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PROSPECTUS SUPPLEMENT

(To Prospectus Dated January 10, 2014)



Cleveland BioLabs, Inc.

5,737,706 Shares of Common Stock Warrants to purchase 5,737,706 Shares of Common Stock

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering 5,737,706 shares of our common stock, par value \$0.005 per share, and common stock purchase warrants, or warrants, to purchase up to 5,737,706 shares of our common stock. The warrants have an exercise price of \$1.22 per whole share of common stock. In connection with the purchase of our common stock, each purchaser will receive a Series A warrant equal to 50% of the number of shares of common stock purchased by the purchaser and a Series B warrant equal to 50% of the number of shares of common stock purchased by the purchaser. The shares of common stock and warrants will be issued separately but can only be purchased together in this offering.

Our common stock trades on the NASDAQ Capital Market (NASDAQ) under the symbol "CBLI." We have applied to list the shares being sold in this offering on the NASDAQ. There can be no assurances that the NASDAQ will grant the application. On January 14, 2014, the last reported sales price of our common stock on the NASDAQ was \$1.21 per share. The warrants are not and will not be listed on any national securities exchange.

As of January 14, 2014, the aggregate market value of the voting and non-voting common equity held by non-affiliates, computed by reference to the price at which the common equity was last sold or the average bid and asked price of such common equity on that date, was approximately \$51,589,698, based on 45,182,114 shares of outstanding common stock, of which 42,636,114 were held by non-affiliates. We have not offered any securities pursuant to General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to and including the date of this prospectus supplement.

You should read carefully and consider the "[Risk Factors](#)" referenced on page S-6 of this prospectus supplement and on page 4 of the accompanying prospectus and the risk factors described in other documents incorporated by reference herein.

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

We have retained H.C. Wainwright & Co., LLC to act as our exclusive placement agent in connection with the common stock and warrants offered by this prospectus supplement. The placement agent has agreed to use its reasonable best efforts to sell the securities offered by this prospectus supplement. We have agreed to pay the placement agent the placement agent fees set forth in the table below, which assumes that we sell all of the common stock and warrants we are offering.

	Per Share	Total
Public offering price	\$1.22	\$7,000,001
Placement agent fees (1)	\$0.07	\$ 420,000
Proceeds, before expenses, to us (2)	\$1.15	\$6,580,001

- (1) We have agreed to reimburse the placement agent, H.C. Wainwright & Co., LLC, for certain of their expenses and to issue to the placement agent warrants to purchase a number of shares of common stock equal to 3% of the aggregate number of shares of common stock sold in this offering as described under the "Plan of Distribution" on page S-13 of this prospectus supplement.
- (2) The amount of the offering proceeds to us presented in this table does not give effect to any exercise of the warrants being issued in this offering.

Delivery of the shares and warrants will take place on or about January 17, 2014, subject to the satisfaction of certain conditions.

H.C. WAINWRIGHT & CO., LLC

The date of this prospectus supplement is January 15, 2014.

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You should rely only on the information incorporated by reference or provided in this prospectus supplement, the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering. Neither we nor the placement agent have authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that the information appearing in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein are accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates. Neither this prospectus supplement nor the accompanying prospectus shall constitute an offer or solicitation by anyone in any jurisdiction in which such 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. Neither the delivery of this prospectus supplement nor any distribution of securities pursuant to this prospectus supplement shall, under any circumstances, create any implication that there has been no change in the information set forth or incorporated by reference into this prospectus supplement or in our affairs since the date of this prospectus supplement.

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement is part of a registration statement (No. 333-192755) that we filed with the Securities and Exchange Commission (the “SEC”) using a “shelf” registration process. Under the registration statement, we registered the offering by us of common stock and warrants for sale from time to time in one or more offerings. This prospectus supplement provides specific information about the offering by us of our common stock and accompanying warrants under the shelf registration statement. This document is in two parts. The first part is the prospectus supplement, which adds to and updates information contained in the accompanying prospectus. The second part, the prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus, on the other hand, you should rely on the information in this prospectus supplement.

Before purchasing any securities, you should carefully read both this prospectus supplement and the accompanying prospectus, together with the documents incorporated by reference herein as described under the heading “Incorporation of Certain Information by Reference” and the additional information described under the heading, “Where You Can Find More Information” in this prospectus supplement, as well as any free writing prospectus prepared by or on behalf of us or to which we have referred you.

In this prospectus, unless otherwise stated or the context otherwise requires, the terms “Cleveland BioLabs” and “CBLI” refer to Cleveland BioLabs, Inc., but not its consolidated subsidiaries and the “Company,” “we,” “us” and “our” refer to Cleveland BioLabs, Inc. together with its consolidated subsidiaries. Each of the trade names or service marks appearing or incorporated by reference in this prospectus supplement or the accompanying prospectus are the property of their respective owners.

This prospectus supplement and the accompanying prospectus, including the information incorporated by reference into this prospectus supplement and the accompanying prospectus, include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus supplement and the accompanying prospectus, or any related free writing prospectus, are the property of their respective owners.

SUMMARY

This summary highlights selected information about our company, this offering and information appearing elsewhere in this prospectus supplement, in the accompanying prospectus, in the documents we incorporate by reference and in any free writing prospectus that we have authorized for use in connection with this offering. This summary is not complete and does not contain all the information that you should consider before investing in our common stock and the accompanying warrants. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the “Risk Factors” contained in this prospectus supplement, the accompanying prospectus and the financial documents and notes incorporated by reference in this prospectus supplement and the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering, before making an investment decision. This prospectus supplement may add to, update or change information in the accompanying prospectus.

The Company

We are a clinical-stage biotechnology company with a focus on oncology drug development. Our lead drug Entolimod (generic name for CBLB502) is being developed for dual indications under (a) the U.S. Food & Drug Administration’s (“FDA’s”) Animal Efficacy Rule (21 CFR §314.610 drugs; §601.91 biologics), commonly referred to as the “Animal Rule”, as a medical radiation countermeasure, and (b) under the FDA’s traditional drug approval pathway as a targeted cancer treatment. CBLI is a Delaware corporation and was founded in 2003. Since our inception, we have pursued the research, development and commercialization of products that have the potential to treat cancer, reduce death from total body irradiation, and counteract the genotoxic effects of radio- and chemotherapies for oncology patients. Presently, three product candidates are under development directly by us and our wholly-owned subsidiary, BioLab 612, LLC, including two-product candidates in clinical or pivotal stage development. In addition, our majority-owned subsidiary, Incuron, LLC (“Incuron”) has two product candidates in clinical stage development and our-majority owned subsidiary Panacela Labs, Inc. (“Panacela”) has rights to development for 5 pre-clinical product candidates. An illustration of our product pipeline follows:

Product Candidate	Indication	Description	Development Stage
Entolimod*	Radiation Countermeasure	Radioprotectant and mitigating agent targeting increased survival from lethal exposure to radiation	Pivotal stage
Entolimod	Targeted Cancer Treatment	TLR5 agonist inducing innate immune response to targeted tumor types and liver metastases	Phase 1
CBLB612	Neutropenia/ Hematopoietic Stem Cell Transplant (HSCT)	Hematopoietic stem cell inducer and mobilizer to peripheral blood	Pre-clinical
<i>Incuron Product Candidates</i>			
CBL0102	Hepatocellular Carcinoma	Quinacrine	Phase 1
CBL0137	Cancer Treatment	Small molecule targeting FACT***	Phase 1
<i>Panacela Product Candidates</i>		5 pre-clinical product candidates	Pre-clinical

* We currently intend to rely on the Animal Rule in seeking marketing approval for this indication. Under the Animal Rule, if human efficacy trials are not ethical or feasible, the FDA can approve drugs or biologics used to treat or prevent serious or life threatening conditions caused by exposure to lethal or permanently disabling toxic chemical, biological, radiological, or nuclear substances based on human clinical data demonstrating safety and evidence of efficacy from appropriate animal studies and any additional supporting data.

We have successfully negotiated contracts and grants with the U.S. government totaling \$85.9 million for the development and procurement of our lead compound, Entolimod, for biodefense application as a radiation countermeasure. Of this \$85.9 million, we have received development funding of approximately \$44.6 million, of which we have recognized approximately \$44.1 million in revenue through September 30, 2013. As of September 30, 2013, the federal government had the potential to fund an additional \$41.4 million under our existing contracts and grants, including a \$30 million procurement option that becomes exercisable upon FDA approval. The period of performance of our contract with the Defense Threat Reduction Agency of Department of Defense ended in December 2013 and the period of performance of our current contract with the Medical Countermeasures—Chemical Defense Pharmaceuticals (formerly Chemical Biological Medical Systems) of the Department of Defense, which provides for the \$30 million procurement option, is scheduled to expire in the first quarter of 2014. We are currently pursuing an extension of this contract. We have performed extensive safety and efficacy studies in non-human primates (“NHPs”) and rodents and have evaluated Entolimod’s safety profile in 150 healthy human volunteers. We have submitted a proposal to the Biomedical Advanced Research and Development Authority (BARDA) of the Department of Health and Human Services to fund the remaining work necessary to complete a dossier of information needed to submit a Biologic License Application, or BLA, to the FDA for marketing approval. This remaining work includes: animal efficacy and safety trials, human safety trial(s), manufacturing runs and biostatistical data needed to confirm proper dose conversion between NHPs and humans.

In October 2013, we received a contract valued at approximately 149 million rubles (approximately \$4.6 million) from the Ministry of Industry and Trade of the Russian Federation to support the clinical safety and efficacy assessment of Entolimod in colorectal cancer.

A Phase 1 trial evaluating the safety and pharmacokinetic and pharmacodynamic profile of Entolimod in refractory patients with advanced cancers, many of whom evidence liver metastases is underway at Roswell Park Cancer Institute. Evaluation of the effect that Entolimod has on metastasized tumor lesions in the liver is a secondary endpoint.

CBLB612, an inducer and mobilizer of hematopoietic stem cells, or HSCs, is also actively being developed and is currently undergoing formal pre-clinical safety assessment and cGMP-manufacturing development. In mid-2012, we received a contract valued at 139 million rubles (approximately \$4.4 million) from the Ministry of Industry and Trade of the Russian Federation for development of CBLB612. In the third quarter of 2013, we submitted an Investigational New Drug Application for CBLB612 in the Russian Federation.

