

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549

**FORM S-1  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933**

**GENOCEA BIOSCIENCES, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**2836**  
(Primary Standard Industrial  
Classification Code Number)

**51-0596811**  
(I.R.S. Employer  
Identification Number)

**100 Acorn Park Drive  
Cambridge, MA 02140  
(617) 876-8191**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**William D. Clark  
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(617) 876-8191**

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**Approximate date of commencement of proposed sale to public:** As soon as practicable after this Registration Statement is declared effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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Large accelerated filer   
Non-accelerated filer

Accelerated filer   
Smaller reporting company   
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financing accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

**CALCULATION OF REGISTRATION FEE**

<b>Title of Each Class of Securities to be Registered</b>	<b>Proposed Maximum Aggregate Offering Price(1)</b>	<b>Amount of Registration Fee(2)</b>
Common Stock, \$0.001 par value per share	\$50,000,000	\$6,060

(1) Estimated solely for the purpose of calculating the registration fee in accordance with Rule 457(o) of the Securities Act of 1933, as amended.

(2) Calculated pursuant to Rule 457(o) based on the proposed maximum aggregate offering price.

**The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.**

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The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

**SUBJECT TO COMPLETION, DATED JUNE 7, 2019**

**PRELIMINARY PROSPECTUS**

**Shares**



**Common Stock**

Genocea Biosciences, Inc. is offering shares of our common stock in this offering.

Our common stock is listed on The Nasdaq Capital Market under the symbol "GNCA". On June 6, 2019, the last sale price on our common stock was \$6.07 per share.

We are an "emerging growth company" as that term is used in the Jumpstart Our Business Startups Act of 2012 and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings.

**Investing in our common stock involves risk. See "Risk Factors" beginning on page 8.**

	<u>Per share</u>	<u>Total</u>
Public Offering Price	\$	\$
Underwriting Discounts and Commissions(1)	\$	\$
Proceeds to Genocea (before expenses)	\$	\$

(1) We refer you to "Underwriting" beginning on page 29 for additional information regarding underwriting compensation.

We have granted the underwriters an option to purchase up to additional shares of common stock.

The underwriters expect to deliver the shares of common stock to investors on or about , 2019 through the book entry facilities of The Depository Trust Company.

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

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You should rely only on the information contained in this prospectus or contained in any free writing prospectus filed with the Securities and Exchange Commission. Neither we nor the underwriters have authorized anyone to provide you with additional information or information different from that contained in this prospectus or in any free writing prospectus filed with the Securities and Exchange Commission. We are offering to sell, and seeking offers to buy, our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus, or of any sale of our common stock.

For investors outside the United States: We have not, and the underwriters have not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of our common stock and the distribution of this prospectus outside the United States.

## SUMMARY

*This summary highlights information contained in other parts of this prospectus or incorporated by reference into this prospectus from our Annual Report on Form 10-K for the year ended December 31, 2018, our Quarterly Report on Form 10-Q for the quarter ended March 31, 2019 and our other filings with the Securities and Exchange Commission (the "SEC") listed in the section of this prospectus entitled "Incorporation of Documents By Reference" and does not contain all of the information that you should consider in making your investment decision. Before investing in our common stock, you should also consider, among other things, the matters described under "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations," appearing elsewhere in this prospectus, in our Annual Report on Form 10-K for the year ended December 31, 2018 or in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, incorporated by reference herein. Unless the context requires otherwise, references in this prospectus to "Genocea", "we", "us" and "our" refer to Genocea Biosciences, Inc.*

### Overview

We are a biopharmaceutical company that discovers and develops novel cancer immunotherapies using the ATLAS™ proprietary discovery platform. The ATLAS platform profiles each patient's CD4<sup>+</sup> and CD8<sup>+</sup> T cell immune responses to every potential target or "antigen" in that patient's tumor. Genocea believes that this approach optimizes antigen selection for cancer vaccines and cellular therapies, because it identifies antigens to which a patient's T cells already mount anti-tumor responses. The Company believes that ATLAS could lead to more immunogenic and efficacious cancer immunotherapies.

Our most advanced program is GEN-009, a personalized neoantigen cancer vaccine, for which we are conducting a Phase 1/2a clinical trial. The GEN-009 program uses ATLAS to identify neoantigens, or immunogenic tumor mutations unique to each patient, for inclusion in each patient's GEN-009 vaccine. We are also advancing GEN-011, a neoantigen-specific adoptive T cell therapy program, as well as GEN-010, a next-generation neoantigen vaccine program.

### *ATLAS Platform*

Harnessing and directing the T cell arm of the immune system to kill tumor cells is increasingly viewed as having potential in the treatment of many cancers, and this approach has shown efficacy in hematologic malignancies. Vaccines or cellular therapies employing this approach must target specific differences from normal tissue present in a tumor, such as genetic mutations. However, the discovery of such targets, or "antigens," has been particularly challenging for two reasons. First, the genetic diversity of human T cell responses means that effective antigens vary from person to person. Second, the number of candidate antigens can be very large, with up to thousands of candidates per patient in some cancers.

We have designed the ATLAS platform to overcome these antigen discovery challenges. We believe that ATLAS represents the most comprehensive, accurate, and high-throughput system for antigen discovery in the biopharmaceutical industry. ATLAS employs components of the T cell arm of the human immune system from each patient that it profiles in a laboratory setting. Using ATLAS, we measure that patient's T cell responses to an extensive set of candidate neoantigens, tumor-associated antigens or tumor-associated viral antigens for any individual's cancer, allowing us to select those targets associated with the anti-tumor T cell responses that may kill that individual's cancer.

We believe that we are a leader in the field of antigen immunotherapy discovery and development. Our management and scientific teams possess considerable experience in oncology, immunology, and vaccinology spanning research, manufacturing, clinical development, and regulatory affairs.

### *Our Immuno-Oncology Programs*

Our cancer immunotherapies are designed to educate T cells to recognize and attack specific targets (vaccines) - or to introduce T cells that have been educated to attack these targets (cellular therapies) - and thereby kill cancer cells. We are first developing personalized cancer vaccines by applying ATLAS to identify patient-specific neoantigens that are associated with that individual's pre-existing immune responses to a tumor.

Neoantigens are personalized tumor mutations that are recognized as "foreign" by an individual's immune system. Data published in recent years have indicated that an individual's response to neoantigens drives immune checkpoint inhibitor ("ICI") therapy efficacy and that it is possible to vaccinate an individual against their own neoantigens. If approved, neoantigen vaccines could be used in combination with existing treatment approaches for cancer, including ICI therapy, to potentially direct and enhance an individual's T cell response to their cancer, thereby potentially effecting better clinical outcomes. Data also support the potential of isolating and expanding T cell populations targeting specific neoantigens for therapeutic benefit.

Our lead immuno-oncology program, GEN-009, is an adjuvanted neoantigen peptide vaccine candidate. GEN-009's neoantigens are identified by our proprietary ATLAS platform. Following ATLAS neoantigen identification, we manufacture a personalized vaccine for each patient using only those neoantigens determined to be stimulatory to the immune system by ATLAS.

The following table describes our active immuno-oncology programs in development:

Vaccine Candidate	Program	Stage of Development	Next Milestone	Anticipated Timeline
GEN-009	First generation neoantigen cancer vaccine	Phase 1/2a	Initiation of Part B of the clinical trial	Second half of 2019
GEN-010	Second generation neoantigen cancer vaccine	Pre-clinical	Select delivery technology platform	Ongoing
GEN-011	Adoptive T cell therapy	Pre-clinical	IND filing	First half of 2020

We are currently conducting a Phase 1/2a clinical trial for GEN-009 across a range of solid tumor types:

- Part A of the trial is assessing the safety and immunogenicity of GEN-009 as monotherapy in certain cancer patients with no evidence of disease
- Part B of the trial, which we expect to initiate in the second half of 2019, is designed to assess the safety, immunogenicity, and preliminary antitumor activity of GEN-009 in combination with ICI therapy in patients with advanced or metastatic solid tumors

At the Annual Meeting of the American Society of Clinical Oncology ("ASCO") in June 2019, we presented the first peer-reviewed data from Part A of the ongoing clinical trial. Data from the five evaluable patients presented in the scientific poster, demonstrated that:

- 100% of patients had measurable CD4<sup>+</sup> and CD8<sup>+</sup> T cell responses to their GEN-009 vaccines,
- Responses were detected to 91% of the administered vaccine neoantigens - significantly higher results than previously demonstrated by neoantigen vaccines created using first-generation target prediction methods,
- GEN-009 appears to be unique amongst its peers in its ability to elicit *ex vivo* CD8<sup>+</sup> T cell responses, which were observed for 47% of vaccine neoantigens, and
- GEN-009 was well tolerated, with no dose-limiting toxicities.

Behind GEN-009, we continue to explore GEN-010, our vaccine candidate employing next-generation antigen delivery technology, which we may advance to provide an opportunity for better immunogenicity and/or efficiency of production. We also are advancing pre-clinical work on GEN-011, an adoptive T cell therapy to neoantigens identified by ATLAS.

In addition, we are using ATLAS to pursue discovery of novel candidate antigens for non-personalized cancer immunotherapies. Such programs would target shared neoantigens, non-mutated, shared tumor-associated antigens, and cancers of viral origin (e.g., cancers driven by Epstein-Barr Virus infection).

### Our Strengths

We offer a differentiated and rational approach to neoantigen selection through our proprietary ATLAS platform. A real-time test of T cells from each individual's immune system. ATLAS is designed to determine what tumor mutations are recognized by T cells in each patient. Using ATLAS, we believe that we can both optimize neoantigens for inclusion in our immunotherapies and exclude inhibitory antigens that appear to exert an immunosuppressive effect on the patient. We are advancing complementary programs built from ATLAS insights: GEN-009, our neoantigen vaccine candidate for which we are conducting a Phase 1/2a clinical trial across a variety of solid tumor types, and GEN-011, our neoantigen-specific adoptive T cell therapy, for which we intend to file an Investigational New Drug Application ("IND") in the first half of 2020. Key aspects to our strengths are highlighted below:

- **We are a clinical-stage cancer immunotherapy company focused on the discovery and development of T cell vaccines.** Recent studies from academia and industry have shown that neoantigen-based vaccines can stimulate an efficacious anti-tumor immune response that can prolong melanoma remission. A neoantigen vaccine to amplify responses to therapeutic levels against multiple neoantigens may lead to clinical responses by killing tumor cells and preventing tumor escape via immuno-editing (elimination of cancer cells that display only a single neoantigen, but leaving behind cells that do not express that antigen).
- **ATLAS provides us an advantage in identifying and validating vaccine antigens that generate a strong cellular immune response.** The ATLAS platform places us in an advantageous position by allowing identification of neoantigens to which CD8<sup>+</sup> and/or CD4<sup>+</sup> T cell responses exist in a patient, thereby bypassing the uncertainty of predictive algorithms, which cannot determine whether a patient's immune system can actually respond to a particular neoantigen. Immuno-profiling studies have shown that traditional predictive algorithms failed to predict many of the true neoantigens identified by ATLAS, which has been validated in the screening of around 200 cancer subjects.
- **Strong management team, advisors, and investors.** We believe that we are a leader in the field of T cell-related immunotherapy discovery and development. Our management and scientific teams possess considerable experience in oncology, immunology, and vaccinology, spanning research, manufacturing, clinical development, and regulatory affairs.

