
PROSPECTUS

CryoLife, Inc.

3,703,699 Shares

Common Stock

This prospectus relates to the resale of up to 3,703,699 shares of common stock of CryoLife, Inc. (“CryoLife,” “we,” “us” or the “Company”) by the selling shareholders identified in this prospectus. The selling shareholders acquired these shares from us pursuant to an Agreement and Plan of Merger dated December 22, 2015. The selling shareholders may sell these shares through public or private transactions at market prices prevailing at the time of sale or at negotiated prices. The selling shareholders will receive all net proceeds from the sale of shares of our common stock in this offering.

We may also authorize one or more free writing prospectuses or prospectus supplements to be provided to you in connection with these offerings. Any related free writing prospectus or prospectus supplement may also add, update or change information contained in this prospectus. We urge you to carefully read this prospectus, any accompanying prospectus supplement, any related free writing prospectus and any documents we incorporate by reference before you make your investment decision.

Our common stock is listed on the New York Stock Exchange under the symbol “CRY.” On March 28, 2016, the last reported sale price for our common stock on the New York Stock Exchange was \$10.78 per share.

Investing in our common stock involves risks. See “[Risk Factors](#)” beginning on page 6 of this prospectus.

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.

The date of this prospectus is March 29, 2016

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No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus. You must not rely on any unauthorized information or representations. This prospectus and any accompanying supplement to this prospectus do not constitute an offer to sell, or a solicitation of an offer to purchase, any securities other than the registered securities to which they relate, nor do prospectus and any accompanying supplement to this prospectus constitute an offer to sell, or a solicitation of an offer to purchase, the securities offered by this prospectus in any jurisdiction to or from any person whom or from whom it is unlawful to make such offer or solicitation of an offer in such jurisdiction. The information contained in this prospectus is current only as of its date.

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 process, the selling shareholders identified in this prospectus may offer or sell shares of our common stock, as described in this prospectus, in one or more offerings from time to time.

We may also authorize one or more free writing prospectuses or prospectus supplements to be provided to you in connection with these offerings. Any related free writing prospectus or prospectus supplement may also add, update or change information contained in this prospectus or in any documents that we have incorporated by reference into this prospectus and, accordingly, to the extent inconsistent, information in this prospectus and in any documents incorporated by reference herein is superseded by the information in any accompanying prospectus supplement or any related free writing prospectus.

You should only rely on the information contained or incorporated by reference in this prospectus and any applicable prospectus supplement or any related free writing prospectus that we may authorize to be provided to you. We have not authorized any other person 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 applicable prospectus supplement or any related free writing prospectus is accurate as of any date other than the date on the cover of the applicable document. Our business, financial condition, results of operations and prospects may have changed since that date.

We urge you to read carefully this prospectus (as supplemented and amended) before deciding whether to purchase any of the shares of our common stock being offered.

FORWARD-LOOKING STATEMENTS

This prospectus, any prospectus supplement and the information incorporated by reference, including the sections entitled “Prospectus Summary” and “Risk Factors,” contain “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). These forward-looking statements reflect the views of our management regarding current expectations and projections about future events and are based on currently available information. Actual results could differ materially from those contained in these forward-looking statements for a variety of reasons, including, but not limited to, those discussed in our Annual Report on Form 10-K for the year ended December 31, 2015, Part I, Item 1A, “Risk Factors,” as well as those discussed elsewhere in this prospectus. Other unknown or unpredictable factors also could have a material adverse effect on our business, financial condition and results of operations. Accordingly, readers should not place undue reliance on these forward-looking statements. The use of words such as “anticipates,” “estimates,” “expects,” “intends,” “plans” and “believes,” among others, generally identify forward-looking statements; however, these words are not the exclusive means of identifying such statements. In addition, any statements that refer to expectations, projections or other characterizations of future events or circumstances are forward-looking statements. These forward-looking statements are inherently subject to uncertainties, risks and changes in circumstances that are difficult to predict. We are not under any obligation and do not intend to publicly update or review any of these forward-looking statements, whether as a result of new information, future events or otherwise, even if experience or future events make it clear that any expected results expressed or implied by those forward-looking statements will not be realized. Please carefully review and consider the various disclosures made in this report and in our other reports filed with the SEC that attempt to advise interested parties of the risks and factors that may affect our business, prospects and results of operations.

PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus. This summary does not contain all the information that you should consider before investing in our common stock. You should read the following summary together with the more detailed information regarding our company, the common stock being registered hereby, and our financial statements and notes thereto incorporated by reference in this prospectus.

Our Company

Overview

CryoLife, Inc. was incorporated under the laws of the State of Florida on January 19, 1984. All references to “CryoLife,” the “Company,” “we,” “us” or “our” in this prospectus mean CryoLife, Inc., a Florida corporation, and all entities owned or controlled by CryoLife, Inc., except where it is made clear that the term means only the parent company.

Our principal executive offices are located at 1655 Roberts Boulevard, NW, Kennesaw, Georgia 30144. Our telephone number is (770) 419-3355 and our website is located at www.cryolife.com. Information contained on our website is not part of this prospectus.

CryoLife, Inc. is a leader in medical device manufacturing and distribution and in the processing and distribution of implantable human tissue for use in cardiac and vascular surgeries. The Company operates throughout the United States and internationally. CryoLife’s surgical sealants and hemostats include BioGlue® Surgical Adhesive (“BioGlue”), BioFoam® Surgical Matrix (“BioFoam”), and PerClot®, an absorbable powdered hemostat, which the Company distributes internationally. BioGlue is FDA-approved as an adjunct to sutures and staples for use in adult patients in open surgical repair of large vessels. BioGlue is also CE marked in Europe for use in soft tissue repair and has received additional marketing approvals for specified applications in several other countries throughout the world. BioFoam is CE marked in Europe for use as an adjunct to hemostasis in cardiovascular surgery when cessation of bleeding by ligature or conventional methods is ineffective or impractical.

CryoLife also specializes in the treatment of severe angina that is not responsive to conventional therapy with its laser console system and single-use, fiber-optic handpieces, used to perform a surgical procedure known as Transmyocardial Revascularization. CryoLife exclusively distributes PhotoFix™ for Genesee biomedical, Inc. PhotoFix is a bovine pericardial patch stabilized using a dye-mediated photo-fixation process that requires no glutaraldehyde. PhotoFix has received 510(K) clearance and is indicated for use in intracardiac repair, including ventricular repair and atrial repair, great vessel repair and suture line buttressing, and pericardial closure.

The cardiac human tissues distributed by CryoLife include the CryoValve® SG pulmonary heart valve or CryoValve SGPV, and the CryoPatch® SG pulmonary cardiac patch tissue, or CryoPatch SG, both of which are processed using CryoLife’s proprietary SynerGraft® technology. CryoValve SGPV has FDA 510(k) clearance for the replacement of diseased, damaged, malformed, or malfunctioning native or prosthetic pulmonary valves. CryoLife’s CryoPatch has FDA 510(k) clearance for the repair or reconstruction of the right ventricular outflow tract, which is a surgery commonly performed in children with congenital heart defects. CryoLife’s vascular human tissues include its CryoVein® and CryoArtery® tissues, which are used in vascular reconstruction surgeries.

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On February 3, 2016, CryoLife sold its the Hemodialysis Reliable Outflow Graft (HeRO Graft) product line, which is a solution for end-stage renal disease in certain hemodialysis patients, to Merit Medical Systems, Inc. (“Merit”) for \$18.5 million in cash. Under the terms of the agreement, Merit acquired the HeRO Graft product line, including worldwide marketing rights, customer relationships, intellectual property, inventory and certain property and equipment. CryoLife will continue to manufacture the HeRO Graft product line for up to six months under a transition supply agreement, after which Merit will be responsible for manufacturing.

On March 18, 2016, CryoLife announced that LeMaitre Vascular, Inc., or LeMaitre, had acquired CryoLife’s ProCol Vascular Bioprosthesis, or ProCol, distribution rights and purchase option and that LeMaitre had exercised that option to acquire ProCol from Hancock Jaffe Laboratories Inc., or Hancock Jaffe. Under the terms of the agreements governing the transactions, CryoLife received approximately \$2.0 million for all of its ProCol-related assets, including inventory, customer lists, related marketing assets, and its purchase option, as well as for settlement of all amounts due to CryoLife from Hancock Jaffe.

