

PROSPECTUS

PREDICTIVE ONCOLOGY INC.

1,530,067 Shares of Common Stock

This prospectus relates to the proposed resale or other disposition from time to time of up to 1,530,067 shares of Predictive Oncology Inc. (“Predictive”) common stock, \$0.01 par value per share, by the selling stockholders identified in this prospectus. We are not selling any shares of common stock under this prospectus and will not receive any of the proceeds from the sale or other disposition of common stock by the selling stockholder. We will, however, receive the proceeds of any cash exercises of warrants.

The selling stockholders or their pledgees, assignees or successors-in-interest may offer and sell or otherwise dispose of the shares of common stock described in this prospectus from time to time through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. The selling stockholders will bear all commissions and discounts, if any, attributable to the sales of shares. We will bear all other costs, expenses and fees in connection with the registration of the shares. See “Plan of Distribution” beginning on page 6 for more information about how the selling stockholders may sell or dispose of their shares of common stock.

Our common stock is listed on the Nasdaq Capital Market under the symbol “POAI.” On December 16, 2019, the last reported per share price of our common stock on the Nasdaq Capital Market was \$3.05 per share.

Investing in our common stock involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks that we have described on page 3 of this prospectus under the caption “Risk Factors” and in the documents incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission 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 December 20, 2019.

TABLE OF CONTENTS

	<u>Page</u>
About This Prospectus	i
Prospectus Summary	1
Risk Factors	5
Cautionary Note Regarding Forward-Looking Statements	7
Use of Proceeds	7
Selling Stockholders	8
Plan of Distribution	9
Legal Matters	11
Experts	11
Where You Can Find More Information	12
Incorporation of Certain Information by Reference	13

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we have filed with the Securities and Exchange Commission (the “SEC”) pursuant to which the selling stockholders named herein may, from time to time, offer and sell or otherwise dispose of the securities covered by this prospectus. You should not assume that the information contained in this prospectus is accurate on any date subsequent to the date set forth on the front cover of this prospectus or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus is delivered or securities are sold or otherwise disposed of on a later date. It is important for you to read and consider all information contained in this prospectus, including the Information Incorporated by Reference herein, in making your investment decision. You should also read and consider the information in the documents to which we have referred you under the captions “Where You Can Find More Information” and “Incorporation of Information by Reference” in this prospectus.

Neither we nor the selling stockholders have authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus. You should not rely upon any information or representation not contained or incorporated by reference in this prospectus. This prospectus does not constitute an offer to sell or the solicitation of an offer to buy any of our securities other than the securities covered hereby, nor does this prospectus constitute an offer to sell or the solicitation of an offer to buy any securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about, and to observe, any restrictions as to the offering and the distribution of this prospectus applicable to those jurisdictions.

We further note that the representations, warranties and covenants made in any agreement that is filed as an exhibit to any document that is incorporated by reference in the prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

Unless the context otherwise requires, references in this prospectus to “Predictive,” the “Company,” “we,” “us,” and “our” refer to Predictive Oncology Inc.

PROSPECTUS SUMMARY

The following is a summary of what we believe to be the most important aspects of our business and the offering of our securities under this prospectus. We urge you to read this entire prospectus, including the more detailed financial statements, notes to the financial statements and other information incorporated by reference from our other filings with the SEC. Each of the risk factors could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our securities.

The Company

Predictive Oncology (NASDAQ: POAI) operates in two business areas: first, applying artificial intelligence to personalized medicine and drug discovery to provide personalized medicine solutions for patients and clinicians as well as clients in the pharmaceutical, diagnostic, and biotech industries, and second, production of the FDA-approved STREAMWAY® System for automated, direct-to-drain medical fluid disposal.

Predictive's medicine business is committed to improving the effectiveness of cancer therapy using the power of artificial intelligence (AI) applied to rich data diseases databases. This business launched with Predictive's acquisition of 25% of the capital stock of Helomics Holding Corporation ("Helomics"), a precision medicine company and integrated clinical contract research organization whose mission is to improve patient care by partnering with pharmaceutical, diagnostic, and academic organizations to bring innovative clinical products and technologies to the marketplace. In addition to its proprietary precision diagnostics for oncology, Helomics offers boutique Contract Research Organization (CRO) services that leverage their patient-derived tumor models, coupled to a wide range of multi-omics assays (genomics, proteomics and biochemical), and a proprietary bioinformatics platform (D-CHIP) to provide a tailored solution to our clients' specific needs.

Predictive has also formed a subsidiary, TumorGenesis, to pursue a new rapid approach to growing tumors in the laboratory, which essentially "fools" the cancer cells into thinking they are still growing inside the patient. Predictive and Helomics have also announced a proposed joint venture with GLG Pharma focused on using their combined technologies to bring personalized medicines and testing to ovarian and breast cancer patients, especially those who present with ascites fluid (over one-third of patients). The growth strategy in this business includes securing new partnerships and considering acquisitions in the precision medicine space.

On October 26, 2018, Predictive entered into an Amended and Restated Agreement and Plan of Merger (the "Merger Agreement") with Helomics Acquisition, Inc., a wholly owned subsidiary of the Company ("Merger Sub"), and Helomics. The Merger (as defined below) will provide the Company with full access to Helomics' suite of Artificial Intelligent, precision diagnostic and integrated CRO capabilities, which improve patient care and advance the development of innovative clinical products and technologies for the treatment of cancers. The Merger Agreement amends and restates the Agreement and Plan of Merger dated June 28, 2018, previously entered into among the Company, Merger Sub and Helomics. The Merger Agreement contemplates a forward triangular merger whereby Helomics will merge with and into Merger Sub, with Merger Sub surviving the merger as a wholly-owned operating subsidiary of the Company (the "Merger").

