

Invitae Corp
 Form 424B5
 March 04, 2019
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 Registration No. 333-230053

The information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

Subject to completion, dated March 4, 2019

Preliminary prospectus supplement

(To prospectus dated March 4, 2019)

\$125,000,000

Common stock

We are offering \$125,000,000 of shares of our common stock.

Our common stock is listed on The New York Stock Exchange under the symbol NVTA. On March 1, 2019, the last reported sale price of shares of our common stock on The New York Stock Exchange was \$20.33 per share. Based on an assumed public offering price of \$20.33 per share, the last reported sale price of our common stock on The New York Stock Exchange on March 1, 2019, we would expect to offer approximately 6,148,548 shares hereby.

We are an emerging growth company under the federal securities laws and are subject to reduced public company reporting requirements.

	Per share	Total
Public offering price	\$	\$
Underwriting discounts and commissions(1)	\$	\$
Proceeds to Invitae Corporation, before expenses	\$	\$

(1) See Underwriting for a description of the compensation payable to the underwriters.

We have granted the underwriters an option for a period of 30 days to purchase up to \$18,750,000 of additional shares of our common stock.

Investing in our common stock involves a high degree of risk. See the section entitled Risk factors beginning on page S-5 of this prospectus supplement.

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 supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares to purchasers on or about March , 2019.

J.P. Morgan
March , 2019

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About this prospectus supplement

This document contains two parts. The first part is this prospectus supplement, which describes the specific terms of this offering and also supplements and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The second part is the accompanying prospectus, which provides more general information, some of which may not apply to this offering. 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 and the accompanying prospectus. We have not, and the underwriters have not, authorized anyone else to provide you with information that is in addition to or different from that contained or incorporated by reference in this prospectus supplement and the accompanying prospectus, along with the information contained in any permitted free writing prospectuses we have authorized for use in connection with this offering.

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 information contained in this prospectus supplement and the accompanying prospectus is accurate only as of the date of this prospectus supplement or the date of the accompanying prospectus, and the information in the documents incorporated by reference in this prospectus supplement and the accompanying prospectus is accurate only as of the date of those respective documents, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus or of any sale of our common stock. Our business, financial condition, results of operations and prospects may have changed since those dates. It is important for you to read and consider all information contained or incorporated by reference in this prospectus supplement and the accompanying prospectus in making your investment decision. You should read both this prospectus supplement and the accompanying prospectus, as well as the documents incorporated by reference into this prospectus supplement and the accompanying prospectus and the additional information described under **Where You Can Find More Information** in this prospectus supplement and in the accompanying prospectus, before investing in our common stock.

Unless otherwise indicated or the context otherwise requires, references in this prospectus supplement and the accompanying prospectus to Invitae, the company, we, us and our refer to Invitae Corporation and its consolidated subsidiaries.

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Prospectus supplement summary

This summary highlights certain information about us and this offering. Because it is a summary, it does not contain all of the information that you should consider before investing. Before investing in our common stock, you should read this entire prospectus supplement and the accompanying prospectus carefully, including the Risk factors, and the financial statements and accompanying notes and other information incorporated by reference in this prospectus supplement and the accompanying prospectus.

Our company

Our mission is to bring comprehensive genetic information into mainstream medical practice to improve the quality of healthcare for billions of people. Combining genetic testing services that support patient care throughout life's journey from family planning, to proactive health screening, to inherited disease diagnosis with a unique, rapidly expanding network of patients, healthcare providers, biopharma and advocacy partners, we seek to capture the broad potential of genetics and expand its use across the healthcare continuum.

We offer high quality, comprehensive, affordable genetic testing across multiple clinical areas, including hereditary cancer, cardiology, neurology, pediatrics, metabolic conditions and rare diseases. To augment our offering and realize our mission, we have acquired multiple assets. We acquired four businesses in 2017 and in doing so expanded our suite of genome management offerings and completed our entry into prenatal and perinatal genetic testing.

In 2017, we established a leading position in family health genetic information services through the strategic acquisition of reproductive health testing capabilities. In January 2017, we acquired AltaVoice, formerly PatientCrossroads, a patient-centered data company with a global platform for collecting, curating, coordinating and delivering safeguarded data from patients and clinicians. This acquisition was complemented by the acquisition in June 2017 of Ommdom, Inc. and its product, CancerGene Connect, an end-to-end platform for collecting and managing genetic family histories to deliver personalized genetic risk information. In August 2017, we acquired Good Start Genetics Inc., or Good Start, a molecular diagnostics company focused on preimplantation and carrier screening for inherited disorders. In November 2017, we completed our acquisition of CombiMatrix Corporation, a company which specialized in prenatal diagnosis, miscarriage analysis and pediatric developmental disorders.

We have experienced rapid growth. For the years ended December 31, 2018, 2017 and 2016, our revenue was \$147.7 million, \$68.2 million and \$25.0 million, respectively, and we incurred net losses of \$129.4 million, \$123.4 million and \$100.3 million, respectively. At December 31, 2018, our accumulated deficit was \$516.7 million. To meet the demands of scaling our business, we increased our number of employees to 788 at December 31, 2018 from 594 on December 31, 2017. We grew our sales force to 128 at December 31, 2018 from 103 at December 31, 2017. We expect headcount will continue to increase in 2019 as we add to the team to support anticipated growth.

Sales of our tests have grown significantly. In 2018, 2017 and 2016, we generated approximately 292,000, 145,000 and 57,000 billable tests, respectively. Approximately 29% of the billable tests we performed in 2018 were billable to institutions and patients, and the remainder were billable to third-party payers. Many of the gene tests on our assays are tests for which private insurers reimburse. However, when we do not have reimbursement policies or contracts with private insurers, our claims for reimbursement may be denied upon submission, and we must appeal the claims. The appeals process is time consuming and expensive, and may not result in payment. Even if we are successful in achieving reimbursement, we may be paid at lower rates than if

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we were under contract with the third-party payer. When there is not a contracted rate for reimbursement, there is typically a greater co-insurance or co-payment requirement from the patient which may result in further delay or decreased likelihood of collection.

We expect to incur operating losses for the near-term future and may need to raise additional capital in order to fund our operations. If we are unable to achieve our revenue growth objectives and successfully manage our costs, we may not be able to achieve profitability.

We believe that the keys to our future growth will be to increase billable test volume, achieve broad reimbursement coverage for our tests from third-party payers, consistently drive down the price for genetic analysis and interpretation, steadily increase the amount of genetic content we offer, consistently improve the client experience, drive physician and patient utilization of our website for ordering and delivery of results and increase the number of strategic partners working with us to add value for our clients.

Corporate information

We were incorporated in the state of Delaware on January 13, 2010, as Locus Development, Inc. and changed our name to Invitae Corporation in 2012. Our principal executive offices are located at 1400 16th Street, San Francisco, California 94103 and our telephone number is (415) 374-7782. Our website address is www.invitae.com. We do not incorporate the information on, or accessible through, our website into this prospectus supplement or the accompanying prospectus, and you should not consider any information on, or accessible through, our website as part of this prospectus supplement or the accompanying prospectus.

Invitae, and the Invitae logo are our trademarks. This prospectus supplement and the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus may also contain trademarks and trade names that are the property of their respective owners. We do not intend our use or display of other companies' trade names, trademarks or service marks to imply relationships with, or endorsements or sponsorship of us by, these other companies.

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012. We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year following the fifth anniversary of the completion of our initial public offering of common stock (December 31, 2020), (2) the last day of the fiscal year in which we have total annual gross revenue of at least \$1.07 billion, (3) the last day of the fiscal year in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the prior June 30th, and (4) the date on which we have issued more than \$1.0 billion in non-convertible debt during the prior three-year period.

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The offering

Common stock offered by us shares

Common stock to be outstanding immediately after the offering shares

Option to purchase additional shares The underwriters have a 30-day option to purchase up to an additional shares of common stock.