The disposal of HeRO Graft and the sale of our ProCol option are part of a strategic shift of the Company to focus on cardiac surgery products, including the On-X heart valve.

Acquisition of On-X Life Technologies

On December 22, 2015, CryoLife entered into an Agreement and Plan of Merger (the “Merger Agreement”) to acquire On-X Life Technologies Holdings, Inc. (“On-X”), a Delaware corporation for approximately \$130.0 million, subject to certain adjustments for On-X’s cash on hand, net working capital, and unpaid transaction expenses, consisting of approximately \$91.0 million in cash and \$39.0 million, or 3,703,699 shares, of CryoLife’s common stock (the “Acquisition Shares”). Pursuant to the Merger Agreement and following the closing of the merger which occurred on January 20, 2016, On-X has become the wholly-owned subsidiary of CryoLife.

Per the Company’s preliminary analysis, the purchase price of the transaction totaled approximately \$128.1 million, consisting of cash of \$93.5 million and 3,703,699 shares of CryoLife’s common stock, with a value of \$34.6 million as determined on the date of closing. This purchase price is subject to several potential adjustments, including a working capital adjustment, which has not yet been finalized. Upon the closing of the merger, CryoLife entered into a Registration Rights Agreement with the selling shareholders on January 20, 2016 (the “Registration Rights Agreement”), pursuant to which CryoLife is required to file a Registration Statement on Form S-3 to register all of the Acquisition Shares for resale. This prospectus is part of such a registration statement filed on Form S-3 pursuant to the Registration Rights Agreement.

The On-X catalogue of products includes the On-X prosthetic aortic and mitral heart valves and the On-X ascending aortic prosthesis. On-X also distributes CarbonAid CO2 diffusion catheters, manufactures Chord-X ePTFE sutures for mitral chordal replacement, and offers pyrolytic carbon coating services to other medical device manufacturers.

The On-X heart valve is a bileaflet mechanical valve composed of a graphite substrate coated with On-X’s pyrolytic carbon coating. The On-X heart valve is available for both aortic and mitral indications and with a variety of sewing ring options to suit physicians’ preferences. The On-X AAP is an On-X aortic valve combined with a Vascutek Gelweave Valsava™ Graft to allow physicians to more conveniently treat patients requiring both an aortic valve replacement and an aortic graft.

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The On-X heart valve is FDA approved for the replacement of diseased, damaged, or malfunctioning native or prosthetic heart valves in the aortic and mitral positions, and is classified as a Class III medical device. On-X distributes the On-X heart valve under Conformité Européene Mark product certification (“CE Mark”) in the EEA. Additional marketing approvals have been granted in several other countries throughout the world.

RISK FACTORS

Investing in our common stock involves risks. You should carefully consider the risks described under “Risk Factors” beginning on page 20 of our annual report on Form 10-K for the period ended December 31, 2015, which are incorporated by reference herein and which may be updated, supplemented or superseded by the risks and uncertainties described in the reports we subsequently file with the SEC, as well as the other information contained or incorporated by reference in this prospectus or any prospectus supplement hereto before making a decision to invest in our securities.

USE OF PROCEEDS

The proceeds from the sale of the common stock offered pursuant to this prospectus are solely for the account of the selling shareholders. Accordingly, we will not receive any proceeds from the sale of the common stock offered hereby.

DESCRIPTION OF THE SECURITIES

Description of Capital Stock

The Company is authorized to issue up to 75,000,000 shares of common stock and 5,000,000 shares of preferred stock.

The following summary is qualified in its entirety by reference to the Company’s Amended and Restated Articles of Incorporation (the “Articles of Incorporation”), the Company’s Amended and Restated Bylaws (the “Bylaws”) and the Florida Business Corporation Act (the “FBCA”).

Common Stock

Holders of common stock are entitled to one vote per share of common stock held of record on all matters to be voted upon by the Company’s shareholders generally. Holders of common stock are not entitled to cumulative voting rights. As a result, the holders of a majority of the shares of common stock voting for the election of directors may elect all of the Company’s directors if they choose to do so, and, in such event, the holders of the remaining shares of common stock will not be able to elect any person or persons to the Board of Directors.