Sold through the Skyline Medical business of Predictive Oncology, The STREAMWAY System virtually eliminates staff exposure to blood, irrigation fluid and other potentially infectious fluids found in the healthcare environment. Antiquated manual fluid handling methods that require hand carrying and emptying filled fluid canisters present an exposure risk and potential liability. Skyline Medical's STREAMWAY System fully automates the collection, measurement, and disposal of waste fluids and is designed to: 1) reduce overhead costs to hospitals and surgical centers; 2) improve compliance with OSHA and other regulatory agency safety guidelines; 3) improve efficiency in the operating room, and radiology and endoscopy departments, thereby leading to greater profitability; and 4) provide greater environmental stewardship by helping to eliminate the approximately 50 million potentially disease-infected canisters that go into landfills each year in the U.S.

For more information regarding Predictive's businesses, please carefully consider the information contained in our periodic reports filed with the SEC, which are incorporated by reference in this prospectus. Before making an investment decision, you should carefully consider such information as well as other information we include or incorporate by reference in this prospectus.

Description of the Private Placement Transactions

The shares being offered by this prospectus were issued, or are issuable under warrants or convertible securities issued, in the transactions described below.

Amendments to and Extensions of Promissory Note Issued to L2 Capital, LLC

On September 27, 2019, the Company entered into an amendment to the Amended and Restated Senior Secured Promissory Note (the “L2 Note”) dated September 28, 2018 and amended and restated as of February 7, 2019 issued to L2 Capital, LLC (“L2”). Under the amendment, the maturity date of the L2 Note was extended from September 28, 2019 to December 31, 2019. In exchange for such extension, the outstanding principal amount of the L2 Note was increased by \$120,000, such that, as of the Effective Date, the outstanding principal amount owed under the L2 Note is \$1,903,295.38. Under the amendment, through October 15, 2019, L2 waived its rights under the L2 Note to have the L2 Note repaid from the proceeds of any financing consummated by the Company. In exchange for such waiver, the Company issued 15,000 shares of common stock to L2. The shares offered hereby also include any additional shares issuable upon conversion of the L2 Note, as well as shares issuable upon the exercise of certain warrants issued to L2 in September 2018.

On December 12, 2019, the Company entered into a second amendment to the L2 Note. Under the second amendment, the maturity date of the L2 Note was extended from December 31, 2019 to March 31, 2020. In exchange for such extension, the outstanding principal amount of the L2 Note was increased by \$120,000, such that, as of the effective date of the second amendment, the outstanding principal amount owed under the L2 Note is \$1,909,104. Under the second amendment, through March 31, 2020, the holder waived its rights under the L2 Note to have the L2 Note repaid from the proceeds of any financing consummated by the Company. In exchange for such waiver, the Company issued an additional 15,000 shares of common stock to the holder.

Promissory Note Issued to Oasis Capital, LLC

On September 27, 2019, the Company entered into a Securities Purchase Agreement (the “Securities Purchase Agreement”) with Oasis Capital, LLC (“Oasis”). Pursuant to the Securities Purchase Agreement, as of the Effective Date, the Company issued a promissory note to Oasis (the “Oasis Note”) in the original principal amount of \$847,500 in exchange for an investment of \$700,000. Pursuant to a Security Agreement between the Company and Oasis (the “Security Agreement”), the Company granted to the Oasis a security interest in its assets to secure repayment of the Oasis Note. As additional consideration for the investment, the Company issued an aggregate 88,574 shares of its common stock (the “Inducement Shares”) to Oasis plus a warrant (the “Warrant”) to acquire up to 68,237 shares of the Company’s common stock at an exercise price of \$6.21 per share. The Warrant is exercisable beginning on the sixth month anniversary of September 27, 2019 through the fifth-year anniversary thereof. Oasis has piggyback registration rights with respect to the Inducement Shares. The maturity date of the Oasis Note is six months from the September 27, 2019. The Oasis Note accrues interest at a rate of 8% per annum (with six months of interest guaranteed). The Oasis Note may be prepaid with a prepayment premium of 20%.

Series E Convertible Preferred Stock Offering

On June 13, 2019, Predictive filed with the Secretary of State of the State of Delaware a Certificate of Designation of Preferences, Rights and Limitations of Series E Convertible Preferred Stock, par value \$0.01 per share (the “Series E Stock”) and began a private placement of the Series E Stock. The rights and preferences of the Series E Stock, including the terms under which the Series E Stock is convertible into the Company’s common stock, are described in the Form 8-K filed by the Company on June 19, 2019. Pursuant to the securities purchase agreement, the investors have certain piggyback registration rights covering the shares of common stock issuable upon conversion of the Series E Stock with respect to certain registration statements filed by the Company, including the one of which this prospectus forms a part. The Company sold and issued 257.7 shares of Series E Stock, which shares are currently outstanding. Each share of Series E Stock is convertible into 0.056857% of the Company’s outstanding shares of common stock on the date of conversion. The shares become convertible at the option of the holder commencing on December 13, 2019. Based on the 3,925,007 shares of our common stock outstanding as of December 3, 2019, each share of Series E Stock would be convertible into 2,232 shares of common stock, and the shares of Series E Stock in the aggregate would be convertible into 575,186 shares of common stock. The conversion of the Series E Stock was originally subject to limitations under certain share caps; however, at the special meeting of stockholders described under “Recent Developments” below, the stockholders voted to approve the issuance of shares in excess of the applicable share caps.