Use of proceeds We currently intend to use the net proceeds from this offering for working capital and other general corporate purposes. We may also use a portion of the net proceeds from this offering to acquire or invest in complementary businesses, assets or technologies, although we have no present commitments or agreements to do so. See Use of proceeds.

Risk factors See Risk factors for a discussion of factors you should consider carefully before deciding to invest in our common stock.

NYSE symbol NVTA

The number of shares of common stock to be outstanding immediately after this offering is based on 75,480,699 shares outstanding as of December 31, 2018 and excludes:

3,855,156 shares of common stock issuable upon exercise of stock options outstanding as of December 31, 2018 under our equity incentive plans, with a weighted-average exercise price of \$8.54 per share;

4,030,890 shares of common stock issuable upon vesting of restricted stock units as of December 31, 2018 under our equity incentive plans;

118,882 shares of common stock available for future issuance under our 2015 Stock Incentive Plan;

277,577 shares of common stock available for future issuance under our Employee Stock Purchase Plan;

3,458,823 shares of common stock issuable upon the conversion of our Series A convertible preferred stock;

132,146 shares of common stock issuable in 2019 in connection with acquisitions and up to 452,079 shares of common stock potentially issuable in connection with an earn-out in 2019, in each case as of December 31, 2018; and

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610,875 shares of common stock issuable upon the exercise of warrants to purchase common stock outstanding as of December 31, 2018, with a weighted-average exercise price of \$6.93 per share.

The above also excludes 3,019,227 and 754,806 additional shares of common stock available for future issuance under our 2015 Stock Incentive Plan and Employee Stock Purchase Plan, respectively, as of January 1, 2019. In addition, the number of shares of our common stock to be outstanding immediately after this offering excludes up to \$114.0 million of our common stock available for sale as of February 28, 2019 pursuant to our Sales Agreement with Cowen and Company, LLC, or Cowen, as amended as of February 28, 2019, providing for sales of shares of our common stock in at the market offerings, or the ATM Agreement.

Except as otherwise indicated, all information in this prospectus supplement assumes no exercise by the underwriters of their option to purchase additional shares.

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Investing in our common stock involves a high degree of risk. Before making an investment decision, you should carefully consider the risks described below and in our Annual Report on Form 10-K for the year ended December 31, 2018 incorporated by reference in this prospectus supplement and the accompanying prospectus, any amendment or update thereto reflected in our subsequent filings with the Securities and Exchange Commission, or SEC, and all of the other information in this prospectus supplement and the accompanying prospectus, including our financial statements and related notes incorporated by reference in this prospectus supplement and the accompanying prospectus. If any of these risks is realized, our business, financial condition, results of operations and prospects could be materially and adversely affected. In that event, the trading price of our common stock could decline and you could lose part or all of your investment. Additional risks and uncertainties that are not yet identified or that we think are immaterial may also materially harm our business, operating results and financial condition and could result in a complete loss of your investment.

Risks related to this offering

Purchasers in this offering will experience immediate and substantial dilution in the book value of their investment.

Purchasers of our common stock in this offering will experience immediate dilution in the net tangible book value of the common stock purchased in this offering because the price per share of common stock in this offering is substantially higher than the net tangible book value per share of our common stock outstanding immediately after this offering. Our net tangible book value as of December 31, 2018 was approximately \$81.3 million, or \$1.08 per share of our common stock. Based on an assumed public offering price of \$20.33 per share, the last reported sale price of our common stock on The New York Stock Exchange on March 1, 2019, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our adjusted net tangible book value as of December 31, 2018, would have been approximately \$198.4 million, or approximately \$2.43 per share of our common stock. As a result, if you purchase shares of common stock in this offering, you would suffer immediate and substantial dilution of \$17.90 per share with respect to the net tangible book value of the common stock. See **Dilution** in this prospectus supplement for a detailed discussion of the dilution you will incur if you purchase shares in this offering.

We will have broad discretion in how we use the net proceeds of this offering. We may not use these proceeds effectively, which could affect our results of operations and cause our stock price to decline.

Although we currently intend to use the net proceeds from this offering in the manner described in the section entitled **Use of proceeds** in this prospectus supplement, we will have considerable discretion in the application of the net proceeds of this offering. We may use the net proceeds for purposes that do not yield a significant return or any return at all for our stockholders. In addition, pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

If we raise additional capital in the future, your ownership in us could be diluted.

Any issuance of equity we may undertake in the future to raise additional capital, including pursuant to the ATM Agreement, could cause the price of our common stock to decline, or require us to issue shares at a price that is lower than that paid by holders of our common stock in the past, which would result in those newly issued shares being dilutive. If we obtain funds through a credit facility or through the issuance of debt or preferred securities, these securities would likely have rights senior to your rights as a common shareholder, which could impair the value of our common stock.

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We have never paid dividends on our capital stock and we do not anticipate paying dividends in the foreseeable future.

We have never paid dividends on any of our capital stock and currently intend to retain any future earnings to fund the growth of our business. In addition, our note purchase agreement restricts our ability to pay cash dividends on our common stock. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for the foreseeable future.

Sales of a substantial number of shares of our common stock in the public market could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market or the perception that these sales might occur could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that sales may have on the prevailing market price of our common stock. In addition, the sale of substantial amounts of our common stock could adversely impact its price. As of December 31, 2018, we had outstanding 75,480,699 shares of our common stock, options to purchase 3,855,156 shares of our common stock (of which 2,736,658 were exercisable as of that date), outstanding restricted stock units representing 4,030,890 shares of our common stock, outstanding Series A convertible preferred stock convertible into 3,458,823 shares of our common stock, 132,146 shares of our common stock issuable in 2019 in connection with acquisitions, up to 452,079 shares of our common stock potentially issuable in connection with an earn-out in 2019 and warrants to purchase 610,875 shares of our common stock. In addition, 3,019,227 and 754,806 additional shares of common stock are available for future issuance under our 2015 Stock Incentive Plan and Employee Stock Purchase Plan, respectively, as of January 1, 2019, and up to \$114.0 million of our common stock is available for sale as of February 28, 2019 pursuant to the ATM Agreement. The sale or the availability for sale of a large number of shares of our common stock in the public market could cause the price of our common stock to decline.

We, along with our directors and executive officers, have agreed that for a period of 75 days after the date of this prospectus supplement, subject to specified exceptions, including sales under 10b5-1 plans, we or they will not offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, any shares of our common stock or securities convertible into or exchangeable or exercisable for any shares of our common stock. These lock-up agreements affect approximately 3,923,185 shares of our common stock as of December 31, 2018. Sales of stock by any of our directors and executive officers could have a material adverse effect on the trading price of our common stock.

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Forward-looking statements

This prospectus supplement, the accompanying prospectus and the documents we have filed with the SEC that are incorporated by reference in this prospectus supplement and the accompanying prospectus contain forward-looking statements that involve risks and uncertainties. These statements relate to future periods, future events or our future operating or financial plans or performance. When used in this prospectus, the words expects, believes, anticipates, estimates, continue, anticipate, plan, may, will, could, intends, and similar expressions identify forward-looking statements, and include but are not limited to, statements regarding our expected increases in employee headcount; our strategy; our business plan, including expectations regarding future partnerships, acquisitions and networks; future growth and the keys to such growth; continued investment in our business; future operations; the anticipated use of proceeds from this offering; future operating results and expense levels; and the prospects, plans and objectives of management are forward-looking statements. These statements are subject to known and unknown risks, uncertainties and assumptions that could cause actual results to differ materially from those projected or otherwise implied by the forward-looking statements, including the following: risks associated with our ability to develop and commercialize new tests and expand into new markets; our ability to use rapidly changing genetic data to interpret test results accurately, consistently and quickly; our history of losses; our need to scale our infrastructure in advance of demand for our tests and our ability to increase demand for our tests; our ability to drive revenue; our ability to successfully operationalize payer contracts; our ability to achieve and maintain positive cash flows and to execute our strategy to create a profitable long-term business; the risk that we may not obtain or maintain sufficient levels of reimbursement for our tests; laws and regulations applicable to our business, including potential regulation by the Food and Drug Administration; the risk that Medicare and other payers may change the pricing or other terms for reimbursement, or not reimburse for our tests in the future; and our ability to compete. Given these risks and uncertainties, you should not place undue reliance on these forward-looking statements. Additional cautionary statements or discussions of risks and uncertainties that could affect our results or the achievement of the expectations described in forward-looking statements may also be contained in the documents we incorporate by reference into this prospectus supplement and the accompanying prospectus.