Holders of common stock are entitled to receive, on a pro rata basis, such dividends and distributions, if any, as may be declared from time to time by the Board of Directors out of funds legally available therefor, subject to any preferential dividend right of any issued and outstanding shares of preferred stock. In the event of liquidation, dissolution or winding up of the Company, after payment of creditors, holders of common stock are entitled to share ratably in all assets of the Company, subject to the payment of any liquidation preference of any issued and outstanding shares of preferred stock. Furthermore, holders of common stock have no conversion, sinking fund or redemption rights, or preemptive rights to subscribe for any of the Company’s securities. The shares of common stock currently outstanding are validly issued, fully paid and non-assessable.

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Preferred Stock

The Board of Directors of the Company is empowered, without approval of the Company's shareholders, to cause shares of preferred stock to be issued in one or more series and to fix and determine the relative rights and preferences of the shares of any such series, subject to the limitations of the FBCA. Because the Board of Directors has the power to establish the preferences and rights of each series, it may afford the holders of any series of preferred stock rights and preferences, voting or otherwise, senior to the rights of holders of common stock.

While providing desirable flexibility for possible acquisitions and other corporate purposes, and eliminating delays associated with a shareholder vote on specific issuances, the issuance of preferred stock could adversely affect the voting, dividend and liquidation rights of holders of common stock.

Articles of Incorporation and Bylaws

Certain provisions of the Articles of Incorporation and Bylaws of the Company and of Florida law, which are summarized below, could have the effect of making it more difficult to change the composition of the Company's Board of Directors or for any person or entity to acquire control of the Company.

Special Meetings

Pursuant to Florida law, the Company's Articles of Incorporation and Bylaws, special meetings of the shareholders may be called only by the Board of Directors, the President or Secretary at the request in writing of a majority of the Board of Directors then in office or at the request in writing of shareholders owning not less than 50% of all votes entitled to be cast at the special meeting. Only business within the purpose or purposes described in the special meeting notice may be conducted at the special meeting.

Prohibition of Shareholder Action Without Meeting

Under the Company's Articles of Incorporation, the shareholders may not take action by written consent. Any and all action by the shareholders is required to be taken at the annual shareholders' meeting or at a special shareholders' meeting.

Effect of Florida Affiliated Transactions and Anti-Takeover Statutes

The Company is subject to FBCA Section 607.0901, which provides that, subject to certain exceptions, an "affiliated transaction" must be approved by the holders of two-thirds of the voting shares other than those beneficially owned by an "interested shareholder." The Company is also subject to FBCA Section 607.0902, which requires that any person that engages in a "control-share acquisition" must obtain approval by a majority of the outstanding shares of each class or series entitled to vote, voting together as a single class, as well as, in some circumstances, a majority of the outstanding shares of any series or class voting as a separate class, before the acquiring person obtains voting rights for the acquired shares. Although Florida law permits a corporation to opt out of these requirements, the Company has not elected to opt out, which may have the effect of making it more difficult for any person or group to acquire the Company or substantial amounts of the Company's common stock, or engage in any "affiliated transaction," including the acquisition of a substantial amount of the Company's assets.

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Ability to Consider Other Constituencies

The directors of the Company are subject to the “general standards for directors” provisions set forth in Section 607.0830 of the FBCA. These provisions provide that, among other things, in discharging his or her duties and determining what is in the best interests of the Company, a director may consider such factors as the director deems relevant, including the long-term prospects and interests of the Company and its shareholders, and the social, economic, legal or other effects of any proposed action on the employees, suppliers or customers of the Company or its subsidiaries, the communities and society in which the Company or its subsidiaries operate, and the economy of the state and the nation. Consequently, in connection with any proposed corporate action, the Board of Directors is empowered to consider interests of other constituencies in addition to the interests of the Company’s shareholders. Shareholders should be aware that directors who take into account these other factors may make decisions which are less beneficial to the shareholders than if the law did not permit consideration of such other factors.