In December 2009, we entered into a Participation Agreement with BioProcess Capital Partners, LLC, a Russian Federation venture capital fund, to create a joint venture, Incuron, to develop our Curaxin line of anti-cancer product candidates: specifically CBL0102, a nonproprietary molecule originally used to combat the effects of malaria, which we identified as having cancer treatment properties; and CBL0137, a new, proprietary molecule optimized to better target similar mechanisms of action in combating cancer. Incuron is our majority owned subsidiary, with approximately 59.2% of its equity interests held by us at September 30, 2013. We anticipate that Incuron will receive their 2nd funding tranche of approximately \$5.4 million in the first quarter of 2014 and that upon receipt of such funding, our ownership interest in Incuron will fall below 50.1%. Our Curaxin research is supported by a 150 million ruble (approximately \$4.7 million) grant from the Russian Federation Government initiative “Skolkovo”, which was awarded in late 2011.

Incuron completed a Phase 1 safety and tolerability study of CBL0102 in patients with liver metastases of solid tumors of epithelial origin, or primary advanced hepatic carcinoma for which standard therapy has failed or does not exist in the Russian Federation and is in the process of finalizing the reports for this study.

In October 2012, dosing was started with the oral formulation of CBL0137 in a Phase 1 multi-center, single agent, dose escalation study in subjects with advanced solid tumors that are resistant or refractory to standard of care treatment in the Russian Federation. In August 2013, dosing was started in a Phase 1 multi-center, single agent dose escalation study evaluating intravenous administration of CBL0137 in patients with metastatic or unresectable advanced solid cancers and lymphomas.

In September 2011, we entered into an Investment Agreement with Open Joint Stock Company “Rusnano”, or Rusnano, a multi-billion Russian Federation venture fund, governing the creation of Panacela, a joint venture company formed to develop five separate product candidates. Panacela is a majority-owned subsidiary, with 54.6% of its shares held by us at September 30, 2013. In late 2012, Panacela received a contract valued at 146 million rubles (approximately \$4.6 million) from the Ministry of Industry and Trade of the Russian Federation for the development of one of its product candidates, a family of anti-infective compounds known as Xenomycins. Additionally, in October 2013, Panacela entered into a three-year contract valued at approximately 149 million rubles (approximately \$4.6 million) with the Ministry of Industry and Trade of the Russian Federation to support pre-clinical and clinical studies of another of its product candidates, Mobilan, a cancer vaccine in pre-clinical development.

Additionally, we leverage close development relationships with Roswell Park Cancer Institute, Cleveland Clinic Foundation and Children’s Cancer Institute Australia. Together, our team of legal entities, financial partners and other collaborators engage in the collective development efforts necessary to advance all of our product candidates towards marketing approval and commercialization.

Risk Factors

Our business is subject to substantial risk. Please carefully consider the “Risk Factors” on page S-6 of this prospectus supplement and on page 4 of the accompanying prospectus and other information included and incorporated by reference in this prospectus supplement and the accompanying prospectus, including the risk factors incorporated by reference from our filings with the Securities and Exchange Commission, or the SEC, for a discussion of the factors you should consider carefully before deciding to purchase these securities. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. You should be able to bear a complete loss of your investment.

Corporate Information

We were incorporated in Delaware on June 5, 2003. We conduct operations through several subsidiaries, including our wholly-owned subsidiary, BioLab 612, LLC, and our majority-owned subsidiaries, Incuron, LLC and Panacela Labs, Inc.

Our principal executive offices are located at 73 High Street, Buffalo, New York 14203. Our telephone number is (716) 849-6810. Our website address is www.cbiolabs.com. We have included our website address as an inactive textual reference only. The information contained on, or that can be accessed through, our website is not a part of this prospectus.

The Offering

The following summary contains basic information about our common stock and the offering and is not intended to be complete. It does not contain all the information that may be important to you. For a more complete understanding of our common stock, you should read the section of the accompanying prospectus entitled "Description of Common Stock."

Issuer	Cleveland BioLabs, Inc.
Common stock offered by us	5,737,706 shares
Warrants offered by us	We are offering Series A warrants to purchase 2,868,853 shares of common stock and Series B warrants to purchase 2,868,853 shares of common stock. Each warrant has an exercise price of \$1.22 per share. Each Series A warrant becomes exercisable six months following the date of issuance and expires five years from the date of issuance. Each Series B warrant becomes exercisable six months following the date of issuance and expires 18 months from the date of issuance. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the warrants. There is currently no market for the warrants and none is expected to develop after this offering.
Risk factors	Your investment in our common shares involves substantial risks. You should consider the "Risk Factors" included and incorporated by reference in this prospectus supplement and the accompanying prospectus, including the risk factors incorporated by reference from our filings with the SEC.
Trading Market	Our common stock is listed on the Nasdaq Capital Market under the symbol "CBLI." The warrants are not and will not be listed for trading on the Nasdaq Capital Market, or any other securities exchange.

Unless otherwise stated, all information in this prospectus supplement is based on 45,182,114 shares of common stock outstanding as of January 14, 2014, and does not include the following:

- 5,494,833 shares of common stock issuable upon exercise of outstanding options at a weighted-average exercise price of \$4.17 per share.
- The following shares of common stock issuable upon exercise of our outstanding warrants:
 - 3,485,810 shares of common stock issuable upon exercise of our Series D warrants, which may be exercised at a price of \$1.22 per share, as adjusted to reflect this offering.
 - 935,385 shares of common stock issuable upon exercise of our warrants issued in March 2010, which may be exercised at a price of \$1.22 per share, as adjusted to reflect this offering.
 - 1,468,125 shares of common stock issuable upon exercise of our Series F warrants, which may be exercised at a price of \$5.00 per share.
 - 176,175 shares of common stock issuable upon exercise of warrants issued to the placement agent in connection with our offering in June 2011, which may be exercised at a price of \$5.00 per share.
 - 4,312,500 shares of common stock issuable upon exercise of the warrants issued in connection with our offering in October 2012, which may be exercised at a price of \$3.00 per share.
 - 156,250 shares of common stock issuable upon exercise of the warrants issued in connection with the closing of our Term Loan with Hercules Technology Growth Capital ("Hercules") in September 2013, which may be exercised at a price of \$1.60 per share.

- The warrant issued to Rusnano in September 2013 to purchase that number of shares of the Company's common stock equal to 69.2% of any outstanding amount remaining unpaid under a convertible loan between Panacela and Rusnano which may be exercised at a price of \$1.694 per share upon the occurrence of an uncured Event of Default under the convertible loan agreement.

The shares of common stock issuable upon the exercise of our outstanding warrants and the exercise price in respect thereof are subject to adjustment in certain circumstances. Our Series D warrants and our warrants issued in March 2010 contain "full-ratchet" anti-dilution protection provisions upon the issuance of shares of our common stock at a price less than the applicable exercise price. In addition, our Series I warrant issued in connection with our Term Loan from Hercules contains "full-ratchet" anti-dilution protection for a period of 1 year from the date of issuance of the warrant for any issuance of shares of our common stock at a price less than the applicable exercise price in a transaction not registered under the Securities Act of 1933, as amended, or the Securities Act. If such a lower-priced issuance occurs, the exercise price of these warrants will be reduced to the price at which our common stock is issued or deemed to be issued.

CAUTIONARY NOTE ABOUT FORWARD-LOOKING STATEMENTS

This prospectus, the accompanying prospectus, the documents incorporated by reference herein contain forward-looking statements within the meaning of Section 27A of the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, that involve substantial risks and uncertainties. All statements, other than statements of historical fact, including statements regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words "anticipate," "believe," "continue," "should," "estimate," "expect," "intend," "may," "plan," "project," "will," and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included and incorporated by reference in this prospectus that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. See the section entitled "Risk Factors" herein for more information. You should consider these factors and other cautionary statements made in this prospectus and in the documents we incorporate by reference as being applicable to all related forward-looking statements wherever they appear in the prospectus and in the documents incorporated by reference. Unless specifically indicated, our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. We do not assume any obligation to update any forward-looking statements.

RISK FACTORS

Before purchasing our common stock and the accompanying warrants, you should carefully consider the risk factors set forth below and under the heading “Risk Factors” included in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, each of which are on file with the SEC and are incorporated herein by reference, as well as all other information contained in this prospectus supplement and the accompanying prospectus and incorporated by reference and any free writing prospectus that we have authorized for use in connection with this offering. The risks and uncertainties described below and in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. If any of the risks described below or in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, actually occur, our business, financial condition and results of operations could suffer. As a result, the trading price of our stock could decline, perhaps significantly, and you could lose all or part of your investment. The risks discussed below and in most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, also include forward-looking statements and our actual results may differ substantially from those discussed in these forward-looking statements. See the section entitled “Forward-Looking Information.”

Risks Relating to our Common Stock and this Offering

Since we have broad discretion in how we use the proceeds from this offering, we may use the proceeds in ways with which you disagree.

We have not allocated specific amounts of the net proceeds from this offering for any specific purpose. Accordingly, our management will have significant flexibility in applying the net proceeds of this offering. You will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used in ways with which you would agree. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for the Company. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flow.

The investors in this offering will pay a substantially higher price than the book value of our common stock.

If you purchase shares of our common stock in this offering, you will incur an immediate and substantial dilution in net tangible book value. Our net tangible book value was \$0.05 per share as of September 30, 2013. Assuming the sale by us of all 5,737,706 shares offered hereby (not including the warrant shares as discussed in “— Dilution”) at a price to the public of \$1.22 per share, and after deducting the placement agent fees and expenses payable by us, our adjusted net tangible book value as of September 30, 2013 would have been approximately \$0.13 per share.

The price of our common stock may be volatile, which may in turn expose us to securities litigation.

The market price of our common stock has historically experienced and may continue to experience significant volatility. From January 2013 through January 14, 2014, the market price of our common stock, which is listed on the NASDAQ Capital Market, fluctuated from a high of \$2.28 per share in the first quarter of 2013 to a low of \$0.97 in the fourth quarter of 2013. The listing of our common stock on the NASDAQ Capital Market does not assure that a meaningful, consistent and liquid trading market will exist, and in recent years, the market has experienced extreme price and volume fluctuations that have particularly affected the market prices of many smaller companies like us. Our common stock is thus subject to this volatility in addition to volatility caused by the occurrence of industry and company specific events. Factors that could cause fluctuations include, but are not limited to, the following:

- our progress in developing and commercializing our products;

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- price and volume fluctuations in the overall stock market from time to time;
- fluctuations in stock market prices and trading volumes of similar companies;
- actual or anticipated changes in our earnings or fluctuations in our operating results or in the expectations of securities analysts;
- general economic conditions and trends;
- major catastrophic events;
- sales of large blocks of our stock;
- departures of key personnel;
- changes in the regulatory status of our product candidates, including results of our pre-clinical studies and clinical trials;
- status of contract and funding negotiations relating to our product candidates;
- events affecting The Cleveland Clinic, Roswell Park Center Institute or our other collaborators;
- announcements of new products or technologies, commercial relationships or other events by us or our competitors;
- regulatory developments in the United States and other countries;
- failure of our common stock to be listed or quoted on the Nasdaq Capital Market, other national market system or any national stock exchange;
- changes in accounting principles; and
- discussion of us or our stock price by the financial and scientific press and in online investor communities.