These forward-looking statements made by us in this prospectus supplement, the accompanying prospectus, or any of the documents incorporated by reference in this prospectus supplement and accompany prospectus speak only as of the date of this prospectus supplement and the accompanying prospectus. We expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in our expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based. You should, however, review additional disclosures we make in our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K filed with the SEC.

You should read this prospectus supplement, the accompanying prospectus, and the documents that we incorporated by reference in this prospectus supplement and the accompanying prospectus completely and with the understanding that our actual future results, levels of activity and performance as well as other events and circumstances may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements.

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Use of proceeds

We estimate that the net proceeds to us from this offering, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, will be approximately \$117.1 million (or approximately \$134.7 million if the underwriters exercise their option to purchase additional shares in full).

A \$1.00 increase or decrease in the assumed public offering price of \$20.33 per share, which is the last reported sale price of our common stock on The New York Stock Exchange on March 1, 2019, would increase or decrease the net proceeds to us from this offering by approximately \$5.8 million, assuming that the number of shares offered by us, as set forth above, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the aggregate amount of the shares we are offering. Similarly, a 1.0 million share increase or decrease in the number of shares offered by us would increase or decrease the net proceeds to us by \$19.1 million, assuming that the assumed public offering price of \$20.33 per share remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. The net proceeds information discussed above is illustrative only. The net proceeds to us from this offering is subject to adjustment based on the actual public offering price of our shares and other terms of this offering determined at pricing.

We currently intend to use the net proceeds of this offering for working capital and other general corporate purposes. We may also use a portion of the net proceeds from this offering to acquire or invest in complementary businesses, assets or technologies, although we have no present commitments or agreements to do so. Accordingly, we will retain broad discretion over the use of these proceeds. Pending application of the net proceeds as described above, we intend to invest the net proceeds in short- and intermediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government.

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Dividend policy

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain any future earnings and do not expect to pay any dividends in the foreseeable future. In addition, the terms of our note purchase agreement restrict our ability to pay dividends. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements and general business conditions and other factors that our board of directors may deem relevant.

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If you purchase our common stock in this offering, your ownership interest will be immediately diluted to the extent of the difference between the public offering price per share and the net tangible book value per share of our common stock immediately after this offering. Net tangible book value per share is determined by dividing the number of shares of common stock outstanding as of December 31, 2018 into our total tangible assets less total liabilities.

Our net tangible book value as of December 31, 2018 was approximately \$81.3 million, or \$1.08 per share, based on 75,480,699 shares of our common stock outstanding as of that date.

After giving effect to the sale of 6,148,548 shares of common stock by us at an assumed public offering price of \$20.33 per share, the last reported sale price of our common stock on The New York Stock Exchange on March 1, 2019, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our as adjusted net tangible book value as of December 31, 2018 would have been \$198.4 million, or \$2.43 per share. This represents an immediate increase in net tangible book value of \$1.35 per share to existing stockholders and immediate dilution of \$17.90 per share to investors in this offering, as illustrated by the following table:

Assumed public offering price per share	\$ 20.33
Net tangible book value per share as of December 31, 2018	\$ 1.08
Increase in net tangible book value per share attributable to investors participating in this offering	1.35
As adjusted net tangible book value per share after giving effect to this offering	2.43
Dilution per share to investors in this offering	\$ 17.90

A \$1.00 increase or decrease in the assumed public offering price of \$20.33 per share, the last reported sale price of our common stock on The New York Stock Exchange on March 1, 2019, would increase or decrease our as adjusted net tangible book value by approximately \$0.07 per share, and the dilution per share to investors in this offering by approximately \$0.93 per share, assuming that the number of shares offered by us, as set forth above, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the aggregate amount of the shares we are offering. Similarly, a 1.0 million share increase or decrease in the number of shares offered by us would increase or decrease our as adjusted net tangible book value by approximately \$19.1 million (\$0.20 per share), and the dilution per share to investors in this offering by approximately \$0.20 per share, assuming that the assumed public offering price of \$20.33 per share remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. The as adjusted information discussed above is illustrative only. Our net tangible book value following the completion of this offering is subject to adjustment based on the actual public offering price of our shares and other terms of this offering determined at pricing.

If the underwriters exercise in full their option to purchase up to \$18.75 million of additional shares from us at an assumed public offering price of \$20.33 per share, the last reported sale price of our common stock on The New York Stock Exchange on March 1, 2019, the as adjusted net tangible book value per share after this offering would be \$2.62 per share, the increase in net tangible book value per share to existing stockholders would be \$1.54 per share and the dilution to new investors purchasing shares in this offering would be \$17.71 per share.

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The number of shares of common stock to be outstanding immediately after this offering is based on 75,480,699 shares outstanding as of December 31, 2018 and excludes:

3,855,156 shares of common stock issuable upon exercise of stock options outstanding as of December 31, 2018 under our equity incentive plans, with a weighted-average exercise price of \$8.54 per share;

4,030,890 shares of common stock issuable upon vesting of restricted stock units as of December 31, 2018 under our equity incentive plans;

118,882 shares of common stock available for future issuance under our 2015 Stock Incentive Plan;

277,577 shares of common stock available for future issuance under our Employee Stock Purchase Plan;

3,458,823 shares of common stock issuable upon the conversion of our Series A convertible preferred stock;

132,146 shares of common stock issuable in 2019 in connection with acquisitions and up to 452,079 shares of common stock potentially issuable in connection with an earn-out in 2019, in each case as of December 31, 2018; and

610,875 shares of common stock issuable upon the exercise of warrants to purchase common stock outstanding as of December 31, 2018, with a weighted-average exercise price of \$6.93 per share.

The above also excludes 3,019,227 and 754,806 additional shares of common stock available for future issuance under our 2015 Stock Incentive Plan and Employee Stock Purchase Plan, respectively, as of January 1, 2019.

In addition, the number of shares of our common stock to be outstanding immediately after this offering excludes up to \$114.0 million of our common stock available for sale as of February 28, 2019 pursuant to the ATM Agreement.

To the extent that additional shares are issued pursuant to the foregoing, investors purchasing our common stock in this offering will experience further dilution. In addition, we may offer other securities in other offerings due to market conditions or strategic considerations. To the extent we issue such securities, you may experience further dilution.

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Material U.S. federal income tax consequences to non-U.S. holders

The following is a general discussion of the material U.S. federal income tax considerations applicable to non-U.S. holders (as defined herein) with respect to their ownership and disposition of shares of our common stock issued pursuant to this offering. All prospective non-U.S. holders of our common stock should consult their own tax advisors with respect to the U.S. federal, state, local and non-U.S. tax consequences of the purchase, ownership and disposition of our common stock. In general, a non-U.S. holder means a beneficial owner of our common stock (other than a partnership or an entity or arrangement treated as a partnership for U.S. federal income tax purposes) that is not, for U.S. federal income tax purposes:

an individual who is a citizen or resident of the United States;

a corporation, or an entity treated as a corporation for U.S. federal income tax purposes, created or organized in the United States or under the laws of the United States or of any state thereof or the District of Columbia;

an estate, the income of which is subject to U.S. federal income tax regardless of its source; or

a trust if (1) a U.S. court can exercise primary supervision over the trust's administration and one or more U.S. persons (within the meaning of Section 7701(a)(30) of the Code), have the authority to control all of the trust's substantial decisions or (2) the trust has a valid election in effect under applicable U.S. Treasury Regulations to be treated as a U.S. person.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, existing U.S. Treasury Regulations promulgated thereunder, published administrative pronouncements and rulings of the U.S. Internal Revenue Service, which we refer to as the IRS, and judicial decisions, all as in effect as of the date of this prospectus. These authorities are subject to change and to differing interpretation, possibly with retroactive effect. Any change or differing interpretation could alter the tax consequences to non-U.S. holders described in this prospectus supplement and the accompanying prospectus.