### Our Strategy

Our goal is to become a leading cancer immune therapeutics company focused on the discovery and development of personalized cancer immunotherapies using our proprietary ATLAS vaccine discovery platform. We believe that using ATLAS to identify neoantigens could lead to more immunogenic and efficacious cancer vaccines and immunotherapies. Key elements of our strategy are to:

- **Continue to advance our lead neoantigen cancer vaccine candidate, GEN-009.** GEN-009 is a personalized cancer vaccine that uses our proprietary ATLAS platform to ensure the vaccine targets the right neoantigens in each person, for which we have currently evaluating the safety, immunogenicity, and efficacy in a Phase 1/2a clinical trial. We reported the first immunogenicity data available from the trial in June 2019 and expect preliminary clinical efficacy data in 2020.
- **Advance GEN-011 into an IND application and explore proprietary vaccine modalities for GEN-010.** Our second product candidate, GEN-011, is a neoantigen adoptive T cell therapy ("ACT") program. We are using ATLAS to identify patient-specific neoantigens that stimulate a patient's immune system. Isolating the T cells that are activated by those neoantigens allows us to expand the patient's own autologous T cells to create a cell-based therapeutic. We are currently conducting preclinical studies of GEN-011 with an aim of filing an IND to begin clinical study in the United States in the first half of 2020. Additionally, we expect to advance GEN-010, our novel neoantigen cancer vaccine program.
- **Utilize ATLAS, our antigen discovery platform, to support development of additional cancer immunotherapies.** Cancer immunotherapies represent a broad field. What unites the field is the need for the right targets or antigens to maximize immunogenicity and clinical efficacy. Through partnerships and otherwise, we intend to allow access to our ATLAS platform, in exchange for upfront payments, development and commercial milestones, and royalties, to parties developing cancer immunotherapies in areas not competitive with our product candidates.

### Risks Associated with Our Business

Our business is subject to numerous risks and uncertainties, including those highlighted in the section entitled "Risk Factors" immediately following this prospectus summary. These risks include, among others, the following:

- our estimates regarding the timing and amount of funds we require to conduct clinical trials for GEN-009, filing an IND application for other product candidates, including GEN-010 and GEN-011, and to continue our investments in immuno-oncology;
- our estimates regarding expenses, future revenues, capital requirements, the sufficiency of our current and expected cash resources and our need for additional financing and the timing thereof;
- the timing of, and our ability to, obtain and maintain regulatory approvals for our product candidates;
- the potential benefits of strategic partnership agreements and our ability to enter into strategic partnership arrangements;
- our intellectual property position and rights;
- the rate and degree of market acceptance and clinical utility of any approved product candidate;
- our ability to quickly and efficiently identify and develop product candidates; and

- our commercialization, marketing and manufacturing capabilities and strategy.

### **Implications of Being an Emerging Growth Company**

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) December 31, 2019, (2) the last day of the fiscal year (a) in which we have total annual gross revenue of at least \$1.07 billion, or (b) 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 (3) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period. We refer to the Jumpstart Our Business Startups Act of 2012 in this prospectus as the “JOBS Act,” and references in this prospectus to “emerging growth company” shall have the meaning ascribed to it in the JOBS Act.

As an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise applicable, in general, to public companies that are not emerging growth companies. These provisions include:

- reduced disclosure about our executive compensation arrangements;
- exemption from the non-binding shareholder advisory votes on executive compensation or golden parachute arrangements;
- exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting; and
- reduced disclosure of financial information in this prospectus, such as being permitted to include only two years of audited financial information and two years of selected financial information in addition to any required unaudited interim financial statements, with correspondingly reduced “Management’s Discussion and Analysis of Financial Condition and Results of Operations” disclosure.

We may choose to take advantage of some, but not all, of the available exemptions. We have taken advantage of some reduced reporting burdens in this prospectus. Accordingly, the information contained herein may be different than the information you receive from other public companies in which you hold stock. The JOBS Act permits an emerging growth company to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies. We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies.

### **Corporate Information**

We were incorporated in the state of Delaware in August 2006 as Genoccea, Inc., and we subsequently changed our name to Genoccea Biosciences, Inc. Our principal executive offices are located at 100 Acom Park Drive, Cambridge, MA 02140, and our telephone number is (617) 876-8191. Our website address is: [www.genoccea.com](http://www.genoccea.com). We have included our website address as a factual reference and do not intend it to be an active link to our website. The information that can be accessed through our website is not part of this prospectus, and investors should not rely on any such information in deciding whether to purchase our common stock.

Genoccea® and the Genoccea logo are our registered trademarks. The other trademarks, trade names and service marks appearing in this prospectus are the property of their respective owners.

## THE OFFERING

Common stock we are offering	shares
Common stock outstanding after giving effect to this offering	shares
Option to purchase additional shares	The underwriters have a 30-day option to purchase a total of additional shares of common stock.
Use of proceeds	The net proceeds from this offering will be approximately \$ million, or approximately \$ million if the underwriters exercise their option to purchase additional shares in full, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We expect to use the net proceeds of this offering to conduct additional clinical trials of GEN-009, further pre-clinical development of GEN-011 and GEN-010, and for working capital and other general corporate purposes.
Risk factors	See "Use of Proceeds." See "Risk Factors" beginning on page 8 and the other information included in this prospectus for a discussion of factors you should carefully consider before deciding to invest in our common stock.
Nasdaq Capital Market Symbol	GNCA

In this prospectus, unless otherwise indicated, the amount of shares of common stock outstanding and the other information based thereon is based on 14,049,181 shares of common stock outstanding as of March 31, 2019 and does not reflect:

- 1,303,407 shares of common stock issuable upon exercise of stock options outstanding at March 31, 2019 at a weighted-average exercise price of \$12.88;
- 5,131,398 shares of common stock issuable upon exercise of warrants outstanding at March 31, 2019 at a weighted-average exercise price of \$7.77;
- 204,375 shares of common stock issuable upon conversion of preferred stock outstanding at March 31, 2019;
- 271,743 shares of common stock reserved for future issuance under our 2014 Amended and Restated Equity Incentive Plan; and
- 289,085 shares of common stock reserved for future issuance under our 2014 Employee Stock Purchase Plan.

Unless otherwise indicated, all information in this prospectus reflects or assumes the following:

- a one-for-eight reverse stock split of our common stock that we effected on May 22, 2019;
- no exercise of stock options or warrants after , 2019; and
- no exercise by the underwriters of their option to purchase up to additional shares of common stock in this offering.

## SUMMARY FINANCIAL DATA

The following summary financial data for the years ended December 31, 2018 and 2017 are derived from our audited financial statements incorporated by reference in this prospectus from our Annual Report on Form 10-K for the year ended December 31, 2018, except share and per share information, which has been recast to reflect a one-for-eight reverse stock split effected on May 22, 2019. The summary financial data as of March 31, 2019 and for the three months ended March 31, 2019 and 2018 have been derived from our unaudited financial statements incorporated by reference in this prospectus from our Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, except share and per share information, which has been recast to reflect a one-for-eight reverse stock split effected on May 22, 2019. These unaudited financial statements have been prepared on a basis consistent with our audited financial statements and, in our opinion, contain all adjustments, consisting only of normal and recurring adjustments, necessary for a fair presentation of such financial data. You should read this data together with our financial statements and related notes and the information under the captions “Selected Financial Data” and “Management's Discussion and Analysis of Financial Condition and Results of Operations” incorporated by reference in this prospectus. For more details on how you can obtain the documents incorporated by reference in this prospectus, see “Where You Can Find More Information” and “Incorporation of Documents By Reference” appearing elsewhere in this prospectus. Our historical results are not necessarily indicative of our future results, and our operating results for the three months ended March 31, 2019 are not necessarily indicative of the results that may be expected for the year ending December 31, 2019 or any other interim periods or any future year or period.

Effective May 22, 2019, we effected a reverse stock split of our issued and outstanding common stock, par value \$0.001, at a ratio of one-for-eight, and decreased the number of authorized shares of common stock from 250,000,000 shares to 85,000,000 shares. The share and per share information below reflects the reverse stock split.

(in thousands, except per share data)	Year Ended December 31,		Three Months Ended March 31,	
	2018	2017	2019	2018
<b>Statement of Operations Data:</b>	<b>(unaudited)</b>			
Operating expenses:				
Research and development	\$ 25,209	\$ 39,204	\$ 6,460	\$ 7,275
General and administrative	14,309	13,433	3,017	3,109
Restructuring costs	—	2,618	—	—
Total operating expenses	39,518	55,255	9,477	10,384
Loss from operations	(39,518)	(55,255)	(9,477)	(10,384)
Other income (expense):				
Change in fair value of warrant	14,757	—	(5,787)	(5,298)
Interest expense, net	(1,021)	(1,441)	(302)	(201)
Other expense	(2,029)	(14)	(1)	(7)
Total other income (expense)	11,707	(1,455)	(6,090)	(5,506)
Net loss	\$ (27,811)	\$ (56,710)	\$ (15,567)	\$ (15,890)
Comprehensive loss	\$ (27,811)	\$ (56,710)	\$ (15,567)	\$ (15,890)
Net loss per share-basic and diluted(1)(4)	\$ (2.69)	\$ (15.86)	\$ (1.22)	\$ (1.78)
Weighted-average number of common shares used in computing net loss per share (4)	10,321	3,576	12,713	8,905

(in thousands)	As of March 31, 2019	
	Actual	As adjusted(2)(3)
	(unaudited)	
<b>Balance Sheet Data:</b>		
Cash and cash equivalents	\$ 29,038	\$
Working capital	18,568	
Total assets	35,824	
Common stock and additional paid-in capital	313,105	
Total stockholders' equity	6,235	

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- (1) See Note 2 within the notes to our financial statements incorporated by reference in this prospectus for a description of the method used to calculate basic and diluted net loss per common share.
  - (2) As adjusted to reflect the sale of shares of our common stock in this offering at an assumed public offering price of per share (the last reported price of our common stock on The Nasdaq Capital Market on , 2019) after deducting underwriting discounts and commissions and estimated offering expenses payable by us.
  - (3) A \$1.00 increase (decrease) in the assumed public offering price of per share (the last reported price of our common stock on The Nasdaq Capital Market on , 2019) would increase (decrease) the as adjusted amount of each of cash and cash equivalents and total stockholders' equity by approximately , assuming that the number of shares offered by us, as set forth on the cover of this prospectus, remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us.
  - (4) Reflects the 1-for-8 reverse stock split effective on May 22, 2019.

## RISK FACTORS

*Investing in our common stock involves a high degree of risk. Before investing in our common stock, you should consider carefully the risks described below, together with the other information contained in this prospectus and incorporated by reference in this prospectus, including the risk factors incorporated by reference from our Annual Report on Form 10-K for the year ended December 31, 2018 and other filings we make with the SEC. We believe the risks described below and incorporated by reference herein are the risks that are material to us as of the date of this prospectus. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business.*

### **Additional Risks Related to This Offering**

***We may allocate the net proceeds from this offering in ways that you and other stockholders may not approve.***

We currently intend to use the net proceeds of this offering to conduct additional clinical trials of GEN-009, further pre-clinical development of GEN-011 and GEN-010, and for working capital and other general corporate purposes. This expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development efforts, the status of and results from clinical trials, as well as any collaborations that we may enter into with third parties for our product candidates, and any unforeseen cash needs. Because of the number and variability of factors that will determine our use of the proceeds from this offering, their ultimate use may vary substantially from their currently intended use. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering and could spend the proceeds in ways that do not necessarily improve our operating results or enhance the value of our common stock. See "Use of Proceeds."

***If you purchase our common stock in this offering, you will incur immediate and substantial dilution in the book value of your shares.***

The public offering price of our common stock is substantially higher than the net tangible book value per share of our common stock. Therefore, if you purchase shares of our common stock in this offering, you will pay a price per share that substantially exceeds our net tangible book value per share after this offering. After giving effect to the sale of shares of our common stock in this offering based on an assumed public offering price of \$ per share (the last reported sale price of our common stock on The Nasdaq Capital Market on , 2019), less the estimated underwriting discounts and commissions, and estimated offering expenses payable by us and based on a net tangible book value per share of our common stock of \$0.35 as of March 31, 2019, if you purchase shares in this offering, you will suffer immediate and substantial dilution of per share in the net tangible book value of common stock purchased. To the extent shares are issued under outstanding options, warrants or preferred stock or future sales are made pursuant to our equity sales agreement with Cowen and Company, LLC, you will incur further dilution. See "Dilution" for a more detailed description of the dilution to new investors in the offering.

