Filed Pursuant to Rule 424(b)(3)
Registration No. 333-269045

Prospectus Supplement dated August 7, 2023
(To Prospectus dated February 8, 2023)

800,000 SHARES OF COMMON STOCK

This prospectus supplement dated August 7, 2023 supplements and amends the accompanying prospectus dated February 8, 2023 contained in our Registration Statement on Form S-1 (File No. 333-269045), as amended, that we initially filed with the Securities and Exchange Commission (the "Commission") on December 29, 2022. This prospectus supplement should be read in conjunction with the accompanying prospectus and is qualified by reference thereto, except to the extent that the information herein amends or supersedes the information contained in the accompanying prospectus. This prospectus supplement is not complete without, and may only be delivered or utilized in connection with, the accompanying prospectus and any future amendments or supplements thereto.

The accompanying prospectus relates to the resale from time to time of up to 800,000 shares of our common stock, par value $0.001 per share, which are issuable upon the exercise of certain warrants held by the selling stockholders named in the accompanying prospectus (including shares that may be issued to the holder in lieu of fractional shares) with an exercise price of $2.85 per share, exercisable from May 9, 2023 until May 9, 2028 (the "Warrants"). We are not selling any common stock under this prospectus supplement or the accompanying prospectus and will not receive any proceeds from the sale of shares listed in this prospectus supplement or the accompanying prospectus. We will, however, receive the net proceeds of any Warrants exercised for cash in the future.

This prospectus supplement is being filed to disclose that on August 3, 2023, in connection with a registered public offering by the Company (the "Public Offering") registered on a Registration Statement on Form S-1 (File No. 333-272879), as amended, the Company entered into warrant amendment letter agreements with certain accredited investors in the Public Offering that own all of the outstanding Warrants to amend the exercise price of the Warrants such that effective as of, and subject to, the closing of the Public Offering and the satisfaction of the investors' purchase commitments in connection therewith, the Warrants (as amended) shall have a reduced exercise price equal to $0.7593 per share. The closing of the Public Offering is expected to occur on August 7, 2023.

Our common stock is traded on the Nasdaq Capital Market under the symbol "BPTH." The last reported sale price of our common stock on the Nasdaq Capital Market on August 4, 2023 was $0.4005 per share.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described in the section titled "Risk Factors" on page 5 of the accompanying prospectus and under similar headings in the other documents that are incorporated by reference into the accompanying prospectus, as supplemented and amended by this prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of the accompanying prospectus or this prospectus supplement. Any representation to the contrary is a criminal offense.

PROSPECTUS

800,000 SHARES OF COMMON STOCK

This prospectus relates to the resale from time to time of up to 800,000 shares of our common stock, par value $0.001 per share, which are issuable upon the exercise of certain warrants held by the selling stockholders named in this prospectus (including shares that may be issued to the holder in lieu of fractional shares). We are not selling any common stock under this prospectus and will not receive any proceeds from the sale of shares listed in this prospectus. We will, however, receive the net proceeds of any warrants exercised for cash in the future.

The selling stockholders may offer and sell the shares from time to time at varying prices and in a number of different ways as each selling stockholder may determine through public or private transactions or through other means described in the section entitled "Plan of Distribution" or a supplement to this prospectus. Each selling stockholder may also sell shares under Rule 144 under the Securities Act of 1933, as amended, if available, rather than under this prospectus.

The selling stockholders will bear all commissions and discounts, if any, attributable to the sale or disposition of the shares. We will bear all costs, expenses and fees in connection with the registration of the shares. We will not be paying any underwriting discounts or commissions in this offering.

Our common stock is currently listed on the Nasdaq Capital Market under the symbol "BPTH." The last reported sale price of our common stock on the Nasdaq Capital Market on February 2, 2023 was $2.22 per share.

Investing in our securities involves a high degree of risk. Before making an investment decision, you should review carefully and consider all of the information set forth in this prospectus and the documents incorporated by reference in this prospectus. See "Risk Factors" on page 5 of this prospectus and under similar headings in the other documents that are incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission (the "SEC") nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is February 8, 2023.

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ABOUT THIS PROSPECTUS

This prospectus relates to the offering of up to 800,000 shares of our common stock issuable upon the exercise of outstanding warrants (including shares that may be issued to the holder in lieu of fractional shares). Before buying any of the common stock that the selling stockholders are offering, we urge you to carefully read this prospectus, together with the information incorporated by reference as described under the headings "Where You Can Find More Information" and "Information Incorporated By Reference" in this prospectus. These documents contain important information that you should consider when making your investment decision.

You should rely only on the information we have provided or incorporated by reference in this prospectus. We have not authorized anyone to provide you with different information. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus. You must not rely on any unauthorized information or representation. You should assume that the information in this prospectus is accurate only as of the dates on the front of this document and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference. Our business, financial condition, results of operations and prospects may have changed since those dates.

You should read this prospectus and the documents incorporated by reference in this prospectus when making your investment decision.

Unless the context requires otherwise, references in this prospectus to "we," "our," "us," "the Company" and "Bio-Path" refer to Bio-Path Holdings, Inc. and its wholly-owned subsidiary. Bio-Path Holdings, Inc.'s wholly-owned subsidiary, Bio-Path, Inc., is sometimes referred to herein as "Bio-Path Subsidiary."

PROSPECTUS SUMMARY

This prospectus summary highlights selected information contained elsewhere in this prospectus or in documents incorporated by reference. This summary does not contain all of the information that you should consider before making an investment decision. You should carefully read the entire prospectus, including under the section titled "Risk Factors" and the documents incorporated by reference into this prospectus, before making an investment decision.

Our Company

We are a clinical and preclinical stage oncology-focused RNAi nanoparticle drug development company utilizing a novel technology that achieves systemic delivery for target-specific protein inhibition for any gene product that is over-expressed in disease. Our drug delivery and antisense technology, called DNAbilize®, is a platform that uses P-ethoxy, which is a deoxyribonucleic acid (DNA) backbone modification that is intended to protect the DNA from destruction by the body's enzymes when circulating *in vivo*, incorporated inside of a lipid bilayer having neutral charge. We believe this combination allows for high efficiency loading of antisense DNA into non-toxic, cell-membrane-like structures for delivery of the antisense drug substance into cells. *In vivo*, the DNAbilize® delivered antisense drug substances are systemically distributed throughout the body to allow for reduction or elimination of target proteins in blood diseases and solid tumors. Through testing in numerous animal studies and treatment in over 125 patients, our DNAbilize® drug candidates have demonstrated an excellent safety profile. DNAbilize® is a registered trademark of the Company.

Using DNAbilize® as a platform for drug development and manufacturing, we currently have four drug candidates in development to treat at least five different cancer disease indications. Our lead drug candidate, prexigebersen (pronounced prex" i je ber' sen), which targets growth factor receptor-bound protein 2 (Grb2), initially started the efficacy portion of a Phase 2 clinical trial for untreated acute myeloid leukemia ("AML") patients in combination with low-dose cytarabine ("LDAC"). The interim data released on March 6, 2019 showed that 11 (65%) of the 17 evaluable patients had a response, including five (29%) who achieved complete remission ("CR"), inclusive of one CR with incomplete hematologic recovery ("CRi") and one morphologic leukemia-free state, and six (35%) stable disease responses, including two patients who had greater than a 50% reduction in bone marrow blasts. However, DNA hypomethylating agents are now the most frequently used agents in the treatment of elderly AML patients in the U.S. and Europe. As a result, Stage 2 of the Phase 2 trial in AML was amended to remove the combination treatment of prexigebersen and LDAC and replace it with the combination treatment of prexigebersen and decitabine, a DNA hypomethylating agent, for treatment of a second cohort of untreated AML patients. Since decitabine is also used as a treatment for relapsed/refractory AML patients, a cohort of relapsed/refractory AML patients was also added to the study.