Certain holders of Series E Stock have requested that the Company include their shares of Series E Stock in this prospectus. For additional information, see “Selling Stockholders” below.

Recent Developments

Special Stockholders Meeting. On October 23, 2019, we held a special meeting of stockholders at which the following actions were taken: (1) approval of an amendment of the Company's certificate of incorporation to effect a reverse stock split of the outstanding shares of its common stock at a ratio of not less than one-for-two (1:2) and not more than one-for-fifteen (1:15) (the "Reverse Split Proposal"); (2) approval, pursuant to Nasdaq Listing Rule 5635, of the issuance of shares of common stock of the Company in excess of applicable share caps upon conversion of the outstanding shares of Series E Convertible Preferred Stock; and (3) approval, pursuant to Nasdaq Listing Rule 5635, of the issuance of shares of common stock of the Company pursuant to an equity line of credit arrangement of up to \$15.0 million, when and if negotiated with a specific investor.

Reverse Stock Split. On October 25, 2019, following the approval of the Reverse Split Proposal, we filed an amendment to our Amended and Restated Certificate of Incorporation in order to effect a one-for-ten reverse stock split (the "Reverse Split"), effective for trading purposes on October 29, 2019. The number of authorized shares of common stock remains at 100,000,000. The purpose of the Reverse Split was to prevent our stock from being delisted from Nasdaq. As described in a Current Report on Form 8-K filed on May 17, 2019, we needed to regain compliance with Nasdaq's minimum bid price requirement no later than November 11, 2019, and we believed the Reverse Split was necessary to assure compliance with such requirement.

The numbers of shares of common stock and prices per share indicated in this prospectus have been adjusted to reflect the Reverse Split.

Equity Purchase Agreement. On October 24, 2019 (the "Execution Date"), the Company entered into an Equity Purchase Agreement (the "Equity Purchase Agreement") with Oasis Capital, LLC ("Oasis Capital"), providing for an equity financing facility (the "Equity Line"). The Equity Purchase Agreement provides that, upon the terms and subject to the conditions in the Equity Purchase Agreement, Oasis Capital is committed to purchase shares ("Put Shares") having an aggregate value of up to \$15.0 million (the "Maximum Commitment Amount") of our common stock during the period (the "Commitment Period") commencing on the Execution Date, and ending on the earlier of (i) the date on which Oasis Capital shall have purchased Put Shares equal to the Maximum Commitment Amount, (ii) October 24, 2022, or (iii) written notice of termination by the Company to Oasis Capital (which shall not occur at any time that Oasis Capital holds any of the Put Shares). In consideration for Oasis Capital's execution and delivery of, and performance under the Equity Purchase Agreement, the Company also issued to Oasis Capital 104,651 shares (the "Commitment Shares").

Under the terms of the Equity Purchase Agreement, Oasis Capital will not be obligated to purchase Put Shares unless and until certain conditions ("Closing Conditions") are met, including but not limited to a registration statement on Form S-1 being effective which registers Oasis Capital's resale of any Put Shares purchased by it under the Equity Line and the Commitment Shares. From time to time during the Commitment Period, provided that the Closing Conditions are satisfied, we may, in our sole discretion, provide Oasis Capital with a put notice (each, a "Put Notice"), to purchase a specified number of Put Shares. Each Put Notice may be either an Option 1 Put Notice or an Option 2 Put Notice.

Subject to certain limitations and conditions, an "Option 1 Put Notice" will require Oasis Capital to purchase the specified number of Put Shares up to the Option 1 Maximum Put Amount. The "Option 1 Maximum Put Amount" means: (a) if, on the trading day when the Put Notice is delivered (the "Put Date"), the closing bid price of our common stock on Nasdaq is below \$10.00, then "Option 1 Maximum Put Amount" shall mean the lesser of (i) 10,000 shares, or (ii) twenty percent (20%) of the average trading volume of our common stock in the ten (10) trading days immediately preceding the respective Put Date (the "Average Daily Trading Volume"); and (b) if, on the Put Date, the closing bid price of our common stock on Nasdaq is \$10.00 or greater but less than \$15.00, then "Option 1 Maximum Put Amount" shall mean the lesser of (i) 12,500 shares, or (ii) twenty percent (20%) of the Average Daily Trading Volume; and (c) if, on the Put Date, the closing bid price of our common stock on Nasdaq is \$15.00 or greater but less than \$20.00, then "Option 1 Maximum Put Amount" shall mean the lesser of (i) 15,000 shares, or (ii) twenty percent (20%) of the Average Daily Trading Volume; and (d) if, on the Put Date, the closing bid price of our common stock on Nasdaq is \$20.00 or greater, then "Option 1 Maximum Put Amount" shall mean the lesser of (i) 20,000 shares, or (ii) twenty percent (20%) of the Average Daily Trading Volume. The purchase price (the "Option 1 Purchase Price") will be equal to the lesser of (i) the one (1) lowest traded price of our common stock on Nasdaq on the date on which Oasis Capital receives the Put Shares (the "Clearing Date"), or (ii) the average of the three (3) lowest closing sale prices of our common stock on Nasdaq during the twelve (12) consecutive trading days immediately preceding the Clearing Date associated with the applicable Put Notice during which the Option 1 Purchase Price of our common stock is valued.