***Investors in this offering may experience future dilution.***

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into, or exchangeable for, our common stock at prices that may not be the same as the price per share in this offering. We cannot assure you that we will be able to sell shares of our common stock or other related securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in this offering. If the price per share at which we sell additional shares of our common stock or related securities in future transactions is less than the price per share in this offering, investors who purchase our common stock in this offering will suffer a dilution in their investment.

***A significant portion of our total outstanding shares may be sold into the market at any time, which could cause the market price of our common stock to drop significantly, even if our business is doing well.***

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock.

Upon the completion of this offering, approximately shares of our common stock beneficially owned by our officers and directors will be subject to lock-up agreements with the underwriters that prohibit, subject to certain exceptions, the disposal or pledge of, or the hedging against, any of their common stock or securities convertible into or exchangeable for shares of common stock for a period of days after the date of this prospectus. However, all of the shares sold in this offering and the remaining

shares of our common stock outstanding prior to this offering will not be subject to lock-up agreements with the underwriters and, except to the extent such shares are held by our affiliates, will be freely tradable. The market price of our common stock could decline as a result of sales by our stockholders in the market following completion of this offering or the perception that these sales could occur. These factors could also make it difficult for us to raise additional capital by selling stock.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference into this prospectus contain forward-looking statements. Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, our clinical results and other future conditions. The words “anticipate”, “believe”, “contemplate”, “continue”, “could”, “estimate”, “expect”, “forecast”, “goal”, “intend”, “may”, “plan”, “potential”, “predict”, “project”, “should”, “target”, “will”, “would”, or the negative of these terms or other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. In particular, you should consider the numerous risks described in this prospectus and in our Annual Report on Form 10-K for the year ended December 31, 2018 incorporated by reference in this prospectus.

The forward-looking statements in this prospectus include, among other things, statements about:

- our estimates regarding the timing and amount of funds we require to file our IND application and initiate clinical trials for GEN-009 and to continue our investments in immuno-oncology;
- our estimates regarding expenses, future revenues, capital requirements, the sufficiency of our current and expected cash resources and our need for additional financing;
- the timing of, and our ability to, obtain and maintain regulatory approvals for our product candidates;
- the potential benefits of strategic partnership agreements and our ability to enter into strategic partnership arrangements;
- our intellectual property position;
- the rate and degree of market acceptance and clinical utility of any approved product candidate;
- our ability to quickly and efficiently identify and develop product candidates; and
- our commercialization, marketing and manufacturing capabilities and strategy.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make or collaborations or strategic partnerships we may enter into.

You should read this prospectus, other documents incorporated by reference herein and the documents that we have filed as exhibits to the registration statement of which this prospectus is a part completely and with the understanding that our actual future results may be materially different from what we expect. The forward-looking statements represent our views as of the date of this prospectus. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this prospectus.

This prospectus and the other documents incorporated by reference herein include statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe these industry publications and third party research, surveys and studies are reliable, we have not independently verified such data.

## USE OF PROCEEDS

The net proceeds of the sale of shares of common stock in this offering will be approximately \$ at the assumed public offering price of per share (the last reported price of our common stock on The Nasdaq Capital Market on , 2019) after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. If the underwriters exercise their option to purchase additional share of common stock in full, we estimate that the net proceeds will be approximately , after deducting underwriting discounts and commissions and estimated offering expenses payable by us. Each \$1.00 increase or decrease in the assumed public offering price of \$ per share (the last reported price of our common stock on The Nasdaq Capital Market on , 2019) would increase or decrease our net proceeds by approximately \$ , assuming the number of shares offered by us, as set forth on the cover of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

As of March 31, 2019, we had cash and cash equivalents of \$29.0 million. We intend to use the net proceeds from this offering, together with our existing cash and cash equivalents as follows:

- approximately \$ million to conduct additional clinical trials of GEN-009;
- approximately \$ million for further pre-clinical development of GEN-011 and GEN-010; and
- the remainder for working capital and other general corporate purposes.

Our expected use of net proceeds from this offering represents our current intentions based upon our present plans and business condition, which could change in the future as our plans and business conditions evolve. As of the date of this prospectus, we cannot predict with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering or the amounts that we will actually spend on the uses set forth above. We may also use a portion of the net proceeds to in-license, acquire or invest in complementary technologies, products or assets.

The amount and timing of our actual expenditures will depend upon numerous factors, including the results of our research and development efforts, the timing and success of non-clinical studies, our ongoing clinical trials or clinical trials we may commence in the future and the timing of regulatory submissions. As a result, our management will have broad discretion over the use of the net proceeds from this offering.

Pending the use of the proceeds from this offering, we intend to invest the net proceeds in short-term, interest-bearing, investment-grade securities, certificates of deposit or government securities.

## **MARKET PRICE OF OUR COMMON STOCK**

Our common stock is listed on The Nasdaq Capital Market under the symbol “GNCA.” On June 6, 2019, the closing price for our common stock as reported on The Nasdaq Capital Market was \$6.07 per share. As of June 6, 2019, we had 18 holders of record of our common stock.

## **DIVIDEND POLICY**

We have never declared or paid cash dividends on our common stock. We currently intend to retain all available funds and any future earnings, if any, to fund the development and expansion of our business and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination to pay dividends will be made at the discretion of our board of directors. Additionally, our ability to pay dividends on our common stock is limited by restrictions under the terms of the agreements governing our secured credit facility. Payment of future cash dividends, if any, will be at the discretion of the board of directors after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs, the requirements of current or then-existing debt instruments and other factors the board of directors deems relevant.

## CAPITALIZATION

Effective May 22, 2019, we effected a reverse stock split of our issued and outstanding common stock, par value \$0.001, at a ratio of one-for-eight, and decreased the number of authorized shares of common stock from 250,000,000 shares to 85,000,000 shares. The share numbers below reflect the reverse stock split.

The following table sets forth our cash and cash equivalents and capitalization as of March 31, 2019:

- on an actual basis; and
- on an as adjusted basis to give further effect to the sale of shares of our common stock offered in this offering at an assumed public offering price of \$ per share (the last reported price of our common stock on The Nasdaq Capital Market on , 2019), after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

(in thousands, except per share data)	As of March 31, 2019	
	Actual	As Adjusted
	(unaudited)	
Cash and cash equivalents	\$ 29,038	\$
Long-term debt, net of current portion and discount	8,007	
Stockholders equity:		
Preferred stock, \$0.001 par value; 25,000,000 shares authorized, 1,635 shares issued and outstanding as of March 31, 2019, actual	701	
Common stock, \$0.001 par value; 85,000,000 shares authorized, 14,049,181 shares issued and outstanding as of March 31, 2019, actual; 85,000,000 shares authorized and shares issued and outstanding, as adjusted	112	
Additional paid-in capital	312,993	
Accumulated deficit	(307,571)	
Total stockholders' equity	6,235	
Total capitalization	\$ 20,357	\$

You should read this information together with our unaudited financial statements and related notes and the “Management's Discussion and Analysis of Financial Condition and Results of Operations” in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, which are incorporated by reference in this prospectus.

The table above does not include:

- 1,303,407 shares of common stock issuable upon exercise of stock options outstanding at March 31, 2019 at a weighted-average exercise price of \$12.88;
- 5,131,398 shares of common stock issuable upon exercise of warrants outstanding at March 31, 2019 at a weighted-average exercise price of \$7.77;
- 204,375 shares of common stock issuable upon conversion of preferred stock outstanding at March 31, 2019;
- 271,743 shares of common stock reserved for future issuance under our 2014 Amended and Restated Equity Incentive Plan; and
- 289,085 shares of common stock reserved for future issuance under our 2014 Employee Stock Purchase Plan.

## DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted immediately to the extent of the difference between the public offering price per share of our common stock and the pro forma net tangible book value per share of our common stock after this offering.

Our historical net tangible book value as of March 31, 2019 was \$5.0 million, or \$0.35 per share of our common stock. Historical net tangible book value per share represents the amount of our total tangible assets less total liabilities, divided by 14,049,181 shares of our common stock outstanding.

After giving effect to the sale of shares of common stock by us, at an assumed public offering price of \$ per share (the last reported sale price of our common stock on The Nasdaq Capital Market on , 2019), less the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma net tangible book value as of March 31, 2019 would have been approximately \$ million, or approximately \$ per share. This represents an immediate increase in pro forma net tangible book value per share of \$ to existing stockholders and immediate dilution of \$ in pro forma net tangible book value per share to new investors purchasing common stock in this offering.

Dilution per share to new investors is determined by subtracting pro forma net tangible book value per share after this offering from the assumed public offering price per share paid by new investors. The following table illustrates this dilution on a per share basis.

Assumed public offering price per share		\$
Net tangible book value per share as of March 31, 2019	\$	0.35
Increase in net tangible book value per share attributable to new investors	\$	
Pro forma net tangible book value per share after this offering		\$
Dilution per share to new investors		\$

If the underwriters exercise their option to purchase additional shares or if any additional shares are issued under outstanding options, warrants or preferred stock, you will experience further dilution.

The number of shares of our common stock to be outstanding upon completion of this offering as reflected in the foregoing dilution calculations excludes:

- 1,303,407 shares of common stock issuable upon exercise of stock options outstanding at March 31, 2019 at a weighted-average exercise price of \$12.88;
- 5,131,398 shares of common stock issuable upon exercise of warrants outstanding at March 31, 2019 at a weighted-average exercise price of \$7.77;
- 204,375 shares of common stock issuable upon conversion of preferred stock outstanding at March 31, 2019;
- 271,743 shares of common stock reserved for future issuance under our 2014 Amended and Restated Equity Incentive Plan; and
- 289,085 shares of common stock reserved for future issuance under our 2014 Employee Stock Purchase Plan.

## PRINCIPAL STOCKHOLDERS

The following table sets forth information relating to the beneficial ownership of our common stock as of May 15, 2019 by: each person, or group of affiliated persons, known by us to beneficially own more than 5% of our outstanding shares of common stock; each of our directors; each of our named executive officers; and all directors and executive officers as a group.

The number of shares beneficially owned by each entity, person, director or executive officer is determined in accordance with the rules of the SEC, and the information is not necessarily indicative of beneficial ownership for any other purpose. Under such rules, beneficial ownership includes any shares over which the individual has sole or shared voting power or investment power as well as any shares that the individual has the right to acquire within 60 days of May 15, 2019 through the exercise of any stock options, warrants or other rights. Except as otherwise indicated, and subject to applicable community property laws, the persons named in the table have sole voting and investment power with respect to all shares of common stock held by that person.

The percentage of shares beneficially owned is computed on the basis of 14,051,004 shares of our common stock outstanding as of May 15, 2019. Shares of our common stock that a person has the right to acquire within 60 days of May 15, 2019 are deemed outstanding for purposes of computing the percentage ownership of the person holding such rights, but are not deemed outstanding for purposes of computing the percentage ownership of any other person, except with respect to the percentage ownership of all directors and executive officers as a group. Unless otherwise indicated below, the address for each beneficial owner listed is c/o Genocoe Biosciences, Inc., Cambridge Discovery Park, 100 Acom Park Drive, Cambridge, MA 02140.