The U.S. Food and Drug Administration ("FDA") granted approval of venetoclax in combination with LDAC, decitabine or azacytidine (the latter two drugs are DNA hypomethylating agents) as frontline therapy for newly diagnosed AML in adults who are 75 years or older, or who have comorbidities precluding intensive induction chemotherapy. We believe this approval of the frontline venetoclax and decitabine combination therapy provides an opportunity for combining prexigebersen with the combination therapy for the treatment of *de novo* AML patients. Preclinical efficacy studies for the triple combination treatment of prexigebersen, decitabine and venetoclax in AML have been successfully completed. In the preclinical efficacy studies, four AML cancer cell lines were treated with three different combinations of decitabine, venetoclax and prexigebersen. Decrease in AML cell viability was the primary measure of efficacy. The triple combination of decitabine, venetoclax and prexigebersen showed significant improvement in efficacy in three of the four AML cell lines. Based on these results, we believe that adding prexigebersen to the treatment combination of decitabine and venetoclax could lead to improved efficacy in AML patients. Accordingly, we further amended Stage 2 of this Phase 2 clinical trial to add the triple combination treatment comprised of prexigebersen, decitabine and venetoclax.

Our approved amended Stage 2 for this Phase 2 clinical trial currently has three cohorts of patients. The first two cohorts will treat patients with the triple combination of prexigebersen, decitabine and venetoclax. The first cohort will include untreated AML patients, and the second cohort will include relapsed/refractory AML patients. Finally, the third cohort will treat relapsed/refractory AML patients, who are

venetoclax-resistant or -intolerant, with the two-drug combination of prexigebersen and decitabine. The full trial design plans have approximately 98 evaluable patients for the first cohort having untreated AML patients with a preliminary review performed after 19 evaluable patients and a formal interim analysis after 38 evaluable patients. The full trial design plans have approximately 54 evaluable patients for each of the second cohort, having relapsed/refractory AML patients, and the third cohort, having AML patients who are venetoclax-resistant or -intolerant, in each case with a review performed after 19 evaluable patients. The study is anticipated to be conducted at up to ten clinical sites in the U.S., and Gail J. Roboz, MD is the national coordinating Principal Investigator for the Phase 2 trial. Dr. Roboz is a professor of medicine and director of the Clinical and Translational Leukemia Program at the Weill Medical College of Cornell University (the "Weill Medical College") and the New York-Presbyterian Hospital in New York City. On August 13, 2020, we announced the enrollment and dosing of the first patient in this approved amended Stage 2 of the Phase 2 clinical trial.

On April 5, 2021, we announced the successful completion of the safety run-in of Stage 2 of the Phase 2 clinical study. In the safety run-in of the triple combination, six evaluable patients were treated with the combination of prexigebersen, decitabine and venetoclax. These patients included four relapsed/refractory AML patients, and two newly diagnosed AML patients. In the preliminary safety data review, five of the patients (83%) responded to treatment, including four (67%) achieving CR and one (17%) achieving CRi. Recent publications provide that CR rates to combination treatment with decitabine and venetoclax (but without prexigebersen) are 42 to 52% for relapsed/refractory AML patients and 0 to 39% for relapsed/refractory secondary AML patients. Response rates to frontline treatment with decitabine and venetoclax (but without prexigebersen) are 62 to 71% for newly diagnosed AML patients. These preliminary data, presented at the 2021 American Society of Hematology Annual Meeting, showed the treatment was well-tolerated and there were no dose limiting toxicities attributed to prexigebersen. Three patients remained on treatment for more than one cycle.

Our second drug candidate, Liposomal Bcl-2 ("BP1002"), targets the protein Bcl-2, which is responsible for driving cell survival in up to 60% of all cancers. On November 21, 2019, we announced that the FDA cleared an Investigational New Drug ("IND") application for BP1002 for an initial Phase 1 clinical trial that will evaluate the ability of BP1002 to treat refractory/relapsed lymphoma and chronic lymphocytic leukemia patients. The Phase 1 clinical trial is being conducted at several leading cancer centers, including The University of Texas MD Anderson Cancer Center ("MD Anderson Cancer Center") and the Georgia Cancer Center. On November 19, 2020, we announced the enrollment and dosing of the first patient in the Phase 1 clinical trial.

Additionally, preclinical studies suggest that the combination of BP1002 with decitabine is efficacious in venetoclax-resistant leukemia and lymphoma cells. An abstract of the preclinical study was presented at the 2021 American Association for Cancer Research ("AACR") Annual Meeting. On August 24, 2021, we announced that the FDA cleared an IND application for BP1002 for an initial Phase 1/1b clinical trial that will evaluate the ability of BP1002 to treat refractory/relapsed AML patients. The Phase 1/1b clinical trial is anticipated to be conducted at several leading cancer centers in the United States, including the Weill Medical College, MD Anderson Cancer Center, Scripps Health and The University of California at Los Angeles Cancer Center. Gail J. Roboz, M.D., will serve as the national coordinating Principal Investigator for the Phase 1/1b trial. On October 24, 2022, we announced the enrollment and dosing of the first patient in the Phase 1/1b clinical trial.

Our third drug candidate, Liposomal STAT3 ("BP1003"), targets the STAT3 protein and is currently in IND enabling studies as a potential treatment of pancreatic cancer, non-small cell lung cancer ("NSCLC") and AML. Preclinical models have shown BP1003 to inhibit cell viability and STAT3 protein expression in NSCLC and AML cell lines. Further, BP1003 successfully penetrated pancreatic tumors and significantly enhanced the efficacy of gemcitabine, a treatment for patients with advanced pancreatic cancer, in a pancreatic cancer patient derived tumor model. An abstract of the preclinical study was presented at the 2019 AACR Annual Meeting. Our lead indication for BP1003 is pancreatic cancer due to the severity of this disease and the lack of effective, life-extending treatments. For example, pancreatic adenocarcinoma is projected to be the second most lethal cancer behind lung cancer by 2030. Typical survival for a metastatic pancreatic cancer patient is about three to six months from diagnosis. Additionally, an abstract of the preclinical study demonstrating that BP1003 enhanced the sensitivity of breast and ovarian cancer cells to chemotherapy was

presented at the 2022 AACR Annual Meeting. We successfully completed several IND enabling studies of BP1003 in 2021 and have one additional IND enabling study to complete. Once the additional study is successfully completed, our goal is to file an IND as soon as the first half of 2023. Based on the filing of the IND, we expect to initiate the first-in-humans Phase 1 study of BP1003 in patients with refractory, metastatic solid tumors, including pancreatic cancer and NSCLC.

In addition, a modified product named BP1001-A, our fourth drug candidate, has shown to enhance chemotherapy efficacy in preclinical solid tumor models. Results of the preclinical study were published in the scientific journal *Oncotarget* in July 2020. BP1001-A incorporates the same drug substance as prexigebersen but has a slightly modified formulation designed to enhance nanoparticle properties. In late 2019, we filed an IND application to initiate a Phase 1/1b clinical trial of BP1001-A in patients with solid tumors, including ovarian, endometrial, pancreatic and breast cancer. Ovarian cancer is one of the most common types of gynecologic malignancies, with approximately 50% of all cases occurring in women older than 63 years. On October 27, 2021, we announced that the FDA cleared the IND application for BP1001-A for the initial Phase 1/1b clinical trial, and on December 7, 2022, we announced the enrollment and dosing of the first patient in the Phase 1/1b clinical trial.

Our DNAbilize® technology-based products are available for out-licensing or partnering. We intend to apply our drug technology template to new disease-causing protein targets to develop new nanoparticle antisense RNAi drug candidates. We have a new product identification template in place to define a process of scientific, preclinical, commercial and intellectual property evaluation of potential new drug candidates for inclusion into our drug product development pipeline. As we expand our drug development programs, we will look at indications where a systemic delivery is needed and antisense RNAi nanoparticles can be used to slow, reverse or cure a disease, either alone or in combination with another drug.

We have certain intellectual property as the basis for our current drug products in clinical development, prexigebersen, BP1002, BP1003 and BP1001-A. We are developing RNAi antisense nanoparticle drug candidates based on our own patented technology to treat cancer and autoimmune disorders where targeting a single protein may be advantageous and result in reduced patient adverse effects as compared to small molecule inhibitors with off-target and non-specific effects. We have composition of matter and method of use intellectual property for the design and manufacture of antisense RNAi nanoparticle drug products.

