Eloxx Pharmaceuticals, Inc.
Form 424B5
April 24, 2018
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Filed Pursuant to Rule 424(b)(5)
Registration No. 333-224207

The information in this preliminary prospectus supplement and the accompanying prospectus is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are not offers to sell these securities, and we are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED APRIL 24, 2018

PRELIMINARY PROSPECTUS SUPPLEMENT

(to Prospectus dated April 20, 2018)

5,000,000 Shares

Common Stock

We are offering 5,000,000 shares of our common stock. Our common stock is currently traded on the OTCQB Market under the symbol ELOX. Effective upon the pricing of this offering, we expect our common stock to be approved for listing on The Nasdaq Global Market under the symbol ELOX. The closing price of our common stock on the OTCQB Market on April 23, 2018 was $10.70 per share.

Investing in our common stock involves a high degree of risk. Please read the Risk Factors beginning on page S-5 of this prospectus supplement and found in the documents incorporated by reference into this prospectus supplement.

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.

	Per Share	Total

Public offering price	$	$
Underwriting discounts and commissions(1)	$	$
Proceeds to us, before expenses	$	$

(1) The underwriters will be reimbursed for certain expenses incurred in this offering. See Underwriting for details.

Delivery of the shares of common stock is expected to be made on or about April , 2018. We have granted the underwriters an option for a period of 30 days to purchase up to 750,000 additional shares of our common stock. If the underwriters exercise this option in full, the total underwriting discounts and commissions payable by us will be $ and the total proceeds to us, before expenses, will be $.

Joint Book-Running Managers

Citigroup **Piper Jaffray**

Lead Co-Manager *Co-Manager*

Canaccord Genuity **SunTrust Robinson Humphrey**

April , 2018

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Prospectus Supplement

Prospectus

You should rely only on the information contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or any free writing prospectus that we have authorized for use in connection with this offering. Neither we nor the underwriters have authorized anyone to provide you with information different from that contained in this prospectus supplement, the accompanying prospectus or any accompanying free writing prospectus. We are offering to sell, and seeking offers to buy, common stock only in jurisdictions where offers and sales are permitted. If anyone provides you with different or inconsistent information, you should not rely on it. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. The information contained in this prospectus supplement, the accompanying prospectus and any accompanying free writing prospectus is

accurate only as of the date of this prospectus supplement, the accompanying prospectus and any such accompanying free writing prospectus, regardless of the time of delivery of this prospectus supplement, the accompanying prospectus, any such accompanying free writing prospectus or of any sale of our common stock. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized

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for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus supplement entitled Where You Can Find More Information and Incorporation of Documents by Reference.

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus form part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or SEC, utilizing a shelf registration process. This document contains two parts. The first part consists of this prospectus supplement, which provides you with specific information about this offering. The second part, the accompanying prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer only to the prospectus, we are referring to both parts combined. This prospectus supplement may add, update or change information contained in the accompanying prospectus. To the extent that any statement we make in this prospectus supplement is inconsistent with statements made in the accompanying prospectus or any documents incorporated by reference herein or therein, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying prospectus and such documents incorporated by reference herein and therein. You should read this prospectus supplement and the accompanying prospectus, including the information incorporated by reference herein and therein, and any related free writing prospectus that we have authorized for use in connection with this offering.

You should rely only on the information that we have included or incorporated by reference in this prospectus supplement, the accompanying prospectus and any related free writing prospectus that we may authorize to be provided to you. We have not authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or any related free writing prospectus that we may authorize to be provided to you. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or any related free writing prospectus. This prospectus supplement, the accompanying prospectus and any related free writing prospectus do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus supplement, the accompanying prospectus or any related free writing prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction.

You should not assume that the information contained in this prospectus supplement, the accompanying prospectus or any related free writing prospectus is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference herein or therein is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus supplement, the accompanying prospectus or any related free writing prospectus is delivered, or securities are sold, on a later date.

This prospectus supplement contains or incorporates by reference summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been or will be filed or have been or will be incorporated by reference as exhibits to the registration statement of which this prospectus supplement forms a part, and you may obtain copies of those documents as described in this prospectus supplement under the heading Where You Can Find More Information.