Name and Address of Beneficial Owned	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned
<b>5% or greater stockholders:</b>		
New Enterprise Associates 16, L.P. (1) 1954 Greenspring Drive, Suite 600 Timonium, MD 21093	6,241,918	39.20%
S.R. One, Limited (2) 980 Great West Road Brentford, Middlesex, TW8 9GS England	1,819,627	12.67%
BVF Partners L.P. (3) 44 Montgomery Street, 40th Floor San Francisco, CA 94104	1,450,883	9.99%
Vivo Opportunity , LLC (4) 505 Hamilton Avenue, Suite 2017 Palo Alto, CA 94301	1,423,320	9.99%
<b>Directors and Named Executive Officers:</b>		
William Clark (5)	202,702	1.44%
Jessica Baker Flechtner, Ph.D. (6)	54,300	*
Pamela Carroll, Ph.D. (7)	15,641	*
Kenneth Bate (8)	11,266	*
Ali Behbahani, M.D. (9)	3,125	*
Katrine Bosley (10)	18,513	*
Ronald Cooper (11)	10,625	*
Michael Higgins (12)	10,636	*
Howard Mayer, M.D. (13)	7,709	*
George Siber, M.D. (14)	38,659	*
All executive officers and directors as a group (15 persons) (15)	401,485	2.85%

(1) Based on a Schedule 13D filed with the SEC on February 14, 2019, consisting of 4,368,534 shares of common stock and warrants to purchase 1,873,384 shares of common stock. NEA Partners 16, L.P. ("NEA Partners 16") is the sole general partner of NEA 16. NEA 16 GP, LLC ("NEA 16 LLC") is the sole general partner of NEA Partners 16. The individual managers of NEA 16 LLC are Peter J. Barris, Forest Baskett, Ali Behbahani, Carmen Chang, Anthony A. Florence, Jr.,

Mohamad H. Makhzoumi, Joshua Makower, David M. Mott, Scott D. Sandell, Peter W. Sonsini and Paul Walker (collectively, the "Managers"). The Managers share voting and dispositive power with regard to the shares held directly by NEA 16.

- (2) Based on a Schedule 13D filed with the SEC on February 25, 2019, consisting of 1,508,743 shares of common stock and 310,884 shares of common stock issuable upon the exercise of warrants. These shares and warrants are held directly by S.R. One, Limited, an indirect wholly-owned subsidiary of GlaxoSmithKline plc.
- (3) Based on a Schedule 13G filed with the SEC on February 14, 2019, which discloses shares as of December 31, 2018, and securities purchased in connection with a private placement in February 2019. Consists of 472,236 shares of common stock held of record by Biotechnology Value Fund, L.P. ("BVF"), 365,519 shares of common stock held of record by Biotechnology Value Fund II, L.P. ("BVF2"), 73,929 shares of common stock held of record by Biotechnology Value Trading Fund OS LP ("Trading Fund OS"), and 66,848 shares of common stock held of record by the Partners Managed Accounts ("Managed Accounts"). Also includes 472,351 shares of common stock issuable upon exercise of warrants held by the above referenced BVF entities. Excludes 589,018 shares of common stock issuable upon the exercise of warrants, which are not exercisable within 60 days of May 15, 2019 by virtue of the beneficial ownership limitation described below. The number of shares of common stock into which the warrants are convertible is limited to that number of shares of common stock which would result in the stockholders, together with its affiliates, having an aggregate beneficial ownership of no more than 9.99% of the total issued and outstanding shares of common stock. This beneficial ownership limitation may be increased or decreased to an amount not to exceed 19.99% of the number of shares of common stock outstanding immediately after giving effect to the issuance of shares of common stock issuable upon exercise of warrants.
- (4) Based on a Schedule 13G filed with the SEC on January 26, 2018, consisting of 1,022,500 shares of common stock, 204,375 shares of common stock upon conversion of 1,635 shares of Series A convertible preferred stock held of record by Vivo Opportunity Fund, L.P., and 196,445 shares of common stock issuable upon exercise of 392,890 warrants. Excludes 416,993 shares of common stock issuable upon the exercise of warrants, which are not exercisable within 60 days of May 15, 2019 by virtue of the beneficial ownership limitation described below. Vivo Opportunity, LLC is the general partner of Vivo Opportunity Fund, L.P. The voting members of Vivo Opportunity, LLC are Frank Kung, Albert Cha, Shan Fu, Gaurav Aggarwal and Michael Chang, none of whom has individual voting or investment power with respect to these shares of common stock and each of whom disclaims beneficial ownership of such shares of common stock. The number of shares of common stock into which the Series A convertible preferred stock are convertible is limited to that number of shares of common stock which would result in the stockholder, together with its affiliates, having an aggregate beneficial ownership of no more than 9.99% of the total issued and outstanding shares of common stock. The number of shares of common stock issuable upon exercise of warrants is limited to that number of shares of common stock which would result in the stockholder, together with its affiliates, having an aggregate beneficial ownership of no more than 4.99% to the total issued and outstanding shares of common stock. This beneficial ownership limitation may be increased or decreased to an amount not to exceed 9.99% of the number of shares of common stock outstanding immediately after giving effect to the issuance of shares of common stock issuable upon exercise of the warrants.
- (5) Consisting of 14,992 shares of common stock and 187,710 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (6) Consisting of 2,099 shares of common stock and 52,201 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (7) Consisting of 1,450 shares of common stock and 14,191 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (8) Consisting of 11,266 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (9) Consisting of 3,125 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (10) Consisting of 3,887 shares of common stock and 14,626 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.

- (11) Consisting of 10,625 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (12) Consisting of 10,636 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (13) Consisting of 7,709 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (14) Consisting of 20,678 shares of common stock and 17,981 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.
- (15) Consisting of 50,841 shares of common stock and 350,644 shares of common stock that can be acquired upon the exercise of options within 60 days of May 15, 2019.

## DESCRIPTION OF CAPITAL STOCK

### General

The following description of our capital stock is intended as a summary only and is qualified in its entirety by reference to our fifth amended and restated certificate of incorporation, as amended, our amended and restated by-laws and the applicable provisions of the Delaware General Corporation Law. We refer in this section to our fifth amended and restated certificate of incorporation, as amended, as our certificate of incorporation, and we refer to our amended and restated by-laws as our by-laws. Our authorized capital stock consists of 85,000,000 shares of our common stock, par value \$0.001 per share and 25,000,000 shares of our preferred stock, par value \$0.001 per share.

As of March 31, 2019, we had issued and outstanding:

- 14,049,181 shares of our common stock;
- 1,635 shares of our preferred stock;
- options to purchase a total of 1,303,407 shares of our common stock with a weighted average exercise price of \$12.88 per share; and
- 5,131,398 shares of common stock issuable upon the exercise of warrants outstanding at a weighted-average exercise price of \$7.77 per share.

As of March 31, 2019, we had 23 stockholders of record.

### Common Stock

**Dividend Rights.** Subject to preferences that may apply to shares of preferred stock outstanding at the time, holders of outstanding shares of common stock are entitled to receive dividends out of assets legally available at the times and in the amounts as the board of directors may from time to time determine.

**Conversion or Redemption Rights.** Our common stock is neither convertible nor redeemable.

**Liquidation Rights.** Upon our liquidation, dissolution or winding up, the holders of our common stock are entitled to receive pro rata our assets which are legally available for distribution, after payment of all debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then-outstanding shares of preferred stock.

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

### Preferred Stock

Our board of directors have the authority, without further action by our stockholders, to issue up to 25,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon, and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding.

Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in control of us and may adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock on the rights of holders of common stock until the board of directors determines the specific rights attached to that preferred stock.

Our board of directors has designated 1,635 of the 25,000,000 authorized shares of preferred stock as Series A preferred stock. The Series A preferred stock ranks pari passu on an as-converted to common stock basis with all of our common stock as to distributions of assets upon our liquidation, dissolution or winding up, whether voluntarily or involuntarily, or a “Fundamental Transaction,” as defined in the Series A preferred stock certificate of designation (the “Certificate of Designation”). Each share of our Series A preferred stock is convertible into 204,375 shares of our common stock (subject to adjustment as provided in the Certificate of Designation) at any time at the option of the holders at a conversion price of \$8.00 per share, provided that the holders will be prohibited from converting Series A preferred stock into shares of our common stock if, as a result of such conversion, a holder, together with its affiliates, would own more than 9.99% of the total number of shares of our common stock then issued and outstanding.

Shares of Series A preferred stock generally have no voting rights, except as required by law and except that the consent of holders of a majority of the outstanding Series A preferred stock will be required to amend the terms of the Series A preferred stock. Shares of Series A preferred stock are entitled to receive dividends equal, on an as-converted to common stock basis, to and in the same form as dividends actually paid on shares of common stock when, as and if such dividends are paid on shares of common stock. We are not obligated to redeem or repurchase any shares of Series A preferred stock. Shares of Series A preferred stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous fund provisions.

## **Warrants**

As of March 31, 2019, we had the following warrants outstanding:

- warrants exercisable for an aggregate of 9,216 shares of our common stock at an exercise price of \$65.92 per share. These warrants expire on November 20, 2019 and may be exercised at any time and from time to time, in whole or in part.
- warrants exercisable for an aggregate of 3,616,944 shares of our common stock at an exercise price of \$9.60 per share. These warrants expire on January 18, 2023 and may be exercised at any time and from time to time, in whole or in part.
- warrants exercisable for an aggregate of 41,177 shares of our common stock at an exercise price of \$6.80 per share. These warrants expire on April 24, 2023 and may be exercised at any time and from time to time, in whole or in part.
- warrants exercisable for an aggregate of 932,812 shares of our common stock at an exercise price of \$4.52 per share. These warrants will expire on February 14, 2024 and may be exercised at any time and from time to time, in whole or in part.
- warrants exercisable for an aggregate of 531,250 shares of our common stock. The aggregate exercise price of this warrant of \$4.02. All but \$0.08 of the exercise price per warrant share was paid to the Company by the holders of the warrants on or prior to the date of issuance. These warrants expire on February 14, 2039 and may be exercised at any time and from time to time, in whole or in part.

These warrants have a net exercise provision under which their holders may, in lieu of payment of the exercise price in cash, surrender the warrant and receive a net amount of shares based on the fair market value of our stock at the time of exercise of the warrants after deduction of the aggregate exercise price. These warrants contain provisions for adjustment of the exercise price and number of shares issuable upon the exercise of warrants in the event of certain stock dividends, stock splits, reorganizations, reclassifications and consolidations.

Except for the right to participate in certain dividends and distributions and as otherwise provided in the warrants or by virtue of such holder's ownership of our common stock, the holders of the warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their warrants.

Our warrant agent is Computershare Trust Company, N.A.

## **Registration Rights**

We are party to an amended and restated registration rights agreement with the holders of approximately 0.2 million shares of our common stock.

Under the amended and restated registration rights agreement, holders of registrable shares can demand that we file a registration statement or request that their shares be included on a registration statement that we are otherwise filing, in either case, registering the resale of their shares of common stock. These registration rights are subject to conditions and limitations, including the right, in certain circumstances, of the underwriters of an offering to limit the number of shares included in such registration and our right, in certain circumstances, not to effect a requested S-1 or S-3 registration within 90 days before or 180

days following the Company's estimated date of filing of a registration statement pertaining to an underwritten public offering of securities for the account of the Company offering of our securities, including this offering.

#### ***Piggyback Registration Rights***

If we propose to register any of our securities under the Securities Act of 1933, as amended (the "Securities Act") for our own account or the account of any other holder, the holders of registrable shares are entitled to notice of such registration and to request that we include registrable shares for resale on such registration statement, subject to the right of any underwriter to limit the number of shares included in such registration. We will pay all registration expenses, other than underwriting discounts and commissions, related to any demand or piggyback registration. The amended and restated registration rights agreement contains customary cross-indemnification provisions, pursuant to which we are obligated to indemnify the selling stockholders, in the event of misstatements or omissions in the registration statement attributable to us except in the event of fraud and they are obligated to indemnify us for misstatements or omissions attributable to them.

#### ***Expenses of Registration***

We will pay all expenses relating to any demand, piggyback or Form S-3 registration, other than underwriting discounts and commissions, subject to specified conditions and limitations.

#### ***Termination of Registration Rights***

The registration rights granted to any holder of registrable shares will terminate when all such holder's registrable securities have been sold or may be distributed without volume limitation or other restrictions on transfer under Rule 144 of the Securities Act.