In addition to the factors described above, the price of our common stock also could be affected by possible sales of our common stock by investors who view our warrants as a more attractive means of equity participation in our Company and by hedging or arbitrage activity involving our common stock as a result of our warrants. As a result of the volatility of our stock price, we could be subject to securities litigation, which could result in substantial costs and divert management's attention and company resources from our business.

A substantial number of shares of our common stock may be sold in this offering, which could cause the price of our common stock to decline.

In this offering we will sell 5,737,706 shares, or approximately 12.7% of our outstanding common stock as of December 31, 2013, together with warrants to purchase 5,737,706 shares, or approximately 12.7% of our outstanding common stock as of December 31, 2013. This sale and any future sales of a substantial number of shares of our common stock in the public market, or the perception that such sales may occur, could adversely affect the price of our common stock. We cannot predict the effect, if any, that market sales of those shares of common stock or the availability of those shares of common stock for sale will have on the market price of our common stock.

Issuance of additional equity securities may adversely affect the market price of our common stock.

We are currently authorized to issue 160,000,000 shares of our common stock. As of January 14, 2014, we had 45,182,114 shares of common stock issued and outstanding, excluding shares issuable upon the exercise of our outstanding warrants and options, and we had no shares of preferred stock outstanding. As of January 14, 2014, we also had 10,534,245 warrants and 5,494,833 options outstanding, of which 4,986,604 options are currently fully vested or vest within the next 60 days.

To the extent that shares of common stock are issued or options and warrants are exercised, holders of our common stock will experience dilution. In addition, in the event of any future issuances of equity securities or securities convertible into or exchangeable for common stock, holders of our common stock may experience dilution.

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Our outstanding warrants contain provisions that, in certain circumstances, could result in the number of shares of common stock issuable upon the exercise of such warrants to increase and/or the exercise price of such warrants to decrease. See “Prospectus Supplement Summary — The Offering” for a discussion of the impact of this offering to our outstanding warrants.

Moreover, our board of directors is authorized to issue preferred stock without any action on the part of our stockholders. Our board of directors also has the power, without stockholder approval, to set the terms of any such preferred stock that may be issued, including voting rights, conversion rights, dividend rights, preferences over our common stock with respect to dividends or if we liquidate, dissolve or wind up our business and other terms. If we issue preferred stock in the future that has preference over our common stock with respect to the payment of dividends or upon our liquidation, dissolution or winding up, or if we issue preferred stock with voting rights that dilute the voting power of our common stock, the market price of our common stock could decrease. Any provision permitting the conversion of any such preferred stock into our common stock could result in significant dilution to the holders of our common stock.

We also consider from time to time various strategic alternatives that could involve issuances of additional common stock, including but not limited to acquisitions and business combinations, but do not currently have any definitive plans to enter into any of these transactions.

We have no plans to pay dividends on our common stock, and you may not receive funds without selling your common stock.

We have not declared or paid any cash dividends on our common stock, nor do we expect to pay any cash dividends on our common stock for the foreseeable future. We currently intend to retain any additional future earnings to finance our operations and growth and for future stock repurchases and, therefore, we have no plans to pay cash dividends on our common stock at this time. Any future determination to pay cash dividends on our common stock will be at the discretion of our board of directors and will be dependent on our earnings, financial condition, operating results, capital requirements, any contractual restrictions, regulatory and other restrictions on the payment of dividends by our subsidiaries to us, and other factors that our board of directors deems relevant.

Accordingly, you may have to sell some or all of your common stock in order to generate cash from your investment. You may not receive a gain on your investment when you sell our common stock and may lose the entire amount of your investment.

Provisions in our charter documents and Delaware law may inhibit a takeover or impact operational control of our company, which could adversely affect the value of our common stock.

Our certificate of incorporation and bylaws, as well as Delaware corporate law, contain provisions that could delay or prevent a change of control or changes in our management that a stockholder might consider favorable. These provisions include, among others, prohibiting stockholder action by written consent, advance notice for raising business or making nominations at meetings of stockholders and the issuance of preferred stock with rights that may be senior to those of our common stock without stockholder approval. These provisions would apply even if a takeover offer may be considered beneficial by some of our stockholders. If a change of control or change in management is delayed or prevented, the market price of our common stock could decline.

Risks Related to Our Warrants

There is no public market for the warrants to purchase common stock being offered in this offering.

There is no established public trading market for the warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any securities exchange. Without an active market, the liquidity of the warrants will be limited.

Holders of our warrants will have no rights as a common stockholder until such holders exercise their warrants and acquire our common stock.

Until you acquire shares of our common stock upon exercise of your warrants, you will have no rights with respect to the shares of our common stock underlying such warrants. Upon exercise of your warrants, you will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

USE OF PROCEEDS

We estimate the net proceeds from this offering will be approximately \$6,355,001, excluding the proceeds, if any, from the exercise of the warrants, after deducting underwriting discounts and commissions and our estimated offering expenses.

We currently intend to use the net proceeds from this offering for working capital and general corporate purposes, including research and development, clinical trials and general and administrative expenses. As a result, our management will retain broad discretion in the allocation and use of the net proceeds of this offering, and investors will be relying on the judgment of our management with regard to the use of these net proceeds. Pending application of the net proceeds for the purposes as described above, we expect to invest the net proceeds in short-term, interest-bearing securities, investment grade securities, certificates of deposit or direct or guaranteed obligations of the U.S. government.

DILUTION

If you invest in our common stock, your ownership interest will be diluted to the extent of the difference between the public offering price per share and the as-adjusted net tangible book value per share after this offering. We calculate net tangible book value per share by dividing the net tangible book value, which is tangible assets less total liabilities, by the number of outstanding shares of our common stock.

Our net tangible book value as of September 30, 2013 was \$2,333,054, or \$0.05 per share of common stock. After giving effect to the sale of our common stock in the aggregate amount of \$7,000,001 at an offering price of \$1.22 per share, and after deducting estimated offering commissions and expenses payable by us, our net tangible book value as of September 30, 2013 would have been \$6,404,963, or \$0.13 per share of common stock. This represents an immediate increase in the net tangible book value of \$0.08 per share to our existing stockholders and an immediate and substantial dilution in net tangible book value of \$1.09 per share to new investors. The following table illustrates this per share dilution:

Assumed offering price per share	\$1.22
Net tangible book value per share as of September 30, 2013	\$0.05
Increase in net tangible book value per share after this offering	\$0.08
As-Adjusted net tangible book value per share as of September 30, 2013, after giving effect to this offering	\$0.13
Dilution per share to new investors in this offering	\$1.09

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The above discussion and table are based on 45,157,114 shares of our common stock outstanding as of September 30, 2013 and does not include:

- 5,608,912 shares issuable upon the exercise of outstanding stock options with a weighted-average exercise price of \$4.17 per share;
- 2,091,000 shares of common stock not subject to stock awards and reserved for issuance under our equity incentive plans;
- 2,100,000 shares of common stock not subject to stock awards and reserved for issuance under our Employee Stock Purchase Plan;
- shares of common stock issuable upon the exercise of our outstanding warrants, of which there were warrants outstanding as of September 30, 2013, to purchase 4,577,445 shares of common stock at an exercise price of \$1.60 per share, 4,312,500 shares of common stock at an exercise price of \$3.00 per share, 1,644,300 shares of common stock at an exercise price of \$5.00 per share, and shares of common stock at an exercise price of \$1.694 per share issuable upon an uncured event of default under the convertible loan agreement between Panacela and Rusnano; and
- 25,000 shares of restricted common stock that we are obligated to issue under existing consulting arrangements. These shares will be issued without registration in reliance on the exemptions afforded by Section 4(2) of the Securities Act of 1933, as amended.

Because there is no minimum offering amount required as a condition to the closing of this offering, the dilution per share to new investors may be more than that indicated above in the event that the actual number of shares sold, if any, is less than the maximum number of shares of our common stock we are offering.

The above illustration of dilution per share to investors participating in this offering assumes no exercise of outstanding options to purchase our common stock or outstanding warrants to purchase shares of our common stock. The exercise of outstanding options and warrants having an exercise price less than the offering price will increase dilution to new investors.

DESCRIPTION OF SECURITIES

In this offering, we are offering 5,737,706 shares of common stock and warrants to purchase up to 5,737,706 shares of common stock. This prospectus supplement also relates to the offering of shares of our common stock upon the exercise, if any, of the warrants issued in this offering.

The material terms and provisions of our common stock are described under the caption "Description of Common Stock" starting on page 6 of the accompanying prospectus.

Warrants

The material terms and provisions of the warrants to purchase 5,737,706 shares of common stock being offered pursuant to this prospectus supplement and the accompanying prospectus are summarized below. This summary is subject to and qualified in its entirety by the form of warrant, which will be provided to each investor in this offering and will be filed on a Current Report on Form 8-K in connection with this offering.

General Terms of the Warrants

The warrants to be issued in this offering represent the rights to purchase up to 5,737,706 shares of common stock at an initial exercise price of \$1.22 per share. Each Series A warrant becomes exercisable six months following the date of issuance and expires five years from the date of issuance. Each Series B warrant becomes exercisable six months following the date of issuance and expires 18 months from the date of issuance.

Exercise

Holders of the warrants may exercise their warrants to purchase shares of our common stock on or before the expiration date by delivering (i) notice of exercise, appropriately completed and duly signed, and (ii) if such holder is not utilizing the cashless exercise provisions with respect to the warrants, payment of the exercise price for the number of shares with respect to which the warrant is being exercised. Warrants may be exercised in whole or in part, but only for full shares of common stock. We provide certain rescission and buy-in rights to a holder if we fail to deliver the shares of common stock underlying the warrants by the date on which delivery of the stock certificate is required by the warrant. With respect to the rescission rights, the holder has the right to rescind the exercise if stock certificates are not timely delivered. The buy-in rights apply if after the date on which delivery of the stock certificate is required by the warrant, the holder purchases (in an open market transaction or otherwise) shares of our common stock to deliver in satisfaction of a sale by the holder of the warrant shares that the holder anticipated receiving from us upon exercise of the warrant. In this event, we will:

- pay in cash to the holder the amount equal to the excess (if any) of the buy-in price over the product of (A) such number of warrant shares that we were required to deliver to the holder, times (B) the price at which the sell order giving rise to holder's purchase obligation was executed; and
- at the election of holder, either (A) reinstate the portion of the warrant as to such number of shares of common stock, or (B) deliver to the holder a certificate or certificates representing such number of shares of common stock.