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PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained in other parts of this prospectus supplement. Because it is only a summary, it does not contain all of the information that you should consider before investing in shares of our common stock and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information appearing elsewhere in this prospectus supplement, the accompanying prospectus, any applicable free writing prospectus and the documents incorporated by reference herein and therein. You should read all such documents carefully, especially the risk factors and our financial statements and the related notes included or incorporated by reference herein or therein, before deciding to buy shares of our common stock. Unless the context requires otherwise, references in this prospectus supplement to Eloxx, we, us and our refer to Eloxx Pharmaceuticals, Inc. and our subsidiaries.

Company Overview

We are a global biopharmaceutical company focused on discovering and developing novel therapeutics for the treatment of rare and ultra-rare premature stop codon diseases. We are harnessing the science of genetic read-through to develop novel drug product candidates that interact with the ribosome to overcome these premature stop codons. Our revolutionary small molecule approach is designed to unleash the potential to restore production of full length functional proteins with the goal of enabling a return toward normal cellular function. We believe there is a broad application of this approach to the over 1,800 rare and ultra-rare diseases where nonsense mutation has been implicated in the cause or pathway of human disease.

Our research and development strategy is to target rare or ultra-rare diseases where a high unmet medical need, nonsense mutation bearing patient population has been identified. We focus on clinical indications where there is a high unmet medical need, established preclinical read-through or personalized medicine experiments that are predictive of clinical activity, and a definable path for Orphan Drug development, regulatory approval, patient access and commercialization. We believe patient advocacy to be an important element of patient focused drug development and seek opportunities to collaborate with patient advocacy groups throughout the discovery and development process. Our current clinical focus is on cystic fibrosis (or CF) and cystinosis where we are advancing our lead drug product candidate, ELX-02.

We intend to be the global leader in the application of the science of translational read through and the associated pathway of nonsense mediated messenger ribonucleic acid (mRNA) decay. We believe that expanding our expertise across these basic science areas of mRNA regulation, ribosomal function, and protein translation forms a solid foundation to support our discovery and development activities. Our compounds modulate the activity of the ribosome, the organelle within living cells responsible for protein production, a process also known as translation. These novel small molecule compounds are designed to allow the ribosome to read-through a nonsense mutation in mRNA (which is transcribed from the DNA sequence), to restore the translation process to produce full length, functional proteins and increase the amount of mRNA that would otherwise be degraded as part of a phenomenon called nonsense mediated mRNA decay. As our compounds target the general mechanism for protein production in the cell, we believe they have the potential to treat hundreds of genetic diseases where nonsense mutations have impaired gene function. Our subcutaneously injected small molecules have the potential to be self-administered and to be active at most tissue locations across the body.

We believe that our library of related novel small molecules hold the potential to be disease-modifying therapies that may change the course of hundreds of genetic diseases and improve the lives of patients. Our early preclinical data in animal models of nonsense mutations suggests that drug product candidates from our read through compound library may have potential beneficial effects for each of the following diseases: cystic fibrosis, cystinosis,

mucopolysaccharidosis type 1, Duchenne muscular dystrophy and Rett syndrome, and have

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demonstrated the potential for beneficial effects in multiple organs such as the brain, kidney, muscles and others. Furthermore, an independent third party study demonstrated that Ivacaftor, an approved drug from the treatment of cystic fibrosis, enhanced the effects of ELX-02 on organoids when used in conjunction with it. Additionally, independent studies have shown that bi-weekly administration of ELX-02 in a mouse model demonstrated the potential of ELX-02 to reduce kidney cysteine levels. We intend to advance one or more additional molecules from our drug product candidate library toward clinical development by initiating the required investigational new drug (IND)-enabling studies in 2018.

Currently our lead program ELX-02 is focused on development for cystic fibrosis and cystinosis patients with diagnosed nonsense mutations. To advance the program, we have held pre-IND pre-clinical trial application (CTA) discussions with the Federal Agency for Medicines and Health Products (the FAMHP) in Brussels, Belgium and pre-IND discussions with the U.S. Food & Drug Administration (the FDA) for cystic fibrosis and cystinosis, respectively. We are on-track for an expected mid-2018 submission of our IND and CTA. Approval of these submissions will be required for initiation of Phase 2 studies in cystic fibrosis and cystinosis in 2018.

As part of our clinical program, we have completed a Phase 1 single ascending dose (SAD) study in a total of 60 healthy volunteers at sites in Israel (ClinicalTrials.gov Identifier: NCT02807961) and Belgium (ClinicalTrials.gov Identifier: NCT03292302). Currently ongoing is the Phase 1 multiple ascending dose (MAD) study in 45 healthy volunteers in Belgium (ClinicalTrials.gov Identifier: NCT03309605). We anticipate that the Phase 1 MAD study will be completed in 2018. The results from the completed Phase 1 study will be included in the planned IND and CTA submissions.