#### **Anti-Takeover Effects of Our Certificate of Incorporation and Our By-Laws**

Our certificate of incorporation and by-laws contain certain provisions that are intended to enhance the likelihood of continuity and stability in the composition of the board of directors and which may have the effect of delaying, deferring or preventing a future takeover or change in control of the company unless such takeover or change in control is approved by the board of directors.

These provisions include:

***Classified Board.*** Our certificate of incorporation provides that our board of directors is divided into three classes of directors, with the classes as nearly equal in number as possible. As a result, approximately one-third of our board of directors will be elected each year. The classification of directors will have the effect of making it more difficult for stockholders to change the composition of our board. Our certificate of incorporation also provides that, subject to any rights of holders of preferred stock to elect additional directors under specified circumstances, the number of directors will be fixed exclusively pursuant to a resolution adopted by our board of directors.

***Action by Written Consent; Special Meetings of Stockholders.*** Our certificate of incorporation provides that stockholder action can be taken only at an annual or special meeting of stockholders and cannot be taken by written consent in lieu of a meeting. Our certificate of incorporation and the by-laws also provide that, except as otherwise required by law, special meetings of the stockholders can be called only by or at the direction of the board of directors pursuant to a resolution adopted by a majority of the total number of directors. Except as described above, stockholders are not permitted to call a special meeting or to require the board of directors to call a special meeting.

***Removal of Directors.*** Our certificate of incorporation provides that our directors may be removed only for cause by the affirmative vote of at least 75% of the voting power of our outstanding shares of capital stock, voting together as a single class. This requirement of a supermajority vote to remove directors could enable a minority of our stockholders to prevent a change in the composition of our board.

***Advance Notice Procedures.*** Our by-laws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to the board of directors. Stockholders at an annual meeting are only be able to consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of the board of directors or by a stockholder who was a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has given our Secretary timely written notice, in proper form, of the stockholder's intention to bring that business before the meeting. Although the by-laws do not give the board

of directors the power to approve or disapprove stockholder nominations of candidates or proposals regarding other business to be conducted at a special or annual meeting, the by-laws may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempting to obtain control of the company.

***Super Majority Approval Requirements.*** The Delaware General Corporation Law generally provides that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or by-laws, unless either a corporation's certificate of incorporation or by-laws requires a greater percentage. Our certificate of incorporation and by-laws provide that the affirmative vote of holders of at least 75% of the total votes eligible to be cast in the election of directors is required to amend, alter, change or repeal the by-laws. This requirement of a supermajority vote to approve amendments to our by-laws could enable a minority of our stockholders to exercise veto power over any such amendments.

***Authorized but Unissued Shares.*** Our authorized but unissued shares of common stock and preferred stock are available for future issuance, including this offering, without stockholder approval. These additional shares may be utilized for a variety of corporate purposes, including future public offerings to raise additional capital, corporate acquisitions and employee benefit plans. The existence of authorized but unissued shares of common stock and preferred stock could render more difficult or discourage an attempt to obtain control of a majority of our common stock by means of a proxy contest, tender offer, merger or otherwise.

***Exclusive Forum.*** Our certificate of incorporation provides that, subject to limited exceptions, the state or federal courts located in the State of Delaware are the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim against us arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our by-laws, or (iv) any other action asserting a claim against us that is governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and to have consented to the provisions of our certificate of incorporation described above. Although we believe these provisions benefit us by providing increased consistency in the application of Delaware law for the specified types of actions and proceedings, the provisions may have the effect of discouraging lawsuits against our directors and officers. The enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that, in connection with one or more actions or proceedings described above, a court could find the choice of forum provisions contained in our certificate of incorporation to be inapplicable or unenforceable.

#### ***Section 203 of the Delaware General Corporation Law***

We are subject to the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns, or did own within three years prior to the determination of interested stockholder status, 15% or more of the corporation's voting stock.

Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions: before the stockholder became interested, the board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder; upon consummation of the transaction which 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, shares owned by persons who are directors and also officers, and employee stock plans, in some instances; or at or after the time the stockholder became interested, the business combination was approved by the board of directors of the corporation and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

A Delaware corporation may "opt out" of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or by-laws resulting from a stockholders' amendment approved by at least a majority of the outstanding voting shares. We have not opted out of these provisions. As a result, mergers or other takeover or change in control attempts of us may be discouraged or prevented.

#### ***Transfer Agent and Registrar***

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A. The transfer agent and registrar's address is 144 Fernwood Ave, Edison, New Jersey 08837.

**Listing**

Our common stock is listed on The Nasdaq Capital Market under the symbol "GNCA".

## SHARES ELIGIBLE FOR FUTURE SALE

We cannot predict the effect, if any, that future sales of shares of common stock, or the availability for future sales of shares of common stock, will have on the market price of shares of our common stock prevailing from time to time. The sale of substantial amounts of shares of our common stock in the public market, or the perception that such sales could occur, could harm the prevailing market price of shares of our common stock.

Upon completion of this offering, we will have a total of \_\_\_\_\_ shares of our common stock outstanding (or shares of common stock if the underwriters exercise in full their option to purchase additional shares of common stock), based upon the 14,049,181 shares of our common stock that were outstanding at March 31, 2019.

Of those shares, we expect that \_\_\_\_\_ shares, including the shares sold in this offering, will be freely tradeable without restriction under the Securities Act by persons other than our “affiliates.” Under the Securities Act, an “affiliate” of an issuer is a person who directly or indirectly controls, is controlled by or is under common control with that issuer.

In addition, 1,575,150 shares of common stock may be granted under the Amended and Restated 2014 Equity Incentive Plan, which amount includes 1,303,407 shares subject to options outstanding as of March 31, 2019.

356,995 shares of our common stock will be “restricted securities” under Rule 144. Of these shares, \_\_\_\_\_ shares will be subject to a \_\_\_\_\_-day lock-up period under the lock-up agreements entered into in connection with this offering, as further described below. Upon expiration of the lock-up period, these restricted securities may be sold in the public market only if registered or pursuant to an exemption from registration, such as Rule 144 or Rule 701 under the Securities Act.

Our amended and restated certificate of incorporation authorizes us to issue additional shares of common stock and options, rights and warrants relating to common stock for the consideration and on the terms and conditions established by our board of directors in its sole discretion. In accordance with the Delaware General Corporation Law and the provisions of our amended and restated certificate of incorporation, we may also issue preferred stock that has designations, preferences, rights, powers and duties that are different from, and may be senior to, those applicable to shares of common stock. See “Description of Capital Stock.”

### Lock-up Agreements

In connection with this offering, we, our directors, our executive officers and certain stockholders beneficially owning approximately % of our shares of common stock outstanding as of \_\_\_\_\_, 2019, have agreed with the underwriters not to dispose of or hedge any shares of our common stock or securities convertible into or exchangeable for shares of common stock during the period from the date of the lock-up agreement continuing through the date days after the date of this prospectus, except with the prior written consent of \_\_\_\_\_, the representatives of the underwriters. The representatives of the underwriters have advised us that they have no current intent or arrangement to release any of the shares subject to the lock-up agreements prior to the expiration of the lock-up period.

The lock-up agreements do not contain any pre-established conditions to the waiver by on behalf of the underwriters of any terms of the lock-up agreements. Any determination to release shares subject to the lock-up agreements would be based on a number of factors at the time of determination, including but not necessarily limited to the market price of the common stock, the liquidity of the trading market for the common stock, general market conditions, the number of shares proposed to be sold, contractual obligations to release certain shares subject to the lock-up agreements in the event any such shares are released, subject to certain specific limitations and thresholds, and the timing, purpose and terms of the proposed sale.

Following the lock-up periods set forth in the agreements described above, and assuming that the representatives of the underwriters do not release any parties from these agreements, all of the shares of our common stock that are restricted securities or are held by our affiliates as of the date of this prospectus will be eligible for sale in the public market in compliance with Rule 144 under the Securities Act.

### Rule 144

In general, under Rule 144 a person (or persons whose shares are aggregated) who may be deemed our affiliate is entitled to sell within any three-month period a number of restricted securities that does not exceed the greater of 1% of the then outstanding shares of common stock and the average weekly trading volume during the four calendar weeks preceding each such sale, provided that at least six months has elapsed since such shares of common stock were acquired from us or any affiliate of ours and certain manner of sale, notice requirements and requirements as to availability of current public information about us are satisfied.

Any person who is deemed to be our affiliate must also comply with such provisions of Rule 144 (other than the six-month holding period requirement) in order to sell shares of common stock which are not restricted securities (such as shares of common stock acquired by affiliates through purchases in the open market following this offering).

A person who is not our affiliate, and who has not been our affiliate at any time during the 90 days preceding any sale, is entitled to sell shares of common stock (i) subject only to the requirements as to availability of current public information about us, provided that a period of at least six months has elapsed since the shares of common stock were acquired from us or any affiliate of ours, and (ii) without regard to the requirements as to availability of current public information about us or any other requirement of Rule 144, provided that at least one year has elapsed since the shares of common stock were acquired from us or any affiliate of ours.

#### **Rule 701**

In general, under Rule 701 of the Securities Act, any of our employees, consultants or advisors, other than our affiliates, who purchased shares from us in connection with a qualified compensatory stock plan or other written agreement before our initial public offering is eligible to resell these shares in reliance on Rule 144, but without compliance with the holding period requirements of Rule 144 and without regard to the volume of such sales or the availability of public information about us.

#### **Registration Rights**

The holders of 0.2 million shares of our common stock are entitled to specified rights with respect to the registration of the offer and sale of their shares under the Securities Act. Registration of the offer and sale of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act immediately upon the effectiveness of the registration. See the section of this prospectus titled "Description of Capital Stock-Registration Rights" for additional information.

#### **Stock Options and Form S-8 Registration Statement**

As of May 15, 2019, we had outstanding options to purchase an aggregate of 1,287,051 shares of our common stock, of which options to purchase 347,156 shares were vested. We have filed a registration statement on Form S-8 under the Securities Act to register all of the shares of our common stock subject to outstanding options and other awards issuable pursuant to our equity plans. Accordingly, shares of our common stock registered under the registration statements will be available for sale in the open market, subject to Rule 144 volume limitations applicable to affiliates, and subject to any vesting restrictions and lock-up agreements applicable to these shares.

## **MATERIAL UNITED STATES FEDERAL INCOME AND ESTATE TAX CONSIDERATIONS FOR NON-U.S. HOLDERS**

The following discussion summarizes certain material United States federal income and estate tax considerations relating to the purchase, ownership, and disposition of shares of our common stock by a non-U.S. holder (as defined below) that acquires our common stock in this offering and holds it as a capital asset. This discussion is based on the tax laws of the United States, including the Internal Revenue Code of 1986, as amended (the “Code”), Treasury regulations promulgated or proposed thereunder, and administrative and judicial interpretations thereof, all as in effect on the date of this prospectus. These tax laws are subject to change, possibly with retroactive effect, and subject to differing interpretations that could affect the tax consequences described herein.

For purposes of this summary, a “Non-U.S. Holder” means a beneficial owner of common stock that for U.S. federal income tax purposes is not classified as a partnership and is:

- a non-resident alien;
- a foreign corporation (or other entity taxable as a corporation);
- an estate, the income of which is included in gross income for U.S. federal income tax purposes regardless of its source; or
- a trust that does not have in effect a valid election under the Treasury regulations to be treated as a United States person and either (1) no court within the United States is able to exercise primary supervision over the trust’s administration or (2) no United States person has the authority to control all substantial decisions of that trust.

This discussion does not address all aspects of United States federal income and estate taxation that may be applicable to non-U.S. holders in light of their particular circumstances or status, including, for example, financial institutions, banks, investment funds, broker-dealers or traders in securities, insurance companies, persons subject to the alternative minimum tax, partnerships or other pass-through entities, corporations that accumulate earnings to avoid U.S. federal income tax, certain United States expatriates, tax-exempt organizations, pension plans, persons in special situations, such as those that have elected to mark securities to market or that hold shares of our common stock as part of a straddle, hedge or other integrated investment, and foreign governments or agencies.