We assume in this discussion that a non-U.S. holder holds shares of our common stock as a capital asset within the meaning of Section 1221 of the Code (generally, for investment). This discussion does not address all aspects of U.S. federal income taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder's individual circumstances, nor does it address any estate or gift tax consequences, or any aspects of U.S. state, local or non-U.S. taxes. This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as holders that own, or are deemed to own, more than 5% of our capital stock (except to the extent specifically set forth below), corporations that accumulate earnings to avoid U.S. federal income tax, tax-exempt organizations, banks, financial institutions, insurance companies, brokers, dealers or traders in securities, commodities or currencies, tax-qualified retirement plans, holders subject to the alternative minimum tax or the Medicare contribution tax, holders that are subject to the special tax accounting rules of Section 451(b) of the Code, holders who hold or receive our common stock pursuant to the exercise of employee stock options or otherwise as compensation, holders holding our common stock as part of a hedge, straddle or other risk reduction strategy, conversion transaction or other integrated investment, holders deemed to sell our common stock under the constructive sale provisions of the Code, controlled foreign corporations, passive foreign investment companies and certain former U.S. citizens or long-term residents.

In addition, this discussion does not address the tax treatment of partnerships (or entities or arrangements that are treated as partnerships for U.S. federal income tax purposes) or persons that hold their common stock through such partnerships. If a partnership, including any entity or arrangement treated as a partnership for

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U.S. federal income tax purposes, holds shares of our common stock, the U.S. federal income tax treatment of a partner in such partnership will generally depend upon the status of the partner and the activities of the partnership. Such partners and partnerships should consult their own tax advisors regarding the tax consequences of the purchase, ownership and disposition of our common stock.

There can be no assurance that a court or the IRS will not challenge one or more of the tax consequences described herein, and we have not obtained, nor do we intend to obtain, a ruling with respect to the U.S. federal income tax consequences to a non-U.S. holder of the purchase, ownership or disposition of our common stock.

Distributions on our common stock

Distributions, if any, on our common stock generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's adjusted tax basis in the common stock. Any remaining excess will be treated as capital gain from the sale or exchange of such common stock, subject to the tax treatment described below in "Gain on sale, exchange or other disposition of our common stock." Any such distribution will also be subject to the discussion below under the heading "FATCA withholding."

Dividends paid to a non-U.S. holder will generally be subject to withholding of U.S. federal income tax at a 30% rate of the gross amount of dividends or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

Dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States and, if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States, are generally exempt from the 30% withholding tax if the non-U.S. holder satisfies applicable certification and disclosure requirements. However, such U.S. effectively connected income, net of specified deductions and credits, is taxed at the same graduated U.S. federal income tax rates applicable to U.S. persons (as defined in the Code). Any U.S. effectively connected income received by a non-U.S. holder that is a corporation may also, under certain circumstances, 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 between the United States and such holder's country of residence.

To claim a reduction or exemption from withholding, a non-U.S. holder of our common stock generally will be required to provide (a) a properly executed IRS Form W-8BEN or W-8BEN-E (or successor form) and satisfy applicable certification and other requirements to claim the benefit of an applicable income tax treaty between the United States and such holder's country of residence, or (b) a properly executed IRS Form W-8ECI stating that dividends are not subject to withholding because they are effectively connected with such non-U.S. holder's conduct of a trade or business within the United States. Non-U.S. holders are urged to consult their tax advisors regarding their entitlement to benefits under a relevant income tax treaty.

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

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Gain on sale, exchange or other disposition of our common stock

Subject to the discussion below regarding backup withholding and FATCA withholding, in general, a non-U.S. holder will not be subject to any U.S. federal income tax on any gain realized upon such holder's sale, exchange or other disposition of shares of our common stock unless:

the gain is effectively connected with a U.S. trade or business of the non-U.S. holder and, if an applicable income tax treaty so provides, is attributable to a permanent establishment or a fixed base maintained in the United States by such non-U.S. holder, in which case the non-U.S. holder generally will be taxed at the graduated U.S. federal income tax rates applicable to U.S. persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, the branch profits tax described above in **Distributions on our common stock** also may apply;

the non-U.S. holder is a nonresident alien individual who is present in the United States for 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty) on the net gain derived from the disposition, which may be offset by U.S. source capital losses of the non-U.S. holder, if any (even though the individual is not considered a resident of the United States); or

our common stock constitutes a U.S. real property interest because we are, or have been, at any time during the five-year period preceding such disposition (or the non-U.S. holder's holding period, if shorter) a U.S. real property holding corporation. Generally, a corporation is a U.S. real property holding corporation only 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 plus its other assets used or held for use in a trade or business. Although there can be no assurance, we do not believe that we are, or have been, a U.S. real property holding corporation, or that we are likely to become one in the future. Even if we are or become a U.S. real property holding corporation, provided that our common stock is regularly traded, as defined by applicable Treasury Regulations, on an established securities market, our common stock will be treated as a U.S. real property interest only with respect to a non-U.S. holder that holds more than 5% of our outstanding common stock, directly or indirectly, actually or constructively, during the shorter of the 5-year period ending on the date of the disposition or the period that the non-U.S. holder held our common stock. In such case, such non-U.S. holder generally will be taxed on its net gain derived from the disposition at the graduated U.S. federal income tax rates applicable to U.S. persons (as defined in the Code). No assurance can be provided that our common stock will continue to be regularly traded on an established securities market for purposes of the rules described above.

Information reporting and backup withholding

We must report annually to the IRS and to each non-U.S. holder the gross amount of the dividends on our common stock paid to such holder and the tax withheld, if any, with respect to such dividends. Non-U.S. holders will have to comply with specific certification procedures to establish that the holder is not a U.S. person (as defined in the Code) in order to avoid backup withholding at the applicable rate with respect to dividends on our common stock. A non-U.S. holder generally will not be subject to U.S. backup withholding with respect to payments of dividends on our common stock if it certifies its non-U.S. status by providing a valid IRS Form W-8BEN or W-8BEN-E (or successor form) or W-8ECI, or otherwise establishes an exemption; provided we do not have actual knowledge or reason to know such non-U.S. holder is a U.S. person, as defined in the Code. Dividends paid to non-U.S. holders subject to the U.S. withholding tax, as described above in **Distributions on our common stock**, generally will be exempt from U.S. backup withholding.

Information reporting and backup withholding will generally apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected by or through the U.S. office of any broker, U.S. or foreign, unless

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the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a non-U.S. holder where the transaction is effected outside the United States through a non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner similar to dispositions effected through a U.S. office of a broker. Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them.

Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder may be allowed as a credit against the non-U.S. holder's U.S. federal income tax liability, if any, and may entitle such holder to a refund, provided that the required information is timely furnished to the IRS.

FATCA withholding

The Code, U.S. Treasury Regulations and other applicable guidance, commonly referred to as "FATCA", generally impose a U.S. federal withholding tax of 30% on dividends on stock in a U.S. corporation paid to (i) a foreign financial institution (as specifically defined for this purpose), unless such institution enters into an agreement with the U.S. government to, among other things, withhold on certain payments and to collect and provide to the U.S. tax authorities substantial information regarding U.S. account holders of such institution (which includes certain equity and debt holders of such institution, as well as certain account holders that are foreign entities with U.S. owners) or otherwise qualifies for an exemption from these rules, or (ii) a non-financial foreign entity (as defined in the Code), unless such entity provides the withholding agent with either a certification that it does not have any substantial direct or indirect U.S. owners or provides information regarding substantial direct and indirect U.S. owners of the entity, or otherwise qualifies for an exemption from these rules. Treasury Regulations proposed in December 2018 (and upon which taxpayers and withholding agents are entitled to rely) eliminate possible FATCA withholding on the gross proceeds from a sale or other disposition of our common stock, previously scheduled to apply beginning January 1, 2019. Under certain circumstances, a non-U.S. holder might be eligible for refunds or credits of such taxes. An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this paragraph.

