

VERMILLION, INC.
Form 424B5
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Registration No. 333-221092

The information in this preliminary prospectus supplement and the accompanying prospectus is not complete and may be changed. Neither this prospectus supplement nor the accompanying prospectus is an offer to sell these securities, and we are not soliciting an offer to buy these securities, in any jurisdiction where the offer or sale is not permitted.

Subject to completion, dated April 12, 2018

Preliminary Prospectus Supplement

(To Prospectus Dated November 7, 2017)

shares

VERMILLION, INC.

Common Stock
\$ per share

- Vermillion, Inc. is offering _____ shares of common stock
 - The last reported sale price for Vermillion, Inc.'s common stock on The Nasdaq Stock Market on April 11, 2018 was \$1.27 per share
 - Trading symbol for The Nasdaq Stock Market: "VRML"
- Concurrently with the offering of common stock pursuant to this prospectus supplement, we are offering _____ shares of our Series B Convertible Preferred Stock (and the _____ shares of common stock issuable upon conversion of the Series B Convertible Preferred Stock, based on an initial conversion price of \$ _____ per share) pursuant to a separate prospectus supplement

Investing in our common stock involves substantial risks. You should consider the risk factors beginning on page S-5 of this prospectus supplement and the "Risk Factors" section contained in the accompanying prospectus before buying any shares of our common stock.

As of April 11, 2018, the aggregate market value of our common stock held by our non-affiliates, or "public float," as calculated pursuant to the rules of the Securities and Exchange Commission, was approximately \$52,901,543, based on approximately 33,481,989 shares of our common stock held on such date by our non-affiliates, at a price of \$1.58 per share, which was the last reported sale price for our common stock on The Nasdaq Stock Market on March 5, 2018 (a date within 60 days of the date of this prospectus supplement). We have not sold any securities in reliance on General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to and including the date of this prospectus

supplement.

	Per Share	Total
Public offering price.....	\$	\$
Underwriting discounts and commissions(1).....	\$	\$
Net proceeds, before expenses, to us.....	\$	\$

(1) See “Underwriting” for a description of the compensation payable to the underwriter.

We have granted the underwriter an option to purchase up to _____ additional shares of our common stock at the public offering price, less underwriting discounts and commissions, to cover over-allotments, if any. The underwriter can exercise this option at any time within 30 days after the date of 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 is truthful or complete. Any representation to the contrary is a criminal offense.

The underwriter expects to deliver the shares of common stock to purchasers on or about April _____, 2018.

Piper Jaffray

The date of this prospectus supplement is April _____, 2018

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About This Prospectus Supplement

This document contains two parts. The first part is this prospectus supplement, which describes the terms of the offering being made pursuant to this prospectus supplement and also adds to and updates information contained in the accompanying prospectus and the documents incorporated herein and therein by reference. The second part is the accompanying prospectus, which provides more general information, some of which may not apply to the offering being made pursuant to this prospectus supplement. If the information contained in this prospectus supplement differs or varies from the information contained in the accompanying prospectus, you should rely on the information set forth in this prospectus supplement.

You should rely only on the information contained or incorporated by reference in this prospectus supplement, the accompanying prospectus, any related free writing prospectus provided or approved by us and the other information to which we refer you. We have not, and the underwriter has not, authorized any person to provide you with other or additional information.

You should assume that the information appearing in this prospectus supplement, the accompanying prospectus, any related free writing prospectus and the documents incorporated by reference herein or therein are accurate only as of the respective dates of those documents. Our business, financial condition, results of operations and prospects may have changed since those dates, and neither the delivery of this prospectus supplement and the accompanying prospectus nor any sale hereunder shall, under any circumstances, create any implication to the contrary.

Before you invest in our common stock, you should carefully read this prospectus supplement, the accompanying prospectus, the registration statement of which this prospectus and the accompanying prospectus forms a part (including the exhibits thereto) and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. See “Where You Can Find More Information” and “Important Information Incorporated by Reference” in this prospectus supplement.

We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of our common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of our common stock and the distribution of this prospectus supplement and the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any shares of common stock by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

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Prospectus Supplement Summary

This summary highlights certain information contained in greater detail elsewhere in this prospectus supplement or the accompanying prospectus or incorporated by reference herein or therein. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. Accordingly, you should read the information contained or incorporated by reference in this prospectus supplement, the accompanying prospectus, any related free writing prospectus provided or approved by us and the other information to which we refer you, before you invest in our common stock. Unless the context requires otherwise, all references in this prospectus to “Vermillion,” “the Company,” “we,” “us,” “our” or similar references mean Vermillion, Inc. together with its consolidated subsidiaries.

Our Company

Our vision is to drive the advancement of women’s health by providing innovative methods to detect, monitor and manage the treatment of both benign and malignant gynecologic disease, with our primary focus being diseases of the female pelvic cavity.

We are dedicated to the discovery, development and commercialization of novel high-value diagnostic and bio-analytical solutions that help physicians diagnose, treat and improve outcomes for women. Our tests are intended to detect, characterize and stage disease, and to help guide decisions regarding patient treatment, which may include decisions to refer patients to specialists, to perform additional testing, or to assist in monitoring response to therapy. A distinctive feature of our approach is the combination of multi-modal diagnostics and data. Our goal is to combine multiple biomarkers, other modalities and diagnostics, clinical risk factors and patient data into a single, reportable index score that has higher diagnostic accuracy than its constituents. We concentrate our development of novel diagnostic tests for gynecologic disease, with an initial focus on ovarian cancer. We also intend to address clinical questions related to early disease detection, treatment response, monitoring of disease progression, prognosis and others through collaborations with leading academic and research institutions.

Our Business

Our initial product, OVA1, is a blood test designed to, in addition to a physician’s clinical assessment of a woman with a pelvic mass, identify women who are at high risk of having a malignant ovarian tumor prior to planned surgery. The United States Food and Drug Administration (“FDA”) cleared OVA1 in September 2009, and we commercially launched OVA1 in March 2010.

Our second-generation biomarker panel known as Overa is intended to maintain our product’s high sensitivity while improving specificity. We received FDA clearance for Overa in March 2016 and launched Overa on a targeted basis in October 2016.

In June 2014, we launched ASPiRA LABS, Inc. (“ASPiRA LABS”), a Clinical Laboratory Improvement Amendments of 1988 (“CLIA”) certified national laboratory, which specializes in applying biomarker-based technologies to address critical needs in the management of gynecologic cancers and disease. ASPiRA LABS provides expert diagnostic services using a state-of-the-art biomarker-based diagnostic algorithm to aid in clinical decision making and advance personalized treatment plans. The lab currently processes our OVA1 and Overa tests, and we plan to expand the testing to other gynecologic conditions with high unmet need. We also plan to develop and perform laboratory developed tests (“LDTs”) at ASPiRA LABS. ASPiRA LABS holds a CLIA Certificate of Registration and a state laboratory license in California, Florida, Maryland, New York, Pennsylvania and Rhode Island. This allows the lab to process OVA1 on a national basis. The Centers for Medicare & Medicaid Services issued a provider number to ASPiRA LABS in March 2015.

In 2016, we created a service within the ASPiRA channel strategy, “an ASPiRA IVD Services Program.” In April 2016, we formed ASPiRA IVD, Inc. (“ASPiRA IVD”) to offer in vitro diagnostic (“IVD”) trial services to third-party customers.

ASPiRA IVD is a specialized laboratory provider dedicated to meeting the unique testing needs of IVD manufacturers seeking to commercialize high-complexity assays. ASPiRA IVD was built around a core of laboratory expertise and an FDA-compliant quality system, and strives to deliver accurate and reliable results to its third-party customers suitable for FDA submission. ASPiRA IVD received a CLIA laboratory license in June 2016 and commenced operations in the second quarter of 2016.

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Commercialization of Our Products

We have a commercial infrastructure, including sales and marketing and reimbursement expertise. We also operate a national CLIA certified clinical laboratory, ASPIRA LABS, through which we offer OVA1. In March 2015, we entered into a new commercial agreement with Quest Diagnostics. Pursuant to this agreement, all OVA1 U.S. testing services for Quest Diagnostics customers were transferred to Vermillion's wholly-owned subsidiary, ASPIRA LABS. Pursuant to this agreement as amended, Quest Diagnostics is continuing to provide blood draw and logistics support by transporting specimens to ASPIRA LABS for testing through at least March 11, 2019 in exchange for a market value fee. Per the terms of the agreement, we will not offer to existing or future Quest Diagnostics customers CA 125-II or other tests that Quest Diagnostics offers.

In the United States, revenue for diagnostic tests comes from several sources, including third-party payers such as insurance companies, government healthcare programs, such as Medicare and Medicaid, client bill accounts and patients. Novitas Solutions, a Medicare contractor, covers and reimburses for OVA1 tests performed in certain states, including Texas. Because OVA1 tests are exclusively performed at ASPIRA LABS in Texas, this local coverage determination from Novitas Solutions essentially provides national coverage for patients enrolled in Medicare as well as Medicare Advantage health plans. ASPIRA LABS also bills third-party commercial and other government payers as well as client bill accounts and patients for OVA1.

Corporate Information

We were originally incorporated in 1993, and we had our initial public offering in 2000. Our executive offices are located at 12117 Bee Caves Road, Building Three, Suite 100, Austin, Texas 78738, and our telephone number is (512) 519-0400. We maintain websites at www.vermillion.com and www.aspiralab.com where general information about us is available. Our websites, and the information contained therein, are not incorporated by reference into this prospectus supplement or the accompanying prospectus, and you should not consider information contained on our websites to form any part of this prospectus supplement or the accompanying prospectus.

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The Offering

Common stock offered by us, excluding
underwriter’s over-allotment option
Underwriter’s over-allotment option
.....

shares
We have granted the underwriter an option to purchase up
to

additional shares of our common stock at the public
offering price, less underwriting discounts and commissions, to
cover over-allotments, if any. The underwriter can exercise this
option at any time within 30 days after the date of this prospectus
supplement.

Common stock outstanding immediately after the
offering(1)...

shares (or shares if the underwriter exercises
its over-allotment option in full)

Concurrent preferred stock
offering.....

Concurrently with the offering of common stock being made
pursuant to this prospectus supplement, we are
offering shares of our Series B Convertible Preferred Stock
(and the shares of common stock issuable upon conversion
of the Series B Convertible Preferred Stock, based on an initial
conversion price of \$ per share), which we refer to herein as
the “concurrent preferred stock offering” and, together with the
offering of common stock being made pursuant to this prospectus
supplement, the “offerings.” The offering of common stock being
made pursuant to this prospectus supplement is not contingent
upon the completion of the concurrent preferred stock offering
and the concurrent preferred stock offering is not contingent upon
the completion of the offering of common stock being made
pursuant to this prospectus supplement. See “Concurrent Preferred
Stock Offering.”

