM Purchase Agreement, because of the issuance of shares of common stock to the CBM shareholders, our pre-acquisition stockholders hold a percentage ownership of the Company that is much smaller than the pre-acquisition stockholder's previous percentage ownership. Because of this, our pre-acquisition stockholders have less influence over the management and policies of the Company than they now have after the consummation of the acquisition of CBM's assets.

Any failure to maintain or protect our patent assets or other intellectual property rights could significantly impair our return on investment from such assets and harm our brand, our business and our operating results.

Our ability to operate our new line of business and compete in the intellectual property market largely depends on the superiority, uniqueness and value of our acquired patent assets and other intellectual property. To protect our proprietary rights, we will rely on a combination of patent, trademark, copyright and trade secret laws, confidentiality agreements with our employees and third parties, and protective contractual provisions. No assurances can be given that any of the measures we undertake to protect and maintain our assets will have any measure of success.

We are required to spend significant time and resources to maintain the effectiveness of our assets by paying maintenance fees and making filings with the USPTO. We may acquire patent assets, including patent applications, which require us to spend resources to prosecute the applications with the USPTO prior to issuance of patents. Further, there is a material risk that patent related claims (such as, for example, infringement claims (and/or claims for indemnification resulting therefrom), unenforceability claims, or invalidity claims) will be asserted or prosecuted against us, and such assertions or prosecutions could materially and adversely affect our business.

Despite our efforts to protect our intellectual property rights, any of the following or similar occurrences may reduce the value of our intellectual property:

- our applications for patents, trademarks and copyrights may not be granted and, if granted, may be challenged or invalidated;
- issued trademarks, copyrights, or patents may not provide us with any competitive advantages when compared to potentially infringing other properties;
- our efforts to protect our intellectual property rights may not be effective in preventing misappropriation of our technology; or
- our efforts may not prevent the development and design by others of products or technologies similar to or competitive with, or superior to those we acquire and/or prosecute.

Moreover, we may not be able to effectively protect our intellectual property rights in certain foreign countries where we may do business or enforce our patents against infringers in foreign countries. If we fail to maintain, defend or prosecute our patent assets properly, the value of those assets would be reduced or eliminated, and our business would be harmed.

We may be unable to issue securities under our shelf registration statement, which may have an adverse effect on our liquidity.

We have filed a shelf registration statement on Form S-3 with the SEC. The registration statement, which has been declared effective, was filed in reliance on Instruction I.B.6. of Form S-3, which imposes a limitation on the maximum amount of securities that we may sell pursuant to the registration statement during any twelve-month period. At the time we sell securities pursuant to the registration statement, the amount of securities to be sold plus the amount of any securities we have sold during the prior twelve months in reliance on Instruction I.B.6. may not exceed one-third of the aggregate market value of our outstanding common stock held by non-affiliates as of a day during the 60 days immediately preceding such sale as computed in accordance with Instruction I.B.6. Whether we sell securities under the registration statement will depend on a number of factors, including availability of our existing S-3 under the 1/3 limitation calculations set forth in Instruction I.B.6 of Form S-3, the market conditions at that time, our cash position at that time and the availability and terms of alternative sources of capital. Furthermore, Instruction I.B.6. of Form S-3 requires that the issuer have at least one class of common equity securities listed and registered on a national securities exchange. If we are not able to maintain compliance with applicable NASDAQ rules, we will no longer be able to rely upon that Instruction. If we cannot sell securities under our shelf registration, we may be required to utilize more costly and time-consuming means of accessing the capital markets, which could materially adversely affect our liquidity and cash position.

Risks Related to the Product Development, Regulatory Approval, Manufacturing and Commercialization

We are early in our development efforts and currently have no clinical-stage product candidates. If we are unable to clinically develop and ultimately commercialize DHA-dFdC or other product candidates, or experience significant delays in doing so, our business will be materially harmed.

We are early in our development efforts and have no clinical-stage product candidates as of the date of this prospectus. We have the exclusive U.S. rights to develop DHA-dFdC for the treatment of cancer in the licensed field. We are presently planning on filing an IND for DHA-dFdC, and we hope to begin human testing for this indication in 2021, although no assurance can be given that we will be able to achieve this goal.

Therefore, our ability to generate product or royalty revenues, which we do not expect will occur for several years, if ever, will depend heavily on our ability to develop and eventually commercialize our product candidate. The positive development of our product candidate will depend on several factors, including the following:

- positive commencement and completion of clinical trials;
- successful preparation of regulatory filings and receipt of marketing approvals from applicable regulatory authorities;
- obtaining and maintaining patent and trade secret protection and potential regulatory exclusivity for our product candidate and protecting our rights in our intellectual property portfolio;
- launching commercial sales of our product, if and when approved for one or more indications, whether alone or in collaboration with others;
- acceptance of the product for one or more indications, if and when approved, by patients, the medical community and third-party payors;
- protection from generic substitution based upon our own or licensed intellectual property rights;
- effectively competing with other therapies;
- obtaining and maintaining adequate reimbursement from healthcare payors; and
- maintaining a continued acceptable safety profile of our product following approval, if any.

If we do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to clinically develop and commercialize DHA-dFdC as a therapy for cancer, which would materially harm our business.

If we are unable to convince physicians as to the benefits of DHA-dFdC as a therapy for cancer, if and when it is approved, we may incur delays or additional expense in our attempt to establish market acceptance.

Use of DHA-dFdC as a cancer therapy will require physicians to be informed regarding the intended benefits of the product for a new indication. The time and cost of such an educational process may be substantial. Inability to carry out this physician education process may adversely affect market acceptance of DHA-dFdC as a therapy for cancer. We may be unable to timely educate physicians in sufficient numbers regarding our intended application of DHA-dFdC to achieve our marketing plans or to achieve product acceptance. Any delay in physician education or acceptance may materially delay or reduce demand for our product candidate. In addition, we may expend significant funds toward physician education before any acceptance or demand for DHA-dFdC as a therapy for cancer is created, if at all.

Clinical drug development involves a lengthy and expensive process, with an uncertain outcome. We may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidate.

The risk of failure for product candidates in clinical development is high. It is impossible to predict when our sole product candidate, DHA-dFdC for the treatment of cancer, will prove effective and safe in humans or will receive regulatory approval for the treatment of any disease, the indication for which is licensed to us. Before obtaining marketing approval from regulatory authorities for the sale of DHA-dFdC as a cancer therapy, we must conduct one or more clinical trials to demonstrate the safety and efficacy of our product candidate in humans. Clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. A failure of one or more clinical trials can occur at any stage of testing. Moreover, the outcome of early clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results. In addition, preclinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that have believed their product candidates performed satisfactorily in clinical trials have nonetheless failed to obtain marketing approval of their products.

We may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent our ability to receive marketing approval or commercialize our product candidate, including:

- regulators or institutional review boards may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- we may experience delays in reaching, or fail to reach, agreement on acceptable clinical trial contracts or clinical trial protocols with prospective trial sites;
- clinical trials of our product candidate may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon product development programs, which would be time consuming and costly;
- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate or participants may drop out of these clinical trials at a higher rate than we anticipate;
- we may have to suspend or terminate clinical trials of our product candidates for various reasons, including a finding that the participants are being exposed to unacceptable health risks;
- regulators or institutional review boards may require that we or our investigators suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements or a finding that the participants are being exposed to unacceptable health risks;
- the cost of clinical trials may be greater than we anticipate;
- the supply or quality of materials necessary to conduct clinical trials of our product candidate may be insufficient or inadequate;
- our product candidate may have undesirable side effects or other unexpected characteristics, causing us or our investigators, regulators or institutional review boards to suspend or terminate the trials; and
- interactions with other drugs.

If we are required to conduct additional clinical trials or other testing of our product candidate beyond those that we currently contemplate, if we are unable to complete clinical trials of our product candidates or other testing, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may:

- be delayed in obtaining marketing approval for our product candidate for one or more indications;
- not obtain marketing approval at all for one or more indications;
- obtain approval for indications or patient populations that are not as broad as intended or desired (particularly, in our case, for different types of cancer);
- obtain approval with labeling that includes significant use or distribution restrictions or safety warnings;
- be subject to additional post-marketing testing requirements; or
- have the product removed from the market after obtaining marketing approval.

Our product development costs will also increase if we experience delays in testing or marketing approvals. We do not know which, if any, of our clinical trials will need to be restructured or will be completed on schedule, or at all. Significant preclinical or clinical trial delays also could shorten any periods during which we may have the right to commercialize our product candidate or allow our competitors to bring products to market before we do and impair our ability to commercialize our product candidate and may harm our business and results of operations.

If we experience delays or difficulties in the enrollment of patients in any future clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

We may not be able to initiate or continue future clinical trials for DHA-dFdC or our present or future product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the U.S. Food and Drug Administration ("FDA") or similar regulatory authorities outside the United States. In addition, some of our competitors have ongoing clinical trials for product candidates that treat the same indications as our product candidate, and patients who would otherwise be eligible for our future clinical trials may instead enroll in clinical trials of our competitors' product candidates.

Patient enrollment is affected by other factors including:

- the severity of the disease under investigation;
- the eligibility criteria for the study in question;
- the perceived risks and benefits of the product candidate under study;
- the patient referral practices of physicians;
- the ability to monitor patients adequately during and after treatment; and
- the proximity and availability of clinical trial sites for prospective patients.

Our inability to enroll a sufficient number of patients for any future clinical trials would result in significant delays and could require us to abandon one or more clinical trials altogether. Enrollment delays in our clinical trials may result in increased development costs for our product candidate, which would cause the value of our company to decline and otherwise materially and adversely affect our company.

If serious adverse or unacceptable side effects are identified during the development of our product candidate, we may need to abandon or limit such development, which would adversely affect our company.

If clinical testing of our product candidates results in undesirable side effects or demonstrates characteristics that are unexpected, we may need to abandon such development or limit such development to more narrow uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. Many compounds that initially showed promise in early stage testing for treating cancer have later been found to cause side effects that prevented further development of the compound.

For the foreseeable future, we expect to expend our limited resources primarily to pursue a particular product candidate, leaving us unable to capitalize on other product candidates or indications that may be more profitable or for which there is a greater likelihood of clinical and commercial development.

Because we have limited financial and managerial resources, we will focus for the foreseeable future primarily on the clinical development of DHA-dFdC for the treatment of prostate cancer. As a result, we may forego or be unable to pursue opportunities with other product candidates or for indications other than those we intend to pursue that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on research and development programs related to DHA-dFdC for the treatment of cancer may not yield any commercially viable therapies. Because of this concentration of our efforts, our business will be particularly subject to significant risk of failure of our one current product candidate.

We expect to rely on collaborations with third parties for key aspects of our business. If we are unable to secure or maintain any of these collaborations, or if these collaborations do not achieve their goals, our business would be adversely affected.

We presently have very limited capabilities for drug development and do not yet have any capability for manufacturing, sales, marketing or distribution. Accordingly, we expect to enter into collaborations with other companies that we believe can provide such capabilities. These collaborations may also provide us with important funding for our development programs.

There is a risk that we may not be able to maintain our current collaboration or to enter into additional collaborations on acceptable terms or at all, which would leave us unable to progress our business plan. We will face significant competition in seeking appropriate collaborators. Our ability to reach a definitive agreement for a collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. If we are unable to maintain or reach agreements with suitable collaborators on a timely basis, on acceptable terms, or at all, we may have to curtail the development of our product candidate, reduce or delay its development program, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense.

Moreover, even if we are able to maintain and/or enter into such collaborations, such collaborations may pose a number of risks, including the following:

- collaborators may not perform their obligations as expected;
- disagreements with collaborators, including disagreements over proprietary rights, contract interpretation or the preferred course of development, might cause delays or termination of the research, development or commercialization of our product candidate, might lead to additional responsibilities for us with respect to such product candidate, or might result in litigation or arbitration, any of which would be time-consuming and expensive;
- collaborators could independently develop or be associated with products that compete directly or indirectly with our product candidate;
- collaborators could have significant discretion in determining the efforts and resources that they will apply to our arrangements with them;
- should our product candidate achieve regulatory approval, a collaborator with marketing and distribution rights to our product candidate may not commit sufficient resources to the marketing and distribution of such product;

- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential litigation;

- collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability; and

- collaborations may be terminated for the convenience of the collaborator and, if terminated, we could be required to either find alternative collaborators (which we may be unable to do) or raise additional capital to pursue further development or commercialization of our product candidate on our own.

Our business could be materially harmed if any of the foregoing or similar risks comes to pass with respect to our key collaborations.

Even if any of our product candidates receive marketing approval for any indication, they may fail to achieve the degree of market acceptance by physicians, patients, third-party payors and others in the medical community necessary for commercial success.

Even if DHA-dFdC for the treatment of cancer receives marketing approval for any indication, it may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors and others in the medical community. For example, current cancer treatments such as chemotherapy, immunotherapy and radiation therapy are well established in the medical community, and doctors may continue to rely on these treatments. If our product candidate does not achieve an adequate level of acceptance, we may not generate significant product revenues and we may not become profitable. The degree of market acceptance of DHA-dFdC for the treatment of cancer, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and potential advantages compared to alternative treatments;

- our ability to offer our products for sale at competitive prices;

- the convenience and ease of administration compared to alternative treatments;

- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;

- the strength of marketing and distribution support;

- the availability of third-party coverage and adequate reimbursement;

- the prevalence and severity of any side effects; and

- any restrictions on the use of our product together with other medications.

If we are unable to establish sales, marketing and distribution capabilities, we may not be able to commercialize our product candidate if and when it is approved.

We currently do not have a sales or marketing infrastructure. To achieve any level of commercial success for any product for which we have obtained marketing approval, we will need to establish a sales and marketing organization or outsource sales and marketing functions to third parties, and achieve the following:

- successful preparation of regulatory filings and receipt of marketing approvals from applicable regulatory authorities;

- obtaining and maintaining patent and trade secret protection and potential regulatory exclusivity for our product candidate and protecting our rights in our intellectual property portfolio;

- launching commercial sales of our product, if and when approved for one or more indications, whether alone or in collaboration with others;

- acceptance of the product for one or more indications, if and when approved, by patients, the medical community and third-party payors;

- protection from generic substitution based upon our own or licensed intellectual property rights;

- effectively competing with other therapies;

- obtaining and maintaining adequate reimbursement from healthcare payors; and

- maintaining a continued acceptable safety profile of our product following approval, if any.

If we do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to clinically develop and commercialize DHA-dFdC as a therapy for cancer, which would materially harm our business.

In addition, given our current limited financial resources, we are currently focusing our efforts on one key cancer indication, namely prostate cancer. We are thus faced with the risk that DHA-dFdC could be ineffective in addressing this particular cancer indication, and if our efforts to demonstrate the efficacy of DHA-dFdC in prostate cancer are not positive, we may lack the resources to expand our efforts into other cancer indications.

We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

The development and commercialization of new drug products is highly competitive. We face competition with respect to our current product candidate and will face competition with respect to any product candidates that we may seek to develop or commercialize in the future, from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. There are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of products for the treatment of cancer. Potential competitors also include academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and commercialization.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market.

Many of the companies against which we are competing or against which we may compete in the future have significantly greater financial resources and expertise in research and development, manufacturing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller and other early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs, and we may be unable to effectively compete with these companies for these or other reasons.

Even if we are able to commercialize any product candidates, the products may become subject to unfavorable pricing regulations, third-party reimbursement practices or healthcare reform initiatives, which would harm our business.

The regulations that govern marketing approvals, pricing, coverage and reimbursement for new drug products vary widely from country to country. Current and future legislation may significantly change the approval requirements in ways that could involve additional costs and cause delays in obtaining approvals.

Our ability to commercialize any product candidate also will depend in part on the extent to which coverage and adequate reimbursement for our product candidate will be available from government health administration authorities, private health insurers and other organizations. Government authorities and third party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Government authorities and third party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. Coverage and reimbursement may not be available for any product that we commercialize and, even if these are available, the level of reimbursement may not be satisfactory. Reimbursement may affect the demand for, or the price of, any product candidate for which we obtain marketing approval. Obtaining and maintaining adequate reimbursement for our products may be difficult. We may be required to conduct expensive pharmacoeconomic studies to justify coverage and reimbursement or the level of reimbursement relative to other therapies. If coverage and adequate reimbursement are not available or reimbursement is available only to limited levels, we may not be able to commercialize any product candidate for which we obtain marketing approval.

In addition, there may be significant delays in obtaining reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA. Moreover, eligibility for reimbursement does not imply that a drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Our inability to promptly obtain coverage and adequate reimbursement rates from both government-funded and private payors for any approved products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any products that we may develop.

We face an inherent risk of product liability exposure related to the testing of DHA-dFdC in human clinical trials and will face an even greater risk if we commercially sell any products that we may develop. If we cannot defend ourselves against claims that our product candidate or products caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any product candidates or products that we may develop;
- damage to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- significant costs to defend the related litigation;
- substantial monetary awards to trial participants or patients;
- loss of revenue;
- reduced resources of our management to pursue our business strategy; and
- the inability to commercialize any products that we may develop.

We currently do not have product liability insurance coverage, which leaves us exposed to any product-related liabilities that we may incur. We may be unable to obtain insurance on reasonable terms or at all. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

If we fail to comply with healthcare regulations, we could face substantial enforcement actions, including civil and criminal penalties and our business, operations and financial condition could be adversely affected.

We could be subject to healthcare fraud and abuse laws and patient privacy laws of both the federal government and the states in which we conduct our business. The laws include:

- the federal healthcare program anti-kickback law, which prohibits, among other things, persons from soliciting, receiving or providing remuneration, directly or indirectly, to induce either the referral of an individual, for an item or service or the purchasing or ordering of a good or service, for which payment may be made under federal healthcare programs such as the Medicare and Medicaid programs;
- federal false claims laws which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payers that are false or fraudulent, and which may apply to entities like us which provide coding and billing information to customers;

- the federal Health Insurance Portability and Accountability Act of 1996, which prohibits executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters and which also imposes certain requirements relating to the privacy, security and transmission of individually identifiable health information;

- the FDCA which among other things, strictly regulates drug manufacturing and product marketing, prohibits manufacturers from marketing drug products for off-label use and regulates the distribution of drug sample; and

- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payer, including commercial insurers, and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by federal laws, thus complicating compliance efforts.