In addition, the warrant holders are entitled to a "cashless exercise" option if, at any time of exercise, there is no effective registration statement registering, or no current prospectus available for, the issuance or resale of the shares of common stock underlying the warrants. This option entitles the warrant holders to elect to receive fewer shares of common stock without paying the cash exercise price. The number of shares to be issued would be determined by a formula based on the total number of shares with respect to which the warrant is being exercised, the volume weighted average of the prices per share of our common stock on the trading date immediately prior to the date of exercise and the applicable exercise price of the warrants issued in this offering.

The shares of common stock issuable on exercise of the warrants will be, when issued and paid for in accordance with the warrants, duly and validly authorized, issued and fully paid and non-assessable. We will authorize and reserve at least that number of shares of common stock equal to the number of shares of common stock issuable upon exercise of all outstanding warrants.

Fundamental Transactions

If, at any time while the warrants are outstanding, we (1) consolidate or merge with or into another corporation, (2) sell all or substantially all of our assets or (3) are subject to or complete a tender or exchange offer pursuant to which holders of our common stock are permitted to tender or exchange their shares for other securities, cash or property, (4) effect any reclassification of our common stock or any compulsory share exchange pursuant to which our common stock is converted into or exchanged for other securities, cash or property, or (5) engage in one or more transactions with another party that results in that party acquiring more than 50% of our outstanding shares of common stock (each, a "Fundamental Transaction"), then the holder shall have the right thereafter to receive, upon exercise of the warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of warrant shares then issuable upon exercise of the warrant, and any additional consideration payable as part of the Fundamental Transaction. Any successor to us or surviving entity shall assume the obligations under the warrant.

Subsequent Rights Offerings

If, at any time while the warrants are outstanding, we issue rights, options or warrants to all holders of our common stock entitling them to purchase our common stock, then the holders of the warrants will be entitled to acquire those rights, options and warrants on the basis of the number of shares of common stock acquirable upon complete exercise of the warrants.

Pro Rata Distributions

If, at any time while the warrants are outstanding, we make a dividend or distribution of assets or rights to acquire assets to all holders of our common stock, the holders of the warrants will be entitled to participate in the dividend or distribution of assets or rights to acquire assets on the basis of the number of shares of common stock acquirable upon complete exercise of the warrants.

Certain Adjustments

The exercise price and the number of shares of common stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, including stock dividends, stock splits, combinations and reclassifications of our common stock.

Delivery of Shares

Upon the holder's exercise of a warrant, we will promptly, but in no event later than one trading day after the exercise date (the "Warrant Share Delivery Date"), issue and deliver, or cause to be issued and delivered, the shares of common stock issuable upon exercise of the warrant. In addition, we will, if the holder provides the necessary information to us, issue and deliver the shares electronically through The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System ("DWAC") or another established clearing corporation performing similar functions.

Notice of Corporate Action

We will provide notice to holders of the warrants to provide them with the opportunity to exercise their warrants and hold common stock in order to participate in or vote on the following corporate events:

- if we shall take a record of the holders of our common stock for the purpose of entitling them to receive a dividend or other distribution, or any right to subscribe for or purchase any shares of stock of any class or any other right;
- any capital reorganization of our company, any reclassification or recapitalization of our capital stock or any consolidation or merger with, or any sale, transfer or other disposition of all or substantially all of our property, assets or business to, another corporation; or
- a voluntary or involuntary dissolution, liquidation or winding up of our Company.

Limitations on Exercise

The number of warrant shares that may be acquired by any holder upon any exercise of the warrant shall be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of common stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of common stock would be aggregated with the holder's for purposes of Section 13(d) of the Exchange Act, does not exceed either 4.99% or 9.99%, as selected by the holder, of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise), or beneficial ownership limitation. The holder may elect to change this beneficial ownership limitation from 4.99% to 9.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise) upon 61 days' prior written notice.

Additional Provisions

The above summary of certain terms and provisions of the warrants is qualified in its entirety by reference to the detailed provisions of the warrants, the form of which will be filed as an exhibit to a Current Report on Form 8-K that is incorporated herein by reference. We are not required to issue fractional shares upon the exercise of the warrants. No holders of the warrants will possess any rights as a stockholder under those warrants until the holder exercises those warrants, except as set forth in the warrants. The warrants may be transferred independent of the common stock they were issued with, on a form of assignment, subject to all applicable laws.

PLAN OF DISTRIBUTION

Pursuant to an engagement letter, dated as of January 9, 2014, between us and H.C. Wainwright & Co., LLC, we have engaged H.C. Wainwright & Co., LLC as our exclusive placement agent to solicit offers to purchase the common stock and warrants offered by this prospectus supplement. H.C. Wainwright & Co., LLC is not purchasing any common stock or warrants for its own account in this offering, and is not required to arrange the purchase or sale of any additional specific number or dollar amount of the securities.

H.C. Wainwright & Co., LLC has agreed to use its reasonable best efforts to arrange for the sale of all of the securities in this offering. There is no requirement that any minimum number of common stock or warrants or dollar amount of common stock or warrants be sold in this offering and there can be no assurance that we will sell all or any of the common stock and warrants being offered. We will enter into securities purchase agreements directly with the investors who purchase securities in this offering. The engagement letter provides that the obligations of H.C. Wainwright & Co., LLC and the investors are subject to certain conditions precedent, including, among other things, the absence of any material adverse change in our business and the receipt of certain opinions, letters and certificates from us or our counsel.

We currently anticipate that the closing of this offering will occur on or about January 17, 2014, subject to customary closing conditions. On the closing date, the following will occur:

- we will receive funds in the amount of the aggregate purchase price;
- H.C. Wainwright & Co., LLC, as placement agent, will receive the placement agent fees in accordance with the terms of the engagement letter; and
- we will deliver the shares of common stock and warrants to the investors.

We have agreed to pay H.C. Wainwright & Co., LLC an aggregate fee equal to 6% on aggregate gross proceeds in this offering, excluding the proceeds, if any, from the exercise of the warrants. We have also agreed to issue to H.C. Wainwright & Co., LLC a warrant to purchase that number of shares of common stock equal to 3% of the aggregate number of shares of common stock sold in this offering (not including any shares of common stock underlying the warrants issued in this offering). The placement agent warrants will have the same terms, including exercise price, as the warrants issued to investors, except that the placement agent warrants will expire on January 10, 2019 and will otherwise comply with the requirements of the Financial Industry Regulatory Authority, Inc., or FINRA. As required by FINRA Rule 5110(g)(1), neither the placement agent warrants nor any securities issued upon exercise of the placement agent warrants may be sold, transferred, assigned, pledged, or hypothecated, or be the subject of any hedging, short sale, derivative, put, or call transaction that would result in the effective economic disposition of such securities by any person for a period of 180 days immediately following the effective date of the registration statement of which this prospectus is a part, except the transfer of any security:

- by operation of law or by reason of our reorganization;
- to any FINRA member firm participating in the offering and the officers or partners thereof, if all securities so transferred remain subject to the lock-up restriction described above for the remainder of the time period;
- if the aggregate amount of our securities held by the placement agent or related person do not exceed 1% of the securities being offered;
- that is beneficially owned on a pro-rata basis by all equity owners of an investment fund, provided that no participating member manages or otherwise directs investments by the fund, and participating members in the aggregate do not own more than 10% of the equity in the fund; or
- the exercise or conversion of any security, if all securities received remain subject to the lock-up restriction set forth above for the remainder of the time period.

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We have also agreed to reimburse H.C. Wainwright & Co., LLC for expenses up to incurred by it in connection with this offering. Such reimbursement will be limited to a maximum of \$100,000 without our prior written approval.

The following table shows the per share and total placement agent fees we will pay in connection with the sale of the common stock and warrants, assuming the purchase of all of the common stock and warrants we are offering.

Per share placement agent cash fees	\$ 0.0732
Total	\$420,000

We estimate the total expenses of this offering which will be payable by us, excluding the placement agent fees, will be approximately \$225,000. After deducting the fees due to the placement agent and our estimated offering expenses, we expect the net proceeds from this offering to be approximately \$6,355,001. We have agreed to indemnify H.C. Wainwright & Co., LLC and certain other persons against certain liabilities relating to or arising out of H.C. Wainwright & Co., LLC's activities under the engagement letter. We have also agreed to contribute to payments H.C. Wainwright & Co., LLC may be required to make in respect of such liabilities.

H.C. Wainwright & Co., LLC may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the common stock and warrants sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, H.C. Wainwright & Co., LLC would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares of common stock and warrants by H.C. Wainwright & Co., LLC acting as principal. Under these rules and regulations, H.C. Wainwright & Co., LLC:

- may not engage in any stabilization activity in connection with our securities; and
- may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

A copy of the engagement letter, the form of securities purchase agreement we entered into with the purchasers and the form of warrant will be included as exhibits to our current report on Form 8-K that will be filed with the SEC in connection with the consummation of this offering.

The transfer agent for our common stock to be issued in this offering is Continental Stock Transfer & Trust Company. We will act as transfer agent for the warrants being offered hereby.

Our common stock is traded on the NASDAQ Capital Market under the symbol "CBLI." The warrants to purchase common stock issued to the investors in this offering are not expected to be eligible for trading on any market.

LEGAL MATTERS

Cooley LLP, Boston, Massachusetts, will pass on the validity of the shares of common stock offered by this prospectus supplement. Ellenoff Grossman & Schole LLP, New York, New York, is counsel for the placement agent in connection with this offering.

EXPERTS

Meaden & Moore, Ltd., independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2012, and the effectiveness of our internal control over financial reporting as of December 31, 2012, as set forth in their reports, which are incorporated by reference in this prospectus supplement and elsewhere in the registration statement. Our financial statements and our management's assessment of the effectiveness of internal controls over financial reporting as of December 31, 2012 are incorporated by reference in reliance on Meaden & Moore, Ltd.'s reports, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement is part of the registration statement on Form S-3 we filed with the SEC under the Securities Act and does not contain all the information set forth in the registration statement. Whenever a reference is made in this prospectus supplement to any of our contracts, agreements or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference into this prospectus for a copy of such contract, agreement or other document. Because we are subject to the information and reporting requirements of the Exchange Act, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov>. You may also read and copy any document we file at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate" into this prospectus supplement information that we file with the SEC in other documents. This means that we can disclose important information to you by referring to other documents that contain that information. Any information that we incorporate by reference is considered part of this prospectus supplement.