The Company may only deliver an Option 2 Put Notice if an Option 1 Put has been previously and effectively processed and its clearing date is the same day as the Put Notice for the subject Option 2 Put. Subject to certain other limitations and conditions, an "Option 2 Put Notice" will require Oasis Capital to purchase the specified number of Put Shares up to up to the Option 2 Maximum Put Amount. The "Option 2 Maximum Put Amount" means the lesser of (i) such amount that equals ten percent (10%) of the daily trading volume of our common stock on the Put Date, and (ii) Two Hundred Thousand Dollars (\$200,000.00). The purchase price (the "Option 2 Purchase Price") will be equal to the lesser of (i) 91% of the one (1) lowest traded price of our common stock on Nasdaq during the ten (10) consecutive trading days immediately preceding the trading day associated with the applicable Put Notice during which the Option 2 Purchase Price of our common stock is valued, or (ii) 93% of the volume weighted average price on the Clearing Date, or (iii) 93% of the closing bid price of our common stock on Nasdaq on the Clearing Date.

The Equity Purchase Agreement contains customary representations, warranties and agreements by the Company, customary conditions to closing, indemnification obligations of the Company, including for liabilities under the Securities Act, other obligations of the parties and termination provisions.

With regard to the purchase and resale of the Put Shares, Oasis Capital is an "underwriter" within the meaning of the Securities Act of 1933, as amended. Any broker-dealers or agents that are involved in resales of the Put Shares may be deemed "underwriters." The Company will receive net proceeds from the sale of the Put Shares directly from Oasis Capital pursuant to the Equity Purchase Agreement, however, the Company will not receive any proceeds from the resale of the Put Shares by Oasis Capital thereafter.

The foregoing description of the terms and conditions of the Equity Purchase Agreement is not complete and is qualified in its entirety by the full text of the Equity Purchase Agreement, which was filed as Exhibit 10.1 to a Current Report on Form 8-K filed on October 25, 2019 and is incorporated herein by this reference.

Registration Rights Agreement. In connection with the Equity Line, we also entered into a Registration Rights Agreement, dated the Execution Date, with Oasis Capital (the "Registration Rights Agreement"), pursuant to which we agreed to register for resale any Put Shares purchased by Oasis Capital under the Equity Line and the Commitment Shares (the "Registrable Securities") in an initial registration statement (the "Initial Registration Statement") on Form S-1 to be filed with the Securities and Exchange Commission (the "SEC") by the fifth day after the Execution Date. The Company is obligated to use its reasonable best efforts to have the Initial Registration Statement and any amendment thereto declared effective by the SEC at the earliest possible date. In the event the number of shares available under the Initial Registration Statement is insufficient to cover all of the Registrable Securities, the Company must amend the Initial Registration Statement or file a new registration statement, so as to cover all of the Registrable Securities as soon as practicable, but in any event not later than ten (10) business days after the necessity therefor arises, subject to any limits that may be imposed by the SEC pursuant to Rule 415 under the Securities Act of 1933, as amended. As explained above, the effectiveness of the Initial Registration Statement is a condition precedent to our ability to sell Put Shares to Oasis Capital under the Equity Purchase Agreement. Our Form S-2 registration statement covering the Registrable Securities was declared effective on November 19, 2019.

The foregoing description of the terms and conditions of the Registration Rights Agreement is not complete and is qualified in its entirety by the full text of the Registration Rights Agreement, which was filed as Exhibit 10.2 to a Current Report on Form 8-K filed on October 25, 2019 and is incorporated herein by this reference.

Additional Advances by Oasis. On November 26, 2019, Oasis Capital advanced an additional \$125,000 to the Company and received a promissory note in the principal amount of \$136,579 including original discount and expenses. The maturity date of the note is six months after the date of issuance. Interest at a rate of 8% is payable at maturity. Repayment of such note is subject to a premium, such that the payment shall be 105% of the payment amount during the 30 calendar day period after the issuance date of the note; 110% during the 31st through 60th calendar day period after the issuance date; and 125% following the 60th calendar day period after the date of issuance, including payment on and after the maturity date. If the Company completes any sale of securities after the issuance of the note, including but not limited to "putting" shares of common stock to any investor in any "equity line" transactions, the proceeds of each such sale shall first and solely be applied to the repayment of the note. On December 10, 2019, Oasis Capital advanced an additional \$135,000 to the Company and received an additional promissory note in the principal amount of \$147,106, including original discount and expenses. The terms and conditions of this promissory note are the same as for the November 26, 2019 note. The Company also expects to receive an additional advance of \$180,000 from Oasis Capital on or about December 19, 2019 and to issue another promissory note to Oasis Capital in the amount of \$194,475.

Corporate Information

Our address is 2915 Commers Drive, Suite 900, Eagan, Minnesota 55121. Our telephone number is (651) 389-4800, and our website address is www.precisiontherapeutics.com. Our website address is www.precisiontherapeutics.com. The information contained on, or that can be accessed through, our website is not part of this prospectus.

Risk Factors

Our business is subject to numerous risks. For a discussion of the risks you should consider before purchasing shares of our common stock, see “Risk Factors” on page 3 of this prospectus.