We believe there is a significant unmet medical need in the treatment of cystic fibrosis patients carrying nonsense mutations on one or both alleles of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) gene. Cystic fibrosis is the most prevalent genetic disease in the western world and there are no currently approved therapies that target the impairment associated with Class 1 CFTR mutations. We believe that nonsense mutations may impact a similar proportion of patients diagnosed with cystinosis. There are no currently approved therapeutics that target the nonsense mutation mediated impairment of cystinosin the cystine-selective transport channel in the lysosomal membrane that is attributed as the cause for the accumulation of cystine in this disease state. Given the high proportion of pediatric patients in each of these rare orphan diseases we intend to apply for relevant Orphan Drug incentives in the US and Europe, including the Rare Pediatric Disease Priority Review Voucher in the U.S.

Currently, the European Medicines Agency (the EMA) has designated ELX-02 as an orphan medicine for the treatment of mucopolysaccharidosis type I (MPS I), and the FDA has granted orphan drug designation to ELX-02 for the treatment of MPS I and for the treatment of Rett Syndrome.

We hold worldwide development and commercialization rights to ELX-02 and novel compounds in our read-through library, for all indications, in all territories, under a license from the Technion Research and Development Foundation Ltd. Professor Timor Baasov, the inventor of our compounds, has served as our senior consultant since our incorporation.

Merger of Sevion Therapeutics, Inc. and Eloxx Pharmaceuticals, Limited

On December 19, 2017, Sevion Therapeutics, Inc. (Sevion) acquired Eloxx Pharmaceuticals, Limited (Private Eloxx) pursuant to a merger between the companies (the Transaction). Upon consummation of the Transaction (the Closing), Sevion adopted the business plan of Private Eloxx and discontinued the pursuit of Sevion s business plan pre-Closing. In connection with the Transaction, Sevion agreed to acquire all of the outstanding capital stock of Private Eloxx in exchange for the issuance of an aggregate 20,316,656 shares of Sevion s common stock, par value $0.01 per share (the

Common Stock), after giving effect to a 1-for-20

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reverse split effected immediately prior to the Transaction. As a result of the Transaction, Private Eloxx became a wholly-owned subsidiary of Sevion. While Sevion was the legal acquirer in the transaction, Private Eloxx was deemed the accounting acquirer. Immediately after giving effect to the Transaction, on December 19, 2017, Sevion changed its name to Eloxx Pharmaceuticals, Inc.

Corporate Information

Information concerning the Company is contained in the documents that we file with the SEC as a reporting company under the Securities Exchange Act of 1934, which are accessible at www.sec.gov. Our website address is *www.eloxxpharma.com*. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

Our mailing address is 950 Winter Street, Waltham, Massachusetts 02451. Our telephone number is (781) 577-5300.

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THE OFFERING

Common stock offered by us	5,000,000 shares
Option to purchase additional shares	We have granted the underwriters an option to purchase up to 750,000 additional shares of our common stock. This option is exercisable, in whole or in part, for a period of 30 days from the date of this prospectus supplement.
Common stock to be outstanding after this offering	32,527,738 shares (33,277,738 shares if the underwriters elect to exercise in full their option to purchase additional shares from us).
Use of proceeds	We estimate that the net proceeds from our issuance and sale of 5,000,000 shares of common stock in this offering will be approximately $49,620,000, assuming a public offering price of $10.70 per share, the closing price of our common stock on April 23, 2018. We intend to use the net proceeds of this offering to fund part of the continued clinical development of ELX-02, and for working capital and other general corporate purposes. See Use of Proceeds.
Risk factors	An investment in our common stock involves a high degree of risk. See Risk Factors beginning on page S-5 of this prospectus supplement and the similarly titled sections in the documents incorporated by reference into this prospectus supplement.
Nasdaq Global Market symbol (to be effective upon pricing of this offering)	ELOX

Outstanding Shares

The number of shares of our common stock to be outstanding after this offering is based on 27,527,738 shares of our common stock outstanding as of December 31, 2017, and excludes:

- warrants to purchase 480,049 shares of common stock;
- options to purchase 3,215,661 shares of common stock; and
- restricted stock units for 663,212 shares of common stock.