Use of
proceeds.....

We estimate that the net proceeds to us from the offerings will be
approximately \$ million, or approximately \$
million if the underwriter exercises its over-allotment option in
full, after deducting underwriting discounts and commissions and
estimated offering expenses payable by us. We intend to use the
net proceeds of the offerings for working capital and general
corporate purposes, including sales and marketing, portfolio
expansion and general administrative expenses. See “Use of
Proceeds.”

Nasdaq Stock Market
symbol.....

VRML

Transfer
agent.....

EQ Shareowner Services

Risk
factors.....

Investing in our common stock involves substantial risks. You
should consider the risk factors beginning on page S-5 of this
prospectus supplement and the “Risk Factors” section contained in
the accompanying prospectus before buying any shares of our
common stock.

Participation rights..... In connection with a private placement in May 2013, we entered into a stockholders agreement with the investors named therein (the “Stockholders Agreement”). Pursuant to, and subject to, the terms of the stockholders agreement, certain of the investors received rights to participate in any future equity offerings, including the offering of common stock being made by this prospectus supplement, on the same price and terms as other investors. See “Participation Rights of Certain Investors.”

- (1) The number of shares of our common stock that will be outstanding immediately after the offering being made pursuant to this prospectus supplement is based on 60,039,338 shares outstanding as of April 5, 2018, and excludes as of that date the following:
- 4,208,693 shares of our common stock issuable upon the exercise of outstanding stock options at a weighted average exercise price of \$1.86 per share;
 - 2,062,187 shares of our common stock reserved for future issuance to employees, directors and consultants pursuant to our stock incentive plans;
 - 2,810,338 shares of our common stock issuable upon the exercise of outstanding warrants at an exercise price of \$1.80 per share; and
 - _____ shares of our common stock issuable upon the conversion of Series B Convertible Preferred Stock being offered by us in connection with the concurrent preferred stock offering, based on an initial conversion price of \$ _____ per share.

Except as otherwise indicated, all information in this prospectus supplement assumes no exercise by the underwriter of its over-allotment option.

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Risk Factors

Investing in our common stock involves substantial risks. Please carefully consider the risk factors discussed below, as well as the risk factors described in our Annual Report on Form 10 K for the year ended December 31, 2017, incorporated by reference in this prospectus supplement, and the matters discussed under “Disclosure Regarding Forward-Looking Statements” below, before making an investment decision. The occurrence of any of those risks could materially and adversely affect our business, prospects, financial condition, results of operations or cash flow. Other risks and uncertainties that we do not now consider to be material or of which we are not now aware may become important factors that affect us in the future and could result in a complete loss of your investment.

Management will have broad discretion as to the use of the proceeds that we will receive from the offerings and may not use the proceeds effectively.

We have not designated the net proceeds from the offerings to be used for any particular purpose. As a result, our management will have broad discretion as to the application of the net proceeds from the offerings and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from the offerings, our management could use them for purposes other than those contemplated at the time of the offerings. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

There is substantial doubt about our ability to continue as a going concern, and this may adversely affect our stock price and our ability to raise capital.

We have incurred significant losses and negative cash flows from operations since inception and have an accumulated deficit of over \$396 million as of December 31, 2017. We also expect to incur a net loss and negative cash flows from operations in 2018. Given these conditions, there is substantial doubt about our ability to continue as a going concern and our independent registered public accounting firm’s report on our financial statements for the year ended December 31, 2017 includes an explanatory paragraph expressing substantial doubt about our ability to continue as a going concern given our recurring net losses and negative cash flows from operations. The substantial doubt about our ability to continue as a going concern may adversely affect our stock price and our ability to raise capital.

We believe that successful achievement of our business objectives will require additional financing in the future. However, additional financing may not be available when needed or on terms acceptable to us. If we are unable to obtain additional capital, we may not be able to continue sales and marketing, research and development, distribution or other operations on the scope or scale of current activity, and that could have a material adverse effect on our business, results of operations and financial condition.

If you purchase our common stock in the offering, you will experience immediate dilution in your investment and you will experience further dilution if we issue additional equity or convertible debt securities in future offerings.

Since the public offering price per share of our common stock is substantially higher than the net tangible book value per share of our common stock, you will suffer immediate and substantial dilution in the net tangible book value of the common stock you purchase in the offering.

In addition, we have a significant number of stock options and warrants outstanding. To the extent that outstanding stock options or warrants have been or may be exercised, investors purchasing our common stock in the offering may experience further dilution.

We may also choose to raise additional capital from time to time, even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional funds through the sale of equity or convertible debt securities, the issuance of such securities will result in dilution to our stockholders. Investors purchasing shares

or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable

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into common stock, in future transactions may be higher or lower than the price per share paid by investors in the offering.

Sales of a significant number of shares of our common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.

Sales of a substantial number of shares of our common stock in the public markets could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities. Pursuant to registration rights agreements with certain existing stockholders, we have registered for resale over 38 million shares of our common stock pursuant to effective shelf registration statements. Other than our directors and officers, who beneficially own in the aggregate approximately 2.4 million shares of our outstanding common stock, none of those stockholders have signed a lock-up agreement in connection with the offerings. We cannot predict the effect that future sales of our common stock would have on the market price of our common stock.

The liquidity and trading volume of our common stock may be low, and our ownership is concentrated.

The liquidity and trading volume of our common stock has at times been low in the past and may again be low in the future. If the liquidity and trading volume of our common stock is low, this could adversely impact the trading price of our common stock and our stockholders' ability to obtain liquidity in their shares of our common stock. Our stock issuances since May 2013 have primarily involved a significant issuance of stock to a limited number of investors, significantly increasing the concentration of our share ownership in a few holders.

According to publicly available information, we estimate that a total of five persons beneficially own approximately 66% of our outstanding common stock before giving effect to the offerings. Under a May 2013 stockholders agreement, two of these persons have exercised rights to designate a director to be nominated by us to serve on our Board of Directors. As a result, these stockholders will be able to affect the outcome of, or exert significant influence over, all matters requiring stockholder approval, including the election and removal of directors and any change in control involving us. In addition, this concentration of ownership of our common stock could have the effect of delaying or preventing a change in control of us or otherwise discouraging or preventing a potential acquirer from attempting to obtain control of us. This, in turn, could have a negative effect on the market price of our common stock. It could also prevent our stockholders from realizing a premium over the market prices for their shares of common stock. Moreover, the interests of this concentration of ownership may not always coincide with our interests or the interests of other stockholders. The concentration of ownership also contributes to the low trading volume and volatility of our common stock.

Our stock price has been, and may continue to be, highly volatile.

The trading price of our common stock has been highly volatile. During the year ended December 31, 2017, the trading price of our common stock has ranged from a high of \$2.85 per share to a low of \$0.95 per share. The trading price of our common stock could continue to be subject to wide fluctuations in price in response to various factors, many of which are beyond our control, including:

- failure to significantly increase revenue and volumes of OVA1 or Overa;
- actual or anticipated period-to-period fluctuations in financial results;
- failure to achieve, or changes in, financial estimates by securities analysts;
- announcements or introductions of new products or services or technological innovations by us or our competitors;
- publicity regarding actual or potential discoveries of biomarkers by others;
- comments or opinions by securities analysts or stockholders;
- conditions or trends in the pharmaceutical, biotechnology or life science industries;
- announcements by us of significant acquisitions and divestitures, strategic partnerships, joint ventures or capital commitments;

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- developments regarding our patents or other intellectual property or that of our competitors;
- litigation or threat of litigation;
- additions or departures of key personnel;
- limited daily trading volume;
- our ability to continue as a going concern;
- economic and other external factors, disasters or crises; and
- our announcement of the offerings and future fundraisings.

In addition, the stock market in general and the market for diagnostic technology companies, in particular, have experienced significant price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. These broad market and industry factors may adversely affect the market price of our common stock, regardless of our operating performance. In the past, following periods of volatility in the market price of a company's securities, securities class action litigation has often been instituted. A securities class action suit against us could result in substantial costs, potential liabilities and the diversion of our attention and our resources.

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Disclosure Regarding Forward-Looking Statements

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein contain forward-looking statements, as defined in the Private Securities Litigation Reform Act of 1995. These statements involve a number of risks and uncertainties. Words such as “may,” “expects,” “intends,” “anticipates,” “believes,” “estimates,” “plans,” “seeks,” “could,” “should,” “continue,” “will,” “potential,” “projects” and similar expressions are intended to identify such forward-looking statements. Readers are cautioned that these forward-looking statements speak only as of the date on which the document in which they appear is filed with the Securities and Exchange Commission (the “SEC”), and, except as required by law, we do not assume any obligation to update, amend or clarify them to reflect events, new information or circumstances occurring after such dates.

Examples of forward-looking statements include the following:

- projections or expectations regarding our future test volumes, revenue, cost of revenue, operating expenses, cash flow, results of operations and financial condition;
- our plan to broaden our commercial focus from ovarian cancer to differential diagnosis of women with a range of gynecological disorders;
- our planned business strategy and the anticipated timing of the implementation thereof;
- plans with respect to our market expansion and growth, including plans to market OVA1 and Overa outside the United States;
- plans to develop new algorithms and molecular diagnostic tests;
- plans to develop a product or tool combining an OVA1 with results of a symptom index;
- plans to establish our own payer coverage for Overa and expand coverage for OVA1;
 - intentions to address clinical questions related to early disease detection, treatment response, monitoring of disease progression, prognosis and other issues in the fields of oncology and women’s health;
- plans to leverage infrastructure and enhance our pipeline of future technologies by fostering relationships with IVD companies;
- plans with respect to ASPiRA IVD;
- expected service revenue growth based on ASPiRA IVD and the size of ongoing customer projects;
- our planned focus on the execution of five core strategic business drivers in ovarian cancer diagnostics and specialized laboratory services to address unmet medical needs for women faced with gynecologic disease and other conditions and the continued development of our business;
- expectation to maintain consistent research and development expenses;
- anticipated efficacy of our products, product development activities and product innovations;
- expected competition in the markets in which we compete;
- plans with respect to ASPiRA LABS;
- expectations regarding future services provided by Quest Diagnostics Incorporated (“Quest Diagnostics”);
- plans to expand our ovarian cancer franchise beyond OVA1, including with respect to Overa and OvaX;
- plans regarding the commercialization of Overa;
- plans to develop informatics products and develop and perform LDTs;
- plans with respect to our pelvic mass registry, including anticipated sources of funding;

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- anticipated effects on reimbursement for OVA1 from changes to Novitas Solutions' administrative requirements;
- expectations regarding our approach of monitoring and combining multiple protein biomarkers to create diagnostic tests to aid physicians considering treatment options for patients with complex diseases, and our future development of new In Vitro Diagnostic Multivariate Index Assays;
- our ability to improve sensitivity and specificity over traditional diagnostic biomarkers;
- expectations regarding existing and future collaborations and partnerships, including OVA1 and Overa distribution agreements;
- plans regarding future publications;
- our continued ability to comply with applicable governmental regulations, expectations regarding pending regulatory submissions and plans to seek regulatory approvals for our tests outside of the United States;
- our ability to obtain and maintain the regulatory approvals required to market OVA1 and Overa in other countries;
- our continued ability to expand and protect our intellectual property portfolio;
- anticipated liquidity and capital requirements;
- anticipated future losses and our ability to continue as a going concern;
- expectations regarding the second disbursement from our financing arrangement, as amended, with the State of Connecticut Department of Economic and Community Development;
- expected expenditures, including the expected increase in expenses related to sales and marketing of OVA1 and Overa in 2018;
- our ability to use our net operating loss carryforwards;
- anticipated future tax liability under U.S. federal and state income tax legislation;
- expected market adoption of our diagnostic tests, including OVA1 and Overa;
- expectations regarding our ability to launch new products we develop, license, co-market or acquire;
- expectations regarding raising capital and the amount of financing anticipated to be required to fund our planned operations;
- expectations regarding reimbursement for our products, and our ability to obtain such reimbursement, from third-party payers such as private insurance companies and government insurance plans;
- expectations regarding the successful completion of our concurrent preferred stock offering; and
- the anticipated use of proceeds from the offerings.