The Offering

This prospectus relates to the proposed resale or other disposition from time to time of up to 1,530,067 shares of Predictive Oncology Inc. common stock, \$0.01 par value per share, by the selling stockholders identified in this prospectus. See “Selling Stockholders” and “Plan of Distribution” below.

The selling stockholders may offer to sell the shares being offered in this prospectus at fixed prices, at prevailing market prices at the time of sale, at varying prices or at negotiated prices. Our common stock is listed on the Nasdaq Capital Market under the symbol “POAI.”

We will not receive any of the proceeds from the sale of shares of our common stock in this offering. The selling stockholders will receive all of the proceeds from this offering. We will, however, receive the proceeds of any cash exercises of the warrants.

RISK FACTORS

Please carefully consider the risk factors described in our periodic reports filed with the SEC, which are incorporated by reference in this prospectus, including the risk factors described in our quarterly report on Form 10-Q for the period ended September 30, 2019 (the “September 30, 2019 10-Q”). In addition, the risk factor included below under “Revised Risk Factor” replaces the risk factor with the same caption included in the September 30, 2019 10-Q. Before making an investment decision, you should carefully consider these risks as well as other information we include or incorporate by reference in this prospectus. Additional risks and uncertainties not presently known to us or that we deem currently immaterial may also impair our business operations or adversely affect our results of operations or financial condition.

Revised Risk Factor

The Company’s certificate of incorporation, as amended, provides that, to the fullest extent permitted by law, the Court of Chancery of the State of Delaware will be the exclusive forum for certain legal actions between the Company and its stockholders, which could limit the Company’s stockholders’ ability to obtain a judicial forum viewed by the stockholders as more favorable for disputes with the Company or the Company’s directors, officers or employees.

The Company’s certificate of incorporation, as amended, provides that, to the fullest extent permitted by law, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on behalf of the corporation, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director or officer of the corporation to the corporation or the corporation’s stockholders, (iii) any action asserting a claim against the corporation arising pursuant to any provision of the General Corporation Law or the corporation’s Certificate of Incorporation or Bylaws, or (iv) any action asserting a claim against the corporation governed by the internal affairs doctrine. This exclusive forum provision does not apply to suits brought to enforce a duty or liability created by the Securities Exchange Act of 1934, as amended. It could apply, however, to a suit that falls within one or more of the categories enumerated in the exclusive forum provision and asserts claims under the Securities Act of 1933, as amended (the “Securities Act”), inasmuch as Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rule and regulations thereunder. There is uncertainty as to whether a court would enforce such provision with respect to claims under the Securities Act, and our stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder.

Any person or entity purchasing or otherwise acquiring any interest in any of our securities shall be deemed to have notice of and consented to these provisions. These exclusive-forum provisions may limit a stockholder’s ability to bring a claim in a judicial forum of its choosing for disputes with us or our directors, officers or other employees, which may discourage lawsuits against us and our directors, officers and other employees.

If a court were to find the choice of forum provision contained in our certificate of incorporation, as amended, to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, results of operations, and financial condition. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to the Company's management.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains, and the documents incorporated by reference herein and in any prospectus supplement hereto may 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 Securities Exchange Act of 1934, as amended (the “Exchange Act”). These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Specific factors that might cause actual results to differ from our expectations or may affect the value of the common stock, include, but are not limited to those discussed in this prospectus under the caption “Risk Factors” above as well as the risk factors contained in our filings with the SEC that are incorporated by reference in this prospectus.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “could,” “would,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “projects,” “predicts,” “potential” and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements.

Further, any forward-looking statement speaks only as of the date on which it is made, and we undertake no obligation to update any forward-looking statement or statements to reflect events or circumstances after the date on which such statement is made or to reflect the occurrence of unanticipated events. New factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale of shares of our common stock in this offering. The selling stockholders will receive all of the proceeds from this offering. We will, however, receive the proceeds of any cash exercises of the warrants.

SELLING STOCKHOLDERS

This prospectus relates to the proposed resale or other disposition from time to time of up to 1,530,067 shares of Predictive Oncology Inc. common stock, \$0.01 par value per share, by the selling stockholders identified in this prospectus. For additional information regarding the foregoing issuances, and the relationship between the selling stockholders and us, see “Prospectus Summary—Description of the Private Placement” above. We are registering the shares of common stock in order to permit the selling stockholders to offer the shares for resale from time to time.

The following table sets forth:

- the selling stockholders and other information regarding the beneficial ownership of the shares of common stock by the selling stockholders;
- the number of shares of common stock beneficially owned by the selling stockholders as of December 3, 2019;
- the number of shares that may be offered by the selling stockholders pursuant to this prospectus;
- the number of shares to be beneficially owned by the selling stockholders and their affiliates following the sale of any shares covered by this prospectus; and
- the percentage of our issued and outstanding common stock to be beneficially owned by the selling stockholders and their affiliates following the sale of all shares covered by this prospectus.

The selling stockholders may sell all, some or none of their shares in this offering. See “Plan of Distribution” below.