Information contained in this prospectus supplement and information that we file with the SEC in the future and incorporate by reference in this prospectus supplement automatically modifies and supersedes previously filed information including information in previously filed documents or reports that have been incorporated by reference in this prospectus supplement, to the extent the new information differs from or is inconsistent with the old information. Any information so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus supplement.

We incorporate by reference, as of their respective dates of filing, the documents listed below that we have filed with the SEC and any documents that we file with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement (except in each case the information contained in such documents to the extent "furnished" and not "filed"):

- (1) our Annual Report on Form 10-K for the year ended December 31, 2012, as filed with the SEC on March 18, 2013 and as amended on April 30, 2013 (File No. 001-32954);
- (2) our Quarterly Report on Form 10-Q for the quarter ended March 31, 2013, as filed with the SEC on May 9, 2013 (File No. 001-32954);
- (3) our Quarterly Report on Form 10-Q for the quarter ended June 30, 2013, as filed with the SEC on August 9, 2013 (File No. 001-32954);
- (4) our Quarterly Report on Form 10-Q for the quarter ended September 30, 2013, as filed with the SEC on November 8, 2013 (File No. 001-32954);

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- (5) our Current Reports on Form 8-K filed with the SEC on April 9, 2013, April 25, 2013, May 9, 2013, June 20, 2013, September 5, 2013, October 4, 2013, October 18, 2013, November 6, 2013 and December 18, 2013 (File No. 001-32954);
- (6) any other filings pursuant to the Exchange Act after the date of filing the initial registration statement and prior to the termination of the offering; and
- (7) the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on July 20, 2006, including any amendments or reports filed for the purpose of updating that description.

You may request a copy of these documents, which will be provided to you at no cost, by writing or telephoning us using the following contact information:

Cleveland BioLabs, Inc.
73 High Street
Buffalo, New York 14203
Attention: Corporate Secretary
Telephone: (716) 849-6810

You should rely only on the information contained in this prospectus, including information incorporated by reference as described above, any accompanying prospectus supplement or any "free writing prospectus" we may authorize to be delivered to you. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front of those documents or that any document incorporated by reference is accurate as of any date other than its filing date. You should not consider this prospectus to be an offer or solicitation relating to the securities.

Cleveland BioLabs, Inc.

\$50,000,000

of

**Common Stock
Warrants**

We may from time to time offer and sell up to \$50,000,000 aggregate dollar amount of common stock and warrants. We will specify in one or more prospectus supplements the terms of the securities to be offered and sold. We may sell these securities to or through underwriters or dealers and also to other purchasers or through agents. We will set forth the names of any underwriters, dealers or agents in a prospectus supplement.

Our common stock is listed on The NASDAQ Capital Market under the symbol "CBLI." The last reported sale price of our common stock on The NASDAQ Capital Market on December 9, 2013 was \$1.20 per share. As of December 9, 2013, the aggregate market value of the voting and non-voting common equity held by non-affiliates, computed by reference to the price at which the common equity was last sold or the average bid and asked price of such common equity on that date, was approximately \$51,163,337, based on 45,182,114 shares of outstanding common stock, of which 42,636,114 were held by non-affiliates. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below \$75.0 million. We have not offered any securities pursuant to General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to and including the date of this prospectus.

Investing in our securities involves a high degree of risk. See "[Risk Factors](#)" on page 4.

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

This prospectus may not be used to consummate sales of securities unless, to the extent required by applicable law, it is accompanied by a prospectus supplement.

Prospectus dated January 10, 2014.

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You should rely only on the information contained or incorporated by reference in this prospectus, any accompanying prospectus supplement or any “free writing prospectus” we may authorize to be delivered to you. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that the information appearing in this prospectus, any prospectus supplement and the documents incorporated by reference herein and therein are accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates. Neither this prospectus nor any accompanying prospectus supplement shall constitute an offer or solicitation by anyone in any jurisdiction in which such 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.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a “shelf” registration process. Under this shelf registration process, we may from time to time sell common stock and warrants, or any combination of these securities, in one or more offerings up to a total dollar amount of \$50,000,000. We have provided to you in this prospectus a general description of the securities we may offer. Each time we sell securities, we will, to the extent required by law, provide a prospectus supplement that will contain specific information about the terms of the offering. We may also add, update or change in any accompanying prospectus supplement or any free writing prospectus we may authorize to be delivered to you any of the information contained in this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement, you should rely on the information in the prospectus supplement, provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus or any prospectus supplement—the statement in the document having the later date modifies or supersedes the earlier statement. This prospectus, together with any accompanying prospectus supplement and any free writing prospectus we may authorize to be delivered to you, includes all material information relating to the offering of our securities.

As permitted by the rules and regulations of the SEC, the registration statement, of which this prospectus forms a part, includes additional information not contained in this prospectus. You may read the registration statement and the other reports we file with the SEC at the SEC’s web site or at the SEC’s offices described below under the heading “Where You Can Find More Information.”

In this prospectus, unless otherwise stated or the context otherwise requires, the terms “Cleveland BioLabs” and “CBLI” refer to Cleveland BioLabs, Inc., but not its consolidated subsidiaries and the “Company,” “we,” “us” and “our” refer to Cleveland BioLabs, Inc. together with its consolidated subsidiaries. Each of the trade names or service marks appearing or incorporated by reference in this prospectus or any applicable prospectus supplement are the property of their respective owners.

SUMMARY

The Company

We are a clinical-stage biotechnology company with a focus on oncology drug development. Our lead drug Entolimod (generic name for CBLB502) is being developed for dual indications under (a) the U.S. Food & Drug Administration’s (“FDA’s”) Animal Efficacy Rule (21 CFR §314.610 drugs; §601.91 biologics), commonly referred to as the “Animal Rule”, as a radiation countermeasure, and (b) under the FDA’s traditional drug approval pathway as a targeted cancer treatment. CBLI is a Delaware corporation and was founded in 2003. Since our inception, we have pursued the research, development and commercialization of products that have the potential to treat cancer, reduce death from total body irradiation, and counteract the genotoxic effects of radio- and chemotherapies for oncology patients. Presently, nine product candidates are under development directly by our wholly-owned subsidiary, BioLab 612, LLC, and our majority-owned subsidiaries, Incuron, LLC (“Incuron”) and Panacela Labs, Inc. (“Panacela”). An illustration of our product pipeline follows:

Product Candidate	Indication	Description	Development Stage
Entolimod*	Radiation Countermeasure	Radioprotectant and mitigating agent targeting increased survival from lethal exposure	Pivotal stage
Entolimod	Targeted Cancer Treatment	TLR5 agonist inducing innate immune response to targeted tumor types and liver metastases	Phase 1
CBLB612	Neutropenia/HSCT**	Hematopoietic stem cell inducer and mobilizer to peripheral blood	Pre-clinical
<i>Incuron Product Candidates</i>			
CBL0102	Hepatocellular Carcinoma	Quinacrine	Phase 1
CBL0137	Cancer Treatment	Small molecule targeting FACT***	Phase 1
<i>Panacela Product Candidates</i>			
Revercom	Cancer Treatment	Chemotherapy adjuvant	Pre-clinical
Mobilan	Cancer Treatment	Immunotherapy	Pre-clinical
Arkil	Targeted Cancer Treatment	Inhibitor of Androgen receptor	Pre-clinical
Antimycon	Targeted Cancer Treatment	Inhibitor of Myc oncogene	Pre-clinical
Xenomycins	Anti-Infective	Small molecules targeting FACT***	Pre-clinical

* We currently intend to rely on the Animal Rule in seeking marketing approval for this indication. Under the Animal Rule, if human efficacy trials are not ethical or feasible, the FDA can approve drugs or biologics used to treat or prevent serious or life threatening conditions caused by exposure to lethal or permanently disabling toxic chemical, biological, radiological, or nuclear substances based on human clinical data demonstrating safety and evidence of efficacy from appropriate animal studies and any additional supporting data.

** HSCT means hematopoietic stem cell transplant

*** FACT means chromatin remodeling complex named Facilitates Chromatin Transcription

We have successfully negotiated contracts and grants with the U.S. government totaling \$85.9 million for the development and procurement of our lead compound, Entolimod, for biodefense application as a radiation countermeasure. Of this \$85.9 million, we have received development funding of approximately \$44.6 million, of which we have recognized approximately \$44.1 million in revenue through September 30, 2013. As of September 30, 2013, the federal government has the potential to fund an additional \$41.4 million under our existing contracts and grants, including a \$30 million procurement option that becomes exercisable upon FDA approval. Our current contracts with the Department of Defense, including those contracts providing for the \$30 million procurement

option, expire in December 2013. We are currently pursuing extensions of these contracts. We have performed extensive safety and efficacy studies in non-human primates (“NHPs”) and rodents and have evaluated Entolimod’s safety profile in 150 healthy human volunteers. We have submitted a proposal to the Biomedical Advanced Research and Development Agency of the Department of Health and Human Services to fund the remaining work necessary to complete a dossier of information needed to submit a Biologic License Application, or BLA, to the FDA for marketing approval. This remaining work includes: animal efficacy trials, human safety trials and biostatistical data needed to confirm proper dose conversion between NHPs and humans.

In October 2013, we received a contract valued at approximately 149 million rubles (approximately \$4.6 million) from the Ministry of Industry and Trade of the Russian Federation to support the clinical safety and efficacy assessment of Entolimod in colorectal cancer.

A Phase 1 trial evaluating the safety and pharmacokinetic and pharmacodynamic profile of Entolimod in refractory patients with advanced cancers, many of whom evidence liver metastases is underway at Roswell Park Cancer Institute. Evaluation of the effect that Entolimod has on metastasized tumor lesions in the liver is a secondary endpoint. CBLB612, an inducer and mobilizer of hematopoietic stem cells, or HSCs, is also actively being developed and is currently undergoing formal pre-clinical safety assessment and cGMP-manufacturing development. In mid-2012, we received a contract valued at 139 million rubles (approximately \$4.4 million) from the Ministry of Industry and Trade of the Russian Federation for development of CBLB612. In the third quarter of 2013, we submitted an Investigational New Drug Application for CBLB612 in the Russian Federation.