These statements involve estimates, assumptions and uncertainties that could cause actual results to differ materially from those expressed in them. Any forward-looking statements are qualified in their entirety by reference to the risk factors described in this prospectus supplement, the accompanying prospectus or in any document incorporated by reference herein or therein.

These factors include, among others: our ability to increase the volume of OVA1 or Overa sales; our ability to market our test through sales channels other than Quest Diagnostics, including ASPiRA LABS; failures by third-party payers to reimburse OVA1 or Overa or changes or variances in reimbursement rates; our ability to secure additional capital on acceptable terms to execute our business plan; our ability to commercialize OVA1 and Overa both within and outside the United States; in the event that we succeed in commercializing OVA1 and Overa outside the United States, the political, economic and other conditions affecting other countries (including foreign exchange rates); our ability to continue developing existing technologies; our ability to develop and commercialize additional

diagnostic products and achieve market acceptance with respect to these products; our ability to compete successfully; our ability to obtain any regulatory approval required for our future diagnostic products; our or our suppliers' ability to comply with FDA requirements for production, marketing and post-market monitoring of our products; additional costs that may be required to make further improvements to our manufacturing operations; our ability to maintain sufficient or acceptable supplies of immunoassay kits from our suppliers; our ability to continue to develop, protect and promote our proprietary technologies; our ability to use intellectual property directed to diagnose biomarkers; our ability to successfully defend our proprietary technology against third parties; future litigation against us, including infringement of intellectual property and product liability exposure; our ability to retain key employees; business interruptions; legislative actions resulting in higher compliance costs; changes in healthcare policy; our ability to comply with environmental laws; our ability to generate sufficient demand for ASPiRA LABS' services to cover its operating costs; our ability to comply with the additional laws and regulations that apply to us in connection with the operation of ASPiRA LABS; our ability to comply with FDA regulations that relate to our products and to obtain any FDA clearance or approval required to develop and perform LDTs; ASPiRA IVD's lack of operating history; ASPiRA IVD's ability to generate and maintain business; fluctuations over time with respect to ASPiRA IVD's operating results; ASPiRA IVD's ability to enter into profitable contracts; ASPiRA IVD's ability to maintain effective information systems without significant interruption; ASPiRA IVD's ability to perform its services in compliance with contractual requirements, regulatory standards and ethical considerations; our ability to integrate and achieve anticipated results from any acquisitions or strategic alliances; and our ability to continue as a going concern.

You should read this prospectus supplement, the accompanying prospectus, any related free writing prospectus and the documents that we incorporate by reference herein and therein completely and with the understanding that our actual future results may be materially different from what we currently expect. You should not put undue reliance on any forward-looking statement. We believe it is important to communicate our expectations to our investors. However, there may be events in the future that we are not able to accurately predict or that we do not fully control that could cause actual results to differ materially from those expressed or implied in our forward-looking statements.

Use of Proceeds

We estimate that the net proceeds to us from the offering of common stock being made pursuant to this prospectus supplement, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, will be approximately \$ million (or approximately \$ million if the underwriter exercises its over-allotment option in full).

In addition, we estimate that the net proceeds to us from the concurrent preferred stock offering, after deducting underwriting discounts and commissions, will be approximately \$ million. The offering of common stock being made pursuant to this prospectus supplement is not contingent upon the completion of the concurrent preferred stock offering and the concurrent preferred stock offering is not contingent upon the completion of the offering of common stock being made pursuant to this prospectus supplement. We cannot assure you that either or both of the offerings will be completed.

We intend to use the net proceeds of the offerings for working capital and general corporate purposes, including sales and marketing, portfolio expansion and general administrative expenses. 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. As a result, our management will have broad discretion to allocate the net proceeds of the offerings. Pending their ultimate use, we intend to invest the net proceeds in short-term, investment-grade, interest-bearing instruments.

Dividend Policy

We have never declared or paid any cash dividends on our common stock. We currently intend to retain our future earnings, if any, to finance the expansion of our business and do not expect to pay any cash dividends in the foreseeable future. As a result, the success of an investment in our common stock will depend entirely upon any future appreciation. There is no guarantee that our common stock will appreciate in value or even maintain the price at which our stockholders purchased their shares.

CONCURRENT PREFERRED STOCK OFFERING

Concurrently with the offering of our common stock being made pursuant to this prospectus supplement, we are offering shares of our Series B Convertible Preferred Stock (and the shares of common stock issuable upon conversion of the Series B Convertible Preferred Stock, based on an initial conversion price of \$ per share) pursuant to a separate prospectus supplement. Following the closing of the offering of Series B Convertible Preferred Stock, we will be required to hold a meeting of the holders of our common stock in order to satisfy Nasdaq requirements with respect to the issuance of the shares of our common stock issuable upon conversion of the Series B Convertible Preferred Stock. The conversion of the Series B Convertible Preferred Stock will occur automatically upon receipt of such stockholder approval. The offering of common stock being made pursuant to this prospectus supplement is not contingent upon the completion of the concurrent preferred stock offering and the concurrent preferred stock offering is not contingent upon the completion of the offering of common stock being made pursuant to this prospectus supplement. We cannot assure you that either or both of the offerings will be completed.

PARTICIPATION RIGHTS OF CERTAIN INVESTORS

Pursuant to and subject to the terms of the Stockholders Agreement that we entered into with certain of the investors participating in a May 2013 private placement, certain of the investors party thereto, who beneficially own approximately 57% of the outstanding shares of our common stock before giving effect to the offerings, have the right to participate in any future offerings of our equity securities, including the offering being made by this prospectus supplement, at the same price and on the same terms as such securities are offered to other investors, subject to certain limitations and exceptions. In the event that, as a result of participation in the offering being made by this prospectus supplement, any such investor, together with its affiliates, would own more than 19.99% of the total number of shares of our outstanding common stock, such investor is being offering the opportunity to participate in the offering of Series B Convertible Preferred Stock in lieu of participating in the offering being made by this prospectus supplement.

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Material U.S. Federal Income Tax Consequences to Non-U.S. Holders

The following is a summary of material U.S. federal income tax consequences of the purchase, ownership and disposition of shares of our common stock as of the date hereof. Except where noted, this summary deals only with common stock that is held as a capital asset by a non-U.S. holder (as defined below).

A “non-U.S. holder” means a beneficial owner of shares of our common stock (other than an entity treated as a partnership for U.S. federal income tax purposes) that is not, for U.S. federal income tax purposes, any of the following:

- an individual citizen or resident of the United States;
- a corporation (or any other entity treated as a corporation for U.S. federal income tax purposes) created or organized in or 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 taxation regardless of its source; or
- a trust if it (1) is subject to the primary

supervision
of a court
within the
United
States and
one or more
United
States
persons as
defined
under the
Code have
the
authority to
control all
substantial
decisions of
the trust or
(2) has a
valid
election in
effect under
applicable
U.S.
Treasury
regulations
to be treated
as a United
States
person.

This summary is based upon provisions of the Internal Revenue Code of 1986, as amended (the “Code”), and regulations, rulings and judicial decisions as of the date hereof. Those authorities may be changed, perhaps retroactively, so as to result in U.S. federal income consequences different from those summarized below. This summary does not address all aspects of U.S. federal income taxes and does not deal with foreign, state, local or other tax considerations that may be relevant to non-U.S. holders in light of their particular circumstances. In addition, it does not represent a detailed description of the U.S. federal income tax consequences applicable to you if you are subject to special treatment under the U.S. federal income tax laws (including if you are a U.S. expatriate, foreign pension fund, “controlled foreign corporation,” “passive foreign investment company” or a partnership or other pass-through entity for U.S. federal income tax purposes). We cannot assure you that a change in law will not alter significantly the tax considerations that we describe in this summary.

If a partnership (or other entity treated as a partnership for U.S. federal income tax purposes) holds shares of our common stock, the tax treatment of a partner will generally depend upon the status of the partner and the activities of the partnership. If you are a partner of a partnership holding our common stock, you should consult your tax advisors.

If you are considering the purchase of our common stock, you should consult your own tax advisors concerning the particular U.S. federal income tax consequences to you of the purchase, ownership and disposition of our common stock, as well as the consequences to you arising under other U.S. federal tax laws and the laws of any other taxing jurisdiction.

Dividends

We have never paid cash dividends on our common stock and we do not anticipate paying any cash dividends in the foreseeable future. See “Dividend Policy.” If we make a distribution of cash or other property (other than certain pro rata distributions of our stock) in respect of shares of our common stock, the distribution generally will be treated as a dividend for U.S. federal income tax purposes to the extent it is paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Any portion of a distribution that exceeds our current and accumulated earnings and profits generally will be treated first as a tax-free return of capital, causing a reduction in the adjusted tax basis of a non-U.S. holder’s common stock, and to the extent the amount of the distribution exceeds a non-U.S. holder’s adjusted tax basis in shares of our common stock, the excess will be treated as gain from the disposition of shares of our common stock (the tax treatment of which is discussed below under “—Gain on Disposition of Common Stock”).