We will not pay additional amounts or "gross up" payments to holders as a result of any withholding or deduction for taxes imposed under FATCA. Investors are encouraged to consult with their tax advisors regarding the implications of FATCA to their particular circumstances.

EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS OWN TAX ADVISOR REGARDING THE PARTICULAR U.S. FEDERAL, STATE AND LOCAL AND NON-U.S. TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK, INCLUDING THE CONSEQUENCES OF ANY PROPOSED CHANGE IN APPLICABLE LAWS.

Table of Contents**Underwriting**

We are offering the shares of common stock described in this prospectus supplement through a number of underwriters. J.P. Morgan Securities LLC, Cowen and Company, LLC and SVB Leerink LLC are the joint book-running managers of the offering and representatives of the underwriters. We have entered into an underwriting agreement with the underwriters. Subject to the terms and conditions of the underwriting agreement, we have agreed to sell to the underwriters, and each underwriter has severally agreed to purchase, at the public offering price less the underwriting discounts and commissions set forth on the cover page of this prospectus supplement, the number of shares of common stock listed next to its name in the following table:

Name	Number of shares
J.P. Morgan Securities LLC	
Cowen and Company, LLC	
SVB Leerink LLC	

Total
The underwriters are committed to purchase all the common shares offered by us if they purchase any shares. The underwriting agreement also provides that if an underwriter defaults, the purchase commitments of non-defaulting underwriters may also be increased or the offering may be terminated.

The underwriters propose to offer the common shares directly to the public at the public offering price set forth on the cover page of this prospectus supplement and to certain dealers at that price less a concession not in excess of \$ _____ per share. After the public offering of the shares, the offering price and other selling terms may be changed by the underwriters. Sales of shares made outside of the United States may be made by affiliates of the underwriters.

The underwriters have an option to buy up to _____ additional shares of common stock from us. The underwriters have 30 days from the date of this prospectus supplement to exercise this option. If any shares are purchased with this option, the underwriters will purchase shares in approximately the same proportion as shown in the table above. If any additional shares of common stock are purchased, the underwriters will offer the additional shares on the same terms as those on which the shares are being offered.

The underwriting fee is equal to the public offering price per share of common stock less the amount paid by the underwriters to us per share of common stock. The underwriting fee is \$ _____ per share. The following table shows the per share and total underwriting discounts and commissions to be paid to the underwriters assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	Without option to purchase additional shares exercise	With full option to purchase additional shares exercise
Per Share	\$	\$
Total	\$	\$

We estimate that the total expenses of this offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding the underwriting discounts and commissions, will be approximately \$400,000. We have agreed to reimburse the underwriters up to \$40,000 for expenses relating to the clearance of this offering with the Financial Industry Regulatory Authority, Inc., or FINRA.

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A prospectus supplement and the accompanying prospectus in electronic format may be made available on the web sites maintained by one or more underwriters, or selling group members, if any, participating in the offering. The underwriters may agree to allocate a number of shares to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the representative to underwriters and selling group members that may make Internet distributions on the same basis as other allocations.

We have agreed that we will not (1) offer, pledge, sell, contract to sell, 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, or file with the SEC a registration statement under the Securities Act of 1933, as amended, or the Securities Act, relating to, 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, disposition or filing, or (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the common stock or such other securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of common stock or such other securities, in cash or otherwise, without the prior written consent of J.P. Morgan Securities LLC for a period of 75 days after the date of this prospectus supplement, other than, among other things, (i) the shares of our common stock to be sold hereunder, (ii) any shares of our common stock issued upon the exercise of options and the settlement of restricted stock awards granted under our existing equity incentive plans, pursuant to the conversion, exercise or exchange of our securities or pursuant to the payment of any deferred portion of the purchase price for the acquisition of any of our subsidiaries or the release from an escrow associated with such an acquisition, and (iii) securities issued in connection with a transaction with an unaffiliated third party that includes a bona fide commercial relationship or any acquisition of assets of, or any acquisition of not less than a majority or a controlling portion of the equity of, another entity, provided that (x) the aggregate number of shares of common stock issued during the restricted period pursuant to (iii) shall not exceed more than 10% of the total number of outstanding shares of common stock immediately following this offering and (y) the recipient of such securities issued shall execute and deliver to the representatives a lockup agreement or is otherwise restricted in trading by securities laws during the restricted period.

Our directors and executive officers have entered into lock-up agreements with the underwriters prior to the commencement of this offering pursuant to which each of these persons or entities, with limited exceptions, for a period of 75 days after the date of this prospectus supplement, may not, without the prior written consent of J.P. Morgan Securities LLC, (1) lend, offer, pledge, sell, contract to sell, 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 (including, without limitation, common stock or such other securities which may be deemed to be beneficially owned by such directors or executive officers in accordance with the rules and regulations of the SEC and securities which may be issued upon exercise of a stock option or warrant), or publicly disclose the intention to make any offer, sale, pledge or disposition, or (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the common stock or such other securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of common stock or such other securities, in cash or otherwise, or (3) make any demand for or exercise any right with respect to the registration of any shares of our common stock or any security convertible into or exercisable or exchangeable for our common stock.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act.

Our common stock is listed on The New York Stock Exchange under the symbol NVTA.

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In connection with this offering, the underwriters may engage in stabilizing transactions, which involve making bids for, purchasing and selling shares of common stock in the open market for the purpose of preventing or retarding a decline in the market price of the common stock while this offering is in progress. These stabilizing transactions may include making short sales of the common stock, which involve the sale by the underwriters of a greater number of shares of common stock than they are required to purchase in this offering, and purchasing shares of common stock on the open market to cover positions created by short sales. Short sales may be covered shorts, which are short positions in an amount not greater than the underwriters' option to purchase additional shares referred to above, or may be naked shorts, which are short positions in excess of that amount. The underwriters may close out any covered short position either by exercising their option to purchase additional shares, in whole or in part, or by purchasing shares in the open market. In making this determination, the underwriters will consider, among other things, the price of shares available for purchase in the open market compared to the price at which the underwriters may purchase shares through the option to purchase additional shares. 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 common stock in the open market that could adversely affect investors who purchase in this offering. To the extent that the underwriters create a naked short position, they will purchase shares in the open market to cover the position.

The underwriters have advised us that, pursuant to Regulation M of the Securities Act, they may also engage in other activities that stabilize, maintain or otherwise affect the price of the common stock, including the imposition of penalty bids. This means that if the representatives of the underwriters purchase common stock in the open market in stabilizing transactions or to cover short sales, the representatives can require the underwriters that sold those shares as part of this offering to repay the underwriting discounts and commissions received by them.

These activities may have the effect of raising or maintaining the market price of the common stock or preventing or retarding a decline in the market price of the common stock, and, as a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. If the underwriters commence these activities, they may discontinue them at any time. The underwriters may carry out these transactions on the NYSE, in the over-the-counter market or otherwise.

Certain of the underwriters and their affiliates have provided in the past to us and our affiliates and may provide from time to time in the future certain commercial banking, financial advisory, investment banking and other services for us and such affiliates in the ordinary course of their business, for which they have received and may continue to receive customary fees and commissions. For example, we are party to a sales agreement with Cowen and Company, LLC, pursuant to which we may sell up to \$175.0 million of our common stock, from time to time, through an at-the-market offering program. In addition, from time to time, certain of the underwriters and their affiliates may effect transactions for their own account or the account of customers, and hold on behalf of themselves or their customers, long or short positions in our debt or equity securities or loans, and may do so in the future.