If our operations are found to be in violation of any of the laws described above or any governmental regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines and the curtailment or restructuring of our operations. Any penalties, damages, fines, curtailment or restructuring of our operations could adversely affect our ability to operate our business and our financial results. Although compliance programs can mitigate the risk of investigation and prosecution for violations of these laws, the risks cannot be entirely eliminated. Any action against us for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses and divert management's attention from the operation of our business. Moreover, achieving and sustaining compliance with applicable federal and state privacy, security and fraud laws may prove costly.

Members of our management team lack experience in the pharmaceutical field.

Members of our management team lack experience in the pharmaceutical field. This lack of experience may impair our ability to commercialize our pharmaceutical products and attain profitability. We will need to hire or engage managerial personnel with relevant experience in the pharmaceutical field; however, there can be no assurance that such personnel will be available to us or, that once engaged, will be retained by us. Failure to establish and maintain an effective management team with experience in the pharmaceutical field and commercialization of pharmaceuticals products would have a material adverse effect on our business and results of operations.

The marketing approval process of the FDA is lengthy, time consuming and inherently unpredictable, and if were ultimately are unable to obtain marketing approval for the product candidates we intend to develop, our business will be substantially harmed.

None of the product candidates we intend to develop have gained marketing approval in the U.S. and we cannot guarantee that we will ever have marketable products. Our business is substantially dependent on our ability to complete the development of, obtain marketing approval for, and successfully commercialize our product candidates in a timely manner. We cannot commercialize our product candidates in the United States without first obtaining approval from the FDA to market each product candidate. Our product candidates could fail to receive marketing approval for many reasons.

In addition, the process of seeking regulatory clearance or approval to market the product candidates we intend to develop is expensive and time consuming and, notwithstanding the effort and expense incurred, clearance or approval is never guaranteed. If we are not successful in obtaining timely clearance or approval of our product candidates from the FDA, we may never be able to generate significant revenue and may be forced to cease operations. The FDA process is costly, lengthy and uncertain. Any FDA application filed by the Company will have to be supported by extensive data, including, but not limited to, technical, preclinical, clinical trial, manufacturing and labeling data, to demonstrate to the FDA's satisfaction the safety and efficacy of the product for its intended use.

Obtaining clearances or approvals from the FDA and from the regulatory agencies in other countries is an expensive and time consuming process and is uncertain as to outcome. The FDA and other agencies could ask us to supplement our submissions, collect non-clinical data, conduct additional clinical trials or engage in other time-consuming actions, or it could simply deny our applications. In addition, even if we obtain an FDA approval or pre-market approvals in other countries, the approval could be revoked or other restrictions imposed if post-market data demonstrates safety issues or lack of effectiveness. We cannot predict with certainty how, or when, the FDA will act. If we are unable to obtain the necessary regulatory approvals, our financial condition and cash flow may be adversely affected, and our ability to grow domestically and internationally may be limited. Additionally, even if cleared or approved, the Company's products may not be approved for the specific indications that are most necessary or desirable for successful commercialization or profitability.

Modifications to our products may require new FDA approvals.

Once a particular product receives FDA approval or clearance, expanded uses or uses in new indications of our products may require additional human clinical trials and new regulatory approvals or clearances, including additional IND and FDA submissions and premarket approvals before we can begin clinical development, and/or prior to marketing and sales. If the FDA requires new clearances or approvals for a particular use or indication, we may be required to conduct additional clinical studies, which would require additional expenditures and harm our operating results. If the products are already being used for these new indications, we may also be subject to significant enforcement actions. Conducting clinical trials and obtaining clearances and approvals can be a time consuming process, and delays in obtaining required future clearances or approvals could adversely affect our ability to introduce new or enhanced products in a timely manner, which in turn would harm our future growth.

Additional delays to the completion of clinical studies may result from modifications being made to the protocol during the clinical trial, if such modifications are warranted and/or required by the occurrences in the given trial.

Each modification to the protocol during a clinical trial has to be submitted to the FDA. This could result in the delay or halt of a clinical trial while the modification is evaluated. In addition, depending on the quantity and nature of the changes made, the FDA could take the position that the data generated by the clinical trial is not poolable because the same protocol was not used throughout the trial. This might require the enrollment of additional subjects, which could result in the extension of the clinical trial and the FDA delaying clearance or approval of a product. Any such delay could have a material adverse effect on our business and results of operations.

There can be no assurance that the data generated from our clinical trials using modified protocols will be acceptable to FDA.

There can be no assurance that the data generated using modified protocols will be acceptable to the FDA or that if future modifications during the trial are necessary, that any such modifications will be acceptable to the FDA. If the FDA believes that its prior approval is required for a particular modification, it can delay or halt a clinical trial while it evaluates additional information regarding the change.

Serious injury or death resulting from a failure of one of our drug candidates during current or future clinical trials could also result in the FDA delaying our clinical trials or denying or delaying clearance or approval of a product.

Even though an adverse event may not be the result of the failure of our drug candidate, the FDA or an Internal Review Board ("IRB") could delay or halt a clinical trial for an indefinite period of time while an adverse event is reviewed, and likely would do so in the event of multiple such events.

Any delay or termination of our current or future clinical trials as a result of the risks summarized above, including delays in obtaining or maintaining required approvals from IRBs, delays in patient enrollment, the failure of patients to continue to participate in a clinical trial, and delays or termination of clinical trials as a result of protocol modifications or adverse events during the trials, may cause an increase in costs and delays in the filing of any product submissions with the FDA, delay the approval and commercialization of our products or result in the failure of the clinical trial, which could adversely affect our business, operating results and prospects.

The future results of our current or future clinical trials may not support our product candidate claims or may result in the discovery of unexpected adverse side effects.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support our drug candidate claims or that the FDA or foreign authorities will agree with our conclusions regarding them. Success in preclinical studies and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the later trials will replicate the results of prior trials and preclinical studies. The clinical trial process may fail to demonstrate that our drug candidates are safe and effective for the proposed indicated uses. If the FDA concludes that the clinical trials for DHA-dFdC, or any other product for which we might seek clearance, has failed to demonstrate safety and effectiveness, we would not receive FDA clearance to market that product in the United States for the indications sought.

In addition, such an outcome could cause us to abandon the product candidate and might delay development of others. Any delay or termination of our clinical trials will delay the filing of any product submissions with the FDA and, ultimately, our ability to commercialize our product candidates and generate revenues. It is also possible that patients enrolled in clinical trials will experience adverse side effects that are not currently part of the product candidate's profile.

Current and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize our product candidates and affect the prices we may obtain for such product candidates.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval for our product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell our product candidates. Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We do not know whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our product candidates, if any, may be. In addition, increased scrutiny by the U.S. Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-marketing testing and other requirements.

In the United States, the Medicare Modernization Act ("MMA") changed the way Medicare covers and pays for pharmaceutical products. As a result of this legislation and the expansion of federal coverage of drug products, we expect that there will be additional pressure to contain and reduce costs. These cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we receive for our product candidates and could seriously harm our business.

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act of 2010 (collectively, the "Health Care Reform Law") is a sweeping law intended to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for healthcare and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms. The Health Care Reform Law remains subject to legislative efforts to repeal, modify or delay the implementation of the law. However, if the Health Care Reform Law is repealed or modified, or if implementation of certain aspects of the Health Care Reform Law are delayed, such repeal, modification or delay may materially adversely impact our business, strategies, prospects, operating results or financial condition.

In addition, other legislative changes have been proposed and adopted in the United States since the Health Care Reform Law was enacted. We expect that additional federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, and in turn could significantly reduce the projected value of certain development projects and reduce or eliminate our profitability.

Upon commercialization of our products, we may be dependent on third parties to market, distribute and sell our products.

Our ability to receive revenues may be dependent upon the sales and marketing efforts of any future co-marketing partners and third-party distributors. At this time, we have not entered into an agreement with any commercialization partner and only plan to do so after the successful completion of Phase 1 clinical trials and prior to commercialization. If we fail to reach an agreement with any commercialization partner, or upon reaching such an agreement that partner fails to sell a large volume of our products, it may have a negative impact on our business, financial condition and results of operations.

Adverse events involving our products may lead the FDA to delay or deny clearance for our products or result in product recalls that could harm our reputation, business and financial results.

Once a product receives FDA clearance or approval, the agency has the authority to require the recall of commercialized products in the event of adverse side effects, material deficiencies or defects in design or manufacture. The authority to require a recall must be based on an FDA finding that there is a reasonable probability that the product would cause serious injury or death. Manufacturers may, under their own initiative, recall a product if any material deficiency in a product is found. A government-mandated or voluntary recall by us or one of our distributors could occur as a result of adverse side effects, impurities or other product contamination, manufacturing errors, design or labeling defects or other deficiencies and issues. Recalls of any of our products would divert managerial and financial resources and have an adverse effect on our financial condition and results of operations. The FDA requires that certain classifications of recalls be reported to FDA within ten working days after the recall is initiated. Companies are required to maintain certain records of recalls, even if they are not reportable to the FDA. We may initiate voluntary recalls involving our products in the future that we determine do not require notification of the FDA. If the FDA disagrees with our determinations, they could require us to report those actions as recalls. A future recall announcement could harm our reputation with customers and negatively affect our sales. In addition, the FDA could take enforcement action for failing to report the recalls when they were conducted.

Risks Related to Ownership of Our Common Stock

We face evolving regulation of corporate governance and public disclosure that may result in additional expenses and continuing uncertainty.

As a public company, we incur significant legal, accounting and other expenses. The Sarbanes-Oxley Act of 2002, or SOX, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of The NASDAQ Global Market and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel devote a substantial amount of time towards maintaining compliance with these requirements. These rules, regulations and standards are subject to varying interpretations, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We intend to invest the resources necessary to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new or changed laws, regulations and standards differ from the activities intended by regulatory or governing bodies, regulatory authorities may initiate legal proceedings against us, which could be costly and time-consuming, and our reputation and business may be harmed.

Our common stock may be delisted from The NASDAQ Capital Market if we fail to comply with continued listing standards.

Our common stock is currently traded on The NASDAQ Capital Market under the symbol "SPEX". If we fail to meet any of the continued listing standards of The NASDAQ Capital Market, our common stock could be delisted from The NASDAQ Capital Market. These continued listing standards include specifically enumerated criteria, such as:

- a $1.00 minimum closing bid price;
- stockholders' equity of $2.5 million;
- 500,000 shares of publicly-held common stock with a market value of at least $1 million;
- 300 round-lot stockholders; and
- compliance with NASDAQ's corporate governance requirements, as well as additional or more stringent criteria that may be applied in the exercise of NASDAQ's discretionary authority.

There can be no assurance that we will be able to maintain compliance and remain in compliance in the future. In particular, our share price may continue to decline for a number of reasons, including many that are beyond our control. See "*Our share price may be volatile and there may not be an active trading market for our common stock*".

If we fail to comply with NASDAQ's continued listing standards, we may be delisted and our common stock will trade, if at all, only on the over-the-counter market, such as the OTC Bulletin Board or OTCQX market, and then only if one or more registered broker-dealer market makers comply with quotation requirements. In addition, delisting of our common stock could depress our stock price, substantially limit liquidity of our common stock and materially adversely affect our ability to raise capital on terms acceptable to us, or at all. Further, delisting of our common stock would likely result in our common stock becoming a "penny stock" under the Exchange Act.

Our share price may be volatile and there may not be an active trading market for our common stock.

There can be no assurance that the market price of our common stock will not decline below its present market price or that there will be an active trading market for our common stock. The market prices of technology or technology related companies have been and are likely to continue to be highly volatile. Fluctuations in our operating results and general market conditions for technology or technology related stocks could have a significant impact on the volatility of our common stock price. We have experienced significant volatility in the price of our common stock. From January 1, 2019 through December 31, 2019, the share price of our common stock (on a split-adjusted basis) ranged from a high of $3.92 to a low of $1.05. The reason for the volatility in our stock is not well understood and may continue. Factors that may have contributed to such volatility include, but are not limited to:

- introduction of new technologies by us or our competitors;
- government regulations and laws;
- public sentiment relating to our industry;
- developments in patent or other proprietary rights;
- the number of shares issued and outstanding;
- the number of shares trading on an average trading day;
- performance of companies in the non-performing entity space generally;
- announcements regarding other participants in the technology and technology related industries, including our competitors;
- block sales of our shares by stockholders to whom we have sold stock in private placements, or the cessation of transfer restrictions with respect to those shares; and
- market speculation regarding any of the foregoing.

We could fail in future financing efforts or be delisted from The NASDAQ Capital Market if we fail to receive stockholder approval when needed.

We are required under the NASDAQ rules to obtain stockholder approval for any issuance of additional equity securities that would comprise more than 20% of the total shares of our common stock outstanding before the issuance of such securities sold at a discount to the greater of book or market value in an offering that is not deemed to be a "public offering" by NASDAQ. Funding of our operations and acquisitions of assets may require issuance of additional equity securities that would comprise more than 20% of the total shares of our common stock outstanding, but we might not be successful in obtaining the required stockholder approval for such an issuance. If we are unable to obtain financing due to stockholder approval difficulties, such failure may have a material adverse effect on our ability to continue operations.

Our shares of common stock are thinly traded and, as a result, stockholders may be unable to sell at or near ask prices, or at all, if they need to sell shares to raise money or otherwise desire to liquidate their shares.

Our common stock has been "thinly-traded" meaning that the number of persons interested in purchasing our common stock at or near ask prices at any given time may be relatively small or non-existent. This situation is attributable to a number of factors, including the fact that we are a small company that is relatively unknown to stock analysts, stock brokers, institutional investors and others in the investment community that generate or influence sales volume, and that even if we came to the attention of such persons, they tend to be risk-averse and would be reluctant to follow an unproven company such as ours or purchase or recommend the purchase of our shares until such time as we become more seasoned and viable. Our trading volumes are further adversely affected by the 1-for-19 reverse stock split that was effective as of March 4, 2016. In addition, we believe that due to the limited number of shares of our common stock outstanding, an options market has not been established for our common stock, limiting the ability of market participants to hedge or otherwise undertake trading strategies available for larger companies with broader shareholder bases which prevents institutions and others from acquiring or trading in our securities. Consequently, there may be periods of several days or more when trading activity in our shares is minimal or non-existent, as compared to a seasoned issuer which has a large and steady volume of trading activity that will generally support continuous sales without an adverse effect on share price. We cannot give stockholders any assurance that a broader or more active public trading market for our common shares will develop or be sustained, or that current trading levels will be sustained.

Because of the Shareholder Rights Plan and "anti-takeover" provisions in our Certificate of Incorporation and Bylaws, a third party may be discouraged from making a takeover offer that could be beneficial to our stockholders.

Effective as of January 24, 2013, we adopted a shareholder rights plan which was amended and restated as of June 9, 2017. The effect of this rights plan and of certain provisions of our Certificate of Incorporation, By-Laws, and the anti-takeover provisions of the Delaware General Corporation Law, could delay or prevent a third party from acquiring us or replacing members of our Board of Directors, or make more costly any attempt to acquire control of the Company, even if the acquisition or the Board designees would be beneficial to our stockholders. These factors could also reduce the price that certain investors might be willing to pay for shares of the common stock and result in the market price being lower than it would be without these provisions.

Dividends on our common stock are not likely.

During the last five years, we have not paid cash dividends on our common stock, and we do not anticipate paying cash dividends on our common stock in the foreseeable future. Investors must look solely to the potential for appreciation in the market price of the shares of our common stock to obtain a return on their investment.

If we fail to retain our key personnel, we may not be able to achieve our anticipated level of growth and our business could suffer.

Our future depends, in part, on our ability to attract and retain key personnel and the continued contributions of our executive officers, each of whom may be difficult to replace. In particular, Anthony Hayes, our Chief Executive Officer, is important to the management of our business and operations and the development of our strategic direction. The loss of the services of any such individual and the process to replace any key personnel would involve significant time and expense and may significantly delay or prevent the achievement of our business objectives.

Item 1B. UNRESOLVED STAFF COMMENTS.

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

Item 2. PROPERTIES.

Our main office is located in New York, New York where we lease one office with a monthly payment of approximately $3,200. We also lease space in Longview, Texas, on a month to month basis, for approximately $2,000 per month, and in Williamsburg, Virginia, on a month to month basis, for approximately $500 per month. We believe that the New York, Texas and Virginia facilities are sufficient to meet our needs. We leased office space in Bethesda, Maryland under a lease with monthly payments of $15,107 that expired on March 31, 2018, which we did not renew.

Item 3. LEGAL PROCEEDINGS.

In the past, in the ordinary course of business, we actively pursued legal remedies to enforce our intellectual property rights and to stop unauthorized use of our technology. Other than ordinary routine litigation incidental to the business, we know of no material, active or pending legal proceedings against us.

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.

Our common stock is traded on the NASDAQ Capital Market under the symbol "SPEX". No dividends were paid in 2019 or 2018 and we do not currently anticipate paying any cash dividends on our capital stock in the foreseeable future.

On January 30, 2020, the closing price of our common stock, as reported by the NASDAQ Capital Market, was $1.14. As of January 30, 2020, we had approximately 123 holders of record of our common stock

Equity Compensation Plan Information

The following table provides information about our common stock that may be issued upon the exercise of options, warrants and rights under all of our existing equity compensation plans as of December 31, 2019 (on a split-adjusted basis).

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	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (1)) (2)
Equity compensation plans approved by security holder	88,950	$ 172.39	48,016
Equity compensation plans not approved by security holder	-	-	-
	88,950		48,016

(1) Consists of options to acquire 24,840 shares of our common stock under the 2013 Equity Incentive Plan and 64,110 under the 2014 Equity Incentive Plan.
(2) Consists of shares of common stock available for future issuance under our equity incentive plan or any other individual compensation arrangement.

Item 6. SELECTED FINANCIAL DATA

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

Item 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Forward-Looking Statements

You should read this discussion together with the Financial Statements, related Notes and other financial information included elsewhere in this Form 10-K. The following discussion contains assumptions, estimates and other forward-looking statements that involve a number of risks and uncertainties. These risks could cause our actual results to differ materially from those anticipated in these forward-looking statements.