If a partnership (including any entity or arrangement treated as a partnership for United States federal income tax purposes) purchases, owns, or disposes of our common stock, the tax treatment of a person treated as a partner in the partnership for United States federal income tax purposes generally will depend on the status of the partner and the activities of the partnership. Partnerships (and other entities or arrangements so treated for United States federal income tax purposes) and their partners should consult their own tax advisors.

**THIS SUMMARY IS FOR GENERAL INFORMATION ONLY AND IS NOT INTENDED TO BE TAX ADVICE. NON-U.S. HOLDERS ARE URGED TO CONSULT THEIR TAX ADVISORS CONCERNING THE U.S. FEDERAL INCOME AND ESTATE TAXATION, STATE, LOCAL AND NON-U.S. TAXATION AND OTHER TAX CONSEQUENCES TO THEM OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK.**

### **Distributions on Our Common Stock**

As discussed under “Dividend Policy” above, we do not anticipate paying any cash dividends in the foreseeable future. If we do make a distribution of cash or property with respect to our common stock, any such distribution generally will constitute a dividend for United States federal income tax purposes to the extent of our current or accumulated earnings and profits, as determined under United States federal income tax principles. Subject to the discussion below under “FATCA Withholding” and “Information Reporting and Backup Withholding,” any such dividend paid to a non-U.S. holder generally will be subject to withholding tax at a 30% rate or at a lower rate under an applicable income tax treaty between the United States and the non-U.S. holder’s country of residence. In order to receive a reduced treaty withholding tax rate and to avoid backup withholding, as described below, a non-U.S. holder must furnish to us or our paying agent a properly executed Internal Revenue Service Form W-8BEN or Form W-8BEN-E (or other applicable form) prior to payment of the dividend, certifying under penalties of perjury that the non-U.S. holder is entitled to a reduction in withholding under an applicable income tax treaty. A non-U.S. holder that holds our common stock through a financial institution or other agent will be required to provide appropriate documentation to the financial institution or other agent, which then will be required to provide certification to us or our paying agent either directly or through other intermediaries. A non-U.S. holder that is eligible for a reduced rate of withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by filing a refund claim with the Internal Revenue Service.

A non-U.S. holder is exempt from the withholding tax described above if the dividend is “effectively connected” with the conduct of a trade or business in the United States of the non-U.S. holder (and, if an applicable income tax treaty so provides, attributable to a permanent establishment or fixed base maintained by the non-U.S. holder in the United States) and the non-U.S. holder furnishes to us or our paying agent an Internal Revenue Service Form W-8ECI (or applicable successor form), certifying under penalties of perjury that the dividend is effectively connected with the non-U.S. holder’s conduct of a trade or business in the United States (and, if an applicable income tax treaty so provides, attributable to a permanent establishment or fixed base maintained in the United States). “Effectively connected” dividends will generally be subject to United States federal income tax at the graduated rates that also apply to U.S. persons. A corporate non-U.S. holder may, under certain circumstances, be subject to an additional branch profits tax at a 30% rate (or at a lower rate under an applicable income tax treaty) with respect to its “effectively connected” dividends.

Any distribution in excess of our current or accumulated earnings and profits will be treated, first, as a tax-free return of the non-U.S. holder’s capital, up to the holder’s adjusted tax basis in shares of our common stock, and thereafter, as capital gain subject to the tax treatment described below in “Gain on Sale, Exchange or Other Taxable Disposition.”

#### **Gain on Sale, Exchange or Other Taxable Disposition**

Subject to the discussion below under “FATCA Withholding” and “Information Reporting and Backup Withholding”, a non-U.S. holder generally will not be subject to United States federal income tax or withholding tax on gain realized upon a sale, exchange or other taxable disposition of shares of our common stock (including a redemption, but only if the redemption would be treated as a sale or exchange rather than a distribution for United States federal income tax purposes) unless:

- the gain is “effectively connected” with the conduct of a trade or business of the non-U.S. holder in the United States (and, if required by an applicable income tax treaty, attributable to a permanent establishment or fixed base maintained in the United States), in which case the non-U.S. holder generally will be subject to United States federal income tax on a net income basis with respect to such gain in the same manner as if such holder were a resident of the United States and, if the non-U.S. holder is a corporation for United States federal income tax purposes, will be subject to an additional “branch profits tax” at a 30% rate (or at a lower rate under an applicable income tax treaty);
- the non-U.S. holder is an individual who is present in the United States for 183 or more days in the taxable year of the disposition and meets certain other conditions, in which case the non-U.S. holder generally will be subject to United States federal income tax at a 30% rate (or at a lower rate under an applicable income tax treaty) on the gain derived from the sale, which gain may be offset by U.S.-source capital losses for the year; or
- we are or have been a “United States real property holding corporation” (“USRPHC”) at any time within the shorter of the five-year period preceding the disposition and the non-U.S. holder’s holding period for our common stock (the “relevant period”) and the non-U.S. holder (i) disposes of our common stock during a calendar year when our common stock is no longer regularly traded on an established securities market or (ii) owned (directly, indirectly, and constructively) more than 5% of our common stock at any time during the relevant period, in which case such a non-U.S. holder will be subject to tax on the gain on the disposition of shares of our common stock generally as if the gain were effectively connected with the conduct of a trade or business in the United States, except that the “branch profits tax” will not apply

We believe we currently are not, and we do not anticipate becoming, a USRPHC for United States federal income tax purposes. Generally, a corporation is a USRPHC only if the fair market value of its United States real property interests (as defined in the Code) equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests and its other assets used or held for use in a trade or business.

#### **FATCA Withholding**

Sections 1471 through 1474 of the Code and related Treasury Regulations, together with other Treasury Department or IRS guidance issued thereunder (“FATCA”) impose a 30% withholding tax on certain payments unless:

- the foreign entity (i) is a “foreign financial institution” (as defined under FATCA) that undertakes specified due diligence, reporting, withholding and certification obligations or (ii) in the case of a foreign financial institution that is a resident in a jurisdiction that has entered into an intergovernmental agreement with the United States relating to FATCA, complies with the diligence and reporting requirements of the intergovernmental agreement and local implementing rules;
- the foreign entity is a “non-financial foreign entity” (as defined under FATCA) and identifies certain of its U.S. investors or that it does not have such U.S. investors, generally on Internal Revenue Service Form W-8BEN-E; or

- the foreign entity otherwise is exempted from withholding under FATCA.

Withholding under FATCA generally applies to payments of dividends on our common stock and, after December 31, 2018, to payments of gross proceeds from a sale or other disposition of our common stock. Withholding agents may, however, rely on recently proposed Treasury Regulations that would no longer require FATCA withholding on payments of gross proceeds.

An intergovernmental agreement between the United States and an applicable foreign country where a foreign entity is a resident may modify the requirements under FATCA in the previous paragraph and, under certain circumstances, can eliminate FATCA withholding tax. Under certain circumstances, a non-U.S. holder will be eligible for refunds or credits of withholding taxes imposed under FATCA by filing a United States federal income tax return. Prospective investors should consult their tax advisors regarding the effect of FATCA on their ownership and disposition of our common stock.

### **Information Reporting and Backup Withholding**

Except as described below, a non-U.S. holder generally will be exempt from backup withholding and information reporting requirements with respect to dividend payments and the payment of the proceeds from the sale of shares or our common stock effected at a United States office of a broker, as long as the payor or broker does not have actual knowledge or reason to know that the holder is a United States person and has furnished to the payor or broker:

- a valid Internal Revenue Service Form W-8BEN or Form W-8BEN-E on which the non-U.S. holder certifies, under penalties of perjury, that it is a non-United States person; or
- other documentation upon which it may rely to treat the payments as made to a non-United States person in accordance with Treasury regulations, or the non-U.S. holder otherwise establishes an exemption.

However, we must report annually to the Internal Revenue Service and to non-U.S. holders the amount of dividends paid to non-U.S. holders and the tax withheld with respect to such dividends, regardless of whether withholding was required. Copies of the information returns reporting such dividends and withholding may also be made available to the tax authorities in the country in which the respective non-U.S. holder resides under the provisions of an applicable income tax treaty.

Payment of the proceeds from the sale of our common stock effected at a foreign office of a broker generally will not be subject to information reporting or backup withholding. However, a sale of our common stock by a non-U.S. holder that is effected at a foreign office of a broker will be subject to information reporting and backup withholding if:

- the proceeds are transferred to an account maintained by the non-U.S. holder in the United States;
- the payment of proceeds or the confirmation of the sale is mailed to the non-U.S. holder at a United States address; or
- the sale has some other specified connection with the United States as provided in the Treasury regulations,

unless the broker does not have actual knowledge or reason to know that the holder is a United States person and the documentation requirements described above are met or the non-U.S. holder otherwise establishes an exemption.

In addition, a sale of shares of our common stock will be subject to information reporting if it is effected at a foreign office of a broker that is:

- a United States person under Section 7701(a)(30) of the Code;
- a “controlled foreign corporation” for United States federal income tax purposes;
- a foreign person 50% or more of whose gross income is effectively connected with the conduct of a United States trade or business for a specified three-year period (or such part of such period as the person has been in existence); or
- a foreign partnership, if at any time during its tax year (a) one or more of its partners are “U.S. persons”, as defined in the Treasury regulations, who in the aggregate hold more than 50% of the income or capital interest in the partnership, or (b) such foreign partnership is engaged in the conduct of a trade or business in the United States,

unless the broker does not have actual knowledge or reason to know that the holder is a United States person and the documentation requirements described above are met or an exemption is otherwise established. Backup withholding will apply if the sale is subject to information reporting and the broker has actual knowledge that the holder is a United States person.

Backup withholding is not an additional tax. A non-U.S. holder generally may obtain a refund of any amounts withheld under the backup withholding rules that exceed the non-U.S. holder's income tax liability by filing a refund claim with the Internal Revenue Service.

#### **Federal Estate Tax**

The estates of nonresident alien decedents generally are subject to United States federal estate tax on property with a United States situs. Because we are a United States corporation, our common stock will be United States situs property and therefore will be included in the taxable estate of a nonresident alien decedent at the time of the decedent's death, unless an applicable estate tax treaty between the United States and the decedent's country of residence provides otherwise. An estate tax credit is available to reduce the net tax liability of a nonresident alien's estate, but the estate tax credit for a nonresident alien is generally much smaller than the applicable credit for computing the estate tax of a United States resident. Nonresident aliens should consult their personal tax advisors regarding the United States federal estate tax consequences of owning our common stock.

## UNDERWRITING

Subject to the terms and conditions set forth in an underwriting agreement, each of the underwriters named below has severally agreed to purchase from us the aggregate number of shares of common stock set forth opposite their respective names below:

Underwriters	Number of Shares
Total	

The underwriting agreement provides that the obligations of the underwriters to purchase the shares included in this offering are subject to approval of legal matters by counsel and to other conditions. The underwriters are obligated to purchase all the shares (other than those covered by the option to purchase additional shares described below) if they purchase any of the shares.

Shares sold by the underwriters to the public will initially be offered at the price set forth on the cover of this prospectus. Any shares sold by the underwriters to securities dealers may be sold at a discount from the public offering price not to exceed \$ per share. If all the shares are not sold at the public offering price, the underwriters may change the offering price and the other selling terms. The representatives have advised us that the underwriters do not intend to make sales to discretionary accounts.

If the underwriters sell more shares than the total number set forth in the table above, we have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase up to additional shares at the public offering price less the underwriting discount. To the extent the option is exercised, each underwriter must purchase a number of additional shares approximately proportionate to that underwriter's initial purchase commitment. Any shares issued or sold under the option will be issued and sold on the same terms and conditions as the other shares that are the subject of this offering.