Selling Stockholder	Shares Beneficially Owned Before Offering ⁽¹⁾⁽²⁾	Total Shares Offered By Selling Stockholder	Shares Beneficially Owned After Offering ⁽¹⁾⁽³⁾	Percentage of Beneficial Ownership After Offering ⁽¹⁾⁽³⁾
L2 Capital, LLC ⁽⁴⁾	195,858	209,108	0	0%
Oasis Capital, LLC ⁽⁵⁾	181,746	181,746	0	0%
<u>Series E Holders⁽⁶⁾:</u>				
Lincoln Park Capital Fund LLC ⁽⁷⁾	223,200	223,200	0	0%
Jordan Family LLC ⁽⁸⁾	202,290	41,962	160,328	3.9%
Todd O. Loudin	25,788	20,088	5,700	*
Andrew William McAlpine	26,520	22,320	4,200	*
T & I Limited ⁽⁹⁾	76,246	22,320	53,926	1.4%
Charles F. Mueller & Michele Mueller ⁽¹⁰⁾	51,918	22,320	29,598	*
Michael S. Brodherson, M.D. ⁽¹¹⁾	82,518	33,480	49,038	1.2%
Francis M. Chan Living Trust Dtd. 1/15/15 ⁽¹²⁾	44,503	12,053	32,450	*
Paul David Crain ⁽¹³⁾	89,295	31,694	57,601	1.4%
Rajiv Dewan	17,856	17,856	0	*
Dram Investments LP ⁽¹⁴⁾	128,046	22,320	105,726	2.6%
David Olshansky ⁽¹⁵⁾	50,940	44,640	6,300	*
Daniel Gregory Gittsovich	11,160	11,160	0	*
INTL FCStone Financial, Inc. c/f David Hawks R/O IRA ⁽¹⁶⁾	72,189	22,320	49,869	1.3%
INTL FCStone Financial, Inc. c/f Nazim Lokhandwala R/O IRA ⁽¹⁷⁾	25,466	11,160	14,306	*
James Lucey	23,820	22,320	1,500	*
Christopher Moore	23,320	22,320	1,000	*
Paul Sallwasser and Teri Sallwasser JTWR0S ⁽¹⁸⁾	247,109	89,280	157,829	3.8%
INTL FCStone Financial, Inc. c/f Stephen Troutman R/O IRA	46,440	44,640	1,800	*
Donald S. Wegner ⁽¹⁹⁾	90,059	44,640	45,419	1.1%
Dean H. Welle and Paula A. Welle JTWR0S ⁽²⁰⁾	63,640	13,392	50,248	1.3%
Kenneth Stemper	156,354	89,280	67,074	1.7%
CL Anderson & Assoc. Profit Sharing Plan	33,926	33,926	0	0%
Andre Osinsky	66,960	66,960	0	0%
Beth Michele Dryden ⁽²¹⁾	337,472	145,973	191,499	4.57%
INTL FCStone Financial, Inc. c/f Lyudmila Gittsovich Roth R/O IRA	7,589	7,589	0	0%

*Less than 1%

- (1) Beneficial ownership is determined in accordance with SEC rules, beneficial ownership includes any shares as to which the stockholder has sole or shared voting power or investment power, and also any shares which the stockholder has the right to acquire within 60 days of the date hereof, whether through the exercise or conversion of any stock option, convertible security, warrant or other right. The indication herein that shares are beneficially owned is not an admission on the part of the stockholder that he, she or it is a direct or indirect beneficial owner of those shares. The shares beneficially owned are based on 3,925,007 outstanding shares as of December 3, 2019.

- (2) The beneficial ownership reflects the effects of provisions in the L2 Note, which limit conversions and exercises that would exceed beneficial ownership of 4.99% as provided therein.
- (3) Assumes sales of all shares offered under this prospectus by the selling stockholders.
- (4) In addition to 30,000 shares held currently by L2, L2 is entitled to up to 103,734 shares issuable upon the conversion of the L2 Note and 75,374 shares issuable upon the exercise of warrants issued in September 2018 upon the initial issuance of the L2 Note. Adam Long has sole voting and dispositive power with respect to these shares. See “Description of the Private Placement Transactions” and “Recent Developments” for descriptions of transactions between the Company and L2.
- (5) Oasis Capital was issued an aggregate of 113,509 shares in connection with an Equity Purchase Agreement and a warrant to purchase 68,237 shares. Adam Long has sole voting and dispositive power with respect to these shares. See “Description of the Private Placement Transactions” and “Recent Developments” for descriptions of transactions between the Company and Oasis.
- (6) For all Series E Holders, beneficial ownership and the amount being offered assume conversion of each share of Series E convertible preferred stock into up to 4,464 shares of common stock. This assumed maximum amount is equal to 200% of the 2,232 shares of common stock that would currently be issuable upon conversion of each share of Series E Stock, based on 3,925,007 shares of our common stock outstanding as of December 3, 2019, with each share of Series E Stock being convertible into 0.056857% of the Company’s outstanding shares of common stock on the date of conversion. The shares of Series E Stock became convertible at the option of the holder commencing on December 13, 2019.
- (7) Joshua Scheinfeld and Jonathan Cope, the principals of Lincoln Park Capital Fund, LLC, are deemed to be the beneficial owners and have shared voting and dispositive power with respect to these shares.
- (8) Patricia Jordan is the beneficial owner and has voting and dispositive power with respect to these shares. Beneficial ownership includes warrants to purchase 87,022 shares.
- (9) Gillian Bush is the beneficial owner and has voting and dispositive power with respect to these shares. Beneficial ownership includes warrants to purchase 33,000 shares.
- (10) Beneficial ownership includes warrants to purchase 17,160 shares.
- (11) Beneficial ownership includes warrants to purchase 27,500 shares.
- (12) Beneficial ownership includes warrants to purchase 18,040 shares.
- (13) Beneficial ownership includes warrants to purchase 27,950 shares.
- (14) David Olshansky is the beneficial owner and has voting and dispositive power with respect to these shares. Beneficial ownership includes warrants to purchase 52,067 shares.
- (15) Beneficial ownership includes warrants to purchase 2,100 shares.
- (16) Beneficial ownership includes warrants to purchase 15,803 shares.
- (17) Beneficial ownership includes warrants to purchase 5,500 shares.
- (18) Beneficial ownership includes warrants to purchase 60,354 shares.
- (19) Beneficial ownership includes warrants to purchase 17,160 shares.
- (20) Beneficial ownership includes warrants to purchase 27,280 shares.
- (21) Beneficial ownership includes warrants to purchase 67,600 shares. Also includes 90,200 shares and warrants to purchase 23,600 shares held as Personal Representative for the Estate of Larry C. Hopfenspirger.