On August 9, 2017, we received a legal claims letter from Technion Research and Development Foundation Limited, a licensor of our aminoglycosides technology (TRDF), alleging that under its agreement with us, TRDF was entitled to an exit fee of up to 3% of the shares received by Eloxx Ltd. shareholders in connection with the reverse merger with Sevion Therapeutics, Inc. We are in discussions with TRDF regarding a settlement of the legal claim and have agreed in principle, in exchange for the fulfillment and removal of the exit fee clause, that we will issue shares of common stock to TRDF representing approximately 2.1% of our outstanding shares at the time of the reverse merger with Sevion. The number of outstanding shares of common stock used in this prospectus supplement does not reflect any such potential issuance of shares to TRDF.

Except as otherwise indicated herein, all information in this prospectus supplement, including the number of shares that will be outstanding after this offering, does not assume or give effect to the exercise of options or warrants outstanding as of December 31, 2017 or the exercise of the underwriters option to purchase additional shares in this offering.

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RISK FACTORS

An investment in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should carefully consider the risks described below and those discussed under the Section captioned Risk Factors contained in our Annual Report on Form 10-K for the year ended December 31, 2017, which is incorporated by reference in this prospectus supplement and the accompanying prospectus, together with other information in this prospectus supplement, the accompanying prospectus, the information and documents incorporated by reference herein and therein, and in any free writing prospectus that we have authorized for use in connection with this offering. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment.

Risks Related to This Offering

Management will have broad discretion as to the use of the proceeds from this offering, and we may not use the proceeds effectively.

Our management will have broad discretion with respect to the use of proceeds of this offering, including for any of the purposes described in the section of this prospectus supplement entitled Use of Proceeds. You will be relying on the judgment of our management regarding the application of the proceeds of this offering. The results and effectiveness of the use of proceeds are uncertain, and we could spend the proceeds in ways that you do not agree with or that do not improve our results of operations or enhance the value of our common stock. Our failure to apply these funds effectively could have a material adverse effect on our business, delay the development of our product candidates and cause the price of our common stock to decline.

You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.

Since the public offering price for our common stock in this offering is substantially higher than the net tangible book value per share of our common stock outstanding prior to this offering, you will suffer immediate and substantial dilution in the net tangible book value of the common stock you purchase in this offering. If the underwriters exercise their option to purchase additional shares, you will experience additional dilution. See the section entitled Dilution below for a more detailed discussion of the dilution you will incur if you purchase shares in this offering.

The issuance of additional shares of our common stock could be dilutive to stockholders if they do not invest in future offerings. In addition, we have a significant number of options and warrants to purchase shares or our common stock outstanding. If these securities are exercised, you may incur further dilution. Moreover, to the extent that we issue additional options or warrants to purchase, or securities convertible into or exchangeable for, shares of our common stock in the future and those options, warrants or other securities are exercised, converted or exchanged, stockholders may experience further dilution.

We do not intend to pay dividends for the foreseeable future.

We have never declared or paid any dividends on our common stock and do not intend to pay any dividends in the foreseeable future. We anticipate that we will retain all of our future earnings for use in the operation of our business and for general corporate purposes. Any determination to pay dividends in the future will be at the discretion of our board of directors.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the information incorporated by reference in this prospectus supplement, contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this prospectus supplement, including statements regarding our future operating results and financial position, business strategy, and plans and objectives of management for future operations, are forward-looking statements. In many cases, you can identify forward-looking statements by terms such as may, should, expects, plans, anticipates, c intends, target, projects, contemplates, believes, estimates, predicts, potential, or continue or the neg terms or other similar expressions. Forward looking statements include statements herein with respect to our ability to successfully develop and commercialize ELX-02; our expectations regarding approval of ELX-02 by the U.S. Food and Drug Administration; and future performance.

The forward-looking statements contained in this prospectus supplement reflect our views as of the date of this prospectus supplement about future events and are subject to risks, uncertainties, assumptions, and changes in circumstances that may cause our actual results, performance, or achievements to differ significantly from those expressed or implied in any forward-looking statement. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future events, results, performance, or achievements. A number of important factors could cause actual results to differ materially from those indicated by the forward-looking statements, including, without limitation, those factors described or referenced in Risk Factors. In addition, those Risk Factors may be updated from time to time by our filings under the Securities Exchange Act of 1934, as amended. Except as required by law, after the date of this prospectus supplement, we are under no duty to update or revise any of the forward-looking statements contained or incorporated by reference herein, whether as a result of new information, future events or otherwise.

You should read this prospectus supplement and the information that we incorporate by reference, completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements.