We, our executive officers, directors and certain of our stockholders have agreed that, for a period of days from the date of this prospectus, we and they will not, without the prior written consent of, dispose of or hedge any shares or any securities convertible into or exchangeable for our common stock. In their sole discretion may release any of the securities subject to these lock-up agreements at any time, which, in the case of officers and directors, shall be with notice.

Our common stock is listed on The Nasdaq Capital Market under the symbol "GNCA".

The following table shows the underwriting discounts and commissions that we are to pay to the underwriters in connection with this offering. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	Total		
	Per Share	No Exercise	Full Exercise
Public offering price	\$	\$	\$
Underwriting discounts and commissions	\$	\$	\$
Proceeds, before expenses, to us	\$	\$	\$

We estimate that our portion of the total expenses of this offering will be \$ We have agreed to reimburse the underwriters for certain expenses in an amount up to \$ .

In connection with the offering, the underwriters may purchase and sell shares in the open market. Purchases and sales in the open market may include short sales, purchases to cover short positions, which may include purchases pursuant to the underwriters' option to purchase additional shares, and stabilizing purchases.

- Short sales involve secondary market sales by the underwriters of a greater number of shares than they are required to purchase in the offering.

- “Covered” short sales are sales of shares in an amount up to the number of shares represented by the underwriters’ option to purchase additional shares.
- “Naked” short sales are sales of shares in an amount in excess of the number of shares represented by the underwriters’ option to purchase additional shares.
- Covering transactions involve purchases of shares either pursuant to the underwriters’ option to purchase additional shares or in the open market in order to cover short positions.
- To close a naked short position, the underwriters must purchase shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.
- To close a covered short position, the underwriters must purchase shares in the open market or must exercise the underwriters’ option to purchase additional shares. In determining the source of shares to close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the underwriters’ option to purchase additional shares.
- Stabilizing transactions involve bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum.

Purchases to cover short positions and stabilizing purchases, as well as other purchases by the underwriters for their own accounts, may have the effect of preventing or retarding a decline in the market price of the shares. They may also cause the price of the shares to be higher than the price that would otherwise exist in the open market in the absence of these transactions. The underwriters may conduct these transactions on The Nasdaq Capital Market, in the over-the-counter market or otherwise. If the underwriters commence any of these transactions, they may discontinue them at any time.

### **Other Relationships**

The underwriters are full-service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their respective affiliates may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses. In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (which may include bank loans and/or credit default swaps) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The underwriters and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriters may be required to make because of any of those liabilities.

### **Selling Restrictions**

#### ***Notice to Prospective Investors in the European Economic Area***

In relation to each member state of the European Economic Area that has implemented the Prospectus Directive (each, a relevant member state), with effect from and including the date on which the Prospectus Directive is implemented in that relevant member state (the relevant implementation date), an offer of shares described in this prospectus may not be made to the public in that relevant member state other than:

- to any legal entity which is a qualified investor as defined in the Prospectus Directive;
- to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), subject to obtaining the prior consent of the managers for any such offer; or
- in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of shares shall require us or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an “offer to public” in relation to our shares 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 our common shares to be offered so as to enable an investor to decide to purchase our common shares, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State, and the expression “Prospectus Directive” means Directive 2003/71/EC (as amended, including by Directive 2010/73/EU) and includes any relevant implementing measure in the Relevant Member State.

***Notice to Prospective Investors in the United Kingdom***

In the United Kingdom, this prospectus is only addressed to and directed at qualified investors who are (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the “Order”); or (ii) 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”). In the United Kingdom, any investment or investment activity to which this prospectus relates is available only to relevant persons and will only be engaged with relevant persons. Any person in the United Kingdom who is not a relevant person should not act or rely on this prospectus or any of its contents.

***Notice to Prospective Investors in Australia***

No placement document, prospectus, product disclosure statement, or other disclosure document has been lodged with the Australian Securities and Investments Commission in relation to this offering. This prospectus does not constitute a prospectus, product disclosure statement, or other disclosure document under the Corporations Act 2001 (the Corporations Act) and does not purport to include the information required for a prospectus, product disclosure statement, or other disclosure document under the Corporations Act.

Any offer in Australia of the shares may only be made to persons, or Exempt Investors, who are “sophisticated investors” (within the meaning of section 708(8) of the Corporations Act), “professional investors” (within the meaning of section 708(11) of the Corporations Act), or otherwise pursuant to one or more exemptions contained in section 708 of the Corporations Act so that it is lawful to offer the shares without disclosure to investors under Chapter 6D of the Corporations Act.

The shares applied for by Exempt Investors in Australia must not be offered for sale in Australia in the period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring shares must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take account of the investment objectives, financial situation, or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate for their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

***Notice to Prospective Investors in Hong Kong***

The shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong) (“Companies (Winding Up and Miscellaneous Provisions) Ordinance”) or which do not constitute an offer to the public within the meaning of the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) (“Securities and Futures Ordinance”), or (ii) to “professional investors” as defined in the Securities and Futures Ordinance and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a “prospectus” as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance, 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 contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities 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” in Hong Kong as defined in the Securities and Futures Ordinance and any rules made thereunder.

***Notice to Prospective Investors in Japan***

The shares have not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended) (the “FIEA”). The shares may not be offered or sold, directly or indirectly, in Japan or to or for the benefit of any resident of Japan (including any person resident in Japan or any corporation or other entity organized under the laws of Japan) or to others for reoffering or resale, directly or indirectly, in Japan or to or for the benefit of any resident of Japan, except pursuant to an exemption from the registration requirements of the FIEA and otherwise in compliance with any relevant laws and regulations of Japan.

***Notice to Prospective Investors in Singapore***

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this 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 (i) to an institutional investor (as defined under Section 4A of the Securities and Futures Act, Chapter 289 of Singapore (the “SFA”)) under Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to conditions set forth in the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) 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, the securities (as defined in Section 239(1) of the SFA) of that corporation shall not be transferable for six months after that corporation has acquired the shares under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer in that corporation’s securities pursuant to Section 275(1A) of the SFA, (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore (“Regulation 32”).

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is a trust (where the trustee is not an accredited investor (as defined in Section 4A of the SFA)) whose sole purpose is to hold investments and each beneficiary of the trust is an accredited investor, the beneficiaries’ rights and interest (howsoever described) in that trust shall not be transferable for six months after that trust has acquired the shares under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer that is made on terms that such rights or interest are acquired at a consideration of not less than S\$200,000 (or its equivalent in a foreign currency) for each transaction (whether such amount is to be paid for in cash or by exchange of securities or other assets), (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32.

***Notice to Prospective Investors in Canada***

The shares may be sold in Canada 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.

## LEGAL MATTERS

The validity of the issuance of our common stock offered in this prospectus will be passed upon for us by Ropes & Gray LLP, Boston, Massachusetts. Certain legal matters in connection with this offering will be passed upon for the underwriters by .

## EXPERTS

The financial statements of Genocea Biosciences, Inc. appearing in Genocea Biosciences, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2018 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in its report thereon, included therein, and incorporated herein by reference. Such financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

## WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of common stock offered hereby. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement or the exhibits and schedules filed therewith. For further information with respect to us and the common stock offered hereby, reference is made to the registration statement and the exhibits and schedules filed therewith. Statements contained in this prospectus regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement.

We are subject to the information and periodic reporting requirements of the Exchange Act and, in accordance therewith, file periodic 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 registrants that file electronically with the SEC. The address is [www.sec.gov](http://www.sec.gov).

We also maintain a website at <http://www.genocea.com> and make available free of charge through this website our Annual Report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements and amendments to those reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Exchange Act. We make these reports available through our website as soon as reasonably practicable after we electronically file such reports with, or furnish such reports to, the SEC. The information contained on, or that can be accessed through, our website is not a part of this prospectus. The reference to our web address does not constitute incorporation by reference of the information contained in, or that can be accessed through, our website.

## INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus.

Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus.

We are incorporating by reference the filings listed below and any additional documents that we may file with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date we file this prospectus and prior to the termination of the offering, except we are not incorporating by reference any information furnished (but not filed) under Item 2.02 or Item 7.01 of any Current Report on Form 8-K and corresponding information furnished under Item 9.01 as an exhibit thereto:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed on February 28, 2019;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, filed on April 30, 2019;
- the information specifically incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2018 from our definitive proxy statement on Schedule 14A, filed on March 29, 2019;
- our Current Reports on Form 8-K filed on February 12, 2019, February 28, 2019 and May 21, 2019; and
- the description of our common stock contained in our Registration Statement on Form 8-A filed on January 30, 2014, including any amendment or report filed for the purpose of updating such description.

Any statement contained in a document incorporated or deemed to be incorporated by reference in this prospectus will be deemed modified, superseded or replaced for purposes of this prospectus to the extent that a statement contained in this prospectus modifies, supersedes or replaces such statement.

You may request, orally or in writing, a copy of any or all of the documents incorporated herein by reference. These documents will be provided to you at no cost, by contacting: Investor Relations, Genocera Biosciences, Inc. 100 Acorn Park Drive, Cambridge, Massachusetts 02140, (617) 876-8191 email address: [ir@genocera.com](mailto:ir@genocera.com). In addition, copies of any or all of the documents incorporated herein by reference may be accessed at our website at [www.genocera.com](http://www.genocera.com). The information contained in, or accessible through, our website does not constitute part of this prospectus.

**Shares  
Common Stock**



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**PRELIMINARY PROSPECTUS  
, 2019**

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## PART II

### INFORMATION NOT REQUIRED IN PROSPECTUS

#### Item 13. Other Expenses of Issuance and Distribution

The following table sets forth the costs and expenses, other than the underwriting discounts and commissions, payable by the registrant in connection with the sale of common stock being registered. All amounts are estimates except for the SEC registration fee, the Financial Industry Regulatory Authority, or FINRA, filing fee and Nasdaq listing fee.

Item	Amount to be paid
SEC registration fee	\$ 6,060
FINRA filing fee	\$ 8,000
Nasdaq listing fee	*
Printing and engraving expenses	*
Legal fees and expenses	*
Accounting fees and expenses	*
Transfer Agent fees and expenses	*
Miscellaneous expenses	*
<b>Total</b>	<b>*</b>

\* To be filed by amendment

#### Item 14. Indemnification of Directors and Officers

Section 145 of the General Corporation Law of the State of Delaware provides as follows:

A corporation shall have the power to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interest of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction or upon a plea of nolo contendere or its equivalent shall not, of itself, create a presumption that the person did not act in good faith and in a manner which the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had reasonable cause to believe that his conduct was unlawful.

A corporation shall have the power to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by him in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

As permitted by the Delaware General Corporation Law, we have included in our certificate of incorporation a provision to eliminate the personal liability of our directors for monetary damages for breach of their fiduciary duties as directors, subject to certain exceptions. In addition, our certificate of incorporation and by-laws provide that we are required to indemnify our officers and directors under certain circumstances, including those circumstances in which indemnification would otherwise be

discretionary, and we are required to advance expenses to our officers and directors as incurred in connection with proceedings against them for which they may be indemnified.

We entered into indemnification agreements with our directors and officers that provide broader indemnity rights than those provided under the Delaware General Corporation Law and our certificate of incorporation. The indemnification agreements are not intended to deny or otherwise limit third-party or derivative suits against us or our directors or officers, but to the extent a director or officer were entitled to indemnity or contribution under the indemnification agreement, the financial burden of a third-party suit would be borne by us, and we would not benefit from derivative recoveries against the director or officer. Such recoveries would accrue to our benefit but would be offset by our obligations to the director or officer under the indemnification agreement.

The underwriting agreement provides that the underwriters are obligated, under certain circumstances, to indemnify our directors, officers and controlling persons against certain liabilities, including liabilities under the Securities Act. Reference is made to the form of underwriting agreement filed as Exhibit 1.1 hereto.