Shareholder Action

Except as otherwise provided by law or in our Articles of Incorporation or Bylaws, the approval by holders of a majority of the shares of common stock present in person or represented by proxy at a meeting and entitled to vote is sufficient to authorize, affirm, ratify or consent to a matter voted on by shareholders. The FBCA requires the approval of the holders of a majority of the outstanding stock entitled to vote for certain extraordinary corporate transactions, such as a merger, share exchange, conversion, sale of substantially all assets, dissolution or amendment of the articles of incorporation.

Transfer Agent and Registrar

The Transfer Agent and Registrar for the common stock is American Stock Transfer & Trust Company, LLC. It is located at 6201 15th Avenue, Brooklyn, NY 11219, and its telephone number is (718) 921-8124.

Listing

Our common stock is listed on the New York Stock Exchange under the symbol “CRY.”

SELLING SHAREHOLDERS

The following table, which was prepared based on information supplied to us by the selling shareholders, sets forth the name of each of the selling shareholders, the number of shares of common stock beneficially owned by each of the selling shareholders and the number of shares to be offered by each of the selling shareholders pursuant to this prospectus. The table also provides information regarding the beneficial ownership of our common stock by each of the selling shareholders as adjusted to reflect the assumed sale of all of the shares of common stock offered under this prospectus. The ownership percentage indicated in the following table is based on 33,871,367 total outstanding shares of our common stock and as of March 4, 2016. We have no preferred stock outstanding.

We have determined beneficial ownership in accordance with the rules of the SEC. Except as indicated by the footnotes below, we believe, based on the information furnished to us, that the persons named in the table below have sole voting and investment power with respect to all shares of common stock that they beneficially own, subject to applicable community property laws.

In computing the number of shares of common stock beneficially owned by a person and the percentage ownership of that person, we included outstanding shares of common stock subject to options, restricted stock or warrants held by that person that are currently exercisable or exercisable within 60 days of March 4, 2016. We did not deem these shares outstanding, however, for the purpose of computing the percentage ownership of any other person.

Name of Selling Shareholder	Shares Beneficially Owned Prior to the Offering		Number of Shares Being Registered for Resale	Shares Beneficially Owned After the Offering	
	Shares	Percentage		Shares(4)	Percentage
Paul Royalty Fund, L.P.(1)	2,648,184	7.9%	2,648,184	—	—
PTV Sciences II, L.P.(2)	872,810	2.6%	872,810	—	—
Alpha Medical, Inc.(3)	151,287	*	151,287	—	—
Nancy S. Lewis	14,546	*	14,546	—	—
Richard Lynn Alexander	11,637	*	11,637	—	—
Kevin G. McMahon	2,909	*	2,909	—	—
H.A. Lawhon	1,745	*	1,745	—	—
Thomas J. Madsen	581	*	581	—	—

* Represents less than 1% of the total aggregate amount of shares of our common stock

- (1) Information based on Schedule 13G filed with the Securities and Exchange Commission on January 28, 2016 by Paul Royalty Fund, L.P., Paul Capital Management LLC and Paul Capital Advisors, L.L.C. All shares are held of record by Paul Royalty Fund, L.P. Paul Capital Advisors, L.L.C. is the manager of Paul Capital Management LLC, the general partner of Paul Royalty Fund, L.P. Paul Capital Advisors, L.L.C. and Paul Capital Management LLC share voting and dispositive power over the shares held by Paul Royalty Fund, L.P.
- (2) All shares are held of record by PTV Sciences II, L.P. Pinto TV GP Company LLC is the general partner of Pinto Technology Ventures GP II, L.P., the general partner of PTV Sciences II, L.P. Matthew S. Crawford and Rick D. Anderson are managers of Pinto TV GP Company LLC and are deemed to share voting and dispositive power over the shares held by PTV Sciences II, L.P.
- (3) All shares are held of record by Alpha Medical, Inc. Rudiger Dahle founded Alpha Medical, Inc. in 1993 and is the sole shareholder. Mr. Dahle has sole voting power over all of the shares of Alpha Medical, Inc. Mr. Dahle is the President and Secretary of Alpha Medical, Inc.
- (4) Assumes the sale of all shares being offered pursuant to this prospectus. As described in this prospectus, each selling shareholder may offer and sell, from time to time, some, all or none of its shares included in this prospectus.