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PRICE RANGE OF OUR COMMON STOCK

Our common stock has been traded on the OTCQB Market under the symbol ELOX since December 20, 2017. Prior to that time, the stock had traded in the OTCBB under the symbol SVON. During 2016 and 2017 (until December 19, 2017), the Company was called Sevion Therapeutics, Inc., and it had a different management team and board of directors and was pursuing a different business plan. The following table sets forth the high and low sale prices per share for our common stock on the OTCQB Market for the periods indicated:

	High	Low
2018		
First Quarter	$ 9.85	$ 6.25
Second Quarter (through April 20, 2018)	$ 10.75	$ 8.00
2017		
First Quarter	$ 0.30	$ 0.16
Second Quarter	$ 0.38	$ 0.16
Third Quarter	$ 0.36	$ 0.18
Fourth Quarter*	$ 8.80	$ 3.60
2016		
First Quarter	$ 0.40	$ 0.19
Second Quarter	$ 0.28	$ 0.15
Third Quarter	$ 0.22	$ 0.08
Fourth Quarter	$ 0.20	$ 0.11

* Reflects 1-for-20 reverse stock split effected on December 19, 2017.

On April 20, 2018, the closing price of our common stock as reported by the OTCQB Market was $10.20 per share. As of April 23, 2018, there were approximately 218 holders of record of our common stock.

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USE OF PROCEEDS

We estimate that the net proceeds from our issuance and sale of 5,000,000 shares of common stock in this offering will be approximately $49.6 million, or approximately $57.2 million if the underwriters exercise their option to purchase additional shares in full, assuming a public offering price of $10.70 per share, the closing price of our common stock on April 23, 2018 in each case after deducting the underwriting discounts and commissions and the estimated offering expenses payable by us.

We intend to use the net proceeds of this offering to fund part of the continued clinical development of ELX-02, and for working capital and general corporate purposes.

We have not determined the amounts we plan to spend on any of the areas listed above or the timing of these expenditures. As a result, our management will have broad discretion in allocating the net proceeds from this offering. Pending application of the net proceeds as described above, we intend to invest the net proceeds of this offering in short-term, investment-grade, interest-bearing securities.

These expected uses represent our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development, the status of and results from clinical trials, as well as any new collaborations that we may enter into with third parties for our product candidates, and any unforeseen cash needs. As a result, our management will have broad discretion in the application of the net proceeds from this offering, and investors will be relying on the judgment of our management regarding the application of the net proceeds from this offering. The timing and amount of our actual expenditures will be based on many factors, including cash flows from operations and the anticipated growth of our business.

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DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock and our ability to pay cash dividends is currently prohibited by the terms of our debt financing arrangements. We do not anticipate paying cash dividends on our common stock in the foreseeable future. Payment of future dividends, if any, on our common stock will be at the discretion of our board of directors after taking into account various factors, including our financial condition, operating results, anticipated cash needs and plans for expansion.

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CAPITALIZATION

The following table sets forth our cash, cash equivalents and marketable securities and our capitalization as of December 31, 2017:

- on an actual basis; and
- on an as adjusted basis to reflect our issuance and sale of 5,000,000 shares of common stock in this offering at the public offering price of $10.70 per share, assuming a public offering price of $10.70 per share, the closing price of our common stock on April 23, 2018, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this table together with our financial statements and the related notes incorporated by reference in this prospectus supplement and the sections entitled Management s Discussion and Analysis of Financial Condition and Results of Operations included in our most recent Annual Report on Form 10-K , as incorporated by reference herein.

	As of December 31, 2017	
(in thousands, except share data)	**Actual**	**As Adjusted (unaudited)**
Cash and cash equivalents	$ 24,049	$ 73,669
Stockholders equity:		
Preferred stock, $0.01 par value; 5,000,000 shares authorized, no shares issued or outstanding, actual or as adjusted		
Common stock, $0.01 par value; 500,000,000 shares authorized, 27,527,738 shares issued and outstanding, actual; 32,527,738 shares issued and outstanding, as adjusted	274	324
Additional paid-in capital	60,047	109,617
Accumulated deficit	(38,960)	(38,960)
Total stockholders equity	21,361	70,981
Total capitalization	$ 21,361	$ 70,981

The foregoing table and calculations are based on 27,527,738 shares of our common stock outstanding as of December 31, 2017, and excludes:

- warrants to purchase 480,049 shares of common stock;

options to purchase 3,215,661 shares of common stock; and

restricted stock units for 663,212 shares of common stock.