Overview

Spherix Incorporated was initially formed in 1967 and is currently a biotechnology company seeking to develop small-molecule anti-cancer therapeutics. The Company recently purchased the rights to patented technology from leading universities and researchers and we are currently in the process of developing innovative therapeutic drugs through partnerships with world renowned educational institutions, including The University of Texas at Austin and Wake Forest University. Our diverse pipeline of therapeutics includes therapies for pancreatic cancer, acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL).

Prior to the closing on December 5, 2019 of the acquisition of the assets and rights of CBM BioPharma, Inc. and since July 2013, the Company focused its efforts on owning, developing, acquiring and monetizing intellectual property assets. Since March 2016, the Company has received limited funds from its intellectual property monetization. In addition to its patent monetization efforts, since the fourth quarter of 2017, the Company has been transitioning to focus its efforts as a technology and biotechnology development company. These efforts have focused on biotechnology research and blockchain technology research. The Company's biotechnology research development includes investments in: (i) Hoth Therapeutics Inc. ("Hoth"), a development stage biopharmaceutical company focused on unique targeted therapeutics for patients suffering from indications such as atopic dermatitis, also known as eczema, and (ii) DatChat, Inc. ("DatChat"), a privately held personal privacy platform focused on encrypted communication, internet security and digital rights management.

As a result of the Company's biotechnology research development and associated investments and acquisitions, our business portfolio now focuses on the treatment of three different cancers, including pancreatic cancer, acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL). Our AML and ALL compounds, developed at the Wake Forest University, are next generation targeted therapeutics designed to overcome multiple resistance mechanisms observed with the current standard of care. DHA-dFdC, our pancreatic drug developed at the University of Texas at Austin, is a new compound which we hope to become the next generation of chemotherapy treatment for advanced pancreatic cancer. The Company believes that DHA-dFdC overcomes tumor cell resistance to current chemotherapeutic drugs and is well tolerated in preclinical toxicity tests. Preclinical studies have also indicated that DHA-dFdC inhibits pancreatic cancer cell growth (up to 100,000-fold more potent that gemcitabine, a current standard therapy), has documented efficacy against pancreatic tumors in a clinically relevant transgenic mouse model and has demonstrated activities against other cancers, including leukemia, lung and melanoma.

Critical Accounting Policies

Recently Issued Accounting Pronouncements

See Note 3 to the consolidated financial statements for a discussion of recent accounting standards and pronouncements.

Results of Operations

Fiscal Year Ended December 31, 2019 Compared to Fiscal Year Ended December 31, 2018

The Company experienced very little or no revenue in the last two years and we don't expect any revenue until a biotechnology product is fully developed which may not occur for many years.

For the year ended December 31, 2019 and 2018, we incurred a loss from operations of $5.7 million and $6.9 million, respectively. The decrease in net loss in the 2019 period was primarily attributed to $1.4 million decrease in amortization of patent portfolio, $2.2 million decrease in impairment of intangible assets, $0.2 million decrease in selling, general and administrative expense, and partially offset by $2.5 million increase in research and development expense related with license acquisition.

For the year ended December 31, 2019 and 2018, other expense (income) was approximately $1.5 million and $8.6 million, respectively. The decrease of other income was primarily attributed to a $6.8 million decrease in change in fair value of investments and a $0.7 million decrease in the fair value of warrant liabilities, and partially offset by $0.3 million decrease in other expenses. During the year ended December 31, 2019, we recorded a loss of $0.9 million related to our investment in DatChat and a $2.4 million unrealized loss on our investment in Hoth as the closing stock price Hoth increased from a cost basis of $5.42 to $6.19 as of December 31, 2019.

Liquidity and Capital Resources

We continue to incur ongoing administrative and other expenses, including public company expenses, in excess of corresponding (non-financing related) revenue. While we continue to implement our business strategy, we intend to finance our activities through:

- managing current cash and cash equivalents on hand from our past debt and equity offerings;
- seeking additional funds raised through the sale of additional securities in the future;
- seeking additional liquidity through credit facilities or other debt arrangements; and
- increasing revenue from its patent portfolios, license fees and new business ventures.

Our ultimate success is dependent on our ability to obtain additional financing and generate sufficient cash flow to meet our obligations on a timely basis. Our business will require significant amounts of capital to sustain operations and make the investments it needs to execute its longer-term business plan to support new technologies and help advance innovation. Our working capital amounted to approximately $0.4 million at December 31, 2019. We will need to obtain additional debt or equity financing, especially if we experience downturns in our business that are more severe or longer than anticipated, or if we experience significant increases in expense levels resulting from being a publicly-traded company or operations. If we attempt to obtain additional debt or equity financing, we cannot assume that such financing will be available to the Company on favorable terms, or at all.

The Company plans to pursue its plans regarding research and development of our two pre-clinical products which will require resources beyond those currently, ultimately requiring third party capital. During this time, the Company does not expect to generate revenue and there is substantial doubt about the Company's ability to continue as a going concern within one year from the date of this filing. The consolidated financial statements have been prepared assuming that the Company will continue as a going concern, and do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets, or the amounts and classification of liabilities that may result from the outcome of this uncertainty.

Cash Flows from Operating Activities - For the year ended December 31, 2019 and 2018, net cash used in operations was $3.0 million and $2.7 million, respectively. The cash used in operating activities for the year ended December 31, 2019 primarily resulted from a net loss of $4.2 million, reduced by $1.4 million change in fair value of our investment, $0.1 million unrealized loss on marketable securities and $0.2 million change in assets and liabilities, and partially offset by $2.5 million research and development expense related with license acquisition. The cash used in operating activities for the year ended December 31, 2018 primarily resulted from a $8.2 million change in fair value of our investment in Hoth and $0.7 million change in fair value of warrant liabilities, and partially offset by a net income of $1.7 million, impairment of goodwill and intangible assets of $2.2 million and amortization of patent portfolio expenses of $1.4 million.

Cash Flows from Investing Activities - For the year ended December 31, 2019 net cash provided by investing activities was approximately $1.3 million as compared to net cash used in investing activities of approximately $0.2 million for the year ended December 31, 2018. The cash provided by investing activities for the year ended December 31, 2019 of $10.3 million primarily resulted from our sale of marketable securities, partially offset by our purchase of marketable securities of $8.5 million. The cash used in investing activities primarily resulted from our purchase of marketable securities for the year ended December 31, 2018 of $14.3 million, purchase of investment at fair value of $0.9 million, and was partially offset by our sale of marketable securities of $15.1 million.

Cash Flows from Financing Activities – For the year ended December 31, 2019 and 2018, net cash provided by financing activities was $1.8 million and $2.7 million, respectively. Cash provided by financing activities for the year ended December 31, 2019 was $1.8 million, which reflects the net proceeds of $0.8 million from investors in exchange of issuance of common stock and prefunded common stock warrants, and net proceeds of $1.0 million from the issuance of common stock as part of our ATM offering. Net cash provided by financing activities for the year ended December 31, 2018 was approximately $2.7 million, which related to the sale of 522,876 shares of its common stock.

The Company's ultimate success is dependent on its ability to obtain additional financing and generate sufficient cash flow to meet its obligations on a timely basis. The Company's business will require significant amounts of capital to sustain operations and make the investments it needs to execute its longer-term business plan. The Company's working capital amounted to approximately $0.4 million at December 31, 2019. Absent generation of sufficient revenue from the execution of the Company's long-term business plan, the Company will need to obtain additional debt or equity financing if the Company experiences significant increases in expense levels resulting from being a publicly-traded company or operations. If the Company attempts to obtain additional debt or equity financing, the Company cannot assume that such financing will be available to the Company on favorable terms, or at all.

We have filed a shelf registration statement on Form S-3 with the SEC. The registration statement, which has been declared effective, was filed in reliance on Instruction I.B.6 of Form S-3, which imposes a limitation on the maximum amount of securities that we may sell pursuant to the registration statement during any twelve-month period. At the time we sell securities pursuant to the registration statement, the amount of securities to be sold plus the amount of any securities we have sold during the prior twelve months in reliance on Instruction I.B.6 may not exceed one-third of the aggregate market value of our outstanding common stock held by non-affiliates as of a day during the 60 days immediately preceding such sale as computed in accordance with Instruction I.B.6. Whether we sell securities under the registration statement will depend on a number of factors, including the market conditions at that time, our cash position at that time and the availability and terms of alternative sources of capital.

In connection with the consummation of the IPO of Hoth, the Company entered into a lock-up agreement with Hoth pursuant to which the Company has agreed not to sell any shares of Hoth common stock or Spherix Securities until February 20, 2022, which is the 36 month anniversary of the consummation of Hoth's IPO, provided, however (i) Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, up to an aggregate of 10% of the initially issued Spherix Securities, provided further that the recipients of the Spherix Securities shall not be permitted to resell such Spherix Securities until six months after the date of the IPO, (ii) beginning 12 months after the date of Hoth's IPO, Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, up to an additional 10% of the initially issued Spherix Securities, (iii) beginning 24 months after the date of Hoth's IPO, Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, up to an additional 10% of the initially issued Spherix Securities and (iv) beginning 36 months after the date of the Hoth IPO, Spherix may offer, sell, contract to sell, hypothecate, pledge, dividend or distribute to its shareholders or otherwise dispose of, directly or indirectly, the Spherix Securities without any restrictions.

Contractual obligations

None.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

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

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Financial statements and supplementary data required by this Item 8 follow.

Index to Financial Statements Page

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors of
Spherix Incorporated

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Spherix Incorporated and Subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of operations, stockholders' equity and cash flows for each of the two years in the period ended December 31, 2019, 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, 2019 and 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

Explanatory Paragraph – Going Concern

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As more fully described in Note 2, the Company has historically incurred losses from operations and needs to raise additional funds to meet its obligations and sustain its operations. These conditions raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to 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 audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits 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 audits, 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 audits 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 audits 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 audits provide a reasonable basis for our opinion.

/s/ Marcum LLP

Marcum LLP

We have served as the Company's auditor since 2013.

New York, NY
January 31, 2020

SPHERIX INCORPORATED AND SUBSIDIARIES
Consolidated Balance Sheets
($ in thousands except per share amounts)

	December 31, 2019	December 31, 2018
ASSETS		
Current assets		
Cash and cash equivalents	$ 91	$ 17
Marketable securities	857	2,700
Prepaid expenses and other assets	181	188
Total current assets	1,129	2,905
Property and equipment, net	-	1
Investments	10,153	10,345
	$ 11,282	**$ 13,251**
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities		
Accounts payable and accrued expenses	$ 68	$ 132
Accrued salaries and benefits	682	732
Warrant liabilities	-	82
Payable to DatChat	-	207
Total current liabilities	750	1,153
Total liabilities	**750**	**1,153**
Stockholders' equity		
Series D: 4,725 shares issued and outstanding at December 31, 2019 and 2018; liquidation value of $0.0001 per share	-	-
Series D-1: 834 shares issued and outstanding at December 31, 2019 and 2018; liquidation value of $0.0001 per share	-	-
Common stock, $0.0001 par value, 100,000,000 shares authorized; 4,825,552 and 2,010,028 shares issued at December 31, 2019 and 2018, respectively; 4,825,549 and 2,010,025 shares outstanding at December 31, 2019 and 2018, respectively	-	-
Additional paid-in-capital	155,062	152,445
Treasury stock, at cost, 3 shares at December 31, 2019 and 2018	(264)	(264)
Accumulated deficit	(144,266)	(140,083)
Total stockholders' equity	10,532	12,098
Total liabilities and stockholders' equity	**$ 11,282**	**$ 13,251**

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

SPHERIX INCORPORATED AND SUBSIDIARIES
Consolidated Statements of Operations
($ in thousands)

	Years Ended December 31,	
	2019	**2018**
Revenues	$ 9	$ 28
Operating costs and expenses		
Amortization of patent portfolio	$ -	$ 1,405
Selling, general and administrative	3,172	3,324
Research and development	2,522	-
Impairment of intangible assets	-	2,173
Total operating expenses	5,694	6,902
Loss from operations	(5,685)	(6,874)
Other income (expenses)		
Other income (expenses), net	14	(333)
Change in fair value of investment	1,406	8,194
Change in fair value of warrant liabilities	82	740
Total other income	1,502	8,601
Net (loss) income	**$ (4,183)**	**$ 1,727**
Net (loss) income per share attributable to common stockholders, basic and diluted		
Basic	$ (1.67)	$ 0.91
Diluted	$ (1.67)	$ 0.91
Weighted average number of common shares outstanding		
Basic	2,511,566	1,896,057
Diluted	2,511,566	1,896,745

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

SPHERIX INCORPORATED AND SUBSIDIARIES
Consolidated Statements of Changes in Stockholders' Equity
($ in thousands)

	Common Stock		Preferred Stock		Additional Paid-in	Treasury Stock		Accumulated	Total Stockholders'
	Shares	Amount	Shares	Amount	Capital	Shares	Amount	Deficit	Equity
Balance at January 1, 2018	**1,467,052**	**$ -**	**5,559**	**$ -**	**$ 149,425**	**3**	**$ (264)**	**$ (145,055)**	**$ 4,106**
Issuance common stock in equity raise, net of offering cost	522,876	-	-	-	2,700	-	-	-	2,700
Stock-based compensation	20,097	-	-	-	320	-	-	-	320
Cumulative effect of the changes related to adoption of ASC 606	-	-	-	-	-	-	-	3,245	3,245
Net income	-	-	-	-	-	-	-	1,727	1,727
Balance at December 31, 2018	**2,010,025**	**$ -**	**5,559**	**$ -**	**$ 152,445**	**3**	**$ (264)**	**$ (140,083)**	**$ 12,098**
Issuance of common stock and prefunded common stock warrants, net of offering cost	221,000	-	-	-	787	-	-	-	787
Issuance of common stock, net of offering cost / At-the-market offering	532,070	-	-	-	1,047	-	-	-	1,047
Issuance of common stock for research and development - license acquired	1,939,058	-	-	-	2,152	-	-	-	2,152
Exercise of prefunded common stock warrants	201,961	-	-	-	-	-	-	-	-
Warrant exercise	33,333	-	-	-	-				-
Exchange of common shares for prefunded warrants	(115,269)	-	-	-	-	-	-	-	-
Distribution of Hoth common stock	-	-	-	-	(1,698)	-	-	-	(1,698)
Fractional shares adjusted for reverse split	3,371	-	-	-	-	-	-	-	-
Stock-based compensation	-	-	-	-	329	-	-	-	329
Net loss	-	-	-	-	-	-	-	(4,183)	(4,183)
Balance at December 31, 2019	**4,825,549**	**$ -**	**5,559**	**$ -**	**$ 155,062**	**3**	**$ (264)**	**$ (144,266)**	**$ 10,532**

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

SPHERIX INCORPORATED AND SUBSIDIARIES
Consolidated Statements of Cash Flows
($ in thousands)

	Years Ended December 31,	
	2019	**2018**
Cash flows from operating activities		
Net (loss) income	$ (4,183)	$ 1,727
Adjustments to reconcile net loss to net cash used in operating activities:		
Amortization of patent portfolio	-	1,405
Change in fair value of investment	(1,406)	(8,194)
Change in fair value of warrant liabilities	(82)	(740)
Research and development-acquired license, expensed	2,512	-
Stock-based compensation	329	320
Depreciation expense	-	38
Realized loss on marketable securities	172	400
Unrealized loss (gain) on marketable securities	(145)	117
Impairment of intangible assets	-	2,173
Changes in assets and liabilities:		
Prepaid expenses and other assets	7	(38)
Accounts payable and accrued expenses	(64)	74
Accrued salaries and benefits	(50)	37
Payable to DatChat	(107)	-
Accrued lease liabilities	-	(48)
Net cash used in operating activities	(3,017)	(2,729)
Cash flows from investing activities		
Purchase of marketable securities	(8,461)	(14,280)
Sale of marketable securities	10,277	15,061
Purchase of investments at fair value	(200)	(922)
Release of deposit	-	26
Purchase of research and development licenses	(360)	-
Purchase of property and equipment	-	(36)
Net cash provided by (used in) investing activities	1,256	(151)
Cash flows from financing activities		
Proceeds from issuance common stock, net of offering cost	787	2,700
Proceeds from issuance common stock/ At-the-market offering	1,154	-
Offering costs fro the issuance of common stock / At-the-market offering	(106)	-
Net cash provided by financing activities	1,835	2,700
Net increase (decrease) in cash and cash equivalents	74	(180)
Cash and cash equivalents, beginning of period	17	197
Cash and cash equivalents, end of period	$ 91	$ 17
Non-cash investing and financing activities		
Investment in DatChat	$ -	$ 207
Investment in Mellow Scooters	$ -	$ 2
Distribution of Hoth common stock	$ 1,698	$ -

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

Note 1. Organization and Description of Business

Organization and Description of Business

Spherix Incorporated (the "Company") is technology development company committed to the fostering of innovative ideas. The Company was incorporated in 1967 in the State of Delaware as a scientific research company, and for much of its history pursued drug development including through Phase III clinical studies which were discontinued.

The Company was formerly focused on commercializing and monetizing patents by acquiring IP from patent holders in order to maximize the value of the patent holdings by conducting and managing a licensing campaign, or through the settlement and litigation of patents.

Since March 2016, the Company has received limited funds from its intellectual property monetization. In addition to its patent monetization efforts, since the fourth quarter of 2017, the Company has been transitioning to focus its efforts as a technology and biotechnology development company. These efforts have focused on biotechnology research and blockchain technology research. The Company's biotechnology research development includes investments in: (i) Hoth Therapeutics Inc. ("Hoth"), a development stage biopharmaceutical company focused on unique targeted therapeutics for patients suffering from indications such as atopic dermatitis, also known as eczema, (ii) DatChat, Inc. ("DatChat"), a privately held personal privacy platform focused on encrypted communication, internet security and digital rights management, and (iii) the acquisition of assets of CBM BioPharma, Inc. ("CBM"), a pharmaceutical company focusing on the development of cancer treatments.