Selling restrictions

General

Other than in the United States, no action has been taken by us or the underwriters that would permit a public offering of the securities offered by this prospectus supplement and the accompanying prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus supplement and the accompanying prospectus may not be offered or sold, directly or indirectly, nor may this prospectus supplement and the accompanying prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under

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circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons into whose possession this prospectus supplement and the accompanying prospectus come are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus supplement and the accompanying prospectus. This prospectus supplement and the accompanying prospectus do not constitute an offer to sell or a solicitation of an offer to buy any securities offered by this prospectus supplement and the accompanying prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

Canada

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement and accompanying prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

United Kingdom

This document is only being distributed to and is only directed at (1) persons who are outside the United Kingdom or (2) to investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, or the Order, or (3) high net worth entities, and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons"). The securities are only available to, and any invitation, offer or agreement to subscribe, purchase or otherwise acquire such securities will be engaged in only with, relevant persons. Any person who is not a relevant person should not act or rely on this document or any of its contents.

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive, or each, a "Relevant Member State", from and including the date on which the European Union Prospectus Directive, or the EU Prospectus Directive, was implemented in that Relevant Member State, or the Relevant Implementation Date, an offer of securities described in this prospectus supplement may not be made to the public in that Relevant Member State prior to the publication of a prospectus in relation to the shares which has been approved by the competent authority in that Relevant Member State or, where appropriate, approved in another Relevant Member State and notified to the competent authority in that Relevant Member State, all in accordance with the EU Prospectus Directive, except that, with effect from and including the

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Relevant Implementation Date, an offer of securities described in this prospectus supplement and the accompanying prospectus may be made to the public in that Relevant Member State at any time:

to any legal entity which is a qualified investor as defined under the EU Prospectus Directive;

to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150 natural or legal persons (other than qualified investors as defined in the EU Prospectus Directive); or

in any other circumstances falling within Article 3(2) of the EU Prospectus Directive, provided that no such offer of securities described in this prospectus supplement and the accompanying prospectus shall result in a requirement for the publication by us of a prospectus pursuant to Article 3 of the EU Prospectus Directive.

For the purposes of this provision, the expression an offer of securities to the public in relation to any securities in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe for the securities, as the same may be varied in that Member State by any measure implementing the EU Prospectus Directive in that Member State. The expression EU Prospectus Directive means Directive 2003/71/EC (and any amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State) and includes any relevant implementing measure in each Relevant Member State, and the expression 2010 PD Amending Directive means Directive 2010/73/EU.

Switzerland

The shares may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange, or 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 prospectus supplement, the accompanying prospectus nor any other offering or marketing material relating to the shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus supplement, the accompanying prospectus nor any other offering or marketing material relating to the offering, the Company, the shares 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 shares will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of shares has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes, or the CISA. The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of shares.

Hong Kong

The shares may not be offered or sold by means of any document other than (1) in circumstances which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap.32, Laws of Hong Kong), or (2) to professional investors within the meaning of the Securities and Futures Ordinance (Cap.571, Laws of Hong Kong) and any rules made thereunder, or (3) in other circumstances which do not result in the document being a prospectus within the meaning of the Companies Ordinance (Cap.32, Laws of Hong Kong), and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the

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contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to professional investors within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

Singapore

This prospectus supplement and the accompanying prospectus have not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement and the accompanying prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (1) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore, or the SFA, (2) to a relevant person, or any person pursuant to Section 275(1A), and in accordance with the conditions, specified in Section 275 of the SFA or (3) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares are subscribed or purchased under Section 275 by a relevant person which is: (a) a corporation (which is not an accredited investor) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary is an accredited investor, shares, debentures and units of shares and debentures of that corporation or the beneficiaries' rights and interest in that trust shall not be transferable for 6 months after that corporation or that trust has acquired the shares under Section 275 except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person, or any person pursuant to Section 275(1A), and in accordance with the conditions, specified in Section 275 of the SFA; (2) where no consideration is given for the transfer; or (3) by operation of law.

Japan

The securities have not been and will not be registered under the Financial Instruments and Exchange Law of Japan, or the Financial Instruments and Exchange Law, and each underwriter has agreed that it will not offer or sell any securities, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to a resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the Financial Instruments and Exchange Law and any other applicable laws, regulations and ministerial guidelines of Japan.

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Legal matters

The validity of the shares of common stock offered hereby will be passed upon for us by Pillsbury Winthrop Shaw Pittman LLP, Palo Alto, California. Certain legal matters in connection with this offering will be passed upon for the underwriters by Cooley LLP, San Diego, California.

Experts

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2018, as set forth in their report, which is incorporated by reference in this prospectus supplement and elsewhere in the registration statement. Our consolidated financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

Where you can find more information

We have filed a registration statement on Form S-3 with the SEC under the Securities Act of 1933, as amended. The accompanying prospectus is part of the registration statement but the registration statement includes and incorporates by reference additional information and exhibits. We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information regarding companies, such as ours, that file documents electronically with the SEC. The address of that website is <http://www.sec.gov>. The information on the SEC's website is not part of this prospectus supplement or the accompanying prospectus, and any references to this website or any other website are inactive textual references only.

The SEC permits us to incorporate by reference the information contained in documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents rather than by including them in this prospectus supplement or the accompanying prospectus. Information that is incorporated by reference is considered to be part of this prospectus supplement and the accompanying prospectus and you should read it with the same care that you read this prospectus supplement and the accompanying prospectus. Later information that we file with the SEC will automatically update and supersede the information that is either contained, or incorporated by reference, in this prospectus supplement and the accompanying prospectus, and will be considered to be a part of this prospectus supplement and the accompanying prospectus from the date those documents are filed. We have filed with the SEC, and incorporate by reference in this prospectus supplement and the accompanying prospectus:

our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on February 28, 2019;

the information contained in our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 5, 2018 and incorporated by reference into Part III of our Annual Report on Form 10-K for the year ended December 31, 2017;

our Current Report on Form 8-K filed with the SEC on March 1, 2019; and

the description of our common stock contained in our Registration Statement on Form 8-A filed on February 11, 2015, including any amendment or report filed for the purpose of updating such description.

We also incorporate by reference all additional documents that we file with the SEC under the terms of Section 13(a), 13(c), 14 or 15(d) of the Exchange Act that are made after the filing date of the registration

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statement of which this prospectus supplement and the accompanying prospectus is a part, as well as between the date of this prospectus supplement and the termination of any offering of securities offered by this prospectus supplement and the accompanying prospectus. We are not, however, incorporating, in each case, any documents or information that we are deemed to furnish and not file in accordance with SEC rules.

You may request a copy of any or all of the documents incorporated by reference but not delivered with this prospectus supplement and the accompanying prospectus, at no cost, by writing or telephoning us at the following address and number: Investor Relations, Invitae Corporation, 1400 16th Street, San Francisco, California 94103 and (415) 374-7782. We will not, however, send exhibits to those documents, unless the exhibits are specifically incorporated by reference in those documents.

We make available free of charge on our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports, as soon as reasonably practicable after we electronically file or furnish such materials to the SEC. You may obtain a free copy of these reports on the Investor Relations section of our website, www.invitae.com.

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PROSPECTUS

Common Stock

We may, from time to time, offer and sell shares of our common stock in one or more offerings. This prospectus describes the general terms that may apply to sales of our common stock and the general manner in which our common stock will be offered. We will provide the specific terms of any offering in supplements to this prospectus. The prospectus supplements will also describe the manner in which the common stock will be offered and may also add to, update or change information contained in this prospectus. You should read carefully this prospectus and the accompanying prospectus supplement before you invest.

We may offer the common stock for sale directly to investors or through underwriters, dealers or agents. If any underwriters, dealers or agents are involved in the sale of any of the common stock, we will set forth their names and describe their compensation in the applicable prospectus supplement.

Our common stock is listed on The New York Stock Exchange under the symbol NVTA. On March 1, 2019, the last reported sale price of our common stock on The New York Stock Exchange was \$20.33 per share.

Investing in our common stock involves risks. See the section entitled Risk Factors included in or incorporated by reference into any accompanying prospectus supplement and in the documents we incorporate by reference in this prospectus.