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DILUTION

If you invest in our common stock, your interest will be diluted immediately to the extent of the difference between the public offering price per share you will pay in this offering and the as adjusted net tangible book value per share of our common stock after this offering. Net tangible book value per share represents our total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding.

As of December 31, 2017, our net tangible book value was approximately $21.4 million, or $0.78 per share of common stock. After giving effect to our issuance and sale of 5,000,000 shares of common stock in this offering at the assumed public offering price of $10.70 per share, the closing price of our common stock on April 23, 2018 after deducting underwriting discounts and commissions and estimated offering expenses payable by us, the as adjusted net tangible book value as of December 31, 2017 would have been $71.0 million, or $2.18 per share. This represents an immediate increase in as adjusted net tangible book value to existing stockholders of $1.40 per share and an immediate dilution to new investors purchasing common stock in this offering of $8.52 per share.

The following table illustrates this per share dilution to the new investors purchasing shares of common stock in this offering:

Assumed public offering price per share		$ 10.70
Net tangible book value per share at December 31, 2017	$ 0.78	
Increase in net tangible book value per share attributable to new investors purchasing shares in this offering		1.40
As adjusted net tangible book value per share after this offering		2.18
Dilution per share to new investors in this offering		$ 8.52

If the underwriters exercise their option to purchase additional shares in full, at the public offering price of $10.70 per share, the as adjusted net tangible book value will increase to $2.36 per share, representing an immediate increase in net tangible book value to existing stockholders of $1.58 per share and immediate dilution in net tangible book value of $8.34 per share to new investors.

The foregoing table and calculations are based on 27,527,738 shares of our common stock outstanding as of December 31, 2017, and excludes:

- warrants to purchase 480,049 shares of common stock;
- options to purchase 3,215,661 shares of common stock; and
- restricted stock units for 663,212 shares of common stock.

On August 9, 2017, we received a legal claims letter from TRDF, alleging that under its agreement with the Company, TRDF was entitled to an exit fee of up to 3% of the shares received by Eloxx Ltd. shareholders in connection with the

reverse merger with Sevion Therapeutics, Inc. We are in discussions with TRDF regarding a settlement of the legal claim and have agreed in principle, in exchange for the fulfillment and removal of the exit fee clause, that we will issue shares of common stock to TRDF representing approximately 2.1% of our outstanding shares at the time of the reverse merger with Sevion. The number of outstanding shares of common stock used in this prospectus supplement does not reflect any such potential issuance of shares to TRDF.

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MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES FOR CERTAIN NON-U.S. HOLDERS

The following is a summary of the material U.S. federal income tax consequences to non-U.S. holders (as defined below) of the acquisition, ownership and disposition of our common stock issued pursuant to this offering. This discussion is not a complete analysis of all potential U.S. federal income tax consequences relating thereto, does not address the potential application of the Medicare contribution tax on net investment income, and does not address any estate or gift tax consequences or any tax consequences arising under any state, local or foreign tax laws, or any other U.S. federal tax laws. This discussion is based on the Internal Revenue Code of 1986, as amended, or the Code, and applicable Treasury Regulations promulgated thereunder, judicial decisions and published rulings and administrative pronouncements of the Internal Revenue Service, or IRS, all as in effect as of the date hereof. These authorities are subject to differing interpretations and may change, possibly retroactively, resulting in U.S. federal income tax consequences different from those discussed below. We have not requested a ruling from the IRS with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS or a court will agree with such statements and conclusions.

This discussion is limited to non-U.S. holders who purchase our common stock pursuant to this offering and who hold our common stock as a capital asset within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all of the U.S. federal income tax consequences that may be relevant to a particular holder in light of such holder s particular circumstances. This discussion also does not consider any specific facts or circumstances that may be relevant to holders subject to special rules under the U.S. federal income tax laws, including:

certain former citizens or long-term residents of the United States;

partnerships or other pass-through entities (and investors therein);

controlled foreign corporations ;

passive foreign investment companies ;

banks, financial institutions, investment funds, insurance companies, brokers, dealers or traders in securities;

tax-exempt organizations and governmental organizations;

pension plans or tax-qualified retirement plans;

persons subject to the alternative minimum tax;

persons that have a functional currency other than the U.S. dollar

persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation;

persons that own, or have owned, actually or constructively, more than 5% of our common stock;

persons who have elected to mark securities to market;

persons subject to special tax accounting rules under Section 451(b) of the Code; and

persons holding our common stock as part of a hedging or conversion transaction or straddle, or a constructive sale, or other risk reduction strategy or integrated investment.