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Dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. However, dividends that are effectively connected with the conduct of a trade or business by the non-U.S. holder within the United States (and, if required by an applicable income tax treaty, are attributable to a U.S. permanent establishment) are not subject to the withholding tax, provided certain certification and disclosure requirements are satisfied. Instead, such dividends are subject to U.S. federal income tax on a net income basis in the same manner as if the non-U.S. holder were a United States person as defined under the Code. Any such effectively connected dividends received by a foreign corporation may be subject to an additional “branch profits tax” at a 30% rate or such lower rate as may be specified by an applicable income tax treaty.

A non-U.S. holder who wishes to claim the benefit of an applicable treaty rate and avoid backup withholding, as discussed below, for dividends will be required (a) to provide the applicable withholding agent with a properly executed IRS Form W-BEN or Form W-8BEN-E (or other applicable form) certifying under penalty of perjury that such holder is not a United States person as defined under the Code and is eligible for treaty benefits or (b) if our common stock is held through certain foreign intermediaries, to satisfy the relevant certification requirements of applicable U.S. Treasury regulations. Special certification and other requirements apply to certain non-U.S. holders that are pass-through entities rather than corporations or individuals.

A non-U.S. holder eligible for a reduced rate of U.S. federal withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS.

Gain on Disposition of Common Stock

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

- the gain is effectively connected with a trade or business of the non-U.S. holder in the United States (and, if required by an applicable income tax treaty, is attributable to a U.S. permanent establishment of the non-U.S. holder);
- the non-U.S. holder is an individual who is present in the United States for 183 days or more in the taxable year of that disposition, and certain other conditions are met; or
- we are or have been a “United States real property holding corporation” for U.S. federal income tax purposes and certain other conditions are met.

A non-U.S. holder described in the first bullet point immediately above will be subject to tax on the gain derived from the sale or other disposition in the same manner as if the non-U.S. holder were a United States person as defined under the Code. In addition, if any non-U.S. holder described in the first bullet point immediately above is a foreign corporation, the gain realized by such non-U.S. holder may be subject to an additional “branch profits tax” at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. An individual non-U.S. holder described in the second bullet point immediately above will be subject to a 30% (or such lower rate as may be specified by an applicable income tax treaty) tax on the gain derived from the sale or other disposition, which gain may be offset by U.S. source capital losses even though the individual is not considered a resident of the United States.

Generally, a corporation is a “United States real property holding corporation” if the fair market value of its U.S. real property interests equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests and its other assets used or held for use in a trade or business (all as determined for U.S. federal income tax purposes). We have not determined whether we are a “United States real property holding corporation” for U.S. federal income tax purposes. If we are or become a “United States real property holding corporation,” however, so long as our common stock is regularly traded on an established securities market during the calendar year in which the sale or other disposition occurs, only a non-U.S. holder who holds or held (at any time during the shorter of the

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five-year period preceding the date of disposition or the holder's holding period) more than 5% of our common stock will be subject to U.S. federal income tax on the sale or other disposition of our common stock.

Information Reporting and Backup Withholding

Distributions paid to a non-U.S. holder and the amount of any tax withheld with respect to such distributions generally will be reported to the IRS. Copies of the information returns reporting such distributions and any withholding may also be made available to the tax authorities in the country in which the non-U.S. holder resides under the provisions of an applicable income tax treaty.

A non-U.S. holder will not be subject to backup withholding on dividends received if such holder certifies under penalty of perjury that it is a non-U.S. holder (and the payor does not have actual knowledge or reason to know that such holder is a United States person as defined under the Code), or such holder otherwise establishes an exemption.

Information reporting and, depending on the circumstances, backup withholding will apply to the proceeds of a sale or other disposition of our common stock made within the United States or conducted through certain U.S.-related financial intermediaries, unless the beneficial owner certifies under penalty of perjury that it is a non-U.S. holder (and the payor does not have actual knowledge or reason to know that the beneficial owner is a United States person as defined under the Code), or such owner otherwise establishes an exemption.

Backup withholding is not an additional tax and any amounts withheld under the backup withholding rules will be allowed as a refund or a credit against a non-U.S. holder's U.S. federal income tax liability provided the required information is timely furnished to the IRS.

Additional Withholding Requirements under FATCA

Under Sections 1471 through 1474 of the Code (such Sections commonly referred to as "FATCA"), a 30% U.S. federal withholding tax may apply to any dividends paid on our common stock and, for a disposition of our common stock occurring after December 31, 2018, the gross proceeds from such disposition, in each case paid to (i) a "foreign financial institution" (as specifically defined in the Code) which does not provide sufficient documentation, typically on IRS Form W-8BEN-E, evidencing either (x) an exemption from FATCA or (y) its compliance (or deemed compliance) with FATCA (which may alternatively be in the form of compliance with an intergovernmental agreement with the United States) in a manner which avoids withholding, or (ii) a "non-financial foreign entity" (as specifically defined in the Code) which does not provide sufficient documentation, typically on IRS Form W-8BEN-E, evidencing either (x) an exemption from FATCA or (y) adequate information regarding certain substantial U.S. beneficial owners of such entity (if any). If a dividend payment is both subject to withholding under FATCA and subject to the withholding tax discussed above under "—Dividends," the withholding under FATCA may be credited against, and therefore reduce, such other withholding tax. You should consult your own tax advisors regarding these requirements and whether they may be relevant to your ownership and disposition of our common stock.

Underwriting

Subject to the terms and conditions set forth in the underwriting agreement we have entered into with Piper Jaffray & Co., as the underwriter, we have agreed to sell to the underwriter, and the underwriter has agreed to purchase from us, _____ shares of our common stock. Subject to the terms and conditions set forth in the underwriting agreement, the underwriter has agreed to purchase all of the shares if any of the shares are purchased.

The underwriter has advised us that it proposes to offer the shares of our common stock to the public at a price of \$ _____ per share of common stock and to certain dealers at that price less a concession not in excess of \$ _____ per share of common stock. After the offering, the underwriter may change the offering price and other selling terms. The underwriter reserves the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

We have granted the underwriter an option to purchase up to _____ additional shares of our common stock at the public offering price, less underwriting discounts and commissions, to cover over-allotments, if any. The underwriter can exercise this option at any time within 30 days after the date of this prospectus supplement. If any additional shares of common stock are purchased, the underwriter will offer the additional shares on the same terms as those set forth in this prospectus supplement.

The following table shows the per share and total underwriting discounts and commissions to be paid to the underwriter in connection with the offering being made pursuant to this prospectus supplement.

	Per Share	Total(1)	
		Without Option Exercise	With Option Exercise
Public offering price	\$	\$	\$
Underwriting discounts and commissions	\$	\$	\$
Net proceeds, before expenses, to us	\$	\$	\$

(1) Excludes the proceeds to be received by us pursuant to the concurrent preferred stock offering and any discounts and commissions paid by us to the underwriter in connection with such offering.

We estimate that the total fees and expenses of the offerings payable by us, excluding underwriting discounts and commissions, will be approximately \$ _____, which includes up to \$150,000 in out-of-pocket expenses incurred in connection with the offerings for which we have agreed to reimburse the underwriter.

We have agreed to indemnify the underwriter against certain liabilities, including civil liabilities under the Securities Act of 1933, as amended (the "Securities Act"), and to contribute to payments the underwriter may be required to make in respect of those liabilities.

We and each of our directors and officers entered into lock-up agreements with the underwriter. Under these agreements, we and each of these persons may not, without the prior written approval of the underwriter, subject to limited exceptions, offer, pledge, sell, offer to sell, contract to sell or lend, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock or publicly disclose the intention to make any offer, sale, pledge or disposition, or enter into any swap, hedge or similar arrangements, or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of our common stock or such other securities. In addition, subject to limited exceptions, we have agreed not to file any registration statement under the Securities Act for any such transaction or

which registers, or offers for sale, our common stock or any securities convertible into or

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exercisable or exchangeable for our common stock, and each of our directors and officers has agreed not to make any demand for, or exercise any right with respect to, the registration under the Securities Act of any shares of our common stock or any security convertible into or exercisable or exchangeable for our common stock, in each case without the prior written approval of the underwriter. These restrictions will be in effect for a period of 90 days after the date of this prospectus supplement.

Price Stabilization and Short Positions

To facilitate the offering being made pursuant to this prospectus supplement or the concurrent preferred stock offering, the underwriter may engage in transactions that stabilize, maintain or otherwise affect the price of our common stock during and after the offering. Specifically, the underwriter may over-allot or otherwise create a short position in the common stock for its own account by selling more shares of common stock than we have sold to the underwriter. Short sales involve the sale by the underwriter of a greater number of shares than the underwriter is required to purchase in the offering. The underwriter may close out a short position by exercising the over-allotment option or by purchasing shares in the open market.

In addition, the underwriter may attempt to stabilize or maintain the price of the common stock by bidding for or purchasing shares of common stock in the open market and may impose penalty bids. If penalty bids are imposed, selling concessions allowed to other broker-dealers participating in the offering are reclaimed if shares of common stock previously distributed in the offering are repurchased, whether in connection with stabilization transactions or otherwise. The effect of these transactions may be to stabilize or maintain the market price of the common stock at a level above that which might otherwise prevail in the open market. The imposition of a penalty bid may also affect the price of the common stock to the extent that it discourages resales of the common stock. The magnitude or effect of any stabilization or other transactions is uncertain. These transactions may be effected on The Nasdaq Stock Market or otherwise and, if commenced, may be discontinued at any time. The underwriter may also engage in passive market making transactions in our common stock. Passive market making consists of displaying bids on The Nasdaq Stock Market limited by the prices of independent market makers and effecting purchases limited by those prices in response to order flow. Rule 103 of Regulation M promulgated by the SEC limits the amount of net purchases that each passive market maker may make and the displayed size of each bid. Passive market making may stabilize the market price of the common stock at a level above that which might otherwise prevail in the open market and, if commenced, may be discontinued at any time.

Neither we nor the underwriter make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of shares of our common stock. In addition, neither we nor the underwriter make any representation that the underwriter will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Notice to Investors in Switzerland

The common stock may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (the "SIX"), or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the common shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, the Company or the common stock have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of common stock will not be supervised by, the Swiss Financial Market Supervisory Authority, and the offer of common stock has not been and will not be authorized under the Swiss

Federal Act on Collective Investment Schemes (“CISA”). Accordingly, no public distribution, offering or advertising, as defined in CISA, its implementing ordinances and notices, and no distribution to any non-qualified investor, as defined in CISA, its implementing ordinances and notices, shall be undertaken in or from Switzerland, and the investor protection afforded to acquirers of interests in collective investment schemes under CISA does not extend to acquirers of common stock.

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Electronic Distribution

This prospectus may be made available on a website maintained by the underwriter and the underwriter may distribute this prospectus electronically.

Relationship with Vermillion, Inc.

From time to time in the ordinary course of its business, the underwriter and certain of its affiliates have engaged and may in the future engage in commercial banking or investment banking transactions with, and provide financial advisory services to, us or our affiliates.