In December 2009, we entered into a Participation Agreement with BioProcess Capital Partners, LLC, a Russian Federation venture capital fund, to create a joint venture, Incuron, to develop our Curaxin line of anti-cancer product candidates: specifically CBL0102, a nonproprietary molecule originally used to combat the effects of malaria, which we identified as having cancer treatment properties; and CBL0137, a new, proprietary molecule optimized to better target similar mechanisms of action in combating cancer. Incuron is our majority owned subsidiary, with approximately 59.2% of its equity interests held by us at September 30, 2013. Our Curaxin research is supported by a 150 million ruble (approximately \$4.7 million) grant from the Russian Federation Government initiative “Skolkovo”, which was awarded in late 2011.

CBL0102 is currently undergoing a Phase 1 safety and tolerability study in patients with liver metastases of solid tumors of epithelial origin, or primary advanced hepatic carcinoma for which standard therapy has failed or does not exist in the Russian Federation.

In October 2012, dosing was started with the oral formulation of CBL0137 in a multi-center, single agent, dose escalation study in subjects with advanced solid tumors that are resistant or refractory to standard of care treatment in the Russian Federation. In August 2013, dosing was started in a multi-center, single agent dose escalation study evaluating intravenous administration of CBL0137 in patients with metastatic or unresectable advanced solid cancers and lymphomas.

In September 2011, we entered into an Investment Agreement with Open Joint Stock Company “Rusnano”, or Rusnano, a multi-billion Russian Federation fund, governing the creation of Panacela, a joint venture company formed to develop five separate product candidates, all of which were in pre-clinical development at the end of 2012. Panacela is a majority-owned subsidiary, with 54.6% of its shares held by us at September 30, 2013. In late 2012, Panacela received a contract valued at 146 million rubles (approximately \$4.6 million) from the Ministry of Industry and Trade of the Russian Federation for the development of a family of anti-infective compounds known as Xenomycins. Additionally, in October 2013, Panacela entered into a three-year contract valued at approximately 149 million rubles (approximately \$4.6 million) with the Ministry of Industry and Trade of the Russian Federation to support preclinical and clinical studies of Mobilan, a cancer vaccine in preclinical development.

Additionally, we leverage close development relationships with Roswell Park Cancer Institute, Cleveland Clinic Foundation and Children’s Cancer Institute Australia. Together, our team of legal entities, financial partners and other collaborators engage in the collective development efforts necessary to advance all of our product candidates towards marketing approval and commercialization.

Corporate Information

We were incorporated in Delaware on June 5, 2003. We conduct operations through several subsidiaries, including our wholly-owned subsidiary, BioLab 612, LLC, and our majority-owned subsidiaries, Incuron, LLC and Panacela Labs, Inc.

Our principal executive offices are located at 73 High Street, Buffalo, New York 14203. Our telephone number is (716) 849-6810. Our website address is www.cbiolabs.com. We have included our website address as an inactive textual reference only. The information contained on, or that can be accessed through, our website is not a part of this prospectus.

RISK FACTORS

Investing in our securities involves significant risks. Before making an investment decision, you should carefully consider the risks and other information we include or incorporate by reference in this prospectus and any prospectus supplement. In particular, you should consider the risk factors under the heading “Risk Factors” included in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, each of which are on file with the SEC and are incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. The risks and uncertainties we have described are not the only ones facing our company. Additional risks and uncertainties not currently known to us or that we currently deem immaterial may also affect our business operations. Additional risk factors may be included in a prospectus supplement relating to a particular offering of securities.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any prospectus supplement and the documents incorporated by reference herein contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, that involve substantial risks and uncertainties. All statements, other than statements of historical fact, including statements regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words “anticipate,” “believe,” “continue,” “should,” “estimate,” “expect,” “intend,” “may,” “plan,” “project,” “will,” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included and incorporated by reference in this prospectus that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. See the section entitled “Risk Factors” herein for more information. You should consider these factors and other cautionary statements made in this prospectus and in the documents we incorporate by reference as being applicable to all related forward-looking statements wherever they appear in the prospectus and in the documents incorporated by reference. Unless specifically indicated, our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. We do not assume any obligation to update any forward-looking statements.

USE OF PROCEEDS

Unless otherwise provided in the applicable prospectus supplement, we currently intend to use the net proceeds from the sale of the securities from offerings under this prospectus for general corporate purposes, including continued development of our product candidates, working capital and capital expenditures. We may set forth additional information on the use of proceeds from the sale of securities we offer under this prospectus in a prospectus supplement relating to the specific offering. We have not determined the amount of net proceeds to be used specifically for the foregoing purposes. As a result, our management will have broad discretion in the allocation of the net proceeds. Pending use of the net proceeds, we intend to invest the proceeds in a variety of capital preservation instruments, including short-term, investment-grade, interest-bearing instruments.

RATIO OF EARNINGS TO FIXED CHARGES

Our earnings were insufficient to cover fixed charges in each of the years ended December 31, 2008, 2009, 2010, 2011 and 2012 and in the nine months ended September 30, 2013. Accordingly, the following table sets forth the deficiency of earnings to cover fixed charges for each of the foregoing periods. Because of the deficiency, ratio information is not applicable.

	2008	2009	2010	2011	2012	Nine Months Ended September 30, 2013
Earnings	\$(14,025,927)	\$(12,826,409)	\$(26,671,857)	\$(5,229,725)	\$(22,414,640)	\$(19,284,530)
Ratio of earnings to fixed charges	N/A	N/A	N/A	N/A	N/A	N/A
Deficiency of earnings available to cover fixed charges	\$(13,959,410)	\$(12,750,928)	\$(26,602,713)	\$(5,150,392)	\$(22,299,102)	\$(19,162,642)

For purposes of computing the deficiency of earnings to cover fixed charges, “earnings” consist of loss from operations before income taxes and fixed charges. “Fixed charges” consist of interest expense, capitalized interest, amortization of capitalized interest and the portion of operating lease expense that represents interest.

As of the date of this prospectus, we have no shares of preferred stock outstanding and have not declared or paid any preferred stock dividends for the periods set forth above. Accordingly, a ratio of earnings to fixed charges is being presented in lieu of a ratio of earnings to combined fixed charges and preferred stock dividends.

DILUTION

We will set forth in a prospectus supplement the following information regarding any material dilution of the equity interests of investors purchasing securities in an offering under this prospectus:

- the net tangible book value per share of our equity securities before and after the offering;
- the amount of the increase in such net tangible book value per share attributable to the cash payments made by purchasers in the offering; and
- the amount of the immediate dilution from the public offering price which will be absorbed by such purchasers.

DESCRIPTION OF SECURITIES

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplements, summarize the material terms and provisions of the various types of securities that we may offer. We will describe in the applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If we so indicate in the applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. We will also include in the prospectus supplement information, where applicable, about material U.S. federal income tax considerations relating to the securities, and the securities exchange, if any, on which the securities will be listed.

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We may sell from time to time, in one or more offerings, common stock and warrants to purchase any such securities.

In this prospectus, we refer to the common stock and warrants to be sold by us in an offering collectively as “securities.” The total dollar amount of all securities that we may issue under this prospectus will not exceed \$50,000,000.

This prospectus may not be used to consummate a sale of securities unless it is accompanied by a prospectus supplement.

DESCRIPTION OF COMMON STOCK

The following description of our common stock, together with any additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of our common stock that we may offer in offerings under this prospectus. For the complete terms of our common stock, please refer to our certificate of incorporation and by-laws, which are exhibits to the registration statement that includes this prospectus. The terms of our common stock may also be affected by Delaware law.

Authorized Capital Stock

Under our certificate of incorporation, our authorized capital stock consists of 160,000,000 shares of common stock, \$0.005 par value per share, and 10,000,000 shares of preferred stock, \$0.005 par value per share. As of December 9, 2013, we had 45,182,114 shares of common stock outstanding and no shares of preferred stock outstanding. We will describe the specific terms of any common stock we may offer in more detail in a prospectus supplement relating to the offering of shares of common stock. If we so indicate in a prospectus supplement, the terms of any common stock offered under that prospectus supplement may differ from the terms described below.

Common Stock

Voting Rights. The holders of our common stock are entitled to one vote per share with respect to each matter presented to our stockholders on which the holders of common stock are entitled to vote and do not have cumulative voting rights. An election of directors by our stockholders is determined by a plurality of the votes cast by the stockholders entitled to vote on the election.

Dividends. Holders of common stock are entitled to receive ratably any dividends as may be declared by our board of directors, subject to any preferential dividend rights of outstanding preferred stock.

Liquidation and Dissolution. In the event of our liquidation or dissolution, the holders of common stock are entitled to receive ratably all assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any outstanding preferred stock.

Other Rights. Holders of common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Listing. Our common stock is listed on The NASDAQ Capital Market under the symbol “CBLI.” As of December 9, 2013 the closing price per share of our common stock on The NASDAQ Capital Market was \$1.20, and we had approximately 33 holders of record of our common stock.

Transfer Agent and Registrar. The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company.

Anti-Takeover Effects of Delaware Law and our Certificate of Incorporation and By-laws

The provisions of Delaware law, our certificate of incorporation and our bylaws, which are discussed below, could discourage or make it more difficult to accomplish a proxy contest or other change in our management or the acquisition of control by a holder of a substantial amount of our voting stock. It is possible that these provisions could make it more difficult to accomplish, or could deter, transactions that stockholders may otherwise consider to be in their best interests or the best interests of the company. These provisions are intended to enhance the likelihood of continuity and stability in the composition of our board of directors and in the policies formulated by the board of directors and to discourage certain types of transactions that may involve an actual or threatened change of control of us. These provisions are also designed to reduce our vulnerability to an unsolicited acquisition proposal and to discourage certain tactics that may be used in proxy fights. Such provisions also may have the effect of preventing changes in our management.

Delaware Law

We are subject to the anti-takeover provisions of Section 203 of the Delaware General Corporation Law, or DGCL. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. For purposes of Section 203, a “business combination” is defined broadly to include a merger, asset sale or other transaction resulting in a financial benefit to the interested stockholder, and, subject to certain exceptions, an “interested stockholder” is a person who, together with his or her affiliates and associates, owns, or within three years prior, did own, 15% or more of the corporation’s voting stock.