Corporate Information

The Company was incorporated in May 2000 as a Utah corporation. In February 2008, Bio-Path Subsidiary completed a reverse merger with the Company, which at the time was traded over the counter and had no current operations. The prior name of the Company was changed to Bio-Path Holdings, Inc. and the directors and officers of Bio-Path Subsidiary became the directors and officers of Bio-Path Holdings, Inc. On March 10, 2014, our common stock ceased trading on the OTCQX and commenced trading on the Nasdaq Capital Market under the ticker symbol “BPTH.” Effective December 31, 2014, we changed our state of incorporation from Utah to Delaware through a statutory conversion pursuant to the Utah Revised Business Corporation Act and the Delaware General Corporation Law. Our principal executive offices are located at 4710 Bellaire Boulevard, Suite 210, Bellaire, Texas 77401, and our telephone number is (832) 742-1357.

Description of Prior Registered Offering and Private Placement

The shares offered in this prospectus relate to the resale of an aggregate of 800,000 shares of our common stock issuable upon the exercise of the Warrants (as defined below) (including shares that may be issued to the holder in lieu of fractional shares).

On November 9, 2022, we completed the closing of a registered direct offering (the “2022 Registered Direct Offering”) with certain institutional and accredited investors for the sale of an aggregate of 800,000 shares of our common stock for gross proceeds of approximately $2.0 million. In a concurrent private placement (the “2022 Private Placement”), we issued to the investors in the 2022 Registered Direct Offering warrants to purchase up to 800,000 shares of our common stock, with an exercise price of $2.85 per share, exercisable from May 9, 2023 until May 9, 2028 (the “Warrants”). We are registering the resale of the shares issuable upon exercise of the Warrants.

THE OFFERING

Common Stock Offered by the Selling Stockholders	Up to 800,000 shares of our common stock, par value $0.001 per share, issuable upon exercise of the Warrants (including shares that may be issued to the holder in lieu of fractional shares).
Use of Proceeds	We are not selling any common stock under this prospectus and will not receive any proceeds from the sale of shares listed in this prospectus. We will, however, receive the net proceeds of any Warrants exercised for cash in the future. We currently expect to use such net proceeds, if any, for working capital and general corporate purposes.
Nasdaq Capital Market Symbol	"BPTH"
Risk Factors	An investment in our company involves a high degree of risk. Please refer to the sections titled "Risk Factors" and "Special Note Regarding Forward-Looking Statements" and other information included or incorporated by reference in this prospectus for a discussion of factors you should carefully consider before investing in our securities.

RISK FACTORS

An investment in our company involves a high degree of risk. Before you make a decision to invest in our securities, you should consider carefully the risks described in or incorporated by reference in this prospectus, including the risks and uncertainties discussed under the section titled "Risk Factors" in our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K, and all other documents incorporated by reference into this prospectus, as updated by our subsequent filings under the Exchange Act of 1934, as amended (the "Exchange Act").

Any of these risks could have a material adverse effect on our business, prospects, financial condition and results of operations. In any such case, the trading price of our securities could decline and you could lose all or part of your investment. Additional risks not presently known to us or that we currently deem immaterial may also adversely affect our business operations. The risks described in or incorporated by reference in this prospectus also include forward-looking statements and our actual results may differ substantially from those discussed in these forward-looking statements. See "Special Note Regarding Forward-Looking Statements."

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference into this prospectus contain "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 Exchange Act. Forward-looking statements can be identified by words such as "anticipate," "expect," "intend," "plan," "believe," "seek," "estimate," "project," "goal," "strategy," "future," "likely," "may," "should," "will" and variations of these words and similar references to future periods, although not all forward-looking statements contain these identifying words. Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent risks, uncertainties, and changes in circumstances, including but not limited to risk factors contained in or incorporated by reference under the section titled "Item 1A. Risk Factors" to Part I of our Annual Report on Form 10-K as of and for the fiscal year ended December 31, 2021 and other factors described elsewhere in this prospectus or in our current and future filings with SEC. As a result, our actual results may differ materially from those expressed or forecasted in the forward-looking statements, and you should not rely on such forward-looking statements. You should carefully read this prospectus, together with the information incorporated herein by reference as described under the section titled "Where You Can Find More Information," completely and with the understanding that our actual future results may be materially different from what we expect. We can give no assurances that any of the events anticipated by the forward-looking statements will occur or, if any of them do, what impact they will have on our results of operations and financial condition. Forward-looking statements include, but are not limited to, statements about:

- the impact, risks and uncertainties related to COVID-19 and actions taken by governmental authorities or others in connection therewith;
- our lack of significant revenue to date, our history of recurring operating losses and our expectation of future operating losses;
- our need for substantial additional capital and our need to delay, reduce or eliminate our drug development and commercialization efforts if we are unable to raise additional capital;
- the highly-competitive nature of the pharmaceutical and biotechnology industry and our ability to compete effectively;
- the success of our plans to use collaboration arrangements to leverage our capabilities;
- our ability to retain and attract key personnel;
- the risk of misconduct of our employees, agents, consultants and commercial partners;
- disruptions to our operations due to expansions of our operations;
- the costs we would incur if we acquire or license technologies, resources or drug candidates;
- risks associated with product liability claims;
- our reliance on information technology systems and the liability or interruption associated with cyber-attacks or other breaches of our systems;
- our ability to use net operating loss carryforwards;
- provisions in our charter documents and state law that may prevent a change in control;
- work slowdown or stoppage at government agencies could negatively impact our business;
- our need to complete extensive clinical trials and the risk that we may not be able to demonstrate the safety and efficacy of our drug candidates;
- risks that our clinical trials may be delayed or terminated;
- our ability to obtain domestic and/or foreign regulatory approval for our drug candidates;
- changes in existing laws and regulations affecting the healthcare industry;

- our reliance on third parties to conduct clinical trials for our drug candidates;
- our ability to maintain orphan drug exclusivity for our drug candidates;
- our reliance on third parties for manufacturing our clinical drug supplies;
- risks associated with the manufacture of our drug candidates;
- our ability to establish sales and marketing capabilities relating to our drug candidates;
- market acceptance of our drug candidates;
- third-party payor reimbursement practices;
- our ability to adequately protect the intellectual property of our drug candidates;
- infringement on the intellectual property rights of third parties;
- costs and time relating to litigation regarding intellectual property rights;
- our ability to adequately prevent disclosure by our employees or others of trade secrets and other proprietary information;
- our need to raise additional capital;
- the volatility of the trading price of our common stock;
- our common stock being thinly traded;
- our ability to issue shares of common or preferred stock without approval from our stockholders;
- our ability to pay cash dividends;
- costs and expenses associated with being a public company;
- our ability to maintain effective internal controls over financial reporting; and
- our ability to maintain compliance with the listing standards of the Nasdaq Capital Market.

Any forward-looking statement made by us in this prospectus and the documents incorporated by reference into this prospectus is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether as a result of new information, future developments or otherwise. However, you should carefully review the risk factors set forth in other reports or documents we file from time to time with the SEC.

USE OF PROCEEDS

We are not selling any common stock under this prospectus and will not receive any proceeds from the sale of shares listed in this prospectus. We will, however, receive the net proceeds of any Warrants exercised for cash in the future. We currently expect to use such net proceeds, if any, for working capital and general corporate purposes. The selling stockholders will bear all commissions and discounts, if any, attributable to the sale or disposition of the shares. We will bear all costs, expenses and fees in connection with the registration of the shares. We will not be paying any underwriting discounts or commissions in this offering.

EXECUTIVE AND DIRECTOR COMPENSATION

Executive Compensation

The Compensation Committee oversees our compensation programs for executives and all employees. The Compensation Committee understands that for the Company and its stockholders to achieve long-term success, the compensation programs need to attract, retain, develop and motivate a strong leadership team. As a result, our executive compensation programs are designed to pay for performance, enable talent attraction, retain top talent and closely align the interests of our executives with those of our stockholders. All decisions with respect to the compensation of our Chief Executive Officer are determined and approved either solely by the Compensation Committee or together with other independent directors, as directed by the Board. All decisions with respect to non-CEO executive compensation, incentive-compensation and equity-based plans are first approved by the Compensation Committee and then submitted, together with the Compensation Committee's recommendation, to the members of the Board for final approval.