As a result of the Company's biotechnology research development and associated investments and acquisitions, our business portfolio now focuses on the treatment of three different cancers, including pancreatic cancer, acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL). Our AML and ALL compounds, developed at the Wake Forest University, are next generation targeted therapeutics designed to overcome multiple resistance mechanisms observed with the current standard of care. DHA-dFdC, our pancreatic drug developed at the University of Texas at Austin, is a new compound poised to become the next generation of chemotherapy treatment for advanced pancreatic cancer. DHA-dFdC overcomes tumor cell resistance to current chemotherapeutic drugs and is well tolerated in preclinical toxicity tests. Preclinical studies have also indicated that DHA-dFdC inhibits pancreatic cancer cell growth (up to 100,000-fold more potent that gemcitabine, a current standard therapy), has documented efficacy against pancreatic tumors in a clinically relevant transgenic mouse model and has demonstrated activities against other cancers, including leukemia, lung and melanoma. In addition, we are constantly seeking to grow our pipe to treat unmet medical needs in oncology.

Reverse Stock Split

On May 10, 2019, the Company effected a reverse stock split of its outstanding shares of common stock at a ratio of one-for-4.25 (the "Reverse Stock Split"). The Reverse Stock Split, which was approved by the Company's Board of Directors under authority granted by the Company's stockholders at the Company's 2019 Annual Meeting of Stockholders held on April 15, 2019, was consummated pursuant to a Certificate of Amendment filed with the Secretary of State of Delaware on May 9, 2019 (the "Certificate of Amendment"). The Reverse Stock Split was effective on May 10, 2019 (the "Effective Date"). Unless the context otherwise requires, all references in this report to shares of the Company's common stock, including prices per share of its common stock, reflect the Reverse Stock Split. Fractional shares were not issued, and the final number of shares were rounded up to the next whole share.

CBM Asset Acquisition

On October 10, 2018, the Company entered into that certain Agreement and Plan of Merger, dated as of October 10, 2018, by and among the Company, Spherix Delaware Merger Sub Inc., a Delaware corporation, Scott Wilfong, as the CBM stockholder representative, and CBM, a Delaware corporation and a pharmaceutical company focused on the development of cancer treatments, pursuant to which all shares of capital stock of CBM were be converted into the right to receive an aggregate of 15,000,000 shares of the Company's common stock, with CBM continuing as the surviving corporation in the merger.

On May 15, 2019, the Company restructured the terms of the CBM merger and chose to proceed with purchasing substantially all of the assets, properties and rights (the "Acquisition") of CBM. On December 5, 2019, the Company completed the Acquisition of CBM, pursuant to that certain Asset Purchase Agreement, dated as of May 15, 2019, by and between the Company and CBM, as amended by that certain Amendment No. 1 to Asset Purchase Agreement, dated as of May 30, 2019, and Amendment No. 2 to Asset Purchase Agreement, dated as of December 5, 2019 (collectively, the "CBM Purchase Agreement"). As consideration for the Acquisition, the Company agreed to pay to CBM consideration consisting of (i) $1,000,000 in cash (the "Cash Consideration") and (ii) an aggregate of 1,939,058 shares (the "Stock Consideration") of the Company's common stock valued at a price per share of $3.61. The Cash Consideration will become payable to CBM upon the consummation by the Company of the first sale of the Company's common stock or any other equity or equity-linked financing of the Company to investors in or more transactions, after the date of the CBM Purchase Agreement, for which the Company receives aggregate gross proceeds of greater than $2,000,000 (a "Qualified Financing"). Upon the consummation of the Qualified Financing, the Company shall retain the first $2,000,000 of the gross proceeds from the Qualified Financing and CBM shall receive 100% of the gross proceeds of such Qualified Financing received by the Company in excess of $2,000,000 as well as the gross proceeds of any subsequent equity financings by the Company until the Cash Consideration amount is satisfied in full. Additionally, at closing, 7% or 135,734 shares of common stock of the Stock Consideration was deposited with VStock (the "Escrow Shares"), the Company's transfer agent, to be held in escrow for six months post-closing to satisfy certain indemnification obligations pursuant to the terms and conditions of the CBM Purchase Agreement, and 93% or 1,803,324 shares of the Stock Consideration was issued and delivered to CBM.

On December 5, 2019, the Company recorded the issuance of Stock Consideration at fair value, based upon the closing stock price per share of $1.11 as of December 5, 2019. The issuance of Escrow Shares is considered probable as of December 31, 2019. The Cash Consideration was not considered probable as of December 31, 2019 as such consideration is payable on a Qualified Financing. Because acquisition of CBM's intellectual property had not received regulatory approval, the $2.5 million purchase price paid for CBM was immediately expensed in the Company's statement of operations as research and development – intellectual property acquired.

Note 2. Going Concern and Financial Condition

The Company continues to incur ongoing administrative and other expenses, including public company expenses, in excess of corresponding (non-financing related) revenue. While the Company continues to implement its business strategy, it intends to finance its activities through:

- managing current cash and cash equivalents on hand from the Company's past debt and equity offerings,
- seeking additional funds raised through the sale of additional securities in the future,
- seeking additional liquidity through credit facilities or other debt arrangements, and
- increasing revenue from its patent portfolios, license fees and new business ventures.

The Company's ultimate success is dependent on its ability to obtain additional financing and generate sufficient cash flow to meet its obligations on a timely basis. The Company's business will require significant amounts of capital to sustain operations and make the investments it needs to execute its longer-term business plan to support new technologies and help advance innovation. Absent generation of sufficient revenue from the execution of the Company's long-term business plan, the Company will need to obtain additional debt or equity financing, especially if the Company experiences downturns in its business that are more severe or longer than anticipated, or if the Company experiences significant increases in expense levels resulting from being a publicly-traded company or operations. If the Company attempts to obtain additional debt or equity financing, the Company cannot assume that such financing will be available to the Company on favorable terms, or at all.

The Company plans to pursue its plans regarding research and development which will require resources beyond those currently available, including third party capital. During this time, the Company does not expect to generate revenue as there is substantial doubt about the Company's ability to continue as a going concern within one year from the date of this filing. The consolidated financial statements have been prepared assuming that the Company will continue as a going concern, and do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets, or the amounts and classification of liabilities that may result from the outcome of this uncertainty.

Note 3. Summary of Significant Accounting Policies

Basis of Presentation and Principles of Consolidation

The accompanying consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries, Nuta Technology Corp. ("Nuta"), Spherix Portfolio Acquisition II, Inc. ("SPAII"), Guidance IP, LLC ("Guidance"), Directional IP, LLC ("Directional"), Spherix Management Services, LLC ("SMS"), Spherix Delaware Merger Sub Inc. ("Merger Sub"), Spherix Merger Subsidiary, Inc ("SMSI") and NNPT, LLC ("NNPT"). All significant intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The accompanying consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("US GAAP"). This requires management to make estimates and assumptions that affect certain reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expenses during the period. The Company's significant estimates and assumptions include stock-based compensation, the valuation of derivative liabilities, the valuation of investments and the valuation allowance related to the Company's deferred tax assets. Certain of the Company's estimates could be affected by external conditions, including those unique to the Company and general economic conditions. It is reasonably possible that these external factors could have an effect on the Company's estimates and could cause actual results to differ from those estimates and assumptions.

Segments

The Company operates in one operating segment and, accordingly, no segment disclosures have been presented herein.

Concentration of Cash

The Company maintains cash balances at two financial institutions in checking accounts and money market accounts. The Company considers all highly liquid investments with original maturities of three months or less when purchased to be cash equivalents. The Company has not experienced any losses in such accounts and believes it is not exposed to any significant credit risk on cash.

Marketable Securities

Marketable securities are classified as trading and are carried at fair value. The Company's marketable securities consist of corporate bonds and highly liquid mutual funds and exchange-traded & closed-end funds which are valued at quoted market prices.

Investments

The Company accounts for its investment in Hoth at fair value (based upon the closing price on the Nasdaq Capital Market). In connection with the consummation of the initial public offering of Hoth, the Company entered into a lock-up agreement until February 20, 2022. Therefore, the Company considers its investment in Hoth to be long term.

Research and Development – Intellectual Property Acquired

The Company concluded that its acquisition of CBM, completed on December 5, 2019, should be accounted for as an asset acquisition rather than a business combination under Accounting Standards Codification (ASC) 805, Business Combinations. The acquisition of CBM was accounted for as an asset acquisition because substantially all the fair value of the assets being acquired are concentrated in a group of similar assets. Furthermore, the acquired assets did not have outputs or employees. The assets acquired by the Company included a license, other associated intellectual property, documentation and records, and related materials.

Treasury Stock

The Company accounts for the treasury stock using the cost method, which treats it as a reduction in stockholders' equity.

Revenue Recognition

The Company recognizes revenue under ASC 606, *Revenue from Contracts with Customers*. The core principle of the new revenue standard is that a company should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. The following five steps are applied to achieve that core principle:

- Step 1: Identify the contract with the customer
- Step 2: Identify the performance obligations in the contract
- Step 3: Determine the transaction price
- Step 4: Allocate the transaction price to the performance obligations in the contract
- Step 5: Recognize revenue when the company satisfies a performance obligation

In order to identify the performance obligations in a contract with a customer, a company must assess the promised goods or services in the contract and identify each promised good or service that is distinct. A performance obligation meets ASC 606's definition of a "distinct" good or service (or bundle of goods or services) if both of the following criteria are met:

- The customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer (i.e., the good or service is capable of being distinct).

- The entity's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract (i.e., the promise to transfer the good or service is distinct within the context of the contract).

If a good or service is not distinct, the good or service is combined with other promised goods or services until a bundle of goods or services is identified that is distinct.

The transaction price is the amount of consideration to which an entity expects to be entitled in exchange for transferring promised goods or services to a customer. The consideration promised in a contract with a customer may include fixed amounts, variable amounts, or both. When determining the transaction price, an entity must consider the effects of all of the following:

- Variable consideration

- Constraining estimates of variable consideration

- The existence of a significant financing component in the contract

- Noncash consideration

- Consideration payable to a customer

Variable consideration is included in the transaction price only to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved.

The transaction price is allocated to each performance obligation on a relative standalone selling price basis.

The transaction price allocated to each performance obligation is recognized when that performance obligation is satisfied, at a point in time or over time as appropriate.

As of December 31, 2019 and 2018, there were no contract assets or liabilities associated with the Company's settlement and licensing agreements. During the year ended December 31, 2019 and 2018, the Company only generated $9,000 and $28,000 of revenue, respectively.

Accounting for Warrants

The Company accounts for the issuance of common stock purchase warrants issued in connection with the equity offerings in accordance with the provisions of ASC 815, *Derivatives and Hedging* ("ASC 815"). The Company classifies as equity any contracts that (i) require physical settlement or net-share settlement or (ii) gives the Company a choice of net-cash settlement or settlement in its own shares (physical settlement or net-share settlement). The Company classifies as assets or liabilities any contracts that (i) require net-cash settlement (including a requirement to net-cash settle the contract if an event occurs and if that event is outside the control of the Company) or (ii) gives the counterparty a choice of net-cash settlement or settlement in shares (physical settlement or net-share settlement). In addition, Under ASC 815, registered common stock warrants that require the issuance of registered shares upon exercise and do not expressly preclude an implied right to cash settlement are accounted for as derivative liabilities. The Company classifies these derivative warrant liabilities on the consolidated balance sheet as a current liability.

The Company assessed the classification of common stock purchase warrants as of the date of each offering and determined that such instruments met the criteria for liability classification. Accordingly, the Company classified the warrants as a liability at their fair value and adjusts the instruments to fair value at each reporting period. This liability is subject to re-measurement at each balance sheet date until the warrants are exercised or expired, and any change in fair value is recognized as "change in the fair value of warrant liabilities" in the consolidated statements of operations. The fair value of the warrants has been estimated using a Black-Scholes valuation model.

Stock-based Compensation

The Company accounts for share-based payment awards exchanged for services at the estimated grant date fair value of the award. Stock options issued under the Company's long-term incentive plans are granted with an exercise price equal to no less than the market price of the Company's stock at the date of grant and expire up to ten years from the date of grant. These options generally vest over a one- to five-year period.

The Company estimates the fair value of stock option grants using the Black-Scholes option pricing model and the assumptions used in calculating the fair value of stock-based awards represent management's best estimates and involve inherent uncertainties and the application of management's judgment.

Expected Term - The expected term of options represents the period that the Company's stock-based awards are expected to be outstanding based on the simplified method, which is the half-life from vesting to the end of its contractual term.

Expected Volatility - The Company computes stock price volatility over expected terms based on its historical common stock trading prices.

Risk-Free Interest Rate - The Company bases the risk-free interest rate on the implied yield available on U. S. Treasury zero-coupon issues with an equivalent remaining term.

Expected Dividend - The Company has never declared or paid any cash dividends on its common shares and does not plan to pay cash dividends in the foreseeable future, and, therefore, uses an expected dividend yield of zero in its valuation models.

Effective January 1, 2017, the Company elected to account for forfeited awards as they occur, as permitted by Accounting Standards Update ("ASU") 2016-09. Ultimately, the actual expenses recognized over the vesting period will be for those shares that vested. Prior to making this election, the Company estimated a forfeiture rate for awards at 0%, as the Company did not have a significant history of forfeitures.

Income Taxes

The Company uses the asset and liability method of accounting for income taxes in accordance with ASC 740, "*Income Taxes*" ("ASC 740"). Under this method, income tax expense is recognized as the amount of: (i) taxes payable or refundable for the current year and (ii) deferred tax consequences of temporary difference resulting from matters that have been recognized in the Company's financial statement or tax returns. Deferred tax assets and liabilities are determined based on the difference between the financial statement and tax bases of assets and liabilities measured at the enacted tax rates in effect for the year in which these items are expected to reverse. Deferred tax assets are reduced by valuation allowances if, based on the consideration of all available evidence, it is more likely than not that some portion or all of the deferred tax asset will not be realized.

Recently Issued Accounting Standards

In August 2018, the Financial Accounting Standards Board ("FASB") issued ASU 2018-13, "*Fair Value Measurement* (Topic 820), - Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement," which makes a number of changes meant to add, modify or remove certain disclosure requirements associated with the movement amongst or hierarchy associated with Level 1, Level 2 and Level 3 fair value measurements. This guidance is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. Early adoption is permitted upon issuance of the update. The Company adopted this ASU on January 1, 2020 and the adoption of this ASU did not have a material impact on its consolidated financial statements or related disclosures.

In December 2019, the FASB issued ASU No. 2019-12, "*Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes* ("ASU 2019-12"), which is intended to simplify various aspects related to accounting for income taxes. ASU 2019-12 removes certain exceptions to the general principles in Topic 740 and also clarifies and amends existing guidance to improve consistent application. This guidance is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2020, with early adoption permitted. The Company is currently evaluating the impact of this standard on its consolidated financial statements and related disclosures.

Recently Adopted Accounting Standards

In May 2014, the FASB issued ASU No. 2014-09, "*Revenue from Contracts with Customers* (Topic 606)" (ASU 2014-09) as modified by ASU No. 2015-14, "*Revenue from Contracts with Customers* (Topic 606): Deferral of the Effective Date," ASU 2016-08, "*Revenue from Contracts with Customers* (Topic 606): *Principal versus Agent Considerations* (Reporting Revenue Gross versus Net)," ASU No. 2016-10, "*Revenue from Contracts with Customers* (Topic 606): *Identifying Performance Obligations and Licensing*," and ASU No. 2016-12, "*Revenue from Contracts with Customers* (Topic 606): *Narrow-Scope Improvements and Practical Expedients*." The revenue recognition principle in ASU 2014-09 is that an entity should recognize revenue to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In addition, new and enhanced disclosures will be required. Companies may adopt the new standard either using the full retrospective approach, a modified retrospective approach with practical expedients, or a cumulative effect upon adoption approach. The Company adopted the new standard effective January 1, 2018, using the modified retrospective approach. The Company has determined that its licenses represent functional intellectual property under Topic 606. Therefore, revenue is recognized at the point in time when the customer has the right to use the intellectual property rather than over the license period. Accordingly, the Company's deferred revenue related to its licenses was eliminated and accumulated deficit as of January 1, 2018 was decreased by approximately $3.2 million so that the Company will not recognize revenue on earnings statements in the future as to its license. Absent the adoption of ASC 606, the Company would have recorded approximately $1.0 million of deferred revenue for the year ended December 31, 2018.

In January 2016, the FASB issued ASU No. 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities*. ASU No. 2016-01 requires equity investments to be measured at fair value with changes in fair value recognized in net income; simplifies the impairment assessment of equity investments without readily determinable fair values by requiring a qualitative assessment to identify impairment; eliminates the requirement for public business entities to disclose the methods and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost on the balance sheet; requires public business entities to use the exit price notion when measuring the fair value of financial instruments for disclosure purposes; requires an entity to present separately in other comprehensive income the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the entity has elected to measure the liability at fair value in accordance with the fair value option for financial instruments; requires separate presentation of financial assets and financial liabilities by measurement category and form of financial assets on the balance sheet or the accompanying notes to the financial statements; and clarifies that an entity should evaluate the need for a valuation allowance on a deferred tax asset related to available-for-sale securities in combination with the entity's other deferred tax assets. ASU No. 2016-01 is effective for financial statements issued for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. The Company adopted the provisions of ASU 2016-01 on January 1, 2018. The adoption of this update did not impact the Company's consolidated financial statements and related disclosures.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*, which supersedes FASB ASC Topic 840, *Leases (Topic 840)* and provides principles for the recognition, measurement, presentation and disclosure of leases for both lessees and lessors. The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease, respectively. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than twelve months regardless of classification. Leases with a term of twelve months or less will be accounted for similar to existing guidance for operating leases. The standard is effective for annual and interim periods beginning after December 15, 2018, with early adoption permitted upon issuance. The Company does not have any long-term leases, therefore the adoption of this standard on January 1, 2019 did not have a material impact on the Company's consolidated financial position and results of operations.

In May 2017, the Financial Accounting Standards Board (the FASB) issued ASU 2017-09, *Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting*, (ASU 2017-09). ASU 2017-09 provides clarity and reduces both (1) diversity in practice and (2) cost and complexity when applying the guidance in Topic 718, to a change to the terms or conditions of a share-based payment award. The amendments in ASU 2017-09 should be applied prospectively to an award modified on or after the adoption date. This ASU is effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. The Company adopted ASU 2017-09 on January 1, 2018. The adoption of this ASU did not have a material impact on the Company's financial position or results of operations.