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Legal Matters

Certain legal matters relating to the validity of the shares of common stock offered hereby will be passed upon by Sidley Austin LLP, Chicago, Illinois. Michael A. Gordon, a stockholder of the Company, is a partner in such firm. As of the date of this prospectus supplement, Mr. Gordon beneficially owned less than 1% of the outstanding shares of our common stock. Certain legal matters in connection with the offering will be passed upon for the underwriter by Goodwin Procter LLP, New York, New York.

Experts

The consolidated financial statements as of December 31, 2017 and 2016 and for the years then ended incorporated by reference in this prospectus supplement and the accompanying prospectus have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm (the report on the consolidated financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern), incorporated herein and therein by reference, given on the authority of said firm as experts in auditing and accounting.

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Where You Can Find More Information

We file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the shares of common stock we are offering under this prospectus supplement. This prospectus supplement and the accompanying prospectus do not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the shares of common stock we are offering under this prospectus supplement, we refer you to the registration statement and the exhibits filed as a part of the registration statement. You may read and copy, at prescribed rates, any document we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the Public Reference Room. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including the Company. The SEC's Internet site can be found at www.sec.gov. Our filings are also available to the public over the Internet at our website at www.vermillion.com.

Information on any Vermillion website, any subsection, page or other subdivision of any Vermillion website or any website linked to by content on any Vermillion website is not part of this prospectus, and you should not rely on that information unless that information is also in this prospectus supplement or the accompanying prospectus or incorporated by reference herein or therein.

Important Information Incorporated by Reference

The SEC allows us to incorporate by reference into this prospectus supplement the information contained in other documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents. Any statement contained in any document incorporated or deemed to be incorporated by reference into this prospectus supplement shall be deemed to be modified or superseded, for purposes of this prospectus supplement, to the extent that a statement contained in or omitted from this prospectus supplement, or in any other subsequently filed document that also is or is deemed to be incorporated by reference into this prospectus supplement, modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus supplement. We incorporate by reference the documents listed below, which have been filed by us and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) until the offering being made pursuant to this prospectus supplement is completed:

(a) Our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 13, 2018;

(b) Our Current Report on Form 8-K filed with the SEC on March 6, 2018; and

(c) The description of our common stock set forth in the Registration Statement on Form 8-A filed with the SEC on July 6, 2010 (File No. 001-34810), including any amendments or reports filed for the purpose of updating such description.

Upon written or oral request, we will provide without charge to each person, including any beneficial owner, to whom a copy of the prospectus is delivered a copy of the documents incorporated by reference into this prospectus supplement (other than exhibits to such documents unless such exhibits are specifically incorporated by reference herein). You may request a copy of these filings, at no cost, by writing or telephoning us at the following address:

Vermillion, Inc.
12117 Bee Caves Road, Building Three, Suite 100
Austin, Texas 78738

(512) 519-0400
Attn: Corporate Secretary

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PROSPECTUS

\$50,000,000 Aggregate Offering Price of

Common Stock, Preferred Stock, Debt securities, Warrants, Rights and Units

Vermillion, Inc., a Delaware corporation (“Vermillion”), may offer and sell from time to time, in one or more offerings, common stock, preferred stock, debt securities, warrants, rights and units for an aggregate initial offering price up to \$50,000,000 in amounts, at prices and on terms that Vermillion will determine at the time of the offering.

This prospectus describes general terms that apply to these securities. When we decide to sell a particular class or series of these securities, we will provide specific terms of the securities, including the initial offering price and the aggregate amount of the offering, in one or more supplements to this prospectus. Any prospectus supplement may also add, update or change information contained in this prospectus. You should carefully read this prospectus and the applicable prospectus supplement, as well as the documents incorporated or deemed to be incorporated by reference in this prospectus before you invest in our securities.

We may offer and sell these securities in the same offering or in separate offerings; to or through underwriters, dealers or agents; or directly to purchasers. The names of any underwriters, dealers or agents involved in the sale of our securities, their compensation and any over-allotment options held by them will be described in the applicable prospectus supplement. For a more complete description of the plan of distribution with respect to the securities covered by this prospectus, see the section entitled “Plan of Distribution” beginning on page 14 of this prospectus.

Our common stock is traded on The NASDAQ Stock Market under the symbol “VRML.” On October 23, 2017, the last reported sale price for our common stock on The NASDAQ Stock Market was \$1.42 per share. As of October 23, 2017, the aggregate market value of our common stock held by our non-affiliates, as calculated pursuant to the rules of the Securities and Exchange Commission, was \$47,382,510. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a public offering with a value exceeding more than one-third of our “public float” (the market value of our common stock held by our non-affiliates) in any 12-month period so long as our public float remains below \$75,000,000. We have not sold any securities in reliance on General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to and including the date of this prospectus.

INVESTING IN OUR SECURITIES INVOLVES SUBSTANTIAL RISKS. YOU SHOULD CONSIDER THE “RISK FACTORS” ON PAGE 3 OF THIS PROSPECTUS, IN THE DOCUMENTS THAT ARE INCORPORATED BY REFERENCE INTO THIS PROSPECTUS AND, IF APPLICABLE, IN RISK FACTORS DESCRIBED IN ANY ACCOMPANYING PROSPECTUS SUPPLEMENT BEFORE BUYING ANY OF OUR SECURITIES.

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 November 7, 2017.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission (the “SEC”) using a “shelf” registration process. Under this shelf registration process, we may, from time to time, sell any combination of the securities described in this prospectus in one or more offerings up to the aggregate amount of \$50,000,000.

This prospectus provides you with a general description of the securities we may offer. A prospectus supplement may add to, update or change information contained in this prospectus, and, accordingly, to the extent inconsistent, information in this prospectus is superseded by the information in any prospectus supplement.

A prospectus supplement may describe, as applicable: the terms of the securities; the initial public offering price; the price paid for the securities; net proceeds; and the other specific terms related to the offering of the securities.

You should rely only on the information that we have provided or incorporated by reference in this prospectus, any applicable prospectus supplement, any related free writing prospectus that we may authorize to be provided to you and the other information to which we refer you. We have not authorized anyone to provide you with different information. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus or any applicable prospectus supplement or any related free writing prospectus that we may authorize to be provided to you. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that the information in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate only as of the date on the cover of the document and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus, any applicable prospectus supplement or any related free writing prospectus, or any sale of a security. Our business, financial condition, results of operations and prospects may have changed since those dates.

We urge you to carefully read this prospectus and any applicable prospectus supplement, together with the information incorporated herein by reference as described under the heading “Where You Can Find Additional Information.”

SUMMARY

This summary highlights certain information contained in greater detail elsewhere in this prospectus or incorporated by reference into this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our securities. You should carefully read this prospectus, any accompanying prospectus supplements, any related free writing prospectus that we have authorized for use in connection with the offering and the documents incorporated by reference herein and in any accompanying prospectus supplement, including the information referred to under the heading “Risk Factors” in this prospectus, under the heading “Risk Factors” contained in the applicable prospectus supplement and in the documents incorporated by reference into this prospectus and any prospectus supplement. Unless the context requires otherwise, all references in this prospectus to “Vermillion,” “the Company,” “we,” “us,” “our” or similar references mean Vermillion, Inc. together with its consolidated subsidiaries.

Our Company

Our vision is to drive the advancement of women’s health by providing innovative methods to detect, monitor and manage the treatment of both benign and malignant gynecologic disease, with our primary focus being diseases of the female pelvic cavity.

We are dedicated to the discovery, development and commercialization of novel high-value diagnostic and bio-analytical solutions that help physicians diagnose, treat and improve outcomes for women. Our tests are intended to detect, characterize and stage disease, and to help guide decisions regarding patient treatment, which may include decisions to refer patients to specialists, to perform additional testing, or to assist in monitoring response to therapy. A distinctive feature of our approach is to combine multiple biomarkers, other modalities and diagnostics, clinical risk factors and patient data into a single, reportable index score that has higher diagnostic accuracy than its constituents. We concentrate on our development of novel diagnostic tests for gynecologic disease, with an initial focus on ovarian cancer. We also intend to address clinical questions related to early disease detection, treatment response, monitoring of disease progression, prognosis and others through collaborations with leading academic and research institutions.

The Company also offers in-vitro diagnostic (“IVD”) trial services to third-party customers through its wholly-owned subsidiary, ASPiRA IVD, Inc. (“ASPiRA IVD”), which commenced operations in June 2016. ASPiRA IVD is a specialized, CLIA certified, laboratory provider dedicated to meeting the unique testing needs of IVD manufacturers seeking to commercialize high-complexity assays.

Corporate Information

We were originally incorporated in 1993, and we had our initial public offering in 2000. Our executive offices are located at 12117 Bee Caves Road, Building Three, Suite 100, Austin, Texas 78738, and our telephone number is (512) 519-0400. We maintain a website at www.vermillion.com and www.aspiralab.com where general information about us is available. Our websites, and the information contained therein, are not a part of this prospectus.

RISK FACTORS

Investing in our securities involves a high degree of risk. Please carefully consider the risk factors described in our most recent Annual Report on Form 10-K, any subsequent updates in our Quarterly Reports on Form 10-Q and any other filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), incorporated by reference herein, before making an investment decision. Additional risk factors may be included in any prospectus supplements relating to securities described in this prospectus. The occurrence of any of those risks could materially and adversely affect our business, prospects, financial condition, results of operations or cash flow. Other risks and uncertainties that we do not now consider to be material or of which we are not now aware may become important factors that affect us in the future and could result in a complete loss of your investment.

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DISCLOSURE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any prospectus supplement and the documents that we incorporate herein or therein by reference contain forward-looking statements, as defined in the Private Securities Litigation Reform Act of 1995. These statements involve a number of risks and uncertainties. Words such as “may,” “expects,” “intends,” “anticipates,” “believes,” “estimates,” “plans,” “seeks,” “could,” “should,” “continue,” and similar expressions are intended to identify such forward-looking statements. Readers are cautioned that these forward-looking statements speak only as of the date on which the document in which they appear is filed with the SEC, and, except as required by law, we do not assume any obligation to update, amend or clarify them to reflect events, new information or circumstances occurring after such dates.