This section provides important information on our executive compensation programs and explains the compensation decisions made during 2022 by the Compensation Committee for our named executive officers ("NEOs"). In the fiscal year ended December 31, 2022, our only NEO was Peter H. Nielsen, Chairman of the Board, Chief Executive Officer, Chief Financial Officer and President.

Compensation Philosophy

Our primary objective with respect to executive compensation is to design a reward system that will align executive compensation with our overall business strategies and attract and retain highly qualified executives. We intend to stay competitive in the marketplace with companies of comparable size, industry and complexity. Our compensation philosophy for executives is guided by the following principles:

- *Pay for Performance*. In making compensation decisions, we consider annual and long-term Company performance and consider the compensation of our executive officers in relation to companies of comparable size, industry and complexity, taking the performance of the Company into consideration.
- *Reviewed Annually*. The Compensation Committee annually reviews compensation levels to ensure we remain competitive and continue to attract, retain and motivate top-tier talent.
- *Alignment with Stockholder Interests*. Our compensation is intended to closely align the interests of our NEOs with those of our stockholders in an effort to create long-term stockholder value. In developing our compensation philosophy, the Compensation Committee has considered the most recent stockholder advisory vote on executive compensation in which an overwhelmingly positive percentage of the votes cast were in favor of our executive compensation. The Compensation Committee is continuously mindful of stockholders' views on executive compensation and remains focused on ensuring proper alignment with stockholder interests.

Our compensation philosophy rewards demonstrated performance and encourages behavior that is in the long-term best interests of the Company and its stockholders.

Elements and Mix of our 2022 Compensation Program

The following elements made up the fiscal year 2022 compensation program for our NEOs:

Element	Form of Compensation	Purpose, Basis and Performance Criteria
Base Salary	Cash	• Base salary is intended to provide a market competitive level of fixed compensation in recognition of responsibilities, skills, capabilities, experience and leadership.

Element	Form of Compensation	Purpose, Basis and Performance Criteria
		• Base salary is not generally performance based, but reflective of competencies and experience.
Annual Performance Incentive Awards (considered "at-risk" compensation)	Cash	• Annual cash performance incentive awards are intended to motivate and reward performance achievement. • Payments are discretionary and approved annually by the Compensation Committee.
Long-Term Incentive Awards (considered "at-risk" compensation)	Stock Options	• Long-term incentive awards are intended to recognize and reward the achievement of long-term corporate goals and objectives, recognize promotions, motivate retention of our leadership talent and align executives' interests with our stockholders. • The Compensation Committee determines the amount of long-term incentive awards to be granted to each NEO. The Compensation Committee also may make isolated awards to recognize promotions, new hires or individual performance achievements. • In 2022, the long-term incentive awards included time-vested equity awards that vest over a four-year period. • The Compensation Committee provides time-vested long-term incentives (i) to build a consistent ownership stake and retention incentive, (ii) to create a meaningful tie to the Company's relative long-term stockholder returns and (iii) to motivate consistent improvement over a longer-term horizon.

Element	Form of Compensation	Purpose, Basis and Performance Criteria
Change of Control Severance	Eligible to receive severance payments and post-termination health benefits in connection with involuntary termination within three months before or twelve months after a change of control	• Employment agreements are intended to provide financial security and an industry-competitive compensation package for NEOs. This additional security helps ensure that NEOs remain focused on our performance and the continued creation of stockholder value throughout any change of control transaction rather than on the potential uncertainties associated with their own employment.

Evaluation Process, Compensation Consultant, Peer Comparisons and Officers

Evaluation Process. The Compensation Committee oversees the administration of the compensation programs applicable to our employees, including our NEOs. The Compensation Committee generally makes its decisions regarding the annual compensation of our NEOs at its regularly-scheduled meeting in the first quarter of each year. These decisions include adjustments to base salary, grants of annual incentive awards and grants of long-term incentive awards. The Compensation Committee also makes compensation adjustments as necessary at other times during the year, such as in the case of promotions, changes in employment status and for competitive purposes.

Each year for the Compensation Committee meeting, our CEO prepares an evaluation of each of the other executive officers, if any, and makes compensation recommendations to the Compensation Committee based upon our performance against our corporate performance metrics and the individual's performance. In addition to considering the CEO's recommendations, the Compensation Committee assesses the applicable executive officer's impact during the year and his or her overall value to the Company, specifically by considering the individual leadership skills, impact on strategic initiatives, performance in his or her primary area of responsibility, his or her role in succession planning and development and other intangible qualities that contribute to corporate and individual success. During 2022, our CEO was our only executive officer.

Compensation Consultant and Peer Comparisons. For the 2022 performance period, the Compensation Committee did not engage an external compensation consultant to review the compensation of our executive officers. For comparison purposes, the Compensation Committee relied upon peer executive compensation data from proxies and compensation surveys of the Industry Peer Group (as defined below) prepared by our executive compensation counsel based on parameters set by the Compensation Committee. The Compensation Committee reviewed executive compensation data from the Industry Peer Group to consider competitive pay levels and compensation practices. Such data included components such as total direct compensation, considered as the sum of base salary and annual cash performance incentive award, as well as total compensation, including long-term incentive awards.

While executive compensation data from the Industry Peer Group provides a point of reference for measurement, it is not the determinative factor for compensation decisions. The Compensation Committee does not target the compensation of our executive officers to a specific percentile of compensation provided to officers in comparable positions in our Industry Peer Group. The purpose of the comparison is not to supplant the analyses of our corporate performance and the individual performance of our executive officers that the Compensation Committee considers when making compensation decisions. Because the compensation data is just one of the several analytic tools that are used in setting executive compensation, the Compensation Committee has discretion in determining the nature and extent of its use.

The Compensation Committee established our current Industry Peer Group in 2022. With the assistance of our executive compensation counsel, the Compensation Committee reviews the composition of the peer

group annually to ensure that companies are relevant for comparative purposes. In identifying companies to include in the Industry Peer Group, the Compensation Committee considered, among other things, the following:

- the industry of the companies;
- the annual revenue, market capitalization and total assets of the companies;
- the number of full-time employees of the companies;
- the market data sources that are available with respect to the companies; and
- the number of peers included in the Industry Peer Group.

For 2022, our Industry Peer Group consisted of the following companies (the "Industry Peer Group"):

- Aileron Therapeutics, Inc. (ALRN)
- Bellicum Pharmaceuticals, Inc. (BLCM)
- Cellectar Biosciences, Inc. (CLRB)
- CNS Pharmaceuticals, Inc. (CNSP)
- Cyclacel Pharmaceuticals Inc. (CYCC)
- Diffusion Pharmaceuticals, Inc. (DFFN)
- Monopar Therapeutics Inc. (MNPR)
- Neurobo Pharmaceuticals Inc. (NRBO)
- Soligenix, Inc. (SNGX)
- Sonnet Biotherapeutics Holdings, Inc. (SONN)

Role of the Chief Executive Officer. Annually, our CEO provides the Compensation Committee with an evaluation of his performance that is based, in large part, upon performance of the Company and as our lead representative to the investment community. The Compensation Committee evaluates our CEO on these and other criteria. The total compensation package for our CEO is based on the Compensation Committee's evaluation, and reflects his performance, the performance of the Company and competitive industry practices.

Role of Other Executive Officers. Our CEO makes recommendations to the Compensation Committee on all compensation actions (other than his own compensation) affecting our other executive officers, if any. In developing his recommendation for an executive officer, our CEO considers the self-evaluation prepared by the executive officer, the recommendations of his executive team, as well as his own evaluation. Our CEO's evaluation includes an assessment of the impact that the executive officer has had on the Company during the award year and their overall value to the Company as a senior leader. The Compensation Committee is provided with our CEO's evaluation of each executive officer's performance and contributions to the Company. The Compensation Committee considers the information and recommendations provided by our CEO and provides a recommendation to the Board for non-CEO executive officer base salary, annual cash incentive awards and grants of long-term incentive awards, which are subject to Board approval. During 2022, our CEO was our only executive officer.