In July 2017, the FASB issued ASU 2017-11, *Earnings Per Share (Topic 260), Distinguishing Liabilities from Equity (Topic 480) and Derivatives and Hedging (Topic 815): I. Accounting for Certain Financial Instruments with Down Round Features; II. Replacement of the Indefinite Deferral for Mandatorily Redeemable Financial Instruments of Certain Nonpublic Entities and Certain Mandatorily Redeemable Noncontrolling Interests with a Scope Exception*, (ASU 2017-11). Part I of this update addresses the complexity of accounting for certain financial instruments with down round features. Down round features are features of certain equity-linked instruments (or embedded features) that result in the strike price being reduced on the basis of the pricing of future equity offerings. Current accounting guidance creates cost and complexity for entities that issue financial instruments (such as warrants and convertible instruments) with down round features that require fair value measurement of the entire instrument or conversion option. Part II of this update addresses the difficulty of navigating Topic 480, Distinguishing Liabilities from Equity, because of the existence of extensive pending content in the FASB Accounting Standards Codification. This pending content is the result of the indefinite deferral of accounting requirements about mandatorily redeemable financial instruments of certain nonpublic entities and certain mandatorily redeemable noncontrolling interests. The amendments in Part II of this update do not have an accounting effect. This ASU is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018. The Company adopted ASU 2017-11 on January 1, 2019 and the adoption did not have an impact on the Company's consolidated financial statements.

In June 2018, the FASB issued ASU 2018-07, *Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting* ("ASU 2018-07"). ASU 2018-07 simplifies several aspects of the accounting for nonemployee share-based payment transactions resulting from expanding the scope of Topic 718, Compensation-Stock Compensation, to include share-based payment transactions for acquiring goods and services from nonemployees. ASU 2018-07 is effective for public business entities for fiscal years beginning after December 15, 2018, including interim periods within that fiscal year. The Company adopted ASU 2018-07 on January 1, 2019 and the adoption did not have an impact on the Company's consolidated financial statements.

Note 4. Investments in Marketable Securities

The realized gain or loss, unrealized gain or loss, and dividend income related to marketable securities for the year ended December 31, 2019 and 2018, which are recorded as a component of other (expenses) income on the consolidated statements of operations, are as follows ($ in thousands):

	For the Years Ended December 31,	
	2019	**2018**
Realized gain (loss)	$ (172)	$ (400)
Unrealized gain (loss)	145	(117)
Dividend income	38	158
Interest income	4	-
	$ 14	$ (359)

Note 5. Investment in Hoth Therapeutics, Inc.

Hoth is a development stage biopharmaceutical company focused on unique targeted therapeutics for patients suffering from indications such as atopic dermatitis, also known as eczema. Hoth's primary asset is a sublicense agreement with Chelexa Biosciences, Inc. ("Chelexa") pursuant to which Chelexa has granted Hoth an exclusive sublicense to use its BioLexa products for the treatment of eczema.

On February 20, 2019, Hoth closed its initial public offering (the "IPO") at an initial offering price to the public of $5.60 per share. The Company records this investment at fair value and records any change in fair value in the statements of operations (see Note 7).

On October 2, 2019, the Board of Directors approved a distribution to the Company's stockholders of 100,000 Hoth Shares held by the Company. Accordingly, each of the Company's stockholders received one (1) share of Hoth common stock for every twenty-nine (29) shares of Company common stock held as of 5 p.m. Eastern Time on October 21, 2019, the dividend record date. The Company did not distribute fractional shares of Hoth common stock, and any fractional shares were rounded down to the nearest whole share.

The following summarizes the Company investment in Hoth:

Security Name	**Shares Owned as of December 31, 2019**	**Fair value per Share as of December 31, 2019**	**Fair value as of December 31, 2019 (in thousands)**
HOTH	1,636,230	$ 6.19	$ 10,128

The fair value of Hoth common shares as of December 31, 2019 was based on the closing price of $6.19 reported on The NASDAQ Capital Market as of December 31, 2019.

Note 6. Investment in Others

In May 2019, the Company purchased (a) a senior convertible note issued by DatChat with outstanding principal of $300,000, with an initial conversion rate of $0.20 per share, (b) a warrant to purchase 2,250,000 shares of DatChat common stock at an initial exercise price of $0.20 per share, (c) an option to acquire an additional $300,000 senior convertible note and a warrant to purchase 1,500,000 shares of DatChat common stock, (d) a contingent option to purchase 500,000 shares of DatChat common stock from an existing DatChat stockholder, (e) a contingent option to put 200,000 shares of DatChat common stock and (f) 50,000 shares of common stock of CBM which represents a 20% interest in CBM. The Company allocated all the fair value of this investment to CBM. As a result of the nominal purchase price allocated to DatChat, the Company reviewed its existing holdings in DatChat and reduced its existing carrying amount from $1.0 million to $0. The Company recorded its initial investment in DatChat on adjusted cost method measurement alternative in accordance with ASU 2016-01.

On December 5, 2019, in connection with the acquisition of the assets of CBM, the Company wrote-off its investment to research and development expense as the original purchase of 50,000 CBM shares was a component of the transaction contemplated with CBM.

The balance of Company's other investments is $25,000 as of December 31, 2019. Such investments were recorded on adjusted cost method measurement alternative in accordance with ASU 2016-01.

Note 7. Fair Value of Financial Assets and Liabilities

Financial instruments, including cash and cash equivalents, accounts payable and accrued liabilities are carried at cost, which management believes approximates fair value due to the short-term nature of these instruments. The Company measures the fair value of financial assets and liabilities based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The Company maximizes the use of observable inputs and minimizes the use of unobservable inputs when measuring fair value.

The Company uses three levels of inputs that may be used to measure fair value:

Level 1 - quoted prices in active markets for identical assets or liabilities
Level 2 - quoted prices for similar assets and liabilities in active markets or inputs that are observable
Level 3 - inputs that are unobservable (for example, cash flow modeling inputs based on assumptions)

The following table presents the Company's assets and liabilities that are measured at fair value at December 31, 2019 and 2018 ($ in thousands):

	Fair value measured at December 31, 2019			
	Total at December 31, 2019	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Assets				
Marketable securities - mutual and exchange traded funds	$ 857	$ 857	$ -	$ -
Investments in Hoth	$ 10,128	$ 10,128	$ -	$ -

	Fair value measured at December 31, 2018			
	Total at December 31, 2018	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Assets				
Marketable securities - mutual and exchange traded funds	$ 2,700	$ 2,700	$ -	$ -
Investments in Hoth	$ 9,214	$ -	$ -	$ 9,214
Liabilities				
Fair value of warrant liabilities	$ 82	$ -	$ -	$ 82

Level 2 Valuation Techniques

The fair values of Level 2 marketable securities are determined using one or more quoted prices in markets that are not active or for which all significant inputs are observable, either directly or indirectly.

Level 3 Valuation Techniques

Level 3 Valuation Techniques – Assets

The following table sets forth a summary of the changes in the fair value of the Company's Level 3 financial assets that are measured at fair value on a recurring basis:

	Fair Value of Level 3 investment	
	December 31, 2019	December 31, 2018
Beginning balance	$ 9,214	$ 1,020
Transfer of Hoth From Level 3 to Level 1 upon IPO	(9,214)	-
Change in fair value of Hoth	-	8,194
Ending balance	$ -	$ 9,214

While the Company believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date.

The decision to elect the fair value option, which is irrevocable once elected, is determined on an instrument by instrument basis and applied to an entire instrument. The net gains or losses, if any, on an investment for which the fair value option has been elected, are recognized as change in fair value of investment in the Consolidated Statements of Operations.

A summary of quantitative information with respect to the valuation methodology and significant unobservable inputs used for the Company's valuation in Hoth that are categorized within Level 3 of the fair value hierarchy at the date of issuance and as of December 31, 2018 is as follows:

Date of valuation	December 31, 2018
Risk-free interest rate	2.45%
Expected volatility	75.00%
Contractual life (in years)	0.17

The investment in Hoth as of December 31, 2018 was valued using the PWERM (Probability Weighted Expected Return Method). Under this method, an analysis of future values of a company is performed for several likely scenarios. These scenarios included both a high and low range of values that were provided to Hoth by their investment bankers. The price per share was $6.50 and $5.50, respectively. The value is then discounted to the present using a risk-adjusted discount rate of 15%. The present values of the common stock under each scenario are then weighted based on the probability of each scenario occurring to determine the value of the investment. A 10% probability was placed on the high end and a 90% probability was placed on the low end.

Level 3 Valuation Techniques – Liabilities

Level 3 financial liabilities consist of the warrant liabilities for which there is no current market for these securities such that the determination of fair value requires significant judgment or estimation. Changes in fair value measurements categorized within Level 3 of the fair value hierarchy are analyzed each period based on changes in estimates or assumptions and recorded as appropriate.

A significant decrease in the volatility or a significant decrease in the Company's stock price, in isolation, would result in a significantly lower fair value measurement. Changes in the values of the warrant liabilities are recorded in "change in fair value of warrant liabilities" in the Company's consolidated statements of operations.

The Series A and Series B warrants have been recorded at their fair value using the Black-Scholes valuation model, and will be recorded at their respective fair value at each subsequent balance sheet date. This model incorporates transaction details such as the Company's stock price, contractual terms, maturity, risk free rates, as well as volatility. The warrants require, at the option of the holder, a net-cash settlement following certain fundamental transactions at the Company or require the issuance of registered shares upon exercise, do not expressly preclude an implied right to cash settlement and are therefore accounted for as derivative liabilities.

A summary of quantitative information with respect to the valuation methodology and significant unobservable inputs used for the Company's warrant liabilities that are categorized within Level 3 of the fair value hierarchy at the date of issuance and as of December 31, 2019 and 2018 is as follows:

Date of valuation	**December 31, 2019**	**December 31, 2018**
Contractual life (in years)	0.93-1.06	1.94-2.06
Expected volatility	74% - 100%	72% - 103%
Risk-free interest rate	1.59%	2.48%

The risk-free interest rate was based on rates established by the Federal Reserve. The general expected volatility is based on standard deviation of the Company's underlying stock price's daily logarithmic returns. The expected life of the warrants was determined by the expiration date of the warrants. The expected dividend yield was based upon the fact that the Company has not historically paid dividends on its common stock and does not expect to pay dividends on its common stock in the future.

The following table sets forth a summary of the changes in the fair value of the Company's Level 3 financial liabilities that are measured at fair value on a recurring basis for the year ended December 31, 2019 and 2018 ($ in thousands):

	Fair Value of Level 3 financial liabilities	
	December 31, 2019	**December 31, 2018**
Beginning balance	$ 82	$ 822
Fair value adjustment of warrant liabilities	(82)	(740)
Ending balance	$ -	$ 82

Note 8. Net Earnings (Loss) per Share Applicable to Common Stockholders

Basic loss per share is computed by dividing the net income or loss applicable to common shares by the weighted average number of common shares outstanding during the period. Net income (loss) attributable to common stockholders includes the effect of the deemed capital contribution on extinguishment of preferred stock and the deemed dividend related to the immediate accretion of beneficial conversion feature of convertible preferred stock. Diluted earnings per share is computed using the weighted average number of common shares and, if dilutive, potential common shares outstanding during the period. Potential common shares consist of the incremental common shares issuable upon the exercise of stock options (using the treasury stock method) and the conversion of the Company's convertible preferred stock and warrants. Diluted loss per share excludes the shares issuable upon the conversion of preferred stock and the exercise of stock options and warrants from the calculation of net loss per share if their effect would be anti-dilutive.

The following table summarizes the earnings (loss) per share calculation (in thousands, except per share amount):

	For the Years Ended December 31,	
	2019	**2018**
Basic earnings per share		
Numerator:		
Net (loss) income	$ (4,183)	$ 1,727
Net (loss) income available to common stockholders	**$ (4,183)**	**$ 1,727**
Denominator:		
Weighted average number of common shares outstanding,	2,511,566	1,896,057
Earnings per basic share:		
Net (loss) income	(1.67)	0.91
Net (loss) income available to common stockholders	**$ (1.67)**	**$ 0.91**
Dilutive earnings per share		
Numerator:		
Net income (loss)	$ (4,183)	$ 1,727
Net (loss) income available to common stockholders	**$ (4,183)**	**$ 1,727**
Denominator:		
Weighted average basic shares outstanding,	2,511,566	1,896,057
Weighted average effect of dilutive securities		
Convertible preferred stock	-	688
Weighted average diluted shares outstanding	2,511,566	1,896,745
Earnings per diluted share:		
Net (loss) income	$ (1.67)	$ 0.91
Net (loss) income available to common stockholders	**$ (1.67)**	**$ 0.91**

Securities that could potentially dilute loss per share in the future that were not included in the computation of diluted loss per share at December 31, 2019 and 2018 are as follows:

	As of December 31,	
	2019	**2018**
Convertible preferred stock	688	-
Warrants to purchase common stock	285,273	294,072
Options to purchase common stock	88,950	124,381
Total	**374,911**	**418,453**

Note 9. Stockholders' Equity and Convertible Preferred Stock

Common Stock

At The Market Offering Agreement

On August 9, 2019, the Company entered into an At The Market Offering Agreement (the "ATM Agreement") with H.C. Wainwright & Co., LLC, as agent ("H.C. Wainwright"), pursuant to which the Company may offer and sell, from time to time through H.C. Wainwright, shares of the Company's common stock having an aggregate offering price of up to $1.2 million (the "Shares"). The Company will pay H.C. Wainwright a commission rate equal to 3.0% of the aggregate gross proceeds from each sale of Shares.

During the year ended December 31, 2019, the Company sold a total of 532,070 shares of common stock under the ATM for aggregate total gross proceeds of approximately $1.2 million at an average selling price of $2.17 per share, resulting in net proceeds of approximately $1.1 million after deducting commissions and other transaction costs.

Registered Common Stock and Warrant Financing

On May 29, 2019, the Company entered into a Securities Purchase Agreement (the "Common Stock Purchase Agreement") for the sale by the Company of 221,000 shares of the Company's common stock, at a purchase price of $2.60 per share, and pre-funded common stock purchase warrants to purchase up to 86,692 shares of common stock at a purchase price of $2.5999 per Warrant, which represents the per share purchase price, less a $0.0001 per share exercise price for each of the warrants ("Penny Warrants"). The Company sold the shares and warrants for net proceeds of approximately $0.8 million which transaction closed on May 31, 2019.

Common Stock Warrant Exchange

On June 6, 2019, the Company entered into an amendment to the Common Stock Purchase Agreement, pursuant to which the Purchaser surrendered an aggregate of 115,269 shares to the Company and the Company issued 115,269 Penny Warrants to the Purchaser in order to limit the Purchaser's beneficial ownership.

The exchange of 115,269 Penny Warrants do not meet the definition of a derivative under ASC 815 because their fair value at issuance is equal to the fair value of the shares underlying the warrant. As such, they have the characteristics of a prepaid forward sale of equity. Since the shares underlying the Penny Warrants are issuable for little or no consideration, they are considered outstanding in the context of earnings per share, as discussed in ASC 260-10-45-13.

2018 activity

On March 19, 2018, the Company closed a public offering of common stock for gross proceeds of approximately $3.0 million. The offering was a shelf takedown off of the Company's registration statement on Form S-3 (File No. 333-222488) and was conducted pursuant to a placement agency agreement (the "Agreement") between the Company and Laidlaw & Company (UK) Ltd., the sole placement agent, on a best-efforts basis with respect to the offering (the "Placement Agent"), that was entered into on March 14, 2018. The Company sold 522,876 shares of its common stock in the offering at a purchase price of $5.74 per share.

The Company had designated separate series of its capital stock as of December 31, 2019 and December 31, 2018 as summarized below:

	Number of Shares Issued and Outstanding as of			
	December 31, 2019	December 31, 2018	Par Value	Conversion Ratio
Series "A"	—	—	$ 0.0001	N/A
Series "C"	—	—	0.0001	0.05:1
Series "D"	4,725	4,725	0.0001	0.53:1
Series "D-1"	834	834	0.0001	0.53:1
Series "F-1"	—	—	0.0001	0.05:1
Series "H"	—	—	0.0001	0.53:1
Series "I"	—	—	0.0001	1.05:1
Series "J"	—	—	0.0001	0.05:1
Series "K"	—	—	0.0001	263.16:1

Series D Convertible Preferred Stock

In connection with the acquisition of North South's patent portfolio in September 2013, the Company issued 1,379,685 shares of its Series D Convertible Preferred Stock ("Series D Preferred Stock") to the stockholders of North South. Each share of Series D Preferred Stock has a stated value of $0.0001 per share and is convertible into ten-nineteenths of a share of Common Stock. Upon the liquidation, dissolution or winding up of the Company's business, each holder of Series D Preferred Stock shall be entitled to receive, for each share of Series D Preferred Stock held, a preferential amount in cash equal to the greater of (i) the stated value or (ii) the amount the holder would receive as a holder of Common Stock on an "as converted" basis. Each holder of Series D Preferred Stock shall be entitled to vote on all matters submitted to its stockholders and shall be entitled to such number of votes equal to the number of shares of Common Stock such shares of Series D Preferred Stock are convertible into at such time, taking into account the beneficial ownership limitations set forth in the governing Certificate of Designation and the conversion limitations described below. The conversion ratio of the Series D Preferred Stock is subject to adjustment in the event of stock splits, stock dividends, combination of shares and similar recapitalization transactions.

As of December 31, 2019 and 2018, 4,725 shares of Series D Preferred Stock remained issued and outstanding.

Series D-1 Convertible Preferred Stock

The Company's Series D-1 Convertible Preferred Stock ("Series D-1 Preferred Stock") was established on November 22, 2013. Each share of Series D-1 Preferred Stock has a stated value of $0.0001 per share and is convertible into ten-nineteenths of a share of Common Stock. Upon the liquidation, dissolution or winding up of the Company's business, each holder of Series D-1 Preferred Stock shall be entitled to receive, for each share of Series D-1 Preferred Stock held, a preferential amount in cash equal to the greater of (i) the stated value or (ii) the amount the holder would receive as a holder of Common Stock on an "as converted" basis. Each holder of Series D-1 Preferred Stock shall be entitled to vote on all matters submitted to the Company's stockholders and shall be entitled to such number of votes equal to the number of shares of Common Stock such shares of Series D-1 Preferred Stock are convertible into at such time, taking into account the beneficial ownership limitations set forth in the governing Certificate of Designation. The conversion ratio of the Series D-1 Preferred Stock is subject to adjustment in the event of stock splits, stock dividends, combination of shares and similar recapitalization transactions. The Company commenced an exchange with holders of Series D Convertible Preferred Stock pursuant to which the holders of the Company's outstanding shares of Series D Preferred Stock acquired in the Merger could exchange such shares for shares of the Company's Series D-1 Preferred Stock on a one-for-one basis.