Examples of forward-looking statements regarding our business include the following:

- projections or expectations regarding our future test volumes, revenue, cost of revenue, operating expenses, cash flow, results of operations and financial condition;
- our plan to broaden our commercial focus from ovarian cancer to differential diagnosis of women with a range of gynecological disorders;
- our planned business strategy and the anticipated timing of the implementation thereof;
- plans with respect to our market expansion and growth, including plans to market Overa outside the United States;
- plans to develop new algorithms and molecular diagnostic tests;
- plans to develop a product or tool combining an OVA1 with results of a symptom index;
- plans to establish our own payer coverage for OVA1 and Overa;
 - intentions to address clinical questions related to early disease detection, treatment response, monitoring of disease progression, prognosis and other issues in the fields of oncology and women’s health;
- plans to leverage infrastructure and enhance our pipeline of future technologies by fostering relationships with in vitro diagnostic companies;
- plans with respect to ASPiRA IVD;
- expected service revenue growth based on ASPiRA IVD;
- expected license revenue in future periods;
- our planned focus on the execution of five core strategic business drivers in ovarian cancer diagnostics and specialized laboratory services to address unmet medical needs for women faced with gynecologic disease and other conditions and the continued development of our business;
- anticipated efficacy of our products, product development activities and product innovations;
- expected competition in the markets in which we compete;
- plans with respect to ASPiRA LABS, Inc. (“ASPiRA LABS”);
- expectations regarding future services provided by Quest Diagnostics Incorporated (“Quest Diagnostics”);
- plans to expand our ovarian cancer franchise beyond OVA1, including with respect to Overa and OvaX;
- plans regarding the commercialization of Overa;
- plans to develop and perform laboratory development tests (“LDTs”);
- plans with respect to the Company’s pelvic mass registry, including anticipated sources of funding;

- anticipated effects on reimbursement for OVA1 from changes to Novitas Solutions' administrative requirements;
- expectations regarding the Company's monitoring and combining multiple protein biomarkers to create diagnostic tests to aid physicians considering treatment options for patients with complex diseases, and the Company's future development of new In Vitro Diagnostic Multivariate Index Assays;
- expectations regarding existing and future collaborations and partnerships, including OVA1 and Overa distribution agreements;
- plans regarding future publications;
- our continued ability to comply with applicable governmental regulations, expectations regarding pending regulatory submissions and plans to seek regulatory approvals for our tests outside the United States;
- our ability to obtain and maintain the regulatory approvals required to market Overa in other countries;
- our continued ability to expand and protect our intellectual property portfolio;
 - anticipated liquidity and capital requirements;
- anticipated future losses and our ability to continue as a going concern;
- expectations regarding the second disbursement from our financing arrangement with the State of Connecticut Department of Economic and Community Development;
- expected expenditures, including the expected decrease in expenses related to research and development in 2017;
- our ability to use our net operating loss carryforwards;
- expected market adoption of our diagnostic tests, including OVA1 and Overa;
- expectations regarding our ability to launch new products developed, licensed, co-marketed or acquired;
- expectations regarding raising capital and the amount of financing anticipated to be required to fund our planned operations; and
- expectations regarding reimbursement for our products, and our ability to obtain such reimbursement, from third-party payers such as private insurance companies and government insurance plans.

These statements involve estimates, assumptions and uncertainties that could cause actual results to differ materially from those expressed in them. Any forward-looking statements are qualified in their entirety by reference to the risk factors described in any accompanying prospectus supplement or in any document incorporated by reference into this prospectus.

These factors include, among others:

- our ability to increase the volume of OVA1 or Overa sales;
- our ability to market our test through sales channels other than Quest Diagnostics, including ASPiRA LABS;
- failures by third-party payers to reimburse OVA1 or Overa or changes or variances in reimbursement rates;
- our ability to secure additional capital on acceptable terms to execute our business plan;
 - our ability to commercialize OVA1 and/or Overa both within and outside the United States;
- in the event that we succeed in commercializing OVA1 and/or Overa outside the United States, the political, economic and other conditions affecting other countries (including foreign exchange rates);

- our ability to develop and commercialize additional diagnostic products and achieve market acceptance with respect to these products;
- our ability to compete successfully;
- our ability to obtain any regulatory approval required for our future diagnostic products;
- our or our suppliers' ability to comply with United States Food and Drug Administration ("FDA") requirements for production, marketing and post-market monitoring of our products;
- additional costs that may be required to make further improvements to our manufacturing operations;
- our ability to maintain sufficient or acceptable supplies of immunoassay kits from our suppliers;
- our ability to continue to develop, protect and promote our proprietary technologies;
- future litigation against us, including infringement of intellectual property and product liability exposure;
- our ability to retain key employees;
- business interruptions;
- legislative actions resulting in higher compliance costs;
- changes in healthcare policy;
- our ability to comply with environmental laws;
- our ability to generate sufficient demand for ASPiRA LABS' services to cover its operating costs;
- our ability to comply with the additional laws and regulations that apply to us in connection with the operation of ASPiRA LABS;
- our ability to comply with FDA regulations that relate to our products and to obtain any FDA clearance or approval required to develop and perform LDTs;
- ASPiRA IVD's lack of operating history;
- ASPiRA IVD's ability to generate and maintain business;
 - fluctuations over time with respect to ASPiRA IVD's operating results;
- ASPiRA IVD's ability to enter into profitable contracts;
- ASPiRA IVD's ability to maintain effective information systems without significant interruption;
- ASPiRA IVD's ability to perform its services in compliance with contractual requirements, regulatory standards and ethical considerations; and
- our ability to continue as a going concern.

You should read this prospectus, any accompanying prospectus supplement, any related free writing prospectus and the documents that we incorporate by reference herein and therein completely and with the understanding that our actual future results may be materially different from what we currently expect. You should not put undue reliance on any forward-looking statement. We believe it is important to communicate our expectations to our investors.

However, there may be events in the future that we are not able to accurately predict or that we do not fully control that could cause actual results to differ materially from those expressed or implied in our forward-looking statements.

USE OF PROCEEDS

Unless otherwise indicated in the prospectus supplement, we will use the net proceeds from the sale of securities offered by this prospectus for general corporate purposes, including working capital, for further research and development and ongoing sales and marketing expenses, and, potentially, capital expenditures and licensing of additional technologies. We may also use a portion of the net proceeds from any offering to acquire or invest in complimentary businesses, technologies, product candidates or other intellectual property, although we have no present commitments or agreements to do so. 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. As a result, unless otherwise indicated in the prospectus supplement, our management will have broad discretion to allocate the net proceeds of the offerings. Pending their ultimate use, we intend to invest the net proceeds in short-term, investment-grade, interest-bearing instruments.

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DESCRIPTION OF CAPITAL STOCK

The following summary description of our capital stock is based on the applicable provisions of the Delaware General Corporation Law (the “DGCL”), and on the provisions of our Fourth Amended and Restated Certificate of Incorporation, dated January 22, 2010, as amended effective June 19, 2014 (our “Certificate of Incorporation”), and our Fifth Amended and Restated Bylaws, effective June 19, 2014 (our “Bylaws”). This information is qualified entirely by reference to the applicable provisions of the DGCL, our Certificate of Incorporation, and our Bylaws. For information on how to obtain copies of our Certificate of Incorporation and our Bylaws, please refer to the heading “Where You Can Find More Information” in this prospectus.

Our Authorized Capital Stock

Under our Certificate of Incorporation, our authorized capital stock consists of 150,000,000 shares of common stock, par value \$0.001 per share, and 5,000,000 shares of preferred stock, par value \$0.001 per share.

Common Stock

As of October 23, 2017, 59,998,748 shares of our common stock were outstanding, 4,753,443 shares of our common stock were subject to outstanding options (assuming, in the case of performance-based options, full attainment of the respective performance measures) and 1,525,212 shares of our common stock were reserved for future issuance to employees, directors and consultants pursuant to our stock incentive plans. In addition, as of October 23, 2017, warrants to purchase 3,180,179 shares of our common stock were outstanding. The rights, preferences and privileges of the holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock which we may designate in the future.

Voting Rights

Each holder of common stock is entitled to one vote for each share on all matters to be voted upon by the stockholders, and there are no cumulative voting rights.

Dividend Rights

Subject to preferences to which holders of preferred stock may be entitled and the rights of certain of our stockholders set forth in the Stockholders Agreement (as defined below), holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by our Board of Directors out of funds legally available therefor. We have never paid or declared any dividend on our common stock, and we do not anticipate paying cash dividends on any common stock in the foreseeable future. We intend to retain all available funds and any future earnings to fund the development and expansion of our business.

No Preemptive or Similar Rights

Holders of our common stock do not have preemptive rights, and our common stock is not convertible or redeemable. As described under “Stockholders Agreement,” certain holders of our common stock have the right to purchase shares in connection with most equity offerings made by the Company.

Right to Receive Liquidation Distributions

In the event of our liquidation, dissolution or winding up, holders of common stock would be entitled to share in our assets remaining after the payment of liabilities and the satisfaction of any liquidation preference granted the holders of any outstanding shares of any senior class of securities. The rights, preferences and privileges of the holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of

preferred stock which we may designate in the future.

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Preferred Stock

As of October 23, 2017, there were no shares of our preferred stock outstanding.

Our Board of Directors is authorized, subject to any limitations prescribed by law, without stockholder approval, to issue from time to time up to an aggregate of 5,000,000 shares of preferred stock, in one or more series, each of such series to have such rights and preferences, including voting rights, dividend rights, conversion rights, redemption terms and liquidation preferences as shall be determined by our Board of Directors. Any issuance of shares of preferred stock could adversely affect the voting power of holders of common stock, and the likelihood that the holders of preferred stock will receive dividend payments and payments upon liquidation could have the effect of delaying, deferring or preventing a change in control.

Warrants

We may issue warrants to purchase shares of common stock or shares of preferred stock. We will issue warrants under one or more warrant agreements between us and a warrant agent we will name in the prospectus supplement.

The prospectus supplement relating to any warrants we are offering will include specific terms relating to the offering. These terms will include some or all of the following:

- the aggregate number of warrants offered;
- the title of the warrants;
- the designation, number and terms of the shares of common stock or shares of preferred stock purchasable upon exercise of the warrants and procedures by which those numbers may be adjusted;
- the exercise price of the warrants;
- the dates or periods during which the warrants are exercisable;
- the designation and terms of any securities with which the warrants are issued;
- if the warrants are issued as a unit with another security, the date on and after which the warrants and the other security will be separately transferable;
- if the exercise price is not payable in U.S. dollars, the foreign currency, currency unit or composite currency in which the exercise price is denominated;
- any minimum or maximum amount of warrants that may be exercised at any one time;
- any terms relating to the modification of the warrants; and
- any terms, procedures and limitations relating to the transferability, exchange or exercise of the warrants.

Rights

We may issue rights for the purchase of shares of our common stock or shares of our preferred stock. Each series of rights will be issued under a separate rights agreement which we will enter into with a bank or trust company, as rights agent, all as set forth in the applicable prospectus supplement. The rights agent will act solely as our agent in connection with the certificates relating to the rights and will not assume any obligation or relationship of agency or trust with any holders of rights certificates or beneficial owners of rights. We will file the rights agreement and the rights certificates relating to each series of rights with the SEC and incorporate them by reference

as an exhibit to the registration statement of which this prospectus is a part on or before the time we issue a series of rights.