PLAN OF DISTRIBUTION

We are registering pursuant to this prospectus a total of 3,703,699 shares of common stock on behalf of the selling shareholders. The selling shareholders, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling shares of common stock or interests in shares of common stock received after the date of this prospectus from a selling shareholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of common stock or interests in shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The selling shareholders may use any one or more of the following methods when disposing of shares or interests therein:

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

A selling shareholder that is an entity may elect to make a pro rata in-kind distribution of the shares of common stock to its members, partners or shareholders pursuant to the registration statement of which this prospectus is a part by delivering a prospectus. To the extent that such members, partners or shareholders are not affiliates of ours, such members, partners or shareholders would thereby receive freely tradable shares of common stock pursuant to the distribution through a registration statement.

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

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

The aggregate proceeds to the selling shareholders from the sale of the common stock offered by them will be the purchase price of the common stock less discounts or commissions, if any. Each of the selling shareholders reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering.

The selling shareholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conform to the requirements of that rule.

The selling shareholders and any underwriters, broker-dealers or agents that participate in the sale of the common stock or interests therein may be “underwriters” within the meaning of Section 2(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling shareholders who are “underwriters” within the meaning of Section 2(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our common stock to be sold, the names of the selling shareholders, the respective purchase prices and public offering prices, the names of any agents, dealers or underwriters and any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

In order to comply with the securities laws of some states, if applicable, the common stock may be sold in these jurisdictions only through registered or licensed brokers or dealers.

We have advised the selling shareholders that the anti-manipulation rules of Regulation M under the Exchange Act, as amended, may apply to sales of shares in the market and to the activities of the selling shareholders and their affiliates. In addition, to the extent applicable we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling shareholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling shareholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act.

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Pursuant to, and in accordance with the terms of, the Registration Rights Agreement (i) we have agreed to indemnify the selling shareholders (and their respective officers, directors, agents, partners, members, managers and employees, and each other person, if any, who controls such selling shareholders (within the meaning of the Securities Act)), against certain liabilities, including liabilities under the Securities Act, relating to the registration of the shares offered by this prospectus, or the selling shareholders may be entitled to contribution if indemnification is prohibited by law, and (ii) the selling shareholders have agreed to indemnify us (including our directors, officers, employees, shareholders and each person who controls the Company (within the meaning of the Securities Act)) against certain liabilities, including liabilities under the Securities Act that may arise from any written information furnished to us by the selling shareholders for use in this prospectus or the registration statement that includes this prospectus, or we may be entitled to contribution if indemnification is prohibited by law.

Pursuant to the Registration Rights Agreement, we have agreed with the selling shareholders to keep the registration statement of which this prospectus constitutes a part effective until the earlier of (i) October 16, 2016, and (ii) such time as the Registrable Securities covered by this Registration Statement have been sold pursuant to (x) this Registration Statement or (y) Rule 144 under the Securities Act or otherwise.

Broker-dealers and agents, and their respective affiliates, may be engaged in transactions with, or perform commercial or investment banking or other services for, us or our subsidiaries or affiliates, in the ordinary course of business.

The selling shareholders and any permitted transferee(s) selling shares under this prospectus will act independently of us in making decisions with respect to the timing, manner, and size of each resale. There can be no assurance that the selling shareholders and any permitted transferee(s) will sell any or all of the shares under this prospectus. Further, we cannot assure you that the selling shareholders and any permitted transferee(s) will not transfer, distribute, devise or gift the shares by other means not described in this prospectus, including through dividends or other distributions made by the selling shareholders or permitted transferees on a private placement basis to their respective partners, members or shareholders. In addition, any shares covered by this prospectus that qualify for sale under Rule 144 of the Securities Act may be sold under Rule 144 rather than under this prospectus.