Stockholder Action; Special Meeting of Stockholders; Advance Notice Requirements for Stockholder Proposals and Director Nominations

Our certificate of incorporation and bylaws do not permit our stockholders to act by written consent. As a result, any action to be effected by our stockholders must be effected at a duly called annual or special meeting of the stockholders. Our certificate of incorporation and our bylaws also provide that special meetings of the stockholders may be called only by (i) our Chairman of the board of directors and (ii) our board of directors. Our bylaws provide that, for nominations to the board of directors or for other business to be properly brought by a stockholder before a meeting of stockholders, the stockholder must first have given timely notice of the proposal in writing to our Secretary. For an annual meeting, a stockholder’s notice generally must be delivered not less than 90 days nor more than 120 days prior to the anniversary of the date of previous year’s annual meeting; provided, however, that in the event that the annual meeting is called for a date that is not within 30 days before or after such anniversary date, notice by the stockholder in order to be timely must be received not later than the 10th day following the day on which such notice of the date of the annual meeting was mailed or public disclosure was made, whichever occurs first. Detailed requirements as to the form of the notice and information required in the notice are specified in the bylaws. If it is determined that business was not properly brought before a meeting in accordance with our bylaws, such business will not be conducted at the meeting.

Effects of Authorized but Unissued Stock

We have shares of common stock and preferred stock available for future issuance without stockholder approval, subject to any limitations imposed by the listing standards of The NASDAQ Capital Market. We may utilize these additional shares for a variety of corporate purposes including for future public offerings to raise additional capital or facilitate corporate acquisitions or for payment as a dividend on our capital stock. The existence of unissued and unreserved common stock and preferred stock may enable our board of directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could have the effect of making it more difficult for a third party to acquire, or could discourage a third party from seeking to acquire, a controlling

interest in our company by means of a merger, tender offer, proxy contest or otherwise. In addition, if we issue preferred stock, the issuance could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation.

Limitation of Liability and Indemnification of Officers and Directors

Our certificate of incorporation contains provisions permitted under the DGCL relating to the liability of directors. The provisions eliminate a director's liability for monetary damages for a breach of fiduciary duty, except in circumstances involving wrongful acts, such as the breach of a director's duty of loyalty or acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law. Further, our certificate of incorporation contains provisions to indemnify our directors and officers to the fullest extent permitted by the DGCL. We have also entered into indemnification agreements with certain of our current and former directors and certain of our officers and expect to enter into a similar agreement with any new directors or officers.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer in an offering under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we so indicate in the prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms described below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement that includes this prospectus.

General

We may issue warrants for the purchase of common stock in one or more series. We may issue warrants independently or together with common stock, and the warrants may be attached to or separate from these securities.

We will evidence each series of warrants by warrant certificates that we will issue under a separate agreement. We may enter into the warrant agreement with a warrant agent. We will indicate the name and address and other information regarding the warrant agent in the applicable prospectus supplement relating to a particular series of warrants.

If we decide to issue warrants pursuant to this prospectus, we will specify in a prospectus supplement the terms of the series of warrants, including, if applicable, the following:

- the offering price and aggregate number of warrants offered;
- the currency for which the warrants may be purchased;
- the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- the date on and after which the warrants and the related securities will be separately transferable;
- the number of shares of common stock purchasable upon the exercise of the warrants and the price at which these shares may be purchased upon such exercise;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;

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- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrant agreement and warrants may be modified;
- a discussion of any material U.S. income tax consequences of holding or exercising the warrants;
- the terms of the securities issuable upon exercise of the warrants; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including the right to receive dividends, if any, or payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5:00 p.m. New York City time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

Enforceability of Rights by Holders of Warrants

Each warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

LEGAL OWNERSHIP OF SECURITIES

We can issue securities in registered form or in the form of one or more global securities. We describe global securities in greater detail below. We refer to those persons who have securities registered in their own names on the books that we or any applicable trustee maintain for this purpose as the “holders” of those securities. These persons are the legal holders of the securities. We refer to those persons who, indirectly through others, own beneficial interests in securities that are not registered in their own names, as “indirect holders” of those securities. As we discuss below, indirect holders are not legal holders, and investors in securities issued in book-entry form or in street name will be indirect holders.

Book-Entry Holders

We may issue securities in book-entry form only, as we will specify in the applicable prospectus supplement. This means securities may be represented by one or more global securities registered in the name of a financial institution that holds them as depositary on behalf of other financial institutions that participate in the depositary’s book-entry system. These participating institutions, which are referred to as participants, in turn, hold beneficial interests in the securities on behalf of themselves or their customers.

Only the person in whose name a security is registered is recognized as the holder of that security. Securities issued in global form will be registered in the name of the depositary or its nominee. Consequently, for securities issued in global form, we will recognize only the depositary as the holder of the securities, and we will make all payments on the securities to the depositary. The depositary passes along the payments it receives to its participants, which in turn pass the payments along to their customers who are the beneficial owners. The depositary and its participants do so under agreements they have made with one another or with their customers; they are not obligated to do so under the terms of the securities.

As a result, investors in a book-entry security will not own securities directly. Instead, they will own beneficial interests in a global security, through a bank, broker or other financial institution that participates in the depositary’s book-entry system or holds an interest through a participant. As long as the securities are issued in global form, investors will be indirect holders, and not holders, of the securities.

Street Name Holders

We may terminate a global security or issue securities in non-global form. In these cases, investors may choose to hold their securities in their own names or in “street name.” Securities held by an investor in street name would be registered in the name of a bank, broker or other financial institution that the investor chooses, and the investor would hold only a beneficial interest in those securities through an account he or she maintains at that institution.

For securities held in street name, we will recognize only the intermediary banks, brokers and other financial institutions in whose names the securities are registered as the holders of those securities, and we will make all payments on those securities to them. These institutions pass along the payments they receive to their customers who are the beneficial owners, but only because they agree to do so in their customer agreements or because they are legally required to do so. Investors who hold securities in street name will be indirect holders, not holders, of those securities.

Legal Holders

Our obligations, as well as the obligations of any applicable trustee and of any third parties employed by us or a trustee, run only to the legal holders of the securities. We do not have obligations to investors who hold beneficial interests in global securities, in street name or by any other indirect means. This will be the case whether an investor chooses to be an indirect holder of a security or has no choice because we are issuing the securities only in global form. For example, once we make a payment or give a notice to the holder, we have no further responsibility for the payment or notice even if that holder is required, under agreements with depositary participants or customers or by law, to pass it along to the indirect holders but does not do so.

Special Considerations For Indirect Holders

If you hold securities through a bank, broker or other financial institution, either in book-entry form or in street name, you should check with your own institution to find out:

- how it handles securities payments and notices;
- whether it imposes fees or charges;
- how it would handle a request for the holders' consent, if ever required;
- whether and how you can instruct it to send you securities registered in your own name so you can be a holder, if that is permitted in the future;
- how it would exercise rights under the securities if there were a default or other event triggering the need for holders to act to protect their interests; and
- if the securities are in book-entry form, how the depository's rules and procedures will affect these matters.

Global Securities

A global security is a security held by a depository that represents one or any other number of individual securities. Generally, all securities represented by the same global securities will have the same terms.

Each security issued in book-entry form will be represented by a global security that we deposit with and register in the name of a financial institution or its nominee that we select. The financial institution that we select for this purpose is called the depository. Unless we specify otherwise in the applicable prospectus supplement, The Depository Trust Company, or DTC, will be the depository for all securities issued in book-entry form.

A global security may not be transferred to or registered in the name of anyone other than the depository, its nominee or a successor depository, unless special termination situations arise. We describe those situations below under "—Special Situations When a Global Security Will Be Terminated." As a result of these arrangements, the depository, or its nominee, will be the sole registered owner and holder of all securities represented by a global security, and investors will be permitted to own only beneficial interests in a global security. Beneficial interests must be held by means of an account with a broker, bank or other financial institution that in turn has an account with the depository or with another institution that does. Thus, an investor whose security is represented by a global security will not be a holder of the security, but only an indirect holder of a beneficial interest in the global security.

If the prospectus supplement for a particular security indicates that the security will be issued in global form only, then the security will be represented by a global security at all times unless and until the global security is terminated. If termination occurs, we may issue the securities through another book-entry clearing system or decide that the securities may no longer be held through any book-entry clearing system.

Special Considerations For Global Securities

As an indirect holder, an investor's rights relating to a global security will be governed by the account rules of the investor's financial institution and of the depository, as well as general laws relating to securities transfers. We do not recognize an indirect holder as a holder of securities and instead deal only with the depository that holds the global security.

If securities are issued only in the form of a global security, an investor should be aware of the following:

- an investor cannot cause the securities to be registered in his or her name, and cannot obtain non-global certificates for his or her interest in the securities, except in the special situations we describe below;
- an investor will be an indirect holder and must look to his or her own bank or broker for payments on the securities and protection of his or her legal rights relating to the securities, as we describe under “—Legal Holders” above;
- an investor may not be able to sell interests in the securities to some insurance companies and to other institutions that are required by law to own their securities in non-book-entry form;
- an investor may not be able to pledge his or her interest in a global security in circumstances where certificates representing the securities must be delivered to the lender or other beneficiary of the pledge in order for the pledge to be effective;
- the depositary’s policies, which may change from time to time, will govern payments, transfers, exchanges and other matters relating to an investor’s interest in a global security. We and any applicable trustee have no responsibility for any aspect of the depositary’s actions or for its records of ownership interests in a global security. We and the trustee also do not supervise the depositary in any way;
- the depositary may, and we understand that DTC will, require that those who purchase and sell interests in a global security within its book-entry system use immediately available funds, and your broker or bank may require you to do so as well; and
- financial institutions that participate in the depositary’s book-entry system, and through which an investor holds its interest in a global security, may also have their own policies affecting payments, notices and other matters relating to the securities. There may be more than one financial intermediary in the chain of ownership for an investor. We do not monitor and are not responsible for the actions of any of those intermediaries.

Special Situations When A Global Security Will Be Terminated

In a few special situations described below, the global security will terminate and interests in it will be exchanged for physical certificates representing those interests. After that exchange, the choice of whether to hold securities directly or in street name will be up to the investor. Investors must consult their own banks or brokers to find out how to have their interests in securities transferred to their own name, so that they will be direct holders. We have described the rights of holders and street name investors above.

The global security will terminate when the following special situations occur:

- if the depositary notifies us that it is unwilling, unable or no longer qualified to continue as depositary for that global security and we do not appoint another institution to act as depositary within 90 days;
- if we notify any applicable trustee that we wish to terminate that global security; or
- if an event of default has occurred with regard to securities represented by that global security and has not been cured or waived.

The prospectus supplement may also list additional situations for terminating a global security that would apply only to the particular series of securities covered by the prospectus supplement. When a global security terminates, the depositary, and not we or any applicable trustee, is responsible for deciding the names of the institutions that will be the initial direct holders.