The applicable prospectus supplement will describe the terms of any rights we issue, including as applicable:

- the date for determining the persons entitled to participate in the rights distribution;
- the aggregate number or amount of underlying securities purchasable upon exercise of the rights and the exercise price;
- the aggregate number of rights being issued;
- the date, if any, on and after which the rights may be transferable separately;
- the date on which the right to exercise the rights commences and the date on which such right expires;
- the designation and terms of any securities with which the warrants are issued;
- a discussion of any material or special U.S.

- federal income tax considerations applicable to the rights; and
- any other terms of the rights, including the terms, procedures and limitations relating to the distribution, exchange and exercise of the rights.

Rights will be exercisable for U.S. dollars only and will be in registered form only.

Units

We may issue securities in units, each consisting of two or more types of securities. For example, we might issue units consisting of a combination of common stock and warrants to purchase common stock. If we issue units, the prospectus supplement relating to the units will contain information with regard to each of the securities that is a component of the units. In addition, the prospectus supplement relating to the units will describe the terms of any units we issue, including as applicable:

- the date, if any, on and after which the units may be transferable separately;
- whether we will apply to have the units traded on a securities exchange or securities quotation system;
- a discussion of any material or special U.S. federal income tax considerations applicable to the units; and
- how, for U.S. federal income tax purposes, the purchase price paid for the units is to be allocated among the component securities.

Stockholders Agreement

In connection with a private placement in May 2013, we entered into a stockholders agreement with the purchasers named therein (the "Stockholders Agreement"). Pursuant to and subject to the terms of the Stockholders Agreement, certain of the investors received rights to participate in any future equity offerings on the same price and terms as other investors, and rights to exercise "piggyback" registration rights for any registration statements that we file prior to May 13, 2018 on our own account or for the account of others with respect to shares of our common stock. Some or all of such investors might participate in one or more of the equity offering under the registration statement of which this prospectus is a part.

In addition, the Stockholders Agreement prohibits the Company from taking material actions without the consent of at least one of the two primary investors. These material actions include:

- making any acquisition with value greater than \$2 million;
- entering into, or amending the terms of agreements with Quest Diagnostics, provided that such investors' consent shall not be unreasonably withheld, conditioned or delayed following good faith consultation with the Company;
- submitting any resolution at a meeting of stockholders or in any other manner changing or authorizing a change in the size of our Board of Directors;
- offering, selling or issuing any securities senior to our common stock or any securities that are convertible into or exchangeable or exercisable for securities ranking senior to our common stock;
- amending our Certificate of Incorporation or our Bylaws in any manner that affects the rights, privileges or economics of our common stock or the warrants purchased in the May 2013 private placement;
- taking any action that would result in a change in control of Vermillion or an insolvency event;
- paying or declaring dividends on any securities of the Company or distributing any assets of the Company other than in the ordinary course of business or repurchasing any outstanding securities of the Company; or
- adopting or amending any stockholder rights plan.

In addition, the two primary investors (Jack W. Schuler, on the one hand, and Oracle Partners, LP and Oracle Ten Fund Master, LP, on the other hand) each received the right to designate a person to serve on our Board of Directors. These rights terminate for each investor when that investor ceases to beneficially own less than 50% of the shares and warrants (taking into account shares issued upon exercise of the warrants), in the aggregate, that it purchased at the closing of our May 2013 private placement.

Section 203 of the Delaware Corporation Law

We are subject to Section 203 of the DGCL, which prevents an "interested stockholder" (defined in Section 203 of the DGCL, generally, as a person owning 15% or more of a corporation's outstanding voting stock), from engaging in a "business combination" (as defined in Section 203 of the DGCL) with a publicly-held Delaware corporation for three years following the date such person became an interested stockholder, unless:

- before such person became an interested stockholder, the board of directors of the corporation approved the transaction in which the interested stockholder became an interested stockholder or approved the business combination;
- upon consummation of the transaction that resulted in the interested stockholders becoming an interested stockholder, the interested stockholder owns at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced (excluding stock held by directors who are also officers of the corporation and by employee stock plans that do not provide employees with the rights to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer); or
- following the transaction in which such person became an interested stockholder, the business combination is approved by the board of directors of the corporation and authorized at a meeting of stockholders by the affirmative vote of the holders of two-thirds of the outstanding voting stock of the corporation not owned by the interested stockholder.

The provisions of Section 203 of the DGCL could make a takeover of the Company difficult.

Effect of Certain Provisions of Our Certificate of Incorporation and Bylaws

Certain provisions of our Certificate of Incorporation and Bylaws may have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from attempting to acquire, control of us. Such provisions could limit the price that certain investors might be willing to pay in the future for our securities. Our Certificate of Incorporation eliminates the right of stockholders to call special meetings of stockholders or to act by written consent without a meeting, and our Bylaws require advance notice for stockholder proposals and director nominations, which may preclude stockholders from bringing matters before an annual meeting of stockholders or from making nominations for directors at an annual meeting of stockholders. Our Certificate of Incorporation authorizes undesignated preferred stock, which makes it possible for our Board of Directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us.

These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of us. The amendment of any of the provisions of our Certificate of Incorporation described in the immediately preceding paragraph would require approval by our Board of Directors and the affirmative vote of at least 66 2/3% of our then outstanding voting securities, and the amendment of any of the provisions of our Bylaws described in the immediately preceding paragraph would require approval by our Board of Directors or the affirmative vote of at least 66 2/3% of our then outstanding voting securities.

Transfer Agent

The transfer agent for our common stock is Wells Fargo Shareowner Services.

Listing

Our common stock is listed on The NASDAQ Stock Market under the symbol "VRML."

description of Debt Securities

This section describes the general terms and provisions of the debt securities that we may issue from time to time in the form of one or more series of debt securities. We may offer secured or unsecured debt securities which may be senior or subordinated and which may be convertible. The applicable prospectus supplement and/or other offering materials will describe the specific terms of the debt securities offered through that prospectus supplement as well as any general terms described in this section that will not apply to those debt securities. To the extent the applicable prospectus supplement or other offering materials relating to an offering of debt securities are inconsistent with this prospectus, the terms of that prospectus supplement or other offering materials will supersede the information in this prospectus. In this “Description of Debt Securities,” unless otherwise indicated, “we,” “our,” “the Company” and similar words refer to Vermillion, Inc. and not any of its subsidiaries.

The debt securities will be issued under one or more indentures to be entered into between us and one or more trustees. References herein to the “indenture” and the “trustee” refer to the applicable indenture and the applicable trustee pursuant to which any particular series of debt securities is issued. The terms of any series of debt securities will be those specified in or pursuant to the applicable indenture and in the certificates evidencing that series of debt securities and those made part of the indenture by the Trust Indenture Act of 1939, as amended (the “Trust Indenture Act”). We may issue senior, subordinated and convertible debt securities under the same indenture.

The following summary of selected provisions of the indenture and the debt securities is not complete, and the summary of selected terms of a particular series of debt securities included in the applicable prospectus supplement also will not be complete. You should review the applicable form of indenture and the applicable form of certificate evidencing the debt securities, which forms have been or will be filed as exhibits to the registration statement of which this prospectus is a part or as exhibits to documents which have been or will be incorporated by reference in this prospectus. To obtain a copy of the indenture or the form of certificate for the debt securities, see “Where You Can Find More Information” in this prospectus. The following summary and the summary in any applicable prospectus supplement are qualified in their entirety by reference to all of the provisions of the indenture and the certificates evidencing the debt securities (including any amendments or supplements we may enter into from time to time which are permitted under the debt securities or any indenture), which provisions, including defined terms, are incorporated by reference in this prospectus.

Unless otherwise specified in a prospectus supplement, the debt securities will be direct unsecured obligations of the Company and will rank junior in right of payment to any of our secured indebtedness to the extent of the value of the assets securing such indebtedness, and will be structurally junior to all existing and future indebtedness incurred by our subsidiaries. Any debt securities designated as senior will rank equally with any of our other senior and unsubordinated debt. Any debt securities designated as subordinated will be subordinate and junior in right of payment to any senior indebtedness. There may be subordinated debt securities that are senior or junior to other series of subordinated debt securities.

The applicable prospectus supplement will set forth the terms of the debt securities or any series thereof, including, if applicable:

- the title of the debt securities and whether the debt securities will be senior debt securities or subordinated debt securities;
- any limit on the aggregate principal amount of the debt securities;
- whether the debt securities will be issued as registered securities, bearer securities or both, and any restrictions on the exchange of one form of debt securities for another and on the offer, sale and delivery of the debt securities in

either form;

- the date or dates on which the principal amount of the debt securities will mature;

- if the debt securities bear interest, the rate or rates at which the debt securities bear interest, or the method for determining the interest rate, and the date or dates from which interest will accrue;

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14 if the debt securities bear interest, the dates on which interest will be payable, or the method for determining such dates, and the regular record dates for interest payments;

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- the place or places where the payment of principal, any premium and interest will be made, where the debt securities may be surrendered for transfer or exchange and where notices or demands to or upon us may be served;
- any optional redemption provisions, which would allow us to redeem the debt securities in whole or in part;
- any sinking fund or other provisions that would obligate us to redeem, repay or purchase the debt securities;
- if the currency in which the debt securities will be issuable is United States dollars, the denominations in which any registered securities will be issuable, if other than denominations of \$1,000 and any integral multiple thereof;
- if other than the entire principal amount, the portion of the principal amount of debt securities which will be payable upon a declaration of acceleration of the maturity of the debt securities;
- the events of default and covenants relevant to the debt securities, including the inapplicability of any event of default or covenant set forth in the indenture relating to the debt securities, or the applicability of any other events of defaults or covenants in addition to the events of default or covenants set forth in the indenture relating to the debt securities;
- the name and location of the corporate trust office of the applicable trustee under the indenture for such series of notes;
- if other than United States dollars, the currency in which the debt securities will be paid or denominated;
- if the debt securities are to be payable, at our election or the election of a holder of the debt securities, in a currency other than that in which the debt securities are denominated or stated to be payable, the terms and conditions upon which that election may be made, and the time and manner of determining the exchange rate between the currency in which the debt securities are denominated or stated to be payable and the currency in which the debt securities are to be so payable;
- the designation of the original currency determination agent, if any;
- if the debt securities are issuable as indexed securities, the manner in which the amount of payments of principal, any premium and interest will be determined;
- if the debt securities do not bear interest, the dates on which we will furnish to the applicable trustee the names and addresses of the holders of the debt securities;
- if other than as set forth in an indenture, provisions for the satisfaction and discharge or defeasance or covenant defeasance of that indenture with respect to the debt securities issued under that indenture;
- the date as of which any bearer securities and any global security will be dated if other than the date of original issuance of the first debt security of a particular series to be issued;
- whether and under what circumstances we will pay additional amounts to non-United States holders in respect of any tax assessment or government charge;

- whether the debt securities will be issued in whole or in part in the form of a global security or securities and, in that case, any depositary and global exchange agent for the global security or securities, whether the global form shall be permanent or temporary and, if applicable, the exchange date;
- if debt securities are to be issuable initially in the form of a temporary global security, the circumstances under which the temporary global security can be exchanged for definitive debt securities and whether the definitive debt securities will be registered securities, bearer securities or will be in global form and provisions relating to the payment of interest in respect of any portion of a global security payable in respect of an interest payment date prior to the exchange date;

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16 the extent and manner to which payment on or in respect of debt securities will be subordinated to the prior payment of our other liabilities and obligations;

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- whether payment of any amount due under the debt securities will be guaranteed by one or more guarantors, including one or more of our subsidiaries;
- whether the debt securities will be convertible and the terms of any conversion provisions;
- the forms of the debt securities; and
- any other terms of the debt securities, which terms shall not be inconsistent with the requirements of the Trust Indenture Act.