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

The date of this prospectus is March 4, 2019

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We have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus, any applicable prospectus supplement or any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information in this prospectus and any prospectus supplement, or incorporated by reference, is accurate only as of the dates of those documents. Our business, financial condition, results of operations and prospects may have changed since those dates.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, using a shelf registration, or continuous offering, process. Under this shelf registration process, we may, from time to time, offer and sell shares of our common stock in one or more offerings.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. Any prospectus supplement may also add to, update or change information contained in this prospectus. Any statement that we make in this prospectus will be modified or superseded by any inconsistent statement made by us in a prospectus supplement. The registration statement we filed with the SEC includes exhibits that provide more detail of the matters discussed in this prospectus. You should read this prospectus and the related exhibits filed with the SEC and any prospectus supplement, together with additional information described under the heading **Where You Can Find More Information**, before making your investment decision.

Unless the context otherwise requires, references in this prospectus to **Invitae**, **we**, **us** and **our** refer to **Invitae Corporation** and its subsidiaries.

RISK FACTORS

Investing in our common stock involves risk. The prospectus supplement relating to a particular offering will contain or incorporate by reference a discussion of risks applicable to an investment in the common stock offered. Prior to making a decision about investing in our common stock, you should carefully consider the specific factors discussed under the heading **Risk Factors** included in or incorporated by reference into the applicable prospectus supplement together with all of the other information contained in the prospectus supplement or appearing in or incorporated by reference into this prospectus, including the risk factors incorporated by reference to our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K. The occurrence of any of these risks might cause you to lose all or part of your investment in our common stock.

INVITAE CORPORATION

Our mission is to bring comprehensive genetic information into mainstream medical practice to improve the quality of healthcare for billions of people. Our goal is to aggregate most of the world's genetic tests into a single service with higher quality, faster turnaround time and lower pricing than many single gene tests today. By aggregating large numbers of currently available genetic tests into a single service, we believe we can achieve great economies of scale that allow us to not only provide primary single gene or multi-gene tests but also to generate and store additional genetic information on behalf of the patient for future use. We refer to the service of managing genetic information over the course of disease or the lifetime of a patient as **genome management**. In addition, as more individuals gain access to their genetic information, we believe that sharing genetic information will provide an economic opportunity for patients and us to participate in advancing the understanding and treatment of disease.

We were incorporated in the state of Delaware on January 13, 2010, as Locus Development, Inc. and changed our name to Invitae Corporation in 2012. Our principal executive offices are located at 1400 16th Street, San Francisco, California 94103 and our telephone number is (415) 374-7782. Our website address is www.invitae.com. We do not incorporate the information on, or accessible through, our website into this prospectus, and you should not consider any information on, or accessible through, our website as part of this prospectus.

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Invitae, and the Invitae logo are our trademarks. This prospectus and the documents incorporated by reference into this prospectus may also contain trademarks and trade names that are the property of their respective owners. We do not intend our use or display of other companies' trade names, trademarks or service marks to imply relationships with, or endorsements or sponsorship of us by, these other companies.

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FORWARD-LOOKING STATEMENTS

When used in this prospectus, the words *expects, believes, anticipates, estimates, may, could, intends,* expressions are intended to identify forward-looking statements. These statements are subject to known and unknown risks and uncertainties that could cause actual results to differ materially from those projected or otherwise implied by the forward-looking statements. These forward-looking statements speak only as of the date of this prospectus. Given these risks and uncertainties, you should not place undue reliance on these forward-looking statements. We will discuss many of these risks and uncertainties in greater detail in any prospectus supplement under the heading *Risk Factors*. Additional cautionary statements or discussions of risks and uncertainties that could affect our results or the achievement of the expectations described in forward-looking statements may also be contained in the documents we incorporate by reference into this prospectus.

These forward-looking statements speak only as of the date of this prospectus. We expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in our expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based. You should, however, review additional disclosures we make in our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K filed with the SEC.

USE OF PROCEEDS

Unless we state otherwise in the applicable prospectus supplement, we intend to use the net proceeds from the sale of the common stock offered by this prospectus for general corporate purposes. General corporate purposes may include additions to working capital, financing of capital expenditures, repayment or redemption of existing indebtedness, repurchases of stock, and future acquisitions and strategic investment opportunities. Unless we state otherwise in the applicable prospectus supplement, pending the application of net proceeds, we expect to invest the net proceeds in investment grade, interest-bearing securities.

DESCRIPTION OF CAPITAL STOCK

This section describes the general terms and provisions of the shares of our common stock, \$0.0001 par value per share, and preferred stock, \$0.0001 par value per share. This description is only a summary. Our restated certificate of incorporation, the certificate of designation with respect to our Series A convertible preferred stock and our amended and restated bylaws have been filed as exhibits to our periodic reports filed with the SEC, which are incorporated by reference in this prospectus. You should read our restated certificate of incorporation, the certificate of designation with respect to our Series A convertible preferred stock and our amended and restated bylaws for additional information before you buy any of our common stock. See *Where You Can Find More Information*.

Common Stock

We are authorized to issue 400,000,000 shares of common stock. As of December 31, 2018, there were 75,480,699 shares of common stock issued and outstanding. Each holder of common stock is entitled to one vote for each share of common stock held on all matters submitted to a vote of stockholders. We have not provided for cumulative voting for the election of directors in our restated certificate of incorporation. This means that the holders of a majority of the shares voted can elect all of the directors then standing for election. Subject to preferences that may apply to shares of preferred stock outstanding at the time, the holders of outstanding shares of our common stock are entitled to receive dividends out of assets legally available at the times and in the amounts that our board of directors may determine from time to time. Upon our liquidation, dissolution or winding-up, the holders of common stock are entitled to share ratably in all assets remaining after payment of all

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liabilities and the liquidation preferences of any outstanding preferred stock. Holders of common stock have no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are fully paid and nonassessable.

Preferred Stock

We are authorized to issue 20,000,000 shares of preferred stock, of which 3,458,823 shares are designated as Series A convertible preferred stock, or the Series A Preferred Stock. As of December 31, 2018, 3,458,823 shares of Series A Preferred Stock were outstanding. The Series A Preferred Stock is a non-voting common stock equivalent and conversion of the Series A Preferred Stock is prohibited if the holder exceeds a specified threshold of voting security ownership. The Series A Preferred Stock is convertible into common stock on a one-for-one basis, subject to adjustment for events such as stock splits, combinations and the like. The Series A Preferred Stock has the right to receive dividends first or simultaneously with payment of dividends on common stock, in an amount equal to the product of (i) the dividend payable on each share of common stock and (ii) the number of shares of common stock issuable upon conversion of a share of Series A Preferred Stock. The Series A Preferred Stock has no voting rights except as required by law, as modified by our restated certificate of incorporation. In the event of any liquidation or dissolution of the company, the Series A Preferred Stock is entitled to receive \$0.001 per share prior to the payment of any amount to any holders of our capital stock ranking junior to the Series A Preferred Stock and thereafter shall participate *pari passu* with the holders of our common stock (on an as-if-converted-to-common-stock basis).

We may issue additional preferred stock, in series, with such designations, powers, preferences and other rights and qualifications, limitations or restrictions as our board of directors may authorize, without further action by our stockholders, including:

the distinctive designation of each series and the number of shares that will constitute the series;

the voting rights, if any, of shares of the series and the terms and conditions of the voting rights;

the dividend rate on the shares of the series, the dates on which dividends are payable, any restriction, limitation or condition upon the payment of dividends, whether dividends will be cumulative, and the dates from and after which dividends shall accumulate;

the prices at which, and the terms and conditions on which, the shares of the series may be redeemed, if the shares are redeemable;

the terms and conditions of a sinking or purchase fund for the purchase or redemption of shares of the series, if such a fund is provided;

any preferential amount payable upon shares of the series in the event of the liquidation, dissolution or winding up of, or upon the distribution of any of our assets; and

the prices or rates of conversion or exchange at which, and the terms and conditions on which, the shares of the series may be converted or exchanged into other securities, if the shares are convertible or exchangeable. The issuance of additional preferred stock could decrease the amount of earnings and assets available for distribution to holders of our common stock or adversely affect the rights and powers, including voting rights, of the holders of our common stock. The issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of our company, which could depress the market price of our common stock.