As of December 31, 2019 and 2018, 834 shares of Series D-1 Preferred Stock remained issued and outstanding.

Warrants

A summary of warrant activity for year ended December 31, 2019 and 2018 is presented below:

	Warrants	Weighted Average Exercise Price	Total Intrinsic Value	Weighted Average Remaining Contractual Life (in years)
Outstanding as of December 31, 2018	294,072	$ 38.15	$ -	1.92
Issued	301,960	-	506,273	-
Exercised	(235,294)	-	394,940	-
Expired	(8,799)	476.66	-	-
Outstanding as of December 31, 2019	351,939	$ 19.96	111,332	0.94

On May 29, 2019, the Company entered into the Master Service Agreement ("MSA") with a consultant, World Wide Holdings, LLC ("Consultant"). In consideration for services provided by Consultant, the Company paid to Consultant three warrants (the "Consultant Warrants"), with each warrant immediately exercisable for 33,333 shares of common stock with a $0.01 strike price. The Company issued each of the three warrants on June 28, July 28 and August 27, 2019, respectively. The Company recorded $0.3 million in stock-based compensation during the year ended December 31, 2019 related to this arrangement. On July 12, 2019, the Company issued 33,333 shares of common stock upon exercise of one Consultant Warrant which resulted in gross proceeds of approximately $333.

Stock Options

2012 Plan

At December 31, 2019, there were 123 shares available for grant under the 2012 Equity Incentive Plan.

2013 Plan

At December 31, 2019, there were 24,840 fully vested options outstanding and 9,835 shares available for grant under the Spherix Incorporated 2013 Equity Incentive Plan.

2014 Plan and Option Grants

At December 31, 2019, there were 64,110 options outstanding and 38,058 shares available for grant under the Spherix Incorporated 2014 Equity Incentive Plan.

The fair value of options granted in 2019 and 2018 was estimated using the following assumptions:

	For the Years Ended December 31,	
	2019	2018
Exercise price	-	$1.04 - $1.50
Term (years)	-	9.13 - 9.34
Expected stock price volatility	-	131.8% - 132.2%
Risk-free rate of interest	-	2.65% - 2.80%

A summary of option activity under the Company's stock option plan for year ended December 31, 2019 and 2018 is presented below:

	Number of Shares	Weighted Average Exercise Price	Total Intrinsic Value	Weighted Average Remaining Contractual Life (in years)
Outstanding as of December 31, 2018	124,381	$ 209.22	$ -	4.8
Employee options expired	(35,121)	302.29	-	-
Non-employee options expired	(310)	571.71	-	-
Outstanding as of December 31, 2019	88,950	$ 172.39	$ -	5.7
Options vested and exercisable	88,950	$ 172.39	$ -	5.7

Stock-based compensation associated with the amortization of stock option expense was $8,000 and $213,000 for the years ended December 31, 2019 and 2018, respectively.

Estimated future stock-based compensation expense relating to unvested stock options is zero.

Restricted Stock Awards

During 2018 approximately 19,861 shares with a fair value of approximately $106,000 was granted. These restricted stock awards vested immediately.

Restricted Stock Units

As of December 31, 2019 and 2018, the Company did not have unrecognized stock-based compensation expense related to restricted stock unit awards.

Note 10. Commitments and Contingencies

Legal Proceedings

In the ordinary course of business, the Company actively pursues legal remedies to enforce its intellectual property rights and to stop unauthorized use of use technology. From time to time, the Company may be involved in various claims and counterclaims and legal actions arising in the ordinary course of business. There were no pending material claims or legal matters as of the date of this report.

Note 11. Income Taxes

The income tax provision consists of the following ($ in thousands):

	For the years ended December 31,	
	2019	**2018**
Federal		
Current		$ -
Deferred	3,862	(517)
Decrease in valuation allowance	(3,862)	517
State and local		
Current		-
Deferred	(12,115)	(92)
Decrease in valuation allowance	12,115	92
Change in valuation Allowance	8,253	610
Income Tax Provision (Benefit)	$ -	$ -

The following is a reconciliation of the U.S. federal statutory rate to the effective income tax rates for the years ended December 31, 2019 and 2018:

	For the years ended December 31,	
	2019	**2018**
U.S. Statutory Federal Rate	21%	21%
Federal tax rate change	-%	-%
State Taxes, Net of Federal Tax Benefit	13.62%	3.91%
Other Permanent Differences	.01%	1.76%
State rate change in effect	216.40%	-%
Fair Value of Warrants	-%	8.99%
Decrease due to true up of State NOL	(19.10)%	-%
Decrease due to change in Federal NOL and other true ups	(34.64)%	(0.36)%
Change in Valuation Allowance	(197.29)%	(35.30)%
Income Tax Provision (Benefit)		

At December 31, 2019 and 2018, the Company's deferred tax assets and liabilities consisted of the effects of temporary differences attributable to the following ($ in thousands):

	As of December 31,	
	2019	**2018**
Deferred tax assets:		
Net-operating loss carryforward	$ 15,443	$ 12,163
Stock based compensation	8,104	5,444
Patent portfolio and other	15,004	11,201
Total Deferred Tax assets	38,551	28,808
Valuation allowance	(35,084)	(26,831)
Deferred Tax Asset, Net of Allowance	$ 3,467	$ 1,977
Deferred tax liability:		
Fair value adjustment of investment	(3,467)	(1,977)
	-	-

In assessing the realization of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the period in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and taxing strategies in making this assessment. The Company has determined that, based on objective evidence currently available, it is more likely than not, the deferred tax assets will not be realized in future periods. Accordingly, the Company has provided a full allowance for the deferred tax assets at December 31, 2019 and 2018. As of December 31, 2019, the change in valuation allowance is approximately $8.253 million.

Under the Act, corporations are no longer subject to the Alternative Minimum Tax (AMT), effective for taxable years beginning after Dec. 31, 2017. However, where a corporation has an AMT credit from a prior taxable year, the corporation will continue to carry the credit forward and may use a portion of it as a refundable credit in any taxable year beginning after 2017 but before 2022. Generally, 50 percent of the corporation's AMT Credit carried forward to one of these years will be claimable and refundable for that year. In tax years beginning in 2021, however, the entire remaining carryforward generally will be refundable. The Company has an AMT credit carryforward of $40,842 as of December, 31, 2019. The Company will request the following refunds for the tax years ended December 31, 2020 through December 31, 2021:

Tax Year Ended:	AMT Credit Refund Request
December 31, 2020	20,421
December 31, 2021	20,421
	$ 40,842

As of December 31, 2019, the Company has approximately $41 million federal and $20 million of city net operating loss carryovers ("NOLs"), which expire from 2022 through 2037, and $14 million of federal and city NOLs with indefinite utilization. The Company has approximately $35 million of state NOLs, which expire from 2022 through 2039.

The NOL carryover may be subject to limitation under Internal Revenue Code section 382, should there be a greater than 50% ownership change as determined under the regulations. No study has been performed since the last known ownership change of September 10, 2013.

As required by the provisions of ASC 740, the Company recognizes the financial statement benefit of a tax position only after determining that the relevant tax authority would more likely than not sustain the position following an audit. For tax positions meeting the more likely than not threshold, the amount recognized in the consolidated financial statements is the largest benefit that has a greater than 50 percent likelihood of being realized upon ultimate settlement with the relevant tax authority. Differences between tax positions taken or expected to be taken in a tax return and the net benefit recognized and measured pursuant to the interpretation are referred to as "unrecognized benefits." A liability is recognized (or amount of NOL or amount of tax refundable is reduced) for an unrecognized tax benefit because it represents an enterprise's potential future obligation to the taxing authority for a tax position that was not recognized as a result of applying the provisions of ASC 740.

If applicable, interest costs and penalties related to unrecognized tax benefits are required to be calculated and would be classified as interest and penalties in general and administrative expense in the statement of operations. As of December 31, 2019 and 2018, no liability for unrecognized tax benefit was required to be reported. No interest or penalties were recorded during the years ended December 31, 2019 and 2018. The Company does not expect any significant changes in its unrecognized tax benefits in the next year. The Company files U.S. federal and state income tax returns. As of December 31, 2019, the Company's U.S. and state tax returns (Delaware, New York, New York City, Pennsylvania, Virginia, and Texas) remain subject to examination by tax authorities beginning with the tax return filed for the year ended December 31, 2016, however, there were no audits pending in any of the above-mentioned jurisdictions during 2019. The Company believes that its income tax positions would be sustained upon an audit and does not anticipate any adjustments that would result in material changes to its consolidated financial position.

Note 12. Subsequent Events

The Company evaluates events that have occurred after the balance sheet date but before the consolidated financial statements are issued. Based upon the evaluation, the Company did not identify any recognized or non-recognized subsequent events that would have required adjustment or disclosure in the consolidated financial statements other than disclosed.

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

We maintain "disclosure controls and procedures," as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in Securities and Exchange Commission rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and our Chief Financial Officer, to allow timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, management recognized that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the disclosure controls and procedures are met. Additionally, in designing disclosure controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures.

The design of any disclosure controls and procedures also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. With respect to the annual period ended December 31, 2019, under the supervision and with the participation of our management, we conducted an evaluation of the effectiveness of the design and operations of our disclosure controls and procedures. Based upon this evaluation, our management has concluded that our disclosure controls and procedures were not effective as of December 31, 2019. We have a lack of segregation of duties, and a lack of controls in place to ensure that all material transactions and developments impacting the financial statements are reflected.

However, to the extent possible, we will implement procedures to assure that the initiation of transactions, the custody of assets and the recording of transactions will be performed by separate individuals. We believe that the foregoing steps will remediate the material weakness identified above, and we will continue to monitor the effectiveness of these steps and make any changes that our management deems appropriate.

Management is in the process of determining how best to make the required changes that are needed to implement an effective system of internal control over financial reporting. Our management acknowledges the existence of this problem, and intends to develop procedures to address it to the extent possible given the Company's limitations in financial and human resources.

Management's Annual Report on Internal Control over Financial Reporting

Our management, including our Chief Executive Officer and Interim Chief Financial Officer assessed the effectiveness of our internal control over financial reporting as of December 31, 2019 and concluded that our internal controls over financial reporting were not effective. In making this assessment, our management used the 2013 framework established in "Internal Control-Integrated Framework" promulgated by the Committee of Sponsoring Organizations of the Treadway Commission, commonly referred to as the "COSO" criteria.

In connection with management's assessment of our internal control over financial reporting described above, management has identified the following material weaknesses in our internal control over financial reporting as of December 31, 2019.

(1) The Company has inadequate segregation of duties consistent with control objectives.

(2) Lack of controls in place to ensure that all material transactions and developments impacting the financial statements are reflected.

We are currently reviewing our internal controls and procedures related to these material weaknesses and expect to implement changes in the near term, including identifying specific areas within our governance, accounting and financial reporting processes to add adequate resources to potentially mitigate these material weaknesses.

(3) We do not have written documentation of our internal control policies and procedures.

Our management team will continue to monitor and evaluate the effectiveness of our disclosure controls and procedures and our internal controls over financial reporting on an ongoing basis and is committed to taking further action and implementing additional enhancements or improvements, as necessary and as funds allow.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. 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. All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

This Annual Report does not contain an attestation report of our independent registered public accounting firm regarding internal control over financial reporting since the rules for smaller reporting companies provide for this exemption.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the year ended December 31, 2019 which have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. OTHER INFORMATION

None.

PART III

All per share amounts and outstanding shares, including stock options, restricted stocks and warrants, have been retroactively adjusted for all periods on a post-Reverse Stock Split basis below. Further, exercise prices of stock options and warrants have been retroactively adjusted in these consolidated financial statements for all periods presented to reflect the 1-for-19 Reverse Stock Split. Numbers of shares of the Company's preferred stock were not affected by the Reverse Stock Split; however, the conversion ratios have been adjusted to reflect the Reverse Stock Split.

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors and Executive Officers

The following table sets forth the name, age and position of each current director and executive officer of the Company.

Name	Age	Position	Director Since
Robert J. Vander Zanden (1)(2)(3)	74	Director and Chairman of the Board	2004
Anthony Hayes	52	Chief Executive Officer, Principal Accounting Officer, Principal Financial Officer andDirector	2013
Tim S. Ledwick (1)(2)	62	Director	2015
Eric Weisblum (1)(2)(3)	50	Director	2016
Gregory James Blattner (3)	42	Director	2018

(1) Member of our Audit Committee.
(2) Member of our Compensation Committee.
(3) Member of our Nominating Committee.

The biographies of our current directors are as follows:

Dr. Robert J. Vander Zanden

Dr. Robert J. Vander Zanden, a Board member since 2004, having served as a Vice President of R&D at Kraft Foods International, brings a long and distinguished career in applied technology, product commercialization, and business knowledge of the food science industry to us. Additionally, Mr. Vander Zanden has specific experience in developing organizations designed to deliver against corporate objectives. Dr. Vander Zanden holds a Ph.D. in Food Science and an M.S. in Inorganic Chemistry from Kansas State University, and a B.S. in Chemistry from the University of Wisconsin - Platteville, where he was named a Distinguished Alumnus in 2002. In his 30-year career, he has been with ITT Continental Baking Company as a Product Development Scientist; with Ralston Purina's Protein Technology Division as Manager Dietary Foods R&D; with Keebler as Group Director, Product and Process Development (with responsibility for all corporate R&D and quality); with Group Gamesa, a Frito-Lay Company, as Vice President, Technology; and with Nabisco as Vice President of R&D for their International Division. With the acquisition of Nabisco by Kraft Foods, he became the Vice President of R&D for Kraft's Latin American Division. Dr. Vander Zanden retired from Kraft Foods in 2004. He currently holds the title of Adjunct Professor and Lecturer in the Department of Food, Nutrition and Packaging Sciences at Clemson University, where he also is a member of their Industry Advisory Board. His focus on achieving product and process innovation through training, team building and creating positive working environments has resulted in his being recognized with many awards for product and packaging innovation. Mr. Vander Zanden executive experience provides him with valuable business expertise, which the Board of Directors believes qualifies him to serve as a director of the Company.

Anthony Hayes

Mr. Anthony Hayes, a director and Chief Executive Officer since 2013, has served as the Chief Executive Officer of North South since March 2013 and since June 2013, as a consultant to our Company. Mr. Hayes was the fund manager of JaNSOME IP Management LLC and JaNSOME Patent Fund LP from August 2012 to August 2013, both of which he co-founded. Mr. Hayes was the founder and Managing Member of Atwater Partners of Texas LLC from March 2010 to August 2012 and a partner at Nelson Mullins Riley & Scarborough LLP from May 1999 to March 2010. Mr. Hayes received his Juris Doctorate from Tulane University School of Law and his B.A. in economics from Mary Washington College. The Board of Directors believes Mr. Hayes is qualified to serve as a director of the Company based on his expansive knowledge of, and experience in, the patent monetization sector, as well as because of his intimate knowledge of the Company through his service as Chief Executive Officer. On March 10, 2017, as a result of Mr. Frank Reiner's resignation as Chief Financial Officer, Mr. Hayes began serving as the Company's Principal Accounting Officer.

Tim S. Ledwick

Mr. Tim S. Ledwick, who joined as a director in 2015, is currently the Chief Financial Officer of Management Health Solutions, a private equity-backed company that provides software solutions and services to hospitals focused on reducing costs through superior inventory management practices. In addition, since 2012 he has served on the board and as Chair of the Audit Committee of Telkonet, Inc. (TKOI) a smart energy management technology company. From 2007 to 2011, Mr. Ledwick provided CFO consulting services to AdvantageResourcing (former Advantage Human Resourcing, Inc.) a $150 million services firm and, in addition, from 2007-2008 also acted as special advisor to The Dellacorte Group, a middle market financial advisory firm focused on transactions between $100 million and $1 billion. From 2002 through 2006, Tim was a member of the board of directors and Executive Vice President-CFO of Dictaphone Corporation playing a lead role in developing a business plan which revitalized the company, resulting in the successful sale of the firm and delivering a seven times return to shareholders. From 2001-2002, Mr. Ledwick was brought on as CFO to lead the restructuring efforts of Lernout & Hauspie Speech Products, a Belgium-based NASDAQ listed speech technology company, whose market cap had at one point reached a high of $9 billion. From 1999 through 2001, he was CFO of Cross Media Marketing Corp, an $80 million public company headquartered in New York City, playing a lead role in the firm's acquisition activity, tax analysis and capital raising. Mr. Ledwick is a member of the Connecticut Society of Certified Public Accountants and received his B.B.A. in accounting from The George Washington University and his M.S. in Finance from Fairfield University. The Board of Directors believes that Mr. Ledwick's executive experience and financial expertise qualifies him to serve as a director of the Company.

Eric Weisblum

Mr. Eric Weisblum, who joined as a director in 2016, is currently the Chief Executive Officer and a director of Point Capital Inc. (OTC:PTCI), where he has been employed since 2013 and prior to that was President of Sableridge Capital for five years. In addition to being an active investor in both public and private companies, Mr. Weisblum provides managerial assistance and guidance to help companies execute on their business strategy. Mr. Weisblum has reviewed, invested and worked with numerous public and private companies, and he has overseen the execution of M&A strategy in the micro-cap and small cap markets. Mr. Weisblum also co-founded Whalehaven, a hedge fund that has invested in over 100 public companies to date. Prior to Whalehaven, Mr. Weisblum was employed by M.H. Meyerson & Co. Inc., a full-service financial and investment-banking firm, with individual and institutional accounts. At M.H. Meyerson, Mr. Weisblum traded equities on behalf of numerous established funds, and originated, structured, and placed structured financing transactions. As a result, Mr. Weisblum brings with him nearly 20 years of experience in structuring and trading financial instruments. Mr. Weisblum holds a B.A. from the University of Hartford's Barney School of Business.