2022 Performance Analysis and Compensation Decisions

In its meeting in the first quarter of each year, the Compensation Committee determines base salaries for the current year, the annual performance incentive awards for prior-year performance and the long-term incentive awards for the current year. Each element is reviewed annually, as well as at the time of a promotion, other change in responsibilities, other significant corporate events or a material change in market conditions. Variances in the amount of compensation awarded to each executive officer generally reflect differences in individual responsibility and experience.

Base Salary. In recent years, the Compensation Committee has adjusted executive base salaries with the goal of providing a stable base of competitive cash compensation while rewarding corporate and

individual performance through annual performance incentive awards. During 2022, the annual base salary for Mr. Nielsen was $555,000, compared to $530,000 during 2021.

Annual Performance Incentive Awards. During 2022, the Compensation Committee approved a discretionary annual cash performance incentive award for Mr. Nielsen in the amount of $150,000.

Long-term Incentive Awards. The Compensation Committee believes that long-term incentive awards should provide for a retention incentive with a strong tie to relative long-term stockholder return. Accordingly, the Compensation Committee grants stock option awards that typically vest over a four-year period. During 2022, the Board approved a long-term incentive award in the form of stock options to Mr. Nielsen based on recommendations from the Compensation Committee. Specifically, in March 2022, Mr. Nielsen was awarded a time-vested stock option award to purchase 90,000 shares of our common stock. The terms of the stock option grant require, among other things, that Mr. Nielsen continue to provide services over the vesting period of the options. The stock options vest over a four-year period from the date of the grant, with one-fourth (1/4) of the stock options vesting on the first anniversary of such grant, and the remaining stock options vesting thereafter in equal monthly increments equal to one-forty-eighth (1/48) of the stock options over the next three years, based on continuing service to the Company.

Summary Compensation Table

The following table sets forth information with respect to the compensation of our sole NEO for the fiscal years ended December 31, 2022 and 2021.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Option Awards ($)[1]	All Other Compensation ($)	Total ($)
Peter H. Nielsen, CEO, CFO, President, Chairman, Director	2022	$555,000	$150,000	$288,669	$ 17,678[2]	$1,011,347
	2021	$530,000	$150,000	$622,505	$ 179[3]	$1,302,684

(1) The amounts reported in this column reflect the aggregate grant date fair value of equity awards granted during the applicable year computed in accordance with FASB ASC Topic 718. See Note 9 to our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2021 for assumptions made by us in such valuation with respect to the option grant in 2021. See Note 8 to our consolidated financial statements included in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 for assumptions made by us in such valuation with respect to the grant in 2022.

(2) The amounts reported include Medicare premiums of $12,822, insurance copayments of $3,471 and certain other benefits including life insurance premiums paid by the Company for Mr. Nielsen.

(3) The amounts reported represent life insurance premiums paid by the Company for Mr. Nielsen.

Grants of Plan-Based Awards Table

The following table contains information about grants of plan-based stock options to our sole NEO during fiscal year 2022:

Name	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards			All Other Stock Awards: Number of Shares of Stock or Units (#)	All Other Option Awards: Number of Securities Underlying Options (#)	Exercise or Base Price of Option Awards ($/Sh)	Grant Date Fair Value of Stock Awards ($)[2]
		Threshold ($)	Target ($)	Maximum ($)				
Mr. Nielsen[1]	3/23/2022				—	90,000	$ 3.61	$ 3.20

(1) Reflects time-vested stock options awarded under our 2017 Stock Incentive Plan. The options vest over

a four-year period from the date of grant, with one-fourth (1/4) of the options vesting on the first anniversary of such grant, and the remaining options vesting thereafter in equal monthly increments equal to one-forty-eighth (1/48) of the options over the next three years.

(2) The amounts in this column reflect the aggregate grant date fair value of equity awards granted during the applicable years computed in accordance with FASB ASC Topic 718. See Note 8 to our consolidated financial statements included in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 for assumptions made by us in such valuation.

Narrative Disclosures to Summary Compensation Table and Grants of Plan-Based Awards Table

Please see the discussion under the heading "2022 Performance Analysis and Compensation Decisions" above.

Outstanding Equity Awards at December 31, 2022

The following table sets forth certain information with respect to outstanding stock option awards of our sole NEO for the fiscal year ended December 31, 2022.

Name	Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price ($)	Option Expiration Date
Mr. Nielsen[(1)]	7,500	—	—	$ 92.00	August2023
Mr. Nielsen[(1)]	2,761	—	—	$550.00	April 2026
Mr. Nielsen[(1)]	6,500	—	—	$ 36.80	April 2028
Mr. Nielsen[(2)]	14,063	937	—	$ 18.40	March 2029
Mr. Nielsen[(3)]	10,313	4,687	—	$ 3.25	March 2030
Mr. Nielsen[(4)]	53,125	31,875	—	$ 5.21	June 2030
Mr. Nielsen[(5)]	43,750	56,250	—	$ 7.02	March 2031
Mr. Nielsen[(6)]	—	100,000	—	$ 3.61	March 2032

(1) All of these options granted are fully vested.

(2) This option vests over a four-year period from the date of grant, March 28, 2019, with one-fourth (1/4) of the shares vesting on the first anniversary of such grant, and the remaining shares vesting thereafter in equal monthly increments equal to one-forty-eighth (1/48) of the shares over the next three years, based on continuing service to the Company.

(3) This option vests over a four-year period from the date of grant, March 28, 2020, with one-fourth (1/4) of the shares vesting on the first anniversary of such grant, and the remaining shares vesting thereafter in equal monthly increments equal to one-forty-eighth (1/48) of the shares over the next three years, based on continuing service to the Company.

(4) This option vests over a four-year period from the date of grant, June 16, 2020, with one-fourth (1/4) of the shares vesting on the first anniversary of such grant, and the remaining shares vesting thereafter in equal monthly increments equal to one-forty-eighth (1/48) of the shares over the next three years, based on continuing service to the Company.

(5) This option vests over a four-year period from the date of grant, March 31, 2021, with one-fourth (1/4) of the shares vesting on the first anniversary of such grant, and the remaining shares vesting thereafter

in equal monthly increments equal to one-forty-eighth (1/48) of the shares over the next three years, based on continuing service to the Company.

(6) This option vests over a four-year period from the date of grant, March 23, 2022, with one-fourth (1/4) of the shares vesting on the first anniversary of such grant, and the remaining shares vesting thereafter in equal monthly increments equal to one-forty-eighth (1/48) of the shares over the next three years, based on continuing service to the Company.

Employment Agreement and Potential Payments Upon Termination or Change of Control

Bio-Path Subsidiary has entered into an employment agreement with its Chief Executive Officer, Peter H. Nielsen, dated May 1, 2007 (the "Nielsen Employment Agreement").

The Nielsen Employment Agreement provides for a base salary, as approved by the Compensation Committee, of $555,000. The Nielsen Employment Agreement provides that Mr. Nielsen is entitled to certain severance payments and benefits in the event he is terminated without Cause (as defined in the Nielsen Employment Agreement) or resigns for Good Reason (as defined in the Nielsen Employment Agreement), subject to Mr. Nielsen's continued compliance with the Confidentiality Agreement (as defined in the Nielsen Employment Agreement) and execution of a general release of all claims against us. In addition, the Nielsen Employment Agreement also provides that Mr. Nielsen is entitled to certain severance payments and benefits in the event he is terminated without Cause or resigns for Good Reason within three months before or 12 months following a Change in Control (as defined in the Nielsen Employment Agreement), subject to Mr. Nielsen's continued compliance with the Confidentiality Agreement and execution of a general release of all claims against us.

The severance payments and benefits include the following in the event Mr. Nielsen is terminated without Cause or resigns for Good Reason: (i) any accrued but untaken vacation days of Mr. Nielsen will be paid to the extent not yet paid; (ii) the equivalent of Mr. Nielsen's base salary will be paid for a period of three months; and (iii) subject to certain restrictions, for three months after Mr. Nielsen's date of termination, the Company will continue its contributions toward Mr. Nielsen's health care, dental, disability and life insurance benefits on the same basis as immediately prior to the date of termination.