PLAN OF DISTRIBUTION

We may sell the securities under this prospectus in one or more of the following ways from time to time:

- through agents;
- to or through underwriters;
- through dealers;
- directly to purchasers; or
- through a combination of these methods of sale.

The securities that we distribute by any of these methods may be sold, in one or more transactions, at:

- a fixed price or prices, which may be changed;
- market prices prevailing at the time of sale;
- prices related to prevailing market prices;
- negotiated prices; or
- a combination of these pricing methods.

Offers to purchase offered securities may be solicited by agents designated by us from time to time. Any agent involved in the offer or sale of the offered securities in respect of which this prospectus is delivered will be named, and any commissions payable by us will be set forth, in the applicable prospectus supplement. Unless otherwise set forth in the applicable prospectus supplement, any agent will be acting on a reasonable best efforts basis for the period of its appointment. Any agent may be deemed to be an underwriter, as that term is defined in the Securities Act, of the offered securities so offered and sold.

We will set forth in a prospectus supplement the terms of the offering of our securities, including:

- the name or names of any agents, underwriters or dealers;
- the purchase price of our securities being offered and the proceeds we will receive from the sale;
- any over-allotment options under which underwriters may purchase additional securities from us;
- any agency fees or underwriting discounts and commissions and other items constituting agents' or underwriters' compensation;
- the public offering price;
- any discounts or concessions allowed or reallowed or paid to dealers; and
- any securities exchanges on which such securities may be listed.

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If offered securities are sold to the public by means of an underwritten offering, either through underwriting syndicates represented by managing underwriters or directly by the managing underwriters, we will execute an underwriting agreement with an underwriter or underwriters, and the names of the specific managing underwriter or underwriters, as well as any other underwriters, will be set forth in the applicable prospectus supplement. In addition, the terms of the transaction, including commissions, discounts and any other compensation of the underwriters and dealers, if any, will be set forth in the applicable prospectus supplement, which prospectus supplement will be used by the underwriters to make resales of the offered securities. If underwriters are utilized in the sale of the offered securities, the offered securities will be acquired by the underwriters for their own account and may be resold from time to time in one or more transactions, including:

- negotiated transactions;
- at fixed public offering prices; or
- at varying prices determined by the underwriters at the time of sale.

In addition, unless otherwise indicated in the prospectus supplement, the underwriting agreement will provide that the obligations of the underwriters are subject to specified conditions precedent and that the underwriters with respect to a sale of offered securities will be obligated to purchase all of the offered securities of a series if any are purchased.

We may grant to the underwriters options to purchase additional offered securities to cover over-allotments, if any, at the public offering price with additional underwriting discounts or commissions, as may be set forth in the applicable prospectus supplement. If we grant any over-allotment option, the terms of the over-allotment option will be set forth in the applicable prospectus supplement.

If a dealer is utilized in the sales of offered securities, we will sell the offered securities to the dealer as principal. The dealer may then resell the offered securities to the public at varying prices to be determined by the dealer at the time of resale. Any dealer may be deemed to be an underwriter of the offered securities so offered and sold. The name of the dealer and the terms of the transaction will be set forth in the applicable prospectus supplement.

We may directly solicit offers to purchase offered securities and sell offered securities directly to institutional investors or others with respect to any resale of the offered securities. The terms of any of these sales will be described in the applicable prospectus supplement.

Offered securities may also be offered and sold in connection with a remarketing upon their purchase, in accordance with a redemption or repayment pursuant to their terms, or otherwise by one or more remarketing firms acting as principals for their own accounts or as agents for us. Any remarketing firm will be identified and the terms of its agreements, if any, with us and its compensation will be described in the applicable prospectus supplement. Remarketing firms may be deemed to be underwriters in connection with the offered securities remarketed by them.

Agents, underwriters, dealers and remarketing firms may be entitled, under agreements entered into with us, to indemnification by us against specified civil liabilities, including liabilities under the Securities Act that may arise from any untrue statement or alleged untrue statement of a material fact or any omission or alleged omission to state a material fact in this prospectus, any supplement or amendment hereto, or in the registration statement of which this prospectus forms a part, or to contribution with respect to payments which the agents, underwriters or dealers may be required to make.

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We may authorize underwriters or other persons acting as agents to solicit offers by specified institutions to purchase offered securities pursuant to contracts providing for payments and delivery on a future date, which will be set forth in the applicable prospectus supplement. Institutions with which these contracts may be made include commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and others. However, in all cases, these institutions must be approved by us. The obligations of any purchaser under any contract will be subject to the condition that the purchase of the offered securities shall not, at the time of delivery, be prohibited under the laws of the jurisdiction to which the purchaser is subject. The underwriters and other agents will not have any responsibility in respect of the validity or performance of these contracts.

Underwriters, dealers, agents and remarketing firms may be customers of, engage in transactions with, or perform services for, us in the ordinary course of business for which they have received or will continue to receive customary compensation.

Unless otherwise specified in the applicable prospectus supplement, each class or series of securities will be a new issue with no established trading market, other than our common stock, which is traded on The NASDAQ Capital Market. We may elect to list any other class or series of securities on any exchange and, in the case of our common stock, on any additional exchange. However, unless otherwise specified in the applicable prospectus supplement, we will not be obligated to do so. It is possible that one or more underwriters may make a market in a class or series of securities, but the underwriters will not be obligated to do so and may discontinue any market making at any time without notice. We cannot give any assurance as to the liquidity of the trading market for any of the offered securities.

In connection with an offering, an underwriter may purchase and sell securities in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by the underwriters of a greater number of securities than they are required to purchase in the offering. "Covered" short sales are sales made in an amount not greater than the underwriters' option to purchase additional securities from us, if any, in the offering. If the underwriters have an over-allotment option to purchase additional securities from us, the underwriters may close out any covered short position by either exercising their over-allotment option or purchasing securities in the open market. In determining the source of securities to close out the covered short position, the underwriters may consider, among other things, the price of securities available for purchase in the open market as compared to the price at which they may purchase securities through the over-allotment option. "Naked" short sales are any sales in excess of such option or where the underwriters do not have an over-allotment option. The underwriters must close out any naked short position by purchasing securities in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the securities in the open market after pricing that could adversely affect investors who purchase in the offering.

Accordingly, to cover these short sales positions or to otherwise stabilize or maintain the price of the securities, the underwriters may bid for or purchase securities in the open market and may impose penalty bids. If penalty bids are imposed, selling concessions allowed to syndicate members or other broker-dealers participating in the offering are reclaimed if securities previously distributed in the offering are repurchased, whether in connection with stabilization transactions or otherwise. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. The impositions of a penalty bid may also affect the price of the securities to the extent that it discourages resale of the securities. The magnitude or effect of any stabilization or other transactions is uncertain. These transactions may be effected on The NASDAQ Capital Market or otherwise and, if commenced, may be discontinued at any time.

To the extent required, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution.

LEGAL MATTERS

The validity of the securities offered hereby is being passed upon for us by Cooley LLP, Boston, Massachusetts.

EXPERTS

Meaden & Moore, Ltd., independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2012, and the effectiveness of our internal control over financial reporting as of December 31, 2012, as set forth in their reports, which are incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements and our management's assessment of the effectiveness of internal controls over financial reporting as of December 31, 2012 are incorporated by reference in reliance on Meaden & Moore, Ltd.'s reports, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other documents with the SEC as required by the Exchange Act. You can find, copy and inspect information we file at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. You can call the SEC at 1-800-SEC-0330 for further information about the public reference room. You can review our electronically filed reports, proxy and information statements on the SEC's web site at www.sec.gov or on our web site at www.cbiolabs.com. Information included on our web site is not part of this prospectus or any prospectus supplement.

This prospectus is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus regarding us and our securities, including exhibits and schedules. You can obtain a copy of the registration statement from the SEC at any address listed above or from the SEC's web site.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate" into this prospectus information that we file with the SEC in other documents. This means that we can disclose important information to you by referring to other documents that contain that information. Any information that we incorporate by reference is considered part of this prospectus.

Information contained in this prospectus and information that we file with the SEC in the future and incorporate by reference in this prospectus automatically modifies and supersedes previously filed information including information in previously filed documents or reports that have been incorporated by reference in this prospectus, to the extent the new information differs from or is inconsistent with the old information. Any information so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We incorporate by reference, as of their respective dates of filing, the documents listed below that we have filed with the SEC and any documents that we file with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus (except in each case the information contained in such documents to the extent "furnished" and not "filed"):

- (1) our Annual Report on Form 10-K for the year ended December 31, 2012, as filed with the SEC on March 18, 2013 and as amended on April 30, 2013 (File No. 001-32954);
- (2) our Quarterly Report on Form 10-Q for the quarter ended March 31, 2013, as filed with the SEC on May 9, 2013 (File No. 001-32954);
- (3) our Quarterly Report on Form 10-Q for the quarter ended June 30, 2013, as filed with the SEC on August 9, 2013 (File No. 001-32954);
- (4) our Quarterly Report on Form 10-Q for the quarter ended September 30, 2013, as filed with the SEC on November 8, 2013 (File No. 001-32954);

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- (5) our Current Reports on Form 8-K filed with the SEC on April 9, 2013, April 25, 2013, May 9, 2013, June 20, 2013, September 5, 2013, October 4, 2013, October 18, 2013 and November 6, 2013 (File No.001-32954);
- (6) any other filings pursuant to the Exchange Act after the date of filing the initial registration statement and prior to the termination of the offering; and
- (7) the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on July 20, 2006, including any amendments or reports filed for the purpose of updating that description.

You may request a copy of these documents, which will be provided to you at no cost, by writing or telephoning us using the following contact information:

Cleveland BioLabs, Inc.
73 High Street
Buffalo, New York 14203
Attention: Corporate Secretary
Telephone: (716) 849-6810

You should rely only on the information contained in this prospectus, including information incorporated by reference as described above, any accompanying prospectus supplement or any "free writing prospectus" we may authorize to be delivered to you. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front of those documents or that any document incorporated by reference is accurate as of any date other than its filing date. You should not consider this prospectus to be an offer or solicitation relating to the securities in any jurisdiction in which such an offer or solicitation relating to the securities is not authorized. Furthermore, you should not consider this prospectus to be an offer or solicitation relating to the securities if the person making the offer or solicitation is not qualified to do so, or if it is unlawful for you to receive such an offer or solicitation.



**5,737,706 Shares
of Common Stock**

**Warrants to Purchase
5,737,706 Shares of
Common Stock**

PROSPECTUS SUPPLEMENT

H.C. WAINWRIGHT & CO., LLC

January 15, 2014