Pursuant to the Merger Agreement and a Lockup Agreement delivered by PTV Sciences II, L.P. and Paul Royalty Fund, L.P. to us upon the closing of the merger, PTV Sciences II, L.P. and Paul Royalty Fund, L.P. and certain of their permitted transferees are subject to a lock-up for a period of 90 days following January 20, 2016 and ending on April 19, 2016. During this period, subject to certain exceptions, they may not, directly or indirectly, without our prior written consent, offer, pledge, sell, contract to sell, grant, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock acquired in the merger or any securities convertible into or exercisable or exchangeable for shares of our common stock, enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the shares, whether any such transaction described above is to be settled by delivery of shares of our common stock, in cash or otherwise, or publicly disclose the intention to make any

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offer, sale, pledge or disposition, or to enter into any transaction, swap, hedge or other arrangement relating to any shares of our common stock acquired in the merger. The lock-up provisions permit transferring the shares in connection with:

- a sale of CryoLife approved by its board of directors or a tender offer or exchange offer for all of the outstanding shares of CryoLife's common stock;
- transfers as a *bona fide* gift, by will or intestacy or to a family member or trust for the benefit of certain family members;
- transfers to a charity or educational institution;
- if the selling shareholder is a corporation, partnership, limited liability company or other business entity, any transfers to any shareholder, partner or member of, or owner of similar equity interests in, the selling shareholder, subject to certain limitations; or
- transfers between other former holders of On-X Life Technologies, Inc. capital stock that have also executed a substantially similar lock-up agreement.

LEGAL MATTERS

The validity of the shares of common stock offered by this prospectus has been passed upon for CryoLife by Shutts & Bowen LLP.

EXPERTS

The consolidated financial statements of CryoLife, Inc. appearing in CryoLife, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2015, and the effectiveness of CryoLife, Inc.'s internal control over financial reporting as of December 31, 2015 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in its reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

The consolidated financial statements of On-X Life Technologies Holdings, Inc. included in Exhibit 99.1 of CryoLife's Current Report on Form 8-K/A filed with the SEC on March 9, 2016 have been incorporated by reference in this prospectus in reliance on the report of KPMG LLP, an independent registered public accounting firm, and the report of Padgett Stratemann & Co., LLP an independent registered public accounting firm, and upon the authority of said firms as experts in accounting and auditing.

INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with them, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file later with the SEC will automatically update and supersede information included or previously incorporated by reference in this prospectus from the date we file the document containing such information. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus. Except to the extent furnished and not filed with the SEC pursuant to Item 2.02 or Item 7.01 of Form 8-K or as otherwise permitted by the SEC rules, we incorporate by reference the documents listed below and any future filings we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, prior to the completion of the offering in the relevant prospectus supplement to which this prospectus relates or the termination of the offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information deemed furnished and not filed with the SEC. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

The documents we incorporate by reference into this prospectus are:

1. Our Annual Report on Form 10-K for the year ended December 31, 2015, filed with the SEC on February 16, 2016 and Amendment No. 1 to our Annual Report on Form 10-K, filed with the SEC on March 25, 2016;

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2. Our Current Reports on Form 8-K, but only to the extent that the information set forth therein is “filed” rather than “furnished” under the SEC rules, filed with the SEC on January 25, 2016, February 8, 2016, March 1, 2016, March 9, 2016 and March 18, 2016; and

3. The description of our common stock contained in our registration statement on Form 8-A, filed on July 2, 1997, and any amendment or report filed for the purpose of updating such description, including without limitation, our Amendment No. 1 to Form 8-A/A filed on November 3, 2005.

This prospectus is part of a registration statement on Form S-3 filed with the SEC under the Securities Act. This prospectus does not contain all of the information set forth in the registration statement. You should read the registration statement for further information about CryoLife and our common stock.

Documents incorporated by reference are available from us, without charge, excluding all exhibits unless specifically incorporated by reference in the documents. You may obtain documents incorporated by reference in this prospectus by writing to us at the following address or by calling us at the telephone number listed below:

CryoLife, Inc.
Attn: Corporate Secretary
1655 Roberts Boulevard, NW
Kennesaw, Georgia 30144
(770) 419-3355

You should rely only on the information incorporated by reference or provided in this prospectus or any prospectus supplement. We have not authorized anyone else to provide you with different information. 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 page of those documents.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document we file at the SEC’s Public Reference Room located at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the Public Reference Room. Our SEC filings are also available to the public over the internet from the SEC’s website at www.sec.gov, or our website at www.cryolife.com. The contents of our website are not incorporated by reference in or otherwise a part of this prospectus.

CRYOLIFE, INC.

Common Stock

PROSPECTUS