The severance payments and benefits include the following in the event Mr. Nielsen is terminated without Cause or resigns for Good Reason within three months before or 12 months following a Change in Control: (i) any unvested stock or stock options awarded to Mr. Nielsen shall immediately vest upon the occurrence of Mr. Nielsen's termination of employment; (ii) Mr. Nielsen's base salary will be paid through the termination date, and any accrued but untaken vacation days of Mr. Nielsen will be paid to the extent not yet paid; (iii) Mr. Nielsen's normal post-termination benefits will be paid in accordance with our retirement, insurance and other benefit plan arrangements (including non-qualified deferred compensation plans); (iv) the equivalent of Mr. Nielsen's base salary will be paid for a period of three months; (v) subject to certain restrictions, for six months after Mr. Nielsen's date of termination, or such longer period as may be provided by the terms of the appropriate plan, program, practice of policy, Mr. Nielsen's health care, dental, disability and life insurance benefits will be provided on the same basis as immediately prior to the date of termination; and (vi) subject to certain restrictions and to the extent not otherwise paid or provided, we will pay or provide any other amounts or benefits required to be paid or provided or which Mr. Nielsen is eligible to receive following his termination of employment under any of our plans, programs, policies, practices, contracts or agreements.

Potential severance payments and benefits to be paid pursuant to the Nielsen Employment Agreement assuming a termination or Change in Control occurred on December 31, 2022 are set forth in the table below.

Name	Benefit	Triggering Event: Termination without Cause or Resignation for Good Reason ($)	Triggering Event: Termination without Cause or Resignation for Good Reason within 3 Months Before or 12 Months Following a Change in Control ($)
Peter H. Nielsen	Market Value of Stock Vesting	$ —	$ —[1]
	Accrued Vacation Days	51,231	51,231
	Three Months' Base Salary	138,750	138,750
	Continuation of Benefits	1,622	3,244
	Total	$ 191,603	$ 193,225

(1) Mr. Nielsen's stock option awards would immediately become vested, and the value of the acceleration would be equal to the vesting shares multiplied by the excess of the then current stock price over the exercise price of the options. For purposes of this table, we have calculated the value of the acceleration using the closing price of our common stock on December 30, 2022, or $1.51 per share.

Director Compensation

The following table presents summary information for the year ended December 31, 2022 regarding the compensation of the members of our Board (other than Mr. Nielsen).

Name	Fees Earned or Paid in Cash	Option Awards	All Other Compensation	Total
Heath W. Cleaver	$73,000[1]	$33,433[2]	$ —	$106,433
Paul D. Aubert	$61,500[1]	$33,433[2]	$ —	$ 94,933
Martina Molsbergen[3]	$24,188[1]	$ —	$ —	$ 24,188
Aline Sherwood[4]	$32,250[1]	$33,853[2]	$ —	$ 66,103
Douglas P. Morris[5]	$ —	$37,055[6]	$73,626[7]	$110,681

(1) These amounts reflect cash fees paid to or earned by our non-employee directors for attending Board or committee meetings during the year ended December 31, 2022.

(2) In March 2022, our non-employee directors who were eligible at such time earned or received an annual grant of an option to purchase 10,000 shares of our common stock, which was the only grant received by such directors during 2022. The amounts in this column reflect the aggregate grant date fair value of equity awards granted during the year computed in accordance with FASB ASC Topic 718. See Note 8 to our consolidated financial statements included in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 for assumptions made by us in such valuation.

(3) Ms. Molsbergen resigned from the Board on February 14, 2022.

(4) Ms. Sherwood was appointed to the Board on March 31, 2022 to fill the vacancy that resulted from the resignation of Ms. Molsbergen.

(5) Mr. Morris was hired by the Company in 2016 as the Company's Director of Investor Relations. Accordingly, Mr. Morris is not considered a non-employee director and does not receive compensation for his services as a member of the Board.

(6) Option awards granted to Mr. Morris reflect compensation received by Mr. Morris in his capacity as the Company's Director of Investor Relations.

(7) This amount reflects compensation received by Mr. Morris in his capacity as the Company's Director of Investor Relations, which includes base salary and certain other benefits.

The following table reflects the aggregate number of outstanding options (including unexercisable options) held by our directors (other than Mr. Nielsen) as of December 31, 2022.

Director	Number of shares underlying outstanding options
Heath W. Cleaver	32,500
Paul D. Aubert	32,000
Aline Sherwood	10,000
Douglas P. Morris[(1)]	42,640

(1) Mr. Morris's outstanding options include 3,265 options earned while serving as an executive officer of the Company. Mr. Morris ceased serving in his officer capacities in June 2014. However, Mr. Morris was hired by the Company in 2016 as the Company's Director of Investor Relations. Accordingly, Mr. Morris is not considered a non-employee director.

Narrative to Director Compensation Table

In 2022, our non-employee directors received cash and equity compensation in accordance with our non-employee director compensation structure. Directors who were also employed by the Company did not receive compensation for services as directors. During 2022, our compensation structure for all non-employee directors was as follows:

Cash Compensation Program

Non-employee directors received as compensation an annual cash retainer in the amount of $40,000.

The chairs of the respective Board committees also received as compensation the following amounts: (i) an annual cash retainer in the amount of $20,000 to the chair of the Audit Committee; (ii) an annual cash retainer in the amount of $10,000 to the chair of the Compensation Committee; (iii) an annual cash retainer in the amount of $8,000 to the chair of the Nominating/Corporate Governance Committee; and (iv) an annual cash retainer in the amount of $8,000 to the chair of the Business Development Committee.

Non-chair members of the respective Board committees also received as compensation the following amounts: (i) an annual cash retainer in the amount of $7,500 to each member of the Audit Committee; (ii) an annual cash retainer in the amount of $5,000 to each member of the Compensation Committee; and (iii) an annual cash retainer in the amount of $4,000 to each member of the Nominating/Corporate Governance Committee.

In addition to the foregoing cash compensation for Board and committee members, non-employee directors of the Board who spent significant time performing Board or committee service beyond the normal scope of their Board or committee responsibilities could receive up to $2,500 per diem at the discretion of the Chief Executive Officer of the Company.

Equity Compensation Program

Each non-employee director of the Board also received as compensation an annual stock option grant (a "Grant") of 10,000 shares of our common stock (the "Option Shares"). The exercise price of the Option Shares was determined by the Board, and the Option Shares vest over a one-year period from the date of the Grant, with the Option Shares vesting in equal monthly increments equal to one-twelfth (1/12) of the Option Shares, based on continuing service to the Company.

SELLING STOCKHOLDERS

This prospectus covers an aggregate of up to 800,000 shares of our common stock that may be sold or otherwise disposed of by the selling stockholders. Such shares (including shares that may be issued to the holder in lieu of fractional shares) are issuable to the selling stockholders upon the exercise of the Warrants we issued to the selling stockholders in certain private placement transactions. See "Description of Prior Registered Offering and Private Placement" above. When we refer to the "selling stockholders" in this prospectus, we mean the persons and entities listed in the table below, and their respective transferees, donees, pledgees, assignees and successors-in-interest who later come to hold any of the selling stockholders' interests in shares of the common stock other than through a public sale.

The following table sets forth certain information with respect to each selling stockholder, including (i) the shares of our common stock beneficially owned by the selling stockholder prior to this offering, (ii) the maximum number of shares being offered by the selling stockholder pursuant to this prospectus and (iii) the selling stockholder's beneficial ownership after completion of this offering, assuming that all of the Warrants are exercised and all of the shares covered hereby (but none of the other shares, if any, held by the selling stockholders) are sold. The registration of the shares of common stock issuable to the selling stockholders upon the exercise of the Warrants does not necessarily mean that the selling stockholders will sell all or any of such shares.