We maintain directors' and officers' liability insurance for the benefit of our directors and officers.

#### **Item 15. Recent Sales of Unregistered Securities**

In the three years preceding the filing of this registration statement, we have issued the following securities that were not registered under the Securities Act.

##### **Sales of Common Stock and Warrants**

On February 14, 2019, we sold 3.2 million shares of common stock and 531 thousand pre-funded warrants to purchase common stock, along with accompanying warrants to purchase 0.25 shares of common stock for each share of common stock or pre-funded warrant purchased, for net proceeds of approximately \$14.0 million.

On April 24, 2018, we issued warrants to purchase 41 thousand shares of our common stock at an exercise price of \$6.80 per share to Hercules Capital Inc.

Issuances of common stock, pre-funded warrants and warrants were exempt pursuant to Rule 506 and Section 4(a)(2) of the Securities Act.

##### **Grants and Exercises of Stock Options**

From January 1, 2019 through May 31, 2019, we granted options to purchase a total of 500,016 shares of our common stock to employees and non-employees, at a weighted average price of \$4.64 per share. During the same period, we issued 4,610 shares of common stock upon the exercise of options to purchase such shares of common stock at a weighted average price of \$4.32 per share.

In 2018, we granted options to purchase a total of 657,375 shares of our common stock to employees and non-employees, at a weighted average price of \$6.96 per share. During the same period, no options were exercised.

In 2017, we granted options to purchase a total of 184,350 shares of our common stock to employees and non-employees, at a weighted average price of \$37.92 per share. During the same period, we issued 19,417 shares of common stock upon the exercise of options to purchase such shares of common stock at a weighted average price of \$23.60 per share.

In 2016, we granted options to purchase a total of 197,088 shares of our common stock to employees and non-employees, at a weighted average price of \$28.48 per share. During the same period, we issued 9,940 shares of common stock upon the exercise of options to purchase such shares of common stock at a weighted average price of \$22.80 per share.

Issuances of the stock options were exempt pursuant to Rule 701 and Section 4(a)(2) of the Securities Act.

#### **Item 16. Exhibits**

##### **(a) Exhibits**

Exhibit No.	Exhibit
1.1*	Form of Underwriting Agreement
3.1	<a href="#"><u>Fifth Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on February 12, 2014)</u></a>
3.2	<a href="#"><u>Amended and Restated By-laws (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on February 12, 2014)</u></a>
3.3	<a href="#"><u>Certificate of Amendment to Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on June 25, 2018)</u></a>
4.1	<a href="#"><u>Form of Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013)</u></a>
4.2	<a href="#"><u>Fourth Amended and Restated Registration Rights Agreement (incorporated by reference to Exhibit 4.5 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013)</u></a>
4.3	<a href="#"><u>Warrant Agreement between the Company and Hercules Technology Growth Capital, Inc., dated November 20, 2014 (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on November 21, 2014)</u></a>
4.4	<a href="#"><u>Certificate of Designation of Preferences, Rights and Limitations of Series A Convertible Preferred Stock (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K, File No. 001-36289 filed on January 19, 2018)</u></a>
4.5	<a href="#"><u>Form of Class A Warrant to Purchase Shares of Common Stock of Genoecea Biosciences, Inc. (incorporated by reference to Exhibit 4.5 to the Company's Annual Report on Form 8-K, File No. 001-36289, filed on February 16, 2018)</u></a>
4.6	<a href="#"><u>Warrant Agreement between the Company and Hercules Capital, Inc., dated April 24, 2018 (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on April 30, 2018)</u></a>
4.7	<a href="#"><u>Form of Pre-Funded Warrant to Purchase Shares of Common Stock of Genoecea Biosciences, Inc. (incorporated by reference to Exhibit 4.1 to the Company's Form 8-K, File No. 001-36289, filed on February 12, 2019)</u></a>
4.8	<a href="#"><u>Form of Class B Warrant to Purchase Shares of Common Stock of Genoecea Biosciences, Inc. (incorporated by reference to Exhibit 4.8 to the Company's Annual Report on Form 10-K, File No. 001-36289, filed on February 28, 2019)</u></a>
5.1*	Opinion of Ropes & Gray LLP
10.1	<a href="#"><u>Form of Director Indemnification Agreement (incorporated by reference to Exhibit 10.1 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013)</u></a>
10.2+	<a href="#"><u>Amended and Restated License Agreement between Genoecea Biosciences, Inc. and President and Fellows of Harvard College, dated November 19, 2012 (incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q, File No.001-36289, dated November 4, 2016)</u></a>
10.3+	<a href="#"><u>License and Collaboration Agreement between Genoecea Biosciences, Inc. and Isconova AB, dated August 5, 2009, as amended on March 19, 2010, June 18, 2010, August 17, 2010, October 19, 2011 and February 6, 2012 (incorporated by reference to Exhibit 10.3 to the Company's Form 10-Q, File No.001-36289, dated November 4, 2016)</u></a>
10.4+	<a href="#"><u>Exclusive License Agreement for Escherichia Coli K12 to Deliver Protein to the Macrophage Cytosol between Genoecea Biosciences, Inc. and The Regents of the University of California, dated August 18, 2006 (incorporated by reference to Exhibit 10.5 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 13, 2014)</u></a>
10.5	<a href="#"><u>Lease, dated as of July 3, 2012 between TBCI, LLC and Genoecea Biosciences, Inc. (incorporated by reference to Exhibit 10.8 to the Company's Registration Statement on Form S-1, File No. 333-193043, dated December 23, 2013)</u></a>
10.6	<a href="#"><u>Agreement Regarding Sublease, dated as of July 9, 2012, by TBCI, LLC, FoldRx Pharmaceuticals, Inc., Pfizer Inc. and Genoecea Biosciences, Inc. (incorporated by reference to Exhibit 10.9 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013)</u></a>

- 10.7† [Genocea Biosciences, Inc. Amended and Restated 2007 Equity Incentive Plan, as amended on June 24, 2013 \(incorporated by reference to Exhibit 10.10 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013\)](#)
- 10.8† [Consulting Agreement between Genocea Biosciences, Inc. and George Siber, dated May 16, 2007, as amended on June 30, 2009, December 16, 2010, June 15, 2011 and June 5, 2013 \(incorporated by reference to Exhibit 10.11 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013\)](#)
- 10.9† [Amended and Restated Employment Letter Agreement between William Clark and Genocea Biosciences, Inc., dated January 16, 2014 \(incorporated by reference to Exhibit 10.12 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 23, 2014\)](#)
- 10.10† [Letter Agreement, dated April 7, 2014, between the Company and Jonathan Poole \(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on April 8, 2014\)](#)
- 10.11† [Genocea Biosciences, Inc. Amended and Restated 2014 Equity Incentive Plan \(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on June 25, 2018\)](#)
- 10.12† [Genocea Biosciences, Inc. Cash Incentive Plan \(incorporated by reference to Exhibit 10.16 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 13, 2014\)](#)
- 10.13† [Form of Nonstatutory Stock Option Granted under the Genocea Biosciences, Inc. Amended and Restated 2007 Equity Incentive Plan \(incorporated by reference to Exhibit 10.20 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013\)](#)
- 10.14† [Form of Incentive Stock Option Granted under the Genocea Biosciences, Inc. Amended and Restated 2007 Equity Incentive Plan \(incorporated by reference to Exhibit 10.21 to the Company's Registration Statement on Form S-1, File No. 333-193043, filed on December 23, 2013\)](#)
- 10.15† [Form of Incentive Stock Option under the Genocea Biosciences, Inc. 2014 Equity Incentive Plan \(incorporated by reference to Exhibit 10.22 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 13, 2014\)](#)
- 10.16† [Form of Nonstatutory Stock Option under the Genocea Biosciences, Inc. 2014 Equity Incentive Plan \(incorporated by reference to Exhibit 10.23 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 13, 2014\)](#)
- 10.17† [Restricted Stock Agreement between Genocea Biosciences, Inc. and Katrine Bosley, dated November 7, 2013 \(incorporated by reference to Exhibit 10.25 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 13, 2014\)](#)
- 10.18† [Genocea Biosciences, Inc. 2014 Employee Stock Purchase Plan, as amended \(incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on June 25, 2018\)](#)
- 10.19† [Nonstatutory Stock Option granted under the Genocea Biosciences, Inc. Amended and Restated 2007 Equity Incentive Plan to Katrine Bosley, dated May 13, 2013 \(incorporated by reference to Exhibit 10.27 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 13, 2014\)](#)
- 10.20† [Nonstatutory Stock Option granted under the Genocea Biosciences, Inc. Amended and Restated 2007 Equity Incentive Plan to Katrine Bosley, dated November 5, 2013 \(incorporated by reference to Exhibit 10.28 to the Company's Registration Statement on Form S-1, File No. 333-193043, as amended on January 13, 2014\)](#)
- 10.21 [Loan and Security Agreement between the Company and Hercules Technology Growth Capital, Inc., dated November 20, 2014 \(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on November 21, 2014\)](#)
- 10.22 [Equity Rights Letter Agreement between the Company and Hercules Technology Growth Capital, Inc., dated November 20, 2014 \(incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on November 21, 2014\)](#)
- 10.23† [Fifth Amendment to the Consulting Agreement between Genocea Biosciences, Inc. and George Siber, dated June 15, 2015 \(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on June 19, 2015\)](#)

10.24	<a href="#"><u>Amendment No. 1 to Loan and Security Agreement between the Company and Hercules Technology Growth Capital, Inc., dated December 17, 2015 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K File No. 001-36289, filed on December 18, 2015)</u></a>
10.25	<a href="#"><u>Sublease Agreement between the Company and the Smithsonian Institution, dated June 15, 2015 (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on June 19, 2015)</u></a>
10.26	<a href="#"><u>First Amendment to Lease, dated May 16, 2016, between 100 Discovery Park DE, LLC, a Delaware limited liability company (as successor in interest to TBCI, LLC, as Trustee of 100 Discovery Park Realty Trust) and Genocea Biosciences, Inc. (incorporated by reference to Exhibit 10.30 to the Company's Form 10-Q, File No. 001-36289, filed on August 5, 2016)</u></a>
10.27†	<a href="#"><u>Sixth Amendment to the Consulting Agreement between Genocea Biosciences, Inc. and George Siber, dated June 13, 2017 (incorporated by reference to Exhibit 10.29 to the Company's Annual Report on Form 10-K, File No. 001-36289, filed on February 16, 2018)</u></a>
10.28	<a href="#"><u>Amendment No. 2 to the Loan and Security Agreement between the Company and Hercules Technology Growth Capital, Inc., dated January 19, 2018 (incorporated by reference to Exhibit 10.30 to the Company's Annual Report on Form 10-K, File No. 001-36289, filed on February 16, 2018)</u></a>
10.29+	<a href="#"><u>License and Supply Agreement, between the Company and Oncovir, Inc., dated January 26, 2018 (incorporated by reference to Exhibit 10.31 to the Company's Annual Report on Form 10-K, File No. 001-36289, filed on February 16, 2018)</u></a>
10.30+	<a href="#"><u>Amended and Restated Loan and Security Agreement between the Company, the several banks and other financial institutions or entities from time to time parties thereto and Hercules Capital, Inc., dated April 24, 2018 (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q, File No. 001-36289, filed on August 3, 2018)</u></a>
10.31	<a href="#"><u>Amendment to Equity Rights Letter Agreement between the Company, Hercules Capital, Inc. (f/k/a Hercules Technology Growth Capital, Inc.), dated April 24, 2018 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on April 30, 2018)</u></a>
10.32	<a href="#"><u>Subscription Agreement, dated February 11, 2019, among Genocea Biosciences, Inc. and the purchasers party thereto (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q, File No. 001-36289, filed on April 30, 2019)</u></a>
21.1	<a href="#"><u>List of Subsidiaries of the Company (incorporated by reference to