If an entity or arrangement that is classified as a partnership for U.S. federal income tax purposes holds our common stock, the U.S. federal income tax treatment of a partner in the partnership will generally depend on the status of the partner and the activities of the partnership. Partnerships holding our common stock and the partners in such partnerships are urged to consult their tax advisors about the particular U.S. federal income tax consequences to them of holding and disposing of our common stock.

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THIS DISCUSSION IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT TAX ADVICE. PROSPECTIVE INVESTORS SHOULD CONSULT THEIR TAX ADVISORS REGARDING THE PARTICULAR U.S. FEDERAL INCOME TAX CONSEQUENCES TO THEM OF ACQUIRING, OWNING AND DISPOSING OF OUR COMMON STOCK, AS WELL AS ANY TAX CONSEQUENCES ARISING UNDER ANY STATE, LOCAL OR FOREIGN TAX LAWS AND ANY OTHER U.S. FEDERAL TAX LAWS. IN ADDITION, SIGNIFICANT CHANGES IN U.S. FEDERAL INCOME TAX LAWS WERE RECENTLY ENACTED. YOU SHOULD ALSO CONSULT WITH YOUR TAX ADVISOR WITH RESPECT TO SUCH CHANGES IN U.S. TAX LAW AS WELL AS POTENTIAL CONFORMING CHANGES IN STATE TAX LAWS.

Definition of Non-U.S. Holder

For purposes of this discussion, a non-U.S. holder is any beneficial owner of our common stock that is not a U.S. person or a partnership (including any entity or arrangement treated as a partnership) for U.S. federal income tax purposes. A U.S. person is any person that, for U.S. federal income tax purposes, is or is treated as any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation (or entity treated as a corporation for U.S. federal income tax purposes) created or organized under the laws of the United States, any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust (1) whose administration is subject to the primary supervision of a U.S. court and which has one or more U.S. persons who have the authority to control all substantial decisions of the trust or (2) that has a valid election in effect under applicable Treasury Regulations to be treated as a U.S. person.

Distributions on Our Common Stock

As described under the section titled Dividend Policy, we have not paid and do not anticipate paying dividends. However, if we make cash or other property distributions on our common stock, such distributions will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and will first be applied against and reduce a holder s tax basis in our common stock, but not below zero. Any excess will be treated as gain realized on the sale or other disposition of our common stock and will be treated as described under the section titled Gain On Disposition of our Common Stock below.

Subject to the discussions below regarding effectively connected income, backup withholding and FATCA, dividends paid to a non-U.S. holder of our common stock generally will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends or such lower rate specified by an applicable income tax treaty. To receive the benefit of a reduced treaty rate, a non-U.S. holder must furnish us or our paying agent with a valid IRS Form W-8BEN or IRS Form W-8BEN-E (or applicable successor form) and satisfy applicable certification and other

requirements. This certification must be provided to us or our paying agent before the payment of dividends and must be updated periodically. If the non-U.S. holder holds the stock through a financial institution or other agent acting on the non-U.S. holder s behalf, the non-U.S. holder will be required to provide appropriate documentation to the agent, which then will be required to provide certification to us or our paying agent, either directly or through other intermediaries. Non-U.S. holders are urged to consult their own tax advisors regarding their entitlement to benefits under a relevant income tax treaty and the specific methods available to them to satisfy these requirements.

Non-U.S. holders that do not provide the required certification on a timely basis, but that qualify for a reduced treaty rate, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS.

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If a non-U.S. holder holds our common stock in connection with the conduct of a trade or business in the United States, and dividends paid on our common stock are effectively connected with such holder s U.S. trade or business (and are attributable to such holder s permanent establishment in the United States if required by an applicable tax treaty), the non-U.S. holder will be exempt from U.S. federal withholding tax. To claim the exemption, the non-U.S. holder must generally furnish a valid IRS Form W-8ECI (or applicable successor form) to the applicable withholding agent certifying that the dividends are effectively connected with the non-U.S. holder s conduct of a trade or business within the United States.

However, any such effectively connected dividends paid on our common stock generally will be subject to U.S. federal income tax on a net income basis at the regular corporate or graduated individual U.S. federal income tax rates in the same manner as if such holder were a United States person (as defined in the Code). A non-U.S. holder that is a foreign corporation also may be subject to an additional branch profits tax equal to 30% (or such lower rate specified by an applicable income tax treaty) of its effectively connected earnings and profits for the taxable year, as adjusted for certain items. Non-U.S. holders should consult their tax advisors regarding any applicable income tax treaties that may provide for different rules.