This prospectus is part of a registration statement that provides that we may issue debt securities from time to time in one or more series under one or more indentures, in each case with the same or various maturities, at par or at a discount. Unless otherwise indicated in a prospectus supplement, we may issue additional debt securities of a particular series without the consent of the holders of the debt securities of such series outstanding at the time of the issuance. Any such additional debt securities, together with all other outstanding debt securities of that series, will constitute a single series of debt securities under the applicable indenture.

We intend to disclose any restrictive covenants for any issuance or series of debt securities in the applicable prospectus supplement.

PLAN OF DISTRIBUTION

We may sell the securities offered through this prospectus in one or more of the following ways (or in any combination) from time to time:

- to or through underwriters or dealers;
- directly to purchasers, including our affiliates;
- through agents; or
- a combination of any these methods.

If underwriters or dealers are used in the sale, the securities will be acquired by the underwriters or dealers for their own account and may be resold from time to time in one or more transactions, including:

- in one or more transactions at a fixed price or prices, which may be changed from time to time;
- in “at-the-market offerings,” within the meaning of Rule 415(a)(4) of the Securities Act of 1933, as amended (the “Securities Act”), to or through a market maker or into an existing trading market, on an exchange or otherwise;
- through a market maker or into an existing trading market on an exchange or otherwise;
- at prices related to those prevailing market prices; or
- at negotiated prices.

The prospectus supplement will include the following information:

- the terms of the offering;
- the names of any underwriters or agents;
- the name or names of any managing underwriter or underwriters;
- the purchase price of the securities;
- the net proceeds from the sale of the securities;
- any delayed delivery arrangements;
- any underwriting discounts, commissions and other items constituting underwriters’ compensation;
- any initial public offering price;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any commissions paid to agents.

Sale Through Underwriters or Dealers

If underwriters are used in the sale of any securities, the underwriters will acquire the securities for their own account, including through underwriting, purchase, security lending or repurchase agreements with us. The underwriters may resell the securities from time to time in one or more transactions, including negotiated transactions. Underwriters may sell the securities in order to facilitate transactions in any of our other securities

(described in this prospectus or otherwise), including other public or private transactions and short sales. Underwriters may offer securities to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless otherwise indicated in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to certain conditions, and the underwriters will be obligated to purchase all the offered securities if they purchase any of them. The underwriters may change from time to time any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers. The prospectus supplement will include the names of the principal underwriters, the respective amount of securities underwritten, the nature of the obligation of the underwriters to take the securities and the nature of any material relationship between an underwriter and us.

If dealers are used in the sale of securities offered through this prospectus, we will sell the securities to them as principals. They may then resell those securities to the public at varying prices determined by the dealers at the time of resale. The prospectus supplement will include the names of the dealers and the terms of the transaction.

We may authorize underwriters, dealers or agents to solicit offers by certain purchasers to purchase our securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. The contracts will be subject to those conditions set forth in the prospectus supplement, and the prospectus supplement will set forth any commissions paid for solicitation of these contracts.

Underwriters, dealers and agents may contract for or otherwise be entitled to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, or to contribution with respect to payments made by the underwriters, dealers or agents, under agreements between us on one hand, and the underwriters, dealers and agents, on the other hand.

We may grant underwriters who participate in the distribution of our securities an option to purchase additional securities to cover over-allotments, if any, in connection with the distribution.

Underwriters, dealers, or agents may receive compensation in the form of discounts, concessions or commissions from us or our purchasers, as their agents in connection with the sale of our securities. These underwriters, dealers or agents may be considered to be underwriters under the Securities Act. As a result, discounts, commissions or profits on resale received by the underwriters, dealers or agents may be treated as underwriting discounts and commissions. The prospectus supplement for any securities offered by us will identify any such underwriter, dealer or agent and describe any compensation received by them from us. Any public offering price and any discounts or concessions allowed or re-allowed or paid to dealers may be changed from time to time.

Underwriters, broker-dealers or agents who may become involved in the sale of our securities may engage in transactions with and perform other services for us for which they receive compensation.

Direct Sales and Sales Through Agents

We may sell the securities offered through this prospectus directly. In this case, no underwriters or agents would be involved. Such securities may also be sold through agents designated from time to time. The prospectus supplement will name any agent involved in the offer or sale of the offered securities and will describe any commissions payable to the agent by us. Unless otherwise indicated in the prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment.

We may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act, with respect to any sale of those securities.

At-the-Market Offerings

To the extent that we make sales through one or more underwriters or agents in at-the-market offerings, we will do so pursuant to the terms of a sales agency financing agreement or other at-the-market offering arrangement between us, on one hand, and the underwriters or agents, on the other. If we engage in at-the-market sales pursuant

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to any such agreement, we will issue and sell our securities through one or more underwriters or agents, which may act on an agency basis or a principal basis. During the term of any such agreement, we may sell securities on a daily basis in exchange transactions or otherwise as we agree with the underwriters or agents. Any such agreement will provide that any securities sold will be sold at prices related to the then prevailing market prices for our securities. Therefore, exact figures regarding proceeds that will be raised or commissions to be paid cannot be determined at this time. Pursuant to the terms of the agreement, we may agree to sell, and the relevant underwriters or agents may agree to solicit offers to purchase blocks of our common stock or other securities. The terms of any such agreement will be set forth in more detail in the prospectus supplement.

Market Making, Stabilization and Other Transactions

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

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

Derivative Transactions and Hedging

We, the underwriters or other agents may engage in derivative transactions involving the securities. These derivatives may consist of short sale transactions and other hedging activities. The underwriters or agents may acquire a long or short position in the securities, hold or resell securities acquired and purchase options or futures on the securities and other derivative instruments with returns linked to or related to changes in the price of the securities. In order to facilitate these derivative transactions, we may enter into security lending or repurchase agreements with the underwriters or agents. The underwriters or agents may effect the derivative transactions through sales of the securities to the public, including short sales, or by lending the securities in order to facilitate short sale transactions by others. The underwriters or agents may also use the securities purchased or borrowed from us or others (or, in the case of derivatives, securities received from us in settlement of those derivatives) to directly or indirectly settle sales of the securities or close out any related open borrowings of the securities.

Trading Market and Listing of Securities

Any common stock sold or resold pursuant to a prospectus supplement will be listed on The NASDAQ Stock Market or on such other national securities exchange as our common stock may then be listed. The securities other than common stock may or may not be listed on a national securities exchange. It is possible that one or more

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underwriters may make a market in a class or series of securities, but the underwriters will not be obligated to do so and may discontinue any market making at any time without notice. We cannot give any assurance as to the liquidity of the trading market for any of the securities.

General Information

Agents, underwriters, and dealers may be entitled, under agreements entered into with us, to indemnification by us against certain liabilities, including liabilities under the Securities Act.

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LEGAL MATTERS

Sidley Austin LLP will pass upon the validity of the securities being registered by the registration statement of which this prospectus is a part. Michael A. Gordon, a stockholder of the Company, is a partner at such firm. As of October 23, 2017, Mr. Gordon beneficially owned securities representing less than one percent of the outstanding common stock of the Company. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The consolidated financial statements as of December 31, 2016 and 2015 and for the years then ended incorporated by reference in this prospectus have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-3 under the Securities Act of which this prospectus forms a part. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities that may be offered under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. You may read and copy, at prescribed rates, any document we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the Public Reference Room. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including Vermillion, Inc. The SEC's Internet site can be found at <http://www.sec.gov>. Our filings are also available to the public over the Internet at our website, www.vermillion.com.

Information on any Vermillion website, any subsection, page, or other subdivision of any Vermillion website, or any website linked to by content on any Vermillion website, is not part of this prospectus and you should not rely on that information unless that information is also in this prospectus or incorporated by reference in this prospectus.

IMPORTANT INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus the information contained in other documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents. Any statement contained in any document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded, for purposes of this prospectus, to the extent that a statement contained in or omitted from this prospectus, or in any other subsequently filed document that also is or is deemed to be incorporated by reference herein, modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus. We incorporate by reference the documents listed below which have been filed by us and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) subsequent to the date of the initial filing of the registration statement of which this prospectus forms a part until the offering of the securities covered by this prospectus is completed:

- (a) Our Annual Report on Form 10-K for the year ended December 31, 2016 filed with the SEC on March 31, 2017 (including those portions of our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 27,

2017 that are incorporated by reference into Part III of such Annual Report on Form 10-K);

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- (b) Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017 and June 30, 2017 filed with the SEC on May 11, 2017 and August 11, 2017, respectively;
- (c) Our Current Reports on Form 8-K filed with the SEC on (i) February 17, 2017 (Items 1.01 and 3.02 only), (ii) March 3, 2017, (iii) March 13, 2017, (iv) June 26, 2017 and (v) August 28, 2017; and
- (d) The description of our common stock set forth in the Registration Statement on Form 8-A filed with the SEC on July 6, 2010 (File No. 001-34810), including any amendments or reports filed for the purpose of updating such description.

Upon written or oral request, we will provide without charge to each person, including any beneficial owner, to whom a copy of the prospectus is delivered a copy of the documents incorporated by reference herein (other than exhibits to such documents unless such exhibits are specifically incorporated by reference herein). You may request a copy of these filings, at no cost, by writing or telephoning us at the following address:

Vermillion, Inc.

12117 Bee Caves Road, Building Three, Suite 100

Austin, Texas 78738

(512) 519-0400

Attn: Corporate Secretary

shares

VERMILLION, INC.

Common Stock

PROSPECTUS SUPPLEMENT

Piper Jaffray

April , 2018