PLAN OF DISTRIBUTION

We are registering shares issued to L2 and Oasis, and certain shares issuable upon exercise of certain warrants held by L2 and Oasis or upon conversion of a promissory note held by L2, as described under “Selling Stockholders” above. We are also registering shares issuable upon conversion of the Series E Stock issued to certain holders of Series E Stock (the “Series E Holders,” and together with L2 and Oasis, the “Selling Stockholders”) as described under “Prospectus Summary – Description of the Private Placement” above to permit the resale of these shares of common stock from time to time after the date of this prospectus. We will not receive any of the proceeds from the sale by the Selling Stockholders of the shares of common stock. We will, however, receive the proceeds of any cash exercises of the warrants. We will bear all fees and expenses incident to our obligation to register the shares of common stock.

The Selling Stockholders may sell all or a portion of the shares of common stock held by them and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the shares of common stock are sold through underwriters or broker-dealers, the Selling Stockholders will be responsible for underwriting discounts or commissions or agent’s commissions. The shares of common stock may be sold in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale or at negotiated prices. These sales may be effected in transactions, which may involve crosses or block transactions, pursuant to one or more of the following methods:

- on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale;
- in the over-the-counter market;
- in transactions otherwise than on these exchanges or systems or in the over-the-counter market;
- through the writing or settlement of options, whether such options are listed on an options exchange or otherwise;
- 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;
- short sales made after the date the Registration Statement is declared effective by the SEC;
- broker-dealers may agree with a Selling Stockholder to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The Selling Stockholders may also sell shares of common stock under Rule 144 promulgated under the Securities Act of 1933, as amended, if available, rather than under this prospectus. In addition, the Selling Stockholders may transfer the shares of common stock by other means not described in this prospectus. If the Selling Stockholders effect such transactions by selling shares of common stock to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the Selling Stockholders or commissions from purchasers of the shares of common stock for whom they may act as agent or to whom they may sell as principal (which discounts, concessions or commissions as to particular underwriters, broker-dealers or agents may be in excess of those customary in the types of transactions involved). The Selling Stockholders may also loan or pledge shares of common stock to broker-dealers that in turn may sell such shares.

The Selling Stockholders may pledge or grant a security interest in some or all of the warrants or shares of common stock owned by them and, if the Selling Stockholders default in their performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock from time to time pursuant to this prospectus or any amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending, if necessary, the list of Selling Stockholders to include the pledgee, transferee or other successors in interest as Selling Stockholders under this prospectus. The Selling Stockholders also may transfer and donate the shares of common stock in other circumstances in which case the pledgees, assignees or successors-in-interest will be the selling beneficial owners for purposes of this prospectus.

To the extent required by the Securities Act and the rules and regulations thereunder, the Selling Stockholders and any broker-dealer participating in the distribution of the shares of common stock may be deemed to be "underwriters" within the meaning of the Securities Act, and any commission paid, or any discounts or concessions allowed to, any such broker-dealer may be deemed to be underwriting commissions or discounts under the Securities Act. At the time a particular offering of the shares of common stock is made, a prospectus supplement, if required, will be distributed, which will set forth the aggregate amount of shares of common stock being offered and the terms of the offering, including the name or names of any broker-dealers or agents, any discounts, commissions and other terms constituting compensation from the Selling Stockholders and any discounts, commissions or concessions allowed or re-allowed or paid to broker-dealers.

Under the securities laws of some states, the shares of common stock may be sold in such states only through registered or licensed brokers or dealers. In addition, in some states the shares of common stock may not be sold unless such shares have been registered or qualified for sale in such state or an exemption from registration or qualification is available and is complied with.

There can be no assurance that the Selling Stockholders will sell any or all of the shares of common stock registered pursuant to the registration statement, of which this prospectus forms a part.

The Selling Stockholders and any other person participating in such distribution will be subject to applicable provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder, including, without limitation, to the extent applicable, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the shares of common stock by the Selling Stockholders and any other participating person. To the extent applicable, Regulation M may also restrict the ability of any person engaged in the distribution of the shares of common stock to engage in market-making activities with respect to the shares of common stock. All of the foregoing may affect the marketability of the shares of common stock and the ability of any person or entity to engage in market-making activities with respect to the shares of common stock.