Gregory James Blattner

Mr. Blattner, who joined as a member of our Board of Directors in 2018, has nearly five years of experience in the alternative investment technology industry. Since January 2014, he has served as the Director of Business Development at Agio, a progressive managed information technology and cybersecurity services provider, where he is responsible for sales and account management of enterprise accounts. Prior to Agio, from May 2013 to December 2013, Mr. Blattner was a business development manager for the Eikon platform at Thomson Reuters. From 2010 to 2013, Mr. Blattner was a sales manager at American Express for its foreign exchange business. From 2005 to 2009, Mr. Blattner held various positions at JPMorgan, first in the operational risk management arm of the investment bank and later in Foreign Exchange product sales for its treasury services business. From 2000 to 2004, Mr. Blattner was an Associate at Morgan Stanley's corporate treasury funding desk. He earned a bachelor's degree from Iona College. The Company believes Mr. Blattner's extensive experience in technology and operations solutions make him a qualified appointee as director.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act, requires our directors and executive officers, and anyone who beneficially owns ten percent (10%) or more of our Common Stock, to file with the SEC initial reports of beneficial ownership and reports of changes in beneficial ownership of Common Stock. Anyone required to file such reports also need to provide us with copies of all Section 16(a) forms they file.

Based solely upon a review of (i) copies of the Section 16(a) filings received during or with respect to 2019 and (ii) certain written representations of our officers and directors, we believe that all filings required to be made pursuant to Section 16(a) of the Exchange Act during and with respect to 2019 were filed in a timely manner.

Code of Ethics

We have adopted a Code of Ethics, which is available on our website at www.spherix.com.

Audit Committee

We have a standing Audit Committee. The Audit Committee members are Mr. Ledwick, Chair, Dr. Vander Zanden and Eric Weisblum. The Audit Committee has authority to review our financial records, deal with our independent auditors, recommend financial reporting policies to the Board of Directors, and investigate all aspects of our business. The Audit Committee Charter is available for your review on our website at www.spherix.com. Each member of the Audit Committee satisfies the independence requirements and other criteria established by NASDAQ and the SEC applicable to audit committee members. The Board of Directors has determined that Mr. Ledwick meets the requirements of an audit committee financial expert as defined in the SEC and NASDAQ rules.

Item 11. EXECUTIVE COMPENSATION

The following Summary of Compensation table sets forth the compensation paid by our Company during the two years ended December 31, 2019, to all Executive Officers earning in excess of $100,000 during any such year.

Summary of Compensation

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)(1)	Change in Pension Value and Non-Qualified Defferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
Anthony Hayes, Chief Executive Officer, Director, Principal Accounting and Principal Financial Officer	2019	350,000	-	-	-	-	-	-	350,000
	2018	349,010	-	-	-	-	-	-	349,010

(1) Awards pursuant to the Spherix Incorporated 2013 Incentive Compensation Plan and 2014 Plan.

Narrative Disclosure to Summary Compensation Table

Executive Officer Agreements

On April 1, 2016, we entered into an employment agreement with Mr. Anthony Hayes pursuant to which Mr. Hayes serves as the Chief Executive Officer for a period of one year, subject to renewal. In consideration for his employment, we agreed to pay Mr. Hayes a base salary of $350,000 per annum. Mr. Hayes will be entitled to receive an annual bonus in an amount equal to up to 100% of his base salary if we meet or exceed certain criteria adopted by our Compensation Committee. We further agreed to grant executive restricted stock units, pursuant to the Corporation's 2014 Equity Incentive Plan, with respect to 118,512 shares of the Company's common stock. One-half of the grant shall vest if as of December 31, 2016, the Corporation has pro-forma cash of at least five million dollars ($5,000,000) (cash plus any cash used for a Board-approved extraordinary acquisition or transaction reconstituting the Company's core operations, less accrued bonuses) and one-half shall vest upon the Company meeting certain agreed upon criteria. As of December 31, 2019, 59,256 restricted stock units were vested and 59,256 restricted stock units were forfeited.

On October 19, 2017, the Company entered into an amendment to the employment agreement of Mr. Hayes, pursuant to which, effective January 1, 2017, Mr. Hayes was entitled to receive an annual cash bonus in an amount equal to up to $250,000 if the Company meets or exceeds certain criteria adopted by the Compensation Committee of the Company's Board of Directors. In addition, Mr. Hayes was awarded a restricted stock unit grant for 30,000 shares of the Company's common stock under the Company's 2014 Equity Incentive Plan. Such grant shall vest in installments, in tandem with the satisfaction of the same criteria to which the cash bonus is subject. If all criteria are met, 100% of the grant of restricted stock units shall vest upon the determination of the Compensation Committee, which in any event shall not be later than March 15, 2018. All other terms of Mr. Hayes' employment agreement, effective as of April 1, 2016, remain in full force and effect.

Potential Payment upon Termination or Change in Control

Under the April 1, 2016 employment agreement with Mr. Hayes, we have agreed to, in the event of termination by us without "cause" or pursuant to a change in control, grant Mr. Hayes, in addition to reimbursement of any documented, unreimbursed expenses incurred prior to such date, (i) any unpaid compensation and vacation pay accrued during the term of the Employment Agreement, and any other benefits accrued to him under any of our benefit plans outstanding at such time, (ii) twelve (12) months base salary at the then current rate to be paid in a single lump sum within thirty (30) days of Mr. Hayes' termination, (iii) continuation for a period of twelve (12) months of any benefits as extended to our executive officers from time to time, including but not limited to group health care coverage and (iv) payment on a pro rata basis of any annual bonus or other payments earned in connection with any bonus plans to which Mr. Hayes was a participant as of the date of termination. In addition, any options or restricted stock shall be immediately vested upon termination of Mr. Hayes's employment without "cause" or pursuant to a change in control.

Outstanding Equity Awards at December 31, 2019

	Option Awards			
Name	**Number of Securities Underlying Unexercised Options (#) Exercisable**	**Number of Securities Underlying Unexercised Options (#) UnExercisable**	**Option Exercise Price ($)**	**Option Expiration Date**
Anthony Hayes	9,290	-	$ 571.71	4/1/2023
	930	-	$ 8.42	5/2/2021
	930	-	$ 4.34	5/30/2022

Director Compensation

The following table summarizes the compensation paid to non-employee directors during the year ended December 31, 2019.

	Fees earned or paid in cash ($)	**Stock Awards ($)**	**Option Awards ($)**	**Non-Equity Incentive Plan Compensation ($)**	**Change in Pension Value and Non-Qualified Deferred Compensation Earnings ($)**	**All Other Compensation($)**	**Total ($)**
Eric Weisblum (2)	60,000	-	-	-	-	-	60,000
Robert J. Vander Zanden (3)	65,000	-	-	-	-	-	65,000
Tim Ledwick (4)	60,000	-	-	-	-	-	60,000
Gregory Blattner (5)	60,000	-	-	-	-	-	60,000

(1) All stock options were granted in accordance with ASC Topic 718.

(2) Mr. Weisblum was paid $60,000 in cash compensation for his service as a director in 2019.

(3) Mr. Vander Zanden was paid $65,000 in cash compensation for his service as a director in 2019.

(4) Mr. Ledwick was paid $60,000 in cash compensation for his service as a director in 2019.

(5) Mr. Blattner was paid $60,000 in cash compensation for his service as a director in 2019.

Non-employee directors received the following annual compensation for service as a member of the Board for the fiscal year ended December 31, 2019:

Annual Retainer	$	60,000	To be paid in cash in four equal quarterly installments.
Additional Retainer	$	5,000	To be paid to the Chairman of the Board upon election annually.

Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT, AND RELATED STOCKHOLDERS

Securities Authorized for Issuance under Equity Compensation Plans

The following table provides information about our Common Stock that may be issued upon the exercise of options, warrants and rights under all of our existing equity compensation plans as of December 31, 2019.

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	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (1)) (2)
Equity compensation plans approved by security holder	88,950	$ 172.39	48,016
Equity compensation plans not approved by security holder	-	-	-
	88,950		48,016

(1) Consists of options to acquire 24,840 shares of our common stock under the 2013 Equity Incentive Plan and 64,110 under the 2014 Equity Incentive Plan.

(2) Consists of shares of Common Stock available for future issuance under our equity incentive plans.

Beneficial Ownership of our Capital Stock by Certain Beneficial Owners and Management

The following tables set forth certain information concerning the number of shares of our Common Stock, Series D Preferred Stock and Series D-1 Preferred Stock owned beneficially as of January 30, 2020 by (i) our officers and directors as a group and (ii) each person (including any group) known to us to own more than 5% of our Common Stock, Series D Preferred Stock and Series D-1 Preferred Stock. As of January 30, 2020 there were 4,825,549 shares of Common Stock outstanding, 4,725 shares of Series D Preferred Stock outstanding and 834 shares of Series D-1 Preferred Stock outstanding. Unless otherwise indicated, it is our understanding and belief that the stockholders listed possess sole voting and investment power with respect to the shares shown.

	Common Stock Beneficially Owned(2)		Series D Preferred Stock(2)		Series D-1 Preferred Stock(2)	
Name of Beneficial Owner(1)	**Shares**	**Percentage**	**Shares**	**Percentage**	**Shares**	**Percentage**
Robert J. Vander Zanden	20,428(3)	*	—	—	—	—
Anthony Hayes	23,430(4)	*	—	—	—	—
Tim S. Ledwick	21,614(5)	*	—	—	—	—
Eric Weisblum	18,332(6)	*	—	—	—	—
Gregory James Blattner	11,766(7)	*				
All Directors and Officers as a Group (5 persons)	95,570	1.95%	—	—	—	—
Stockholders						
Daniel W. Armstrong 611 Loch Chalet Ct Arlington, TX 76012-3470	—	—	1,350	28.57%	—	—
R. Douglas Armstrong 570 Ocean Dr. Apt 201 Juno Beach, FL 33408-1953	—	—	450	9.52%	—	—
Thomas Curtis 4280 10 Oaks Road Dayton, MD 21036-1124	—	—	900	19.05%	—	—
Francis Howard 376 Victoria Place London, SW1 V1AA United Kingdom	—	—	900	19.05%	—	—
Charles Strogen 6 Winona Ln Sea Ranch Lakes, FL 33308-2913	—	—	1,125	23.81%	—	—
Chai Lifeline Inc. 151 West 30th Street, Fl 3 New York, NY 10001-4027	—	—	—	—	834	100%
CBM BioPharma, Inc. One Rockefeller Plaza, 11th Floor New York, NY 10020	1,939,058	40.2%	—	—	—	—

* Less than 1% of the outstanding shares of the Company Common Stock.

(1) Under Rule 13d-3 of the Exchange Act a beneficial owner of a security includes any person who, directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise has or shares: (i) voting power, which includes the power to vote or to direct the voting of shares; and (ii) investment power, which includes the power to dispose or direct the disposition of shares. Certain shares may be deemed to be beneficially owned by more than one person (if, for example, persons share the power to vote or the power to dispose of the shares). In addition, shares are deemed to be beneficially owned by a person if the person has the right to acquire the shares (for example, upon exercise of an option) within 60 days of the date as of which the information is provided. In computing the percentage ownership of any person, the amount of shares outstanding is deemed to include the amount of shares beneficially owned by such person (and only such person) by reason of these acquisition rights.

(2) Based on 4,825,549 shares of our Common Stock outstanding as of January 30, 2020 and takes into account the beneficial ownership limitations governing the Series D Preferred Stock and Series D-1 Preferred Stock. Beneficial ownership limitations on our Series D Preferred Stock prevent the conversion or voting of the stock if the number of shares of Common Stock to be issued pursuant to such conversion or to be voted would exceed, when aggregated with all other shares of Common Stock owned by the same holder at the time, the number of shares of Common Stock which would result in such holder beneficially owning more than 4.99% of all of the Common Stock outstanding at such time, subject to an increase in such limitation up to 9.99% of the issued and outstanding Common Stock on 61 days' written notice to us. Beneficial ownership limitations on our Series D-1 Preferred Stock prevent the conversion or voting of the stock if the number of shares of Common Stock to be issued pursuant to such conversion or to be voted would exceed, when aggregated with all other shares of Common Stock owned by the same holder at the time, the number of shares of Common Stock which would result in such holder beneficially owning more than 9.99% of all of the Common Stock outstanding at such time.

(3) Includes 4,944 shares of Common Stock and 15,484 options for purchase of Common Stock exercisable as of January 30, 2020.

(4) Includes 12,280 shares of Common Stock and 11,150 options for purchase of Common Stock exercisable as of January 30, 2020.

(5) Includes 7,059 shares of Common Stock and 14,555 options for purchase of Common Stock exercisable as of January 30, 2020.

(6) Includes 4,706 shares of Common Stock and 13,626 options for purchase of Common Stock exercisable as of January 30, 2020.

(7) Includes11,766 options for purchase of Common Stock exercisable as of January 30, 2020.

Effective January 1, 2013, and as amended and restated on June 9, 2017, the Company and Equity Stock Transfer, LLC entered into a Rights Agreement, which was subsequently assigned to Transfer Online Inc. as Rights Agent on June 20, 2016. The Rights Agreement provides each stockholder of record a dividend distribution of one "right" for each outstanding share of Common Stock. Rights become exercisable at the earlier of ten days following: (1) a public announcement that an acquirer has purchased or has the right to acquire 10% or more of our Common Stock, or (2) the commencement of a tender offer which would result in an offer or beneficially owning 10% or more of our outstanding Common Stock. All rights held by an acquirer or offer or expire on the announced acquisition date, and all rights expire at the close of business on December 31, 2020, subject to further extension. Each right entitles a stockholder to acquire, at a price of $7.46 per one nineteen-hundredths of a share of our Series A Preferred Stock, subject to adjustments, which carries voting and dividend rights similar to one share of our Common Stock. Alternatively, a right holder may elect to purchase for the stated price an equivalent number of shares of our Common Stock at a price per share equal to one-half of the average market price for a specified period. In lieu of the stated purchase price, a right holder may elect to acquire one-half of the Common Stock available under the second option. The purchase price of the preferred stock fractional amount is subject to adjustment for certain events as described in the Agreement. At the discretion of a majority of the Board of Directors and within a specified time period, we may redeem all of the rights at a price of $0.001 per right. The Board may also amend any provisions of the Agreement prior to exercise.

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The current Board of Directors consists of Mr. Tim S. Ledwick, Mr. Anthony Hayes, Dr. Robert J. Vander Zanden, Mr. Eric Weisblum and Mr. Gregory James Blattner. The Board of Directors has determined that Dr. Vander Zanden, Mr. Ledwick, Mr. Weisblum and Mr. Blattner are independent directors within the meaning of the applicable NASDAQ rules. Our Audit, Compensation, and Nominating Committees consist solely of independent directors.

We have not adopted written policies and procedures specifically for related person transactions. Our Board of Directors is responsible to approve all related party transactions, and approved each of the transactions set forth above.

Item 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Fees Paid to Auditor

The following table sets forth the fees paid by our Company to Marcum LLP for audit and other services provided in 2019 and 2018.

	2019	2018
Audit Fees	$ 227,630	$ 127,779
Audit Related Fees	-	-
Tax Fees	-	-
All Other Fees	-	-
Total	227,630	127,779

Policy on Audit Committee Pre-Approval of Audit and Permissible Non-Audit Services of Independent Auditors

Consistent with SEC policies and guidelines regarding audit independence, the Audit Committee is responsible for the pre-approval of all audit and permissible non-audit services provided by our principal accountants. Our Audit Committee has established a policy regarding approval of all audit and permissible non-audit services provided by our principal accountants. No non-audit services were performed by our principal accountants during the fiscal years ended December 31, 2019 and 2018. Our Audit Committee pre-approves these services by category and service. Our Audit Committee has pre-approved all of the services provided by our principal accountants.