The table is based on information supplied to us by the selling stockholders, with beneficial ownership and percentage ownership determined in accordance with the rules and regulations of the SEC and includes voting or investment power with respect to shares of stock. This information does not necessarily indicate beneficial ownership for any other purpose. In computing the number of shares beneficially owned by a selling stockholder and the percentage ownership of that selling stockholder, shares of common stock subject to warrants held by that selling stockholder that are exercisable as of January 31, 2023, or exercisable within 60 days after January 31, 2023, are deemed outstanding. Such shares, however, are not deemed outstanding for the purposes of computing the percentage ownership of any other person. The percentage of beneficial ownership after this offering is based on 7,960,164 shares outstanding on January 31, 2023.

The registration of these shares of common stock does not mean that the selling stockholders will sell or otherwise dispose of all or any of those securities. The selling stockholders may sell or otherwise dispose of all, a portion or none of such shares from time to time. We do not know the number of shares, if any, that will be offered for sale or other disposition by any of the selling stockholders under this prospectus. Furthermore, the selling stockholders may have sold, transferred or disposed of the Warrants or the shares of common stock covered hereby in transactions exempt from the registration requirements of the Securities Act since the date on which we filed this prospectus.

Under the terms of the Warrants, a selling stockholder may not exercise Warrants to the extent that such selling stockholder, together with its affiliates, would beneficially own, after such exercise, more than 4.99% of the shares of common stock then outstanding (subject to the right of the selling stockholder to increase or decrease such beneficial ownership limitation upon notice to us, provided that such limitation cannot exceed 9.99%) and provided that any increase in the beneficial ownership limitation shall not be effective until 61 days after such notice is delivered. Substantially similar beneficial ownership limitations are found in other warrants to purchase common stock held by the selling stockholders, where applicable. The number of shares in the second column below does not reflect these beneficial ownership limitations. The selling stockholders may sell all, a portion or none of their shares in this offering. See "Plan of Distribution" below.

To our knowledge and except as noted below, none of the selling stockholders has, or within the past three years has had, any position, office or other material relationship with us or any of our predecessors or affiliates.

Selling Stockholders	Number of Shares Beneficially Owned Prior to the Offering	Percent	Maximum Number Offered by Selling Stockholder[6]	Number of Shares Beneficially Owned After Completion of Offering[7]	Percent[7]
Armistice Capital Master Fund Ltd.	180,000[1]	2.21%	180,000	—	—
CVI Investments, Inc.	311,515[2]	3.84%	160,000	151,515	1.73%
Hudson Bay Master Fund Ltd.	209,616[3]	2.57%	200,000	9,616	*
Intracoastal Capital, LLC	97,890[4]	1.22%	60,000	37,890	*
Walleye Opportunities Master Fund Ltd.	300,000[5]	3.68%	200,000	100,000	1.14%

* Less than 1%

(1) The shares of common stock reported herein are held by Armistice Capital Master Fund Ltd., a Cayman Islands exempted company (the "Master Fund"), and may be deemed to be indirectly beneficially owned by (i) Armistice Capital, LLC ("Armistice Capital"), as the investment manager of the Master Fund; and (ii) Steven Boyd, as the Managing Member of Armistice Capital. Armistice Capital and Steven Boyd disclaim beneficial ownership of the securities except to the extent of their respective pecuniary interests therein. The shares of common stock are issuable only upon the exercise of Warrants, which are subject to a 4.99% beneficial ownership limitation prohibiting the Master Fund from exercising any portion of those Warrants if such exercise would result in the Master Fund owning a percentage of our outstanding common stock exceeding the 4.99% ownership limitation after giving effect to the issuance of common stock in connection with the Master Fund's exercise of any portion of the Warrants.

(2) Consists of: (i) 151,515 shares of common stock underlying warrants issued on November 25, 2019 with an exercise price of $9.90 per share; and (ii) 160,000 shares of common stock underlying its Warrants. Heights Capital Management, Inc., the authorized agent of CVI Investments, Inc. ("CVI"), has discretionary authority to vote and dispose of the shares held by CVI and may be deemed to be the beneficial owner of these shares. Martin Kobinger, in his capacity as Investment Manager of Heights Capital Management, Inc., may also be deemed to have investment discretion and voting power over the shares held by CVI. Mr. Kobinger disclaims any such beneficial ownership of the shares.

(3) Consists of: (i) 9,616 shares of common stock underlying warrants issued on September 25, 2018 with an exercise price of $19.20 per share; and (ii) 200,000 shares of common stock underlying its Warrants. The securities are directly held by Hudson Bay Master Fund Ltd., a Cayman Islands exempted company (the "Hudson Bay Fund"). Hudson Bay Capital Management LP, the investment manager of Hudson Bay Master Fund Ltd., has voting and investment power over these securities. Sander Gerber is the managing member of Hudson Bay Capital GP LLC, which is the general partner of Hudson Bay Capital Management LP. Each of Hudson Bay Master Fund Ltd. and Sander Gerber disclaims beneficial ownership over these securities. The address of Hudson Bay Capital Management L.P. is 28 Havemeyer Place, 2nd Floor, Greenwich, CT 06830.

(4) Consists of: (i) 37,890 shares of common stock underlying warrants issued on November 25, 2019 with an exercise price of $9.90 per share; and (ii) 60,000 shares of common stock underlying its Warrants. The securities are directly held by Intracoastal Capital, LLC, a Delaware limited liability company ("Intracoastal"). Mitchell P. Kopin and Daniel B. Asher, each of whom are managers of Intracoastal, have shared voting control and investment discretion over the securities reported herein that are held by Intracoastal The address of Intracoastal Capital, LLC is 245 Palm Trail, Delray Beach, Florida 33483.

(5) Consists of: (i) 100,000 shares of common stock; and (ii) 200,000 shares of common stock underlying its Warrants. The securities are directly held by Walleye Opportunities Master Fund Ltd, a Cayman Islands exempted company (the "Master Fund"), and may be deemed to be indirectly beneficially owned by Walleye Capital LLC ("Walleye Capital"), as the investment manager of the Master Fund. Walleye Capital disclaims beneficial ownership of the securities. The address of the Master Fund is c/o Walleye Opportunities Master Fund Ltd, 2800 Niagara Lane North, Plymouth, Minnesota 55447.

(6) Represents the maximum number of shares of common stock that may be offered by the selling

stockholder based on the assumption that all of the outstanding Warrants held by the selling stockholder will be exercised for cash, irrespective of limitations on exercise.

(7) Represents the number of shares of common stock that will be beneficially owned by the selling stockholder after completion of this offering based on the assumptions that (i) all of the Warrants held by all selling stockholders will be exercised; (ii) all of the shares of common stock registered for resale by the registration statement of which this prospectus is a part will be sold and (iii) no other shares of common stock will be acquired or sold by the selling stockholders before completion of this offering. Applicable percentage ownership following the offering is based on 8,760,164 shares of common stock that would be outstanding assuming the exercise of all of the Warrants and all shares registered by this prospectus are sold in the offering.

PLAN OF DISTRIBUTION

The selling stockholders, including their transferees, donees, pledgees, assignees and successors-in-interest, may sell, transfer or otherwise dispose of any or all of the shares of common stock offered by this prospectus from time to time on The Nasdaq Capital Market or any other stock exchange, market or trading facility on which the shares are traded or in private transactions. These sales may be at fixed or negotiated prices. A selling stockholder may use any one or more of the following methods when selling the shares:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- in transactions through broker-dealers that agree with the selling stockholders to sell a specified number of shares at a stipulated price per share;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The selling stockholders may also sell shares under Rule 144 under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the selling stockholders may arrange for other broker-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser in amounts to be negotiated.

In connection with a sale of the shares or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our common stock short and deliver these securities to close out short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus, as supplemented or amended to reflect such transaction.

The selling stockholders and any broker-dealers or agents that are involved in selling the shares may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Because the selling stockholders may be deemed to be "underwriters" within the meaning of the Securities Act, the selling stockholders will be subject to the prospectus delivery requirements of the Securities Act.