Registration Rights

As of February 11, 2019, the holders of approximately 8,401,778 shares of our common stock, including shares of our common stock issuable upon conversion of our Series A Preferred Stock, are entitled to contractual

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rights to require us to register those shares under the Securities Act of 1933, as amended, or Securities Act, subject to certain exceptions. These rights are provided under the terms of our amended and restated registration rights agreement. We generally must pay all expenses relating to any such registration, other than underwriting discounts and selling commissions. The registration rights terminate automatically upon the earlier of the sale of the registrable securities (as such term is defined in the agreement), the date such registrable securities may be resold without volume or manner of sale limitations pursuant to Rule 144 under the Securities Act or July 31, 2027.

Certain Provisions of Delaware Law and of our Charter and Bylaws

Certain provisions of Delaware law, our restated certificate of incorporation and our amended and restated bylaws could have the effect of delaying, deferring or discouraging another party from acquiring control of us. These provisions, which are summarized below, are expected to discourage certain types of coercive takeover practices and inadequate takeover bids. These provisions are also designed, in part, to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging such proposals, including proposals that are priced above the then-current market value of our common stock, because, among other reasons, the negotiation of such proposals could result in an improvement of their terms.

Certificate of Incorporation and Bylaws. Our restated certificate of incorporation and amended and restated bylaws include provisions that:

divide our board of directors into three classes, each serving staggered, three-year terms;

authorize the board of directors to issue, without further action by the stockholders, up to 20,000,000 shares of undesignated preferred stock, of which 16,541,177 shares remain undesignated as of the date of this prospectus;

require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;

specify that special meetings of our stockholders can be called only by the board of directors, the chairman of the board, or the chief executive officer;

establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to the board of directors;

provide that directors may be removed only for cause;

establish the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain derivative actions or proceedings brought on our behalf, any action asserting a claim of breach of fiduciary

duty, any action asserting a claim against us arising pursuant to the General Corporation Law of the State of Delaware (the "DGCL"), or any action asserting a claim governed by the internal affairs doctrine;

require the affirmative vote of holders of at least 66 2/3 % of the total votes eligible to be cast in the election of directors to amend, alter, change or repeal our bylaws; and provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum.

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Delaware anti-takeover statute. We are subject to the provisions of Section 203 of the DGCL regulating corporate takeovers. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, but not the outstanding voting stock owned by the interested stockholder, (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or at or subsequent to the date of the transaction, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3 % of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder and an interested stockholder is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, did own 15% or more of a corporation's outstanding voting stock. We expect the existence of this provision to have an anti-takeover effect with respect to transactions our board of directors does not approve in advance. We also anticipate that Section 203 may discourage business combinations or other attempts that might result in a premium over the market price for the shares of common stock held by our stockholders. The provisions of DGCL, our restated certificate of incorporation and our amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC. The transfer agent's address is 6201 5th Avenue, Brooklyn, New York 11219.

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PLAN OF DISTRIBUTION

We may sell the common stock offered by this prospectus to one or more underwriters or dealers for public offering and sale by them or to investors directly or through agents. The accompanying prospectus supplement will set forth the terms of the offering and the method of distribution and will identify any firms acting as underwriters, dealers or agents in connection with the offering, including:

the name or names of any underwriters, dealers or agents;

the purchase price of the common stock and the proceeds to us from the sale;

any underwriting discounts and other items constituting compensation to underwriters, dealers or agents;

any public offering price;

any discounts or concessions allowed or reallocated or paid to dealers; and

any securities exchange or market on which the common stock offered in the prospectus supplement may be listed.

Only those underwriters identified in such prospectus supplement are deemed to be underwriters in connection with the common stock offered in the prospectus supplement.

The distribution of the securities may be effected from time to time in one or more transactions at a fixed price or prices, which may be changed, or at prices determined as the applicable prospectus supplement specifies. The securities may be sold through an at the market offering, a rights offering, forward contracts or similar arrangements. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement so indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be named in the applicable prospectus supplement (or a post-effective amendment). In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus and an applicable prospectus supplement. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

In connection with the sale of the securities, underwriters, dealers or agents may be deemed to have received compensation from us in the form of underwriting discounts or commissions and also may receive commissions from securities purchasers for whom they may act as agent. Underwriters may sell the securities to or through dealers, and the dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters or

commissions from the purchasers for whom they may act as agent.

We will provide in the applicable prospectus supplement information regarding any underwriting discounts or other compensation that we pay to underwriters or agents in connection with the securities offering, and any discounts, concessions or commissions that underwriters allow to dealers. Underwriters, dealers and agents participating in the securities distribution may be deemed to be underwriters, and any discounts, commissions or concessions they receive and any profit they realize on the resale of the securities may be deemed to be underwriting discounts and commissions under the Securities Act. Underwriters and their controlling persons, dealers and agents may be entitled, under agreements entered into with us, to indemnification against and contribution toward specific civil liabilities, including liabilities under the Securities Act. Some of the underwriters, dealers or agents who participate in the securities distribution may engage in other transactions with, and perform other services for, us or our subsidiaries in the ordinary course of business.

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Our common stock is currently listed on The New York Stock Exchange. To facilitate the offering of securities, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of the securities. This may include over-allotments or short sales of the securities, which involve the sale by persons participating in the offering of more securities than were sold to them. In these circumstances, these persons would cover such over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option, if any. In addition, these persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. 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. These transactions may be discontinued at any time.

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LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, the validity of the shares of common stock offered by this prospectus will be passed upon for us by Pillsbury Winthrop Shaw Pittman LLP, Palo Alto, California.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2018, as set forth in their report, which is incorporated by reference in this prospectus and elsewhere in this registration statement. Our consolidated financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-3 with the SEC under the Securities Act. This prospectus is part of the registration statement but the registration statement includes and incorporates by reference additional information and exhibits. We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information regarding companies, such as ours, that file documents electronically with the SEC. The address of that website is <http://www.sec.gov>. The information on the SEC's website is not part of this prospectus, and any references to this website or any other website are inactive textual references only.

The SEC permits us to incorporate by reference the information contained in documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents rather than by including them in this prospectus. Information that is incorporated by reference is considered to be part of this prospectus and you should read it with the same care that you read this prospectus. Later information that we file with the SEC will automatically update and supersede the information that is either contained, or incorporated by reference, in this prospectus, and will be considered to be a part of this prospectus from the date those documents are filed. We have filed with the SEC, and incorporate by reference in this prospectus:

our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on February 28, 2019;

the information contained in our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 5, 2018 and incorporated by reference into Part III of our Annual Report on Form 10-K for the year ended December 31, 2017;

our Current Report on Form 8-K filed with the SEC on March 1, 2019; and

the description of our common stock contained in our Registration Statement on Form 8-A filed on February 11, 2015, including any amendment or report filed for the purpose of updating such description.

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We also incorporate by reference all additional documents that we file with the SEC under the terms of Section 13(a), 13(c), 14 or 15(d) of the Exchange Act that are made after the filing date of the registration statement of which this prospectus is a part, as well as between the date of this prospectus and the termination of any offering of common stock offered by this prospectus. We are not, however, incorporating, in each case, any documents or information that we are deemed to furnish and not file in accordance with SEC rules.

You may request a copy of any or all of the documents incorporated by reference but not delivered with this prospectus, at no cost, by writing or telephoning us at the following address and number: Investor Relations,

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Invitae Corporation, 1400 16th Street, San Francisco, California 94103 and (415) 374-7782. We will not, however, send exhibits to those documents, unless the exhibits are specifically incorporated by reference in those documents.

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\$125,000,000

Common stock

Prospectus supplement

J.P. Morgan

Cowen

SVB Leerink

March , 2019