PART IV

Item 15. EXHIBITS, FINANCIAL STATEMENTS, SCHEDULES

Consolidated Financial Statements

The following financial statements are included in Item 8 herein:

2. **Financial Statement Schedules**

None

Exhibits

Exhibit No.	Description
1.1	Underwriting Agreement, dated July 18, 2017, by and between Spherix Incorporated and Laidlaw & Co. (UK) Ltd (incorporated by reference to Form 8-K filed July 24, 2017)
1.2	Placement Agency Agreement, dated July 15, 2015, by and between Spherix Incorporated and Chardan Capital Markets LLC (incorporated by reference to Form 8-K filed July 17, 2015)
3.1	Amended and Restated Certificate of Incorporation of Spherix Incorporated, dated April 24, 2014 (incorporated by reference to Form 8-K filed April 25, 2014)
3.2	Certificate of Amendment of the Amended and Restated Certificate of Incorporation of Spherix Incorporated, dated March 2, 2016 (incorporated by reference to Form 8-K filed March 18, 2016)
3.3	Amended and Restated Bylaws of Spherix Incorporated (incorporated by reference to Form 8-K filed October 15, 2013)
3.4	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Spherix Incorporated, effective March 4, 2016 (incorporated by reference to Form 10-K filed March 29, 2016)
4.1	Specimen Certificate for common stock, par value $0.0001 per share, of Spherix Incorporated (incorporated by reference to Form S-3/A filed April 17, 2014)
4.2	Rights Agreement, dated as of January 24, 2013, by and between Spherix Incorporated and Equity Stock Transfer, LLC (incorporated by reference to Form 8-K filed January 30, 2013)
4.3	Amended and Restated Rights Agreement, dated as of June 9, 2017, by and between Spherix Incorporated and Transfer Online Inc. (incorporated by reference to Form 8-K filed June 9, 2017)
4.4	Certificate of Designation of Preferences, Rights and Limitations of Series J Convertible Preferred Stock (incorporated by reference to Form 8-K/A filed on June 2, 2014)
4.5	Certificate of Designation of Preferences, Rights and Limitations of Series K Convertible Preferred Stock (incorporated by reference to Form 8-K filed on December 3, 2015)
4.6	Form of Warrant (incorporated by reference to Form 8-K filed on March 26, 2014)
4.7	Form of Placement Agent Warrant (incorporated by reference to Form 8-K filed on March 26, 2014)

4.8	Form of Common Stock Purchase Warrant (incorporated by reference to Form 8-K filed July 17, 2015)
4.9	Form of Warrant (incorporated by reference to Form 8-K filed December 3, 2015)
10.1	2012 Equity Incentive Plan (incorporated by reference from the Company's Information Statement on Definitive 14C filed November 26, 2012)
10.2	Warrant Exchange Agreement, dated March 1, 2013, by and among the Company and certain investors (incorporated by reference to Form 8-K filed March 7, 2013)
10.3	Agreement and Plan of Merger, dated April 2, 2013 (incorporated by reference to the Form 8-K filed on April 4, 2013)
10.4	First Amendment to Agreement and Plan of Merger, dated August 30, 2013 (incorporated by reference to the Form 8-K filed on September 4, 2013)
10.5	Spherix Incorporated 2013 Equity Incentive Plan (incorporated by reference to the Form 8-K filed on April 4, 2013)
10.6	Spherix Incorporated 2014 Equity Incentive Plan (incorporated by reference from the Company's Proxy Statement on Form DEF 14A filed December 20, 2013)
10.7	Amendment to Spherix Incorporated 2014 Equity Incentive Plan (incorporated by reference from the Company's Proxy Statement on Form DEF 14A filed March 28, 2014)
10.8	Form of Indemnification Agreement (incorporated by reference to the Form 8-K filed on September 10, 2013)
10.9	Employment Agreement, by and between Spherix Incorporated and Anthony Hayes (incorporated by reference to the Form 8-K filed on September 13, 2013)
10.10	Indemnification Agreement, by and between Spherix Incorporated and Jeffrey Ballabon (incorporated by reference to the Form 8-K filed on June 13, 2014)
10.11**	Patent Purchase Agreement, by and between Spherix Incorporated and Rockstar Consortium US LP, including Amendment No. 1 thereto (incorporated by reference to the Form 8-K/A filed on November 19, 2013)
10.12	Form of Series F Exchange Agreement (incorporated by reference to the Form 8-K filed on November 26, 2013)
10.13	Form of Series D Exchange Agreement (incorporated by reference to the Form 8-K filed on December 30, 2013)

10.14	Confidential Patent Purchase Agreement, dated December 31, 2013, by and between Spherix Incorporated and Rockstar Consortium US LP (incorporated by reference to the Form S-1/A filed January 21, 2014)
10.15	Form of Subscription Agreement (incorporated by reference to the Form 8-K filed March 26, 2014)
10.16	Form of Registration Rights Agreement (incorporated by reference to the Form 8-K filed March 26, 2014)
10.17	Form of Subscription Agreement (incorporated by reference to the Form 8-K filed on May 29, 2014)
10.18	Letter of Agreement, dated January 6, 2014, by and between Spherix Incorporated and Chord Advisors, LLC (incorporated by reference to the Form 10-K filed on March 30, 2015)
10.19	Letter of Agreement, dated April 11, 2014, by and between Spherix Incorporated and Chord Advisors, LLC (incorporated by reference to the Form 10-K filed on March 30, 2015)
10.20	Securities Purchase Agreement, dated July 15, 2015, by and among Spherix Incorporated and the purchasers party thereto (incorporated by reference to Form 8-K filed July 17, 2015)
10.21	Employment Agreement, dated as of March 14, 2014, by and between Spherix Incorporated and Frank Reiner (incorporated by reference to Form 10-K filed March 29, 2016)
10.22	Amendment to Employment Agreement, dated as of June 30, 2015, by and between Spherix Incorporated and Frank Reiner (incorporated by reference to Form 10-K filed March 29, 2016)
10.23	Settlement and License Agreement, dated October 13, 2015, by and between Spherix Incorporated and Huawei Technologies Co., Ltd. (incorporated by reference to Form 10-K filed March 29, 2016)
10.24	Patent License Agreement, dated as of November 23, 2015, by and between Spherix Incorporated and RPX Corporation (incorporated by reference to Form 8-K filed November 30, 2015
10.25	Securities Purchase Agreement, dated as of December 2, 2015, by and among Spherix Incorporated and the investors party thereto (incorporated by reference to Form 8-K filed December 3, 2015)
10.26	Engagement Agreement, dated September 16, 2015, as amended, by and between Spherix Incorporated and H.C. Wainwright & Co., LLC (incorporated by reference to Form 8-K filed December 3, 2015)
10.27	Employment Agreement, effective as of April 1, 2016, by and between Spherix Incorporated and Anthony Hayes (incorporated by reference to Form 8-K filed May 26, 2016)

10.28	Amendment to Employment Agreement, by and between Spherix Incorporated and Anthony Hayes (incorporated by reference to the Form 8-K filed on October 25, 2017)
10.29	Separation Agreement and Release, dated March 10, 2017, by and between Spherix Incorporated and Frank Reiner (incorporated by reference to Form 8-K filed March 15, 2017)
10.30	Patent License Agreement, dated as of May 23, 2016, by and between Spherix Incorporated and RPX Corporation (incorporated by reference to Form 10-Q filed August 15, 2016)
10.31	Technology Monetization Agreement, dated as of March 11, 2016, and amended as of April 22, 2016, April 27, 2016 and May 22, 2016, by and between Spherix Incorporated and Equitable IP Corporation (incorporated by reference to Form 8-K filed August 2, 2016)
10.32	Underwriting Agreement, dated as of August 2, 2016, by and among Spherix Incorporated and the underwriters named on Schedule I thereto (incorporated by reference to Form 8-K filed August 3, 2016)
10.33	Assignment and Assumption of Rights Agreement, dated as of June 16, 2016, by and between Spherix Incorporated and Transfer Online, Inc. (incorporated by reference to Form 8-K filed June 21, 2016)
10.34	Securities Purchase Agreement, dated as of June 30, 2017, by and between Spherix Incorporated and Hoth Therapeutics, Inc. (incorporated by reference to Form 8-K filed July 3, 2017)
10.35	Registration Rights Agreement, dated as of June 30, 2017, by and between Spherix Incorporated and Hoth Therapeutics, Inc. (incorporated by reference to Form 8-K filed July 3, 2017)
10.36	Form of Shareholders Agreement, dated as of June 30, 2017 (incorporated by reference to Form 8-K filed July 3, 2017)
10.37	Agreement and Plan of Merger, dated as of March 12, 2018, by and among Spherix Incorporated, Spherix Merger Subsidiary Inc., DatChat, Inc. and Darin Myman (incorporated by reference to Form 8-K filed March 14, 2018)
10.38	Placement Agency Agreement, dated as of March 14, 2018, by and between Spherix Incorporated and Laidlaw & Company (UK) Ltd. (incorporated by reference to Form 8-K filed March 19, 2018)
10.39	Assignment of Agreement, dated as of November 13, 2019, by and among The University of Texas in Austin, on behalf of the Board of Regents of the University of Texas, CBM BioPharma, Inc. and Spherix Incorporated
10.40	Assignment of Agreement, dated as of November 13, 2019, by and among Wake Forest University Health Sciences, CBM BioPharma, Inc. and Spherix Incorporated

10.41	First Amendment to Agreement and Plan of Merger, dated as of May 3, 2018, by and among Spherix Incorporated, Spherix Merger Subsidiary Inc., DatChat, Inc. and Darin Myman (incorporated by reference to Form 8-K filed May 7, 2018)
10.42	Agreement and Plan of Merger, dated as of October 10, 2018, by and among Spherix Incorporated, Spherix Delaware Merger Sub Inc., Scott Wilfong and CBM Biopharma, Inc. (incorporated by reference to Form 8-K filed October 16, 2018)
10.43	At The Market Offering Agreement, dated as of August 9, 2019, by and between Spherix Incorporated and H.C. Wainwright & Co., LLC (incorporated by reference to Form 8-K filed August 9, 2019)
10.44	Asset Purchase Agreement, dated as of May 15, 2019, by and between the Company and CBM BioPharma, Inc. (incorporated herein by reference to Form 10-Q filed on August 14, 2019)
10.45	Amendment No. 1 to Asset Purchase Agreement, dated as of May 30, 2019, by and between the Company and CBM BioPharma, Inc. (incorporated herein by reference to Form 10-Q filed on August 14, 2019)
10.46	Amendment No. 2 to Asset Purchase Agreement, dated as of December 5, 2019, by and between the Company and CBM BioPharma, Inc. (incorporated herein by reference to Form 8-K filed on December 10, 2019)
21.1*	List of Subsidiaries
23.1*	Consent of Marcum LLP, independent registered public accounting firm
31.1*	Certification of Principal Executive Officer pursuant to Item 601(b)(31) of Regulation S-K, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.

** Pursuant to a Confidential Treatment Request under Rule 24b-2 filed with and approved by the SEC, portions of this exhibit have been omitted

Item 16. Form 10-K Summary

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Spherix Incorporated
(Registrant)

By: /s/ Anthony Hayes
Anthony Hayes
Chief Executive Officer and Director (Principal Executive Officer, Principal Financial Officer and Principal Accounting Officer)

Date: January 31, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

/s/ Anthony Hayes Anthony Hayes	Chief Executive Officer and Director	January 31, 2020
/s/ Tim S. Ledwick Tim S. Ledwick	Director	January 31, 2020
/s/ Robert J. Vander Zanden Robert J. Vander Zanden	Chairman of the Board	January 31, 2020
/s/ Eric Weisblum Eric Weisblum	Director	January 31, 2020
/s/ Gregory James Blattner Gregory James Blattner	Director	January 31, 2020

ASSIGNMENT OF AGREEMENT

THIS ASSIGNMENT, effective upon the date of last signature below, is made pursuant to that certain Patent License Agreement (the **"Agreement"),** dated April 12, 2018, as amended on April 5, 2019 and November 1, 2019, between **The University of Texas in Austin, on behalf of the Board of Regents of the University of Texas ("UT") and CBM BioPharma, Inc.,** a Delaware Corporation ("**Assignor**"). CBM is making this assignment to **Spherix, Inc.,** a Delaware corporation ("**Assignee**").

WHEREAS, Assignor and UT entered into the Agreement, which is attached hereto as Exhibit A; and

WHEREAS, the Assignor desires to assign to the Assignee, and the Assignee desires to accept assignment of all the Assignor's rights and obligations under the Agreement; and.

WHEMAS, Assignor wishes to grant to UT 25,000 shares of Assignee common stock (the "Spherix Shares"); and

WHEREAS, UT desires to memorialize its consent to *said* assignment and is willing to accept the Spherix Shares, to be issued promptly upon execution of this Assignment, as full satisfaction of the assignment fee provision of Section 3.1(e) of the Agreement **("Assignment Fee");** and

WHEREAS, Under the conditions set forth herein, UT consents to the assignment from Assignor to Assignee; and

WHEREAS, Assignee affirms that (i) the Patent Rights will not be used for the primary purpose of extracting licensing revenue from third parties and will not be used to protect a market position in goods or services to which the Patent Rights relate, (ii) the Patent Rights will not be assigned to an entity that **is** currently or routinely not in compliance with laws and regulations that apply to goods and services to which the Patent Rights relate and (iii) the Patent Rights will not be used in a way that is not in compliance with laws and regulations that apply to goods and services to which the Patent Rights relate.

NOW THEREFORE, in consideration of the mutual promises and covenants contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows.

1. The Assignor hereby assigns transfers and conveys to the Assignee all its rights, title and interest to, and obligations under, the Agreement.

2. The Assignee hereby accepts said assignment, transfer and conveyance from the Assignor and hereby assumes and shall perform any and all obligations of Assignor under the Agreement.

3. UT, by its signature below, hereby consents to the above referenced assignment.

4. Assignor shall deliver the Spherix Shares to UT upon the consummation of the transactions (the "**Asset Purchase**") contempleted by the Asset Purchase Agreement, dated May 15, 2019, as amended, by and between Assignor and Assignee.

5. UT agrees, that it will not sell or otherwise dispose of, directly or indirectly, any of the Spherix. Shares acquired under this Agreement for a period of six (6) months following the consummation of the Asset Purchase. Assignee and UT agree to enter into a lock-up agreement in a fonn satisfactory to the Assignee and UT, which evidences the terms described in this section 5.

6. The delivery of the the Spherix Shares shall constitute full satisfaction of the Assignment Fee.

7. The Parties agree to execute any and all such documents as may be required to further document or complete said assignment.

8. Except as provided in this Assignment, the terms and conditions of the Agreement shall remain in full force and effect.

[SIGNATURES ON NEXT PAGE]

IN WITNESS WHEREOF, the Parties have executed this Assignment on the date and year first above written:

ASSIGNOR:

CBM BioPharma, Inc.
a Delaware corporation

By: /s/ Scott Wilfong
Name: Scott Wilfong
Title: CEO
Date: 11/13/19

ASSIGNEE:

Spherix, Inc.,
a Delaware corporation

By: /s/ Anthony Hayes
Name: Anthony Hayes
Title: CEO
Date: 11/13/19

The University of Texas at Austin on behalf of the Board of Regents of the University of Texas System

By: /s/ Les Nichols
Name: Les Nichols
Title: Director, Office of Technology commercialization
Date: 11/13/2019

EXHIBIT A

PATENT LICENSE AGREEMENT

[ATTACHED]

Exhibit 10.40

ASSIGNMENT OF AGREEMENT

THIS ASSIGNMENT, effective this 13th day of November, 2019, is made pursuant to that certain License Agreement (the "**Agreement**"), dated Apirl 17, 2018, between **Wake Forest University Health Sciences** ("**WFUHS**") and **CBM BioPharma, Inc**., a Delaware Corporation ("**Assignor**"). Assignor is making this assignment to to **Spherix, Inc**., a Delaware corporation ("**Assignee**").

WHEREAS, Assignor and WFUHS entered into the Agreement, which is attached hereto as Exhibit A; and

WHEREAS, the Assignor desires to assign to the Assignee, and the Assignee desires to accept assignment of all the Assignor's rights and obligations under the Agreement; and

WHEREAS, WFUHS desires to memorialize its consent to said assignment.

WHEREAS, Assignor is in full compliance with the Agreement, and Assignor is able to assign the Agreement pursuant to Section 12.1 of the Agreement to an assignee.

WHEREAS, Assignee (i) agrees in writing to be bound by the terms and conditions of this Agreement, (ii) is at least as financially healthy as is Assignor when measured by reasonable standards for financial health, (iii) is not adverse to WFUHS or the University of North Carolina ("UNC") in any action, suit or dispute and (iv) is not of such a nature that the public knowledge of a licensing relationship would be materially detrimental to WFUHS or UNC.

NOW THEREFORE, in consideration of the mutual promises and covenants contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows.

1. The Assignor hereby assigns transfers and conveys to the Assignee all its rights, title and interest to, and obligations under, the Agreement.

2. The Assignee hereby accepts said assignment, transfer and conveyance from the Assignor and hereby assumes and shall perform any and all obligations of Assignor under the Agreement.

3. WFUHS, by its signature below, hereby consents to the above referenced assignment.

4. The Parties agree to execute any and all such documents as may be required to further document or complete said assignment.

5. Except as provided in this Assignment, the terms and conditions of the Agreement shall remain in full force and effect.

[SIGNATURES ON NEXT PAGE]

IN WITNESS WHEREOF, the Parties have executed this Assignment on the date and year first above written:

ASSIGNOR:

CBM BioPharma, Inc.
a Delaware corporation

By: /s/ Scott Wilfong
Name: Scott Wilfong
Title: CEO

ASSIGNEE:

Spherix, Inc.,
a Delaware corporation

By: /s/ Anthony Hayes
Name: Anthony Hayes
Title: CEO

WAKE FOREST UNIVERSITY HEALTH SCIENCES

By:
Name:
Title:

IN WITNESS WHEREOF, the Parties have executed this Assignment on the date and year first above written:

ASSIGNOR:

CBM BioPharma, Inc.
a Delaware corporation

By: _____
Name: Scott Wilfong
Title: CEO

ASSIGNEE:

Spherix, Inc.,
a Delaware corporation

By: _____
Name: Anthony Hayes
Title: CEO

WAKE FOREST UNIVERSITY HEALTH SCIENCES

By: /s/ Todd A. Ponzio. Ph.D.
Name: Todd A. Ponzio. Ph.D.
Title: Associate Vice President

EXHIBIT A
LICENSE AGREEMENT

[ATTACHED]

Exhibit A

Exhibit 21.1

List of Subsidiaries

Nuta Technology Corp
Spherix Portfolio Acquisition II (SPAII)
Guidance IP, LLC
Directional IP, LLC
NNPT, LLC
Spherix Management Services, LLC
Spherix Delaware Merger Sub Inc.
Spherix Merger Subsidiary Inc.

Exhibit 23.1

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM'S CONSENT

We consent to the incorporation by reference in the Registration Statement of Spherix Incorporated (the "Company") on Form S-8 (333-210627), Form S-8 (333-197429), Form S-8 (333-187811), Form S-8 (333-185524), Form S-3 (333-222488) and Form S-1 (333-236199), of our report, which includes an explanatory paragraph as to the Company's ability to continue as a going concern, dated January 31, 2020, with respect to our audits of the consolidated financial statements of Spherix Incorporated and Subsidiaries as of December 31, 2019 and 2018 and for each of the two years in the period ended December 31, 2019, which report is included in this Annual Report on Form 10-K of Spherix Incorporated for the year ended December 31, 2019.

/s/ Marcum LLP

Marcum LLP
New York, NY
January 31, 2020

Exhibit 31.1

Certification of Principal Executive, Financial and Accounting Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Anthony Hayes, certify that:

1. I have reviewed this report on Form 10-K of Spherix Incorporated;

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 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.

/s/ Anthony Hayes

Anthony Hayes
Chief Executive Officer
(Principal Executive Officer,
Principal Financial Officer and Principal Accounting Officer)
January 31, 2020

Exhibit 32.1

Certification of
Principal Executive, Financial and Accounting Officer
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

I, Anthony Hayes, Director, Chief Executive Officer, Principal Financial and Accounting Officer of Spherix Incorporated (the "Company"), in compliance with Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, to the best of my knowledge, the Company's Annual Report on Form 10-K for the period ended December 31, 2019 (the "Report") filed with the Securities and Exchange Commission:

Fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

/s/ Anthony Hayes

Anthony Hayes
Chief Executive Officer
(Principal Executive Officer,
Principal Financial Officer and Principal Accounting Officer)
January 31, 2020

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