We will pay all expenses of the registration of the shares of common stock pursuant to the registration rights agreements with L2 and Oasis, and the Securities Purchase Agreement with the Series E Stockholders estimated to be \$25,000 in total, including, without limitation, SEC filing fees and expenses of compliance with state securities or "blue sky" laws; provided, however, the Selling Stockholders will pay all underwriting discounts and selling commissions, if any. We will indemnify L2 and Oasis against liabilities, including some liabilities under the Securities Act in accordance with the registration rights, or L2 and Oasis may be entitled to contribution. We may be indemnified by L2 and Oasis against civil liabilities, including liabilities under the Securities Act that may arise from any written information furnished to us by L2 and Oasis specifically for use in this prospectus, in accordance with the related registration rights agreements or we may be entitled to contribution. We will indemnify the Series E Stockholders against certain liabilities, including some liabilities under the Securities Act in accordance with the Securities Purchase Agreement.

Once sold under the registration statement, of which this prospectus forms a part, the shares of common stock will be freely tradable in the hands of persons other than our affiliates.

LEGAL MATTERS

The validity of the common stock offered by this prospectus will be passed upon by Maslon LLP, Minneapolis, Minnesota.

EXPERTS

The consolidated financial statements for the fiscal year ended December 31, 2018 incorporated in this Prospectus by reference from the Company's Annual Report on Form 10-K for the year ended December 31, 2018, have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference (which report expresses an unqualified opinion and includes an explanatory paragraph relating to the substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the financial statements). Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

Our financial statements for the fiscal year ended December 31, 2017 incorporated by reference in this prospectus have been so incorporated in reliance on the report of our former auditors, Olsen Thielen & Co., Ltd., certified public accountants registered with the Public Company Accounting Oversight Board.

The financial statements of Helomics Holding Corporation for the fiscal years ended December 31, 2018 and 2017, as restated, incorporated by reference in this prospectus have been so incorporated in reliance on the report of Schneider Downs & Co., Inc., certified public accountants registered with the Public Company Accounting Oversight Board, as auditor for Helomics Holding Corporation prior to the acquisition by the Company.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, and file annual, quarterly and current reports, proxy statements and other information with the SEC. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference facilities. SEC filings are also available at the SEC's web site at <http://www.sec.gov>.

This prospectus is only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act and therefore omits certain information contained in the registration statement. We have also filed exhibits and schedules with the registration statement that are excluded from this prospectus, and you should refer to the applicable exhibit or schedule for a complete description of any statement referring to any contract or other document. You may inspect a copy of the registration statement, including the exhibits and schedules, without charge, at the public reference room or obtain a copy from the SEC upon payment of the fees prescribed by the SEC.

We also maintain a website at www.predictive-oncology.com, through which you can access our SEC filings. The information set forth on, or accessible from, our website is not part of this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” information that we file with them. Incorporation by reference allows us to disclose important information to you by referring you to those other documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. This prospectus omits certain information contained in the registration statement, as permitted by the SEC. You should refer to the registration statement and any prospectus supplement filed hereafter, including the exhibits, for further information about us and the securities we may offer pursuant to this prospectus. Statements in this prospectus regarding the provisions of certain documents filed with, or incorporated by reference in, the registration statement are not necessarily complete and each statement is qualified in all respects by that reference. Copies of all or any part of the registration statement, including the documents incorporated by reference or the exhibits, may be obtained upon payment of the prescribed rates at the offices of the SEC listed above in “Where You Can Find More Information.” The documents we are incorporating by reference are:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 and Amendment to Form 10-K filed on April 2, 2019;
- Quarterly Reports on Form 10-Q for the quarters ended March 31, 2019, June 30, 2019 and September 30, 2019;
- Current Reports on Form 8-K filed December 19, 2019, December 17, 2019, November 15, 2019, October 28, 2019, October 25, 2019, October 24, 2019, October 10, 2019, September 30, 2019, September 26, 2019, September 26, 2019 (amendment), August 19, 2019, July 11, 2019, June 19, 2019, June 18, 2019 (amendment), June 13, 2019, June 4, 2019, May 23, 2019, May 17, 2019, May 17, 2019, May 15, 2019, May 8, 2019, April 10, 2019, April 2, 2019, April 1, 2019, March 22, 2019, March 14, 2019, March 8, 2019, March 5, 2019, March 1, 2019, February 26, 2019, February 19, 2019, February 12, 2019, February 7, 2019, January 28, 2019 (amendment), January 25, 2019, January 22, 2019, January 18, 2019, January 17, 2019, January 14, 2019 and January 3, 2019.
- The description of the Company’s common stock under the caption “Description of Predictive Capital Stock – Common Stock” in the Company’s Amendment No. 2 to Registration Statement on Form S-4 as filed with the SEC on January 24, 2019.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, until we file a post-effective amendment that indicates the termination of the offering of the securities made by this prospectus and will become a part of this prospectus from the respective dates that such documents are filed with the SEC. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes hereof or of the related prospectus supplement to the extent that a statement contained herein or in any other subsequently filed document which is also incorporated or deemed to be incorporated herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, a copy of any or all of the information that has been incorporated by reference in this prospectus but not delivered with this prospectus. You may request a copy of this information at no cost, by writing or telephoning us at the following address or telephone number:

Predictive Oncology Inc.
Attention: Bob Myers
2915 Commers Drive, Suite 900
Eagan, Minnesota 55121
(651) 389-4800

You should rely only on information contained in, or incorporated by reference into, this prospectus and any prospectus supplement. We have not authorized anyone to provide you with information different from that contained in this prospectus or incorporated by reference in this prospectus. We are not making offers to sell the securities in any jurisdiction in which such an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

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