Gain on Disposition of Our Common Stock

Subject to the discussions below regarding backup withholding and FATCA, a non-U.S. holder generally will not be subject to U.S. federal income tax on any gain realized on the sale or other disposition of our common stock, unless:

- the gain is effectively connected with the non-U.S. holder s conduct of a trade or business in the United States, and if required by an applicable income tax treaty, is attributable to a permanent establishment maintained by the non-U.S. holder in the United States, in which case the non-U.S. holder generally will be taxed on a net income basis at the corporate or graduated individual U.S. federal income tax rates applicable to United States persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, the branch profits tax described above in Distributions on Our Common Stock also may apply;

- the non-U.S. holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition, and certain other requirements are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder s country of residence) on the net gain derived from the disposition, which may be offset by certain U.S.-source capital losses of the non- U.S. holder recognized in the taxable year of the disposition, if any; or

- our common stock constitutes a United States real property interest by reason of our status as a United States real property holding corporation, or USRPHC, for U.S. federal income tax purposes at any time within the shorter of the five-year period preceding the disposition or the non-U.S. holder s holding period for our common stock, and our common stock is not regularly traded on an established securities market during the calendar year in which the sale or other disposition occurs. Determining whether we are a USRPHC depends on the fair market value of our U.S. real property interests relative to the fair market value of our other trade or business assets and our foreign real property interests. We believe that we are not currently and do not anticipate becoming a USRPHC for U.S. federal income tax purposes, although there can be no assurance we will not in the future become a USRPHC.

Information Reporting and Backup Withholding

Annual reports are required to be filed with the IRS and provided to each non-U.S. holder indicating the amount of dividends on our common stock paid to such holder and the amount of any tax withheld with respect to those dividends. These information reporting requirements apply even if no withholding was required because the dividends were effectively connected with the holder s conduct of a U.S. trade or business, or withholding was

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reduced or eliminated by an applicable income tax treaty. This information also may be made available under a specific treaty or agreement with the tax authorities in the country in which the non-U.S. holder resides or is established. Backup withholding, currently at a 24% rate, generally will not apply to payments to a non-U.S. holder of dividends on or the gross proceeds of a disposition of our common stock provided the non-U.S. holder furnishes the required certification for its non-U.S. status, such as by providing a valid IRS Form W-8BEN, IRS Form W-8BEN-E or IRS Form W-8ECI, or certain other requirements are met. Backup withholding may apply if the payor has actual knowledge, or reason to know, that the holder is a U.S. person who is not an exempt recipient.

Backup withholding is not an additional tax. If any amount is withheld under the backup withholding rules, the non-U.S. holder should consult with a U.S. tax advisor regarding the possibility of and procedure for obtaining a refund or a credit against the non-U.S. holder s U.S. federal income tax liability, if any. Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them.

Withholding on Foreign Entities

Sections 1471 through 1474 of the Code (commonly referred to as FATCA) impose a U.S. federal withholding tax of 30% on certain payments made to a foreign financial institution (as specially defined under these rules) unless such institution enters into an agreement with the U.S. government to withhold on certain payments and to collect and provide to the U.S. tax authorities substantial information regarding certain U.S. account holders of such institution (which includes certain equity and debt holders of such institution, as well as certain account holders that are foreign entities with U.S. owners) or an exemption applies. FATCA also generally will impose a U.S. federal withholding tax of 30% on certain payments made to a non-financial foreign entity unless such entity provides the withholding agent a certification identifying certain direct and indirect U.S. owners of the entity or an exemption applies. An intergovernmental agreement between the United States and an applicable foreign country may modify these requirements. Under certain circumstances, a non-U.S. holder might be eligible for refunds or credits of such taxes. FATCA currently applies to dividends paid on our common stock. FATCA will also apply to gross proceeds from sales or other dispositions of our common stock after December 31, 2018.

Non-U.S. holders should consult their own tax advisors regarding the possible implications of FATCA on their investment in our common stock and the entities through which they hold our common stock, including, without limitation, the process and deadlines for meeting the applicable requirements to prevent the imposition of the 30% withholding tax under FATCA.

The preceding discussion of material U.S. federal income tax consequences is for general information only. It is not legal or tax advice. Prospective investors should consult their own tax advisors regarding the particular U.S. federal, state, local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed or recently enacted changes in applicable laws.