To our knowledge, there are currently no plans, arrangements or understandings between the selling stockholders and any underwriter, broker-dealer or agent regarding the sale of the shares covered by this prospectus by such selling stockholders. If any selling stockholder notifies us that a material arrangement has been entered into with an underwriter, broker-dealer or other agent for the sale of shares through a block trade, special offering or secondary distribution, we may be required to file a prospectus supplement pursuant to applicable SEC rules promulgated under the Securities Act.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale shares may not simultaneously engage in market making activities with respect to our common

stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the selling stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of shares of our common stock by the selling stockholders or any other person. We will make copies of this prospectus available to the selling stockholders and have informed the selling stockholders of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

We will not receive any proceeds from the sale of the shares by the selling stockholders. We will bear all costs, expenses and fees in connection with the registration of the shares.

DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock is a summary. It is not complete and is subject to and qualified in its entirety by our certificate of incorporation and first amended and restated bylaws, each of which is incorporated by reference into this prospectus. See the sections titled "Where You Can Find More Information" and "Information Incorporated by Reference." As of the date of this prospectus, our certificate of incorporation authorizes us to issue 200,000,000 shares of common stock, par value $0.001 per share, and 10,000,000 shares of preferred stock, par value $0.001 per share. As of January 31, 2023, there were 7,960,164 shares of common stock issued and outstanding and no shares of preferred stock issued and outstanding.

Common Stock

Holders of common stock are entitled to one vote for each share held in the election of directors and on all other matters submitted to a vote of stockholders. Cumulative voting of shares of common stock is prohibited. Accordingly, holders of a majority of the shares of common stock entitled to vote in any election of directors may elect all of the directors standing for election.

Subject to the prior rights of the holders of any outstanding preferred stock, holders of common stock are entitled to receive dividends when, as and if declared by our board of directors out of funds legally available therefor. Upon the liquidation, dissolution or winding up of our company, the holders of common stock are entitled to receive ratably the assets of our company remaining after payment of all liabilities and payment to holders of preferred stock if such preferred stock has an involuntary liquidation preference over the common stock. Holders of common stock have no preemptive, subscription, redemption or conversion rights. The outstanding shares of common stock are, and the shares offered by us in this offering will be, when issued and paid for, validly issued, fully paid and nonassessable.

As of February 2, 2023, there were approximately 190 holders of record of our common stock.

Preferred Stock

The board of directors is authorized, without any further notice to or action of the stockholders, to issue 10,000,000 shares of preferred stock in one or more series and to determine the relative rights, preferences and privileges of the shares of any such series.

Limitation on Liability and Indemnification of Officers and Directors

Our certificate of incorporation and first amended and restated bylaws provide for indemnification of our officers and directors to the fullest extent permitted by Delaware law. Our certificate of incorporation and first amended and restated bylaws limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. We maintain directors and officers liability insurance.

Anti-Takeover Effects of Provisions of Our Certificate of Incorporation, Our Bylaws and Delaware Law

Some provisions of Delaware law and our certificate of incorporation and our first amended and restated bylaws contain provisions that could have the effect of delaying, deterring or preventing another party from acquiring or seeking to acquire control of us. These provisions are intended to discourage certain types of coercive takeover practices and inadequate takeover bids and to encourage anyone seeking to acquire control of us to negotiate first with our board of directors. However, these provisions may also delay, deter or prevent a change in control or other takeover of our company that our stockholders might consider to be in their best interests, including transactions that might result in a premium being paid over the market price of our common stock and also may limit the price that investors are willing to pay in the future for our common stock. These provisions may also have the effect of preventing changes in our management.

Our certificate of incorporation and first amended and restated bylaws include anti-takeover provisions that:

- authorize our board of directors, without further action by the stockholders, to issue shares of preferred stock in one or more series, and with respect to each series, to fix the number of shares constituting that series and establish the rights and other terms of that series;

- establish advance notice procedures for stockholders to submit nominations of candidates for election to our board of directors and other proposals to be brought before a stockholders meeting;
- provide that our first amended and restated bylaws may be amended by our board of directors without stockholder approval;
- limit our stockholders' ability to call special meetings of stockholders;
- allow our directors to establish the size of the board of directors by action of the board, subject to a minimum of three members;
- provide that vacancies on our board of directors or newly created directorships resulting from an increase in the number of our directors may be filled only by a majority of directors then in office, even though less than a quorum; and
- do not give the holders of our common stock cumulative voting rights with respect to the election of directors.

Business Combinations

Section 203 of the Delaware General Corporation Law provides that we may not engage in certain "business combinations" with any "interested stockholder" for a three-year period following the time that the person became an interested stockholder, unless:

- prior to the time that person became an interested stockholder, our board of directors approved either the business combination or the transaction which resulted in the person becoming an interested stockholder;
- upon consummation of the transaction which resulted in the person becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding certain shares; or
- at or subsequent to the time the person became an interested stockholder, the business combination is approved by the board of directors and by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, consolidation, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. Subject to certain exceptions, an interested stockholder is a person who, together with that person's affiliates and associates, owns, or within the previous three years owned, 15% or more of our voting stock. However, in the case of our company, the sponsors and any of their respective permitted transferees receiving 15% or more of our voting stock, such stockholders will not be deemed to be interested stockholders regardless of the percentage of our voting stock owned by them. The statute could prohibit or delay mergers or other takeover or change in control attempts with respect to us and, accordingly, may discourage attempts to acquire us.

Listing

Our common stock is listed for trading on The Nasdaq Capital Market under the symbol "BPTH."

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC, 6201 15th Avenue, Brooklyn, New York 11219. Its phone number is (800) 937-5449.

LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Winstead PC, Houston, Texas.

EXPERTS

The consolidated financial statements of Bio-Path Holdings, Inc. appearing in Bio-Path Holdings, Inc's Annual Report (Form 10-K) for the year ended December 31, 2021, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the securities being offered hereby. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement or the exhibits and schedules filed therewith. For further information about us and the securities offered hereby, we refer you to the registration statement and the exhibits filed thereto. Statements contained in this prospectus regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement.

We file annual, quarterly and current reports, proxy statements and other information with the 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, including us. The SEC's Internet site can be found at *http://www.sec.gov*. In addition, we make available on or through our Internet site copies of these reports as soon as reasonably practicable after we electronically file or furnished them to the SEC. Our Internet site can be found at *http://www.biopathholdings.com*. The information contained in, or that can be accessed through, our website is not incorporated by reference in, and is not part of, this prospectus.

INFORMATION INCORPORATED BY REFERENCE

We are incorporating by reference into this prospectus certain information that we file with the SEC, which means that we are disclosing important information to you by referring you to those documents. The information incorporated by reference is deemed to be part of this prospectus, except for information incorporated by reference that is superseded by information contained in this prospectus. This means that you must look at all of the SEC filings that we incorporate by reference to determine if any statements in the prospectus or any document previously incorporated by reference have been modified or superseded. This prospectus incorporates by reference the documents set forth below that we have previously filed with the SEC:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2021;

  our Quarterly Reports on Form 10-Q for the quarters ended March 31, June 30, and September 30, 2022;

- our Current Reports on Form 8-K filed with the SEC on February 18, 2022, February 25, 2022, April 6, 2022 (other than information furnished under Item 7.01 and exhibits related thereto) and December 20, 2022;

- our Definitive Proxy Statement on Schedule 14A relating to our 2022 Annual Meeting of Stockholders, filed October 28, 2022; and

- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on March 5, 2014, including all amendments and reports filed for purposes of updating such description.

Any information in any of the foregoing documents will automatically be deemed to be modified or superseded to the extent that information in this prospectus or in a later filed document that is incorporated or deemed to be incorporated herein by reference modifies or replaces such information.

We also incorporate by reference all documents we subsequently file in the future pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the effective date of the registration statement of which this prospectus forms a part prior to the termination of the offering. These documents include periodic reports, such as Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K (except, in any such case, the portions furnished and not filed pursuant to Item 2.02, Item 7.01 or otherwise), as well as any proxy statements.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits which are specifically incorporated by reference into such documents. You may request a copy of these filings at no cost, by writing to or telephoning us at the following address:

Bio-Path Holdings, Inc.
Attention: Secretary
4710 Bellaire Boulevard, Suite 210
Bellaire, Texas 77401
(832) 742-1357

800,000 SHARES OF COMMON STOCK

August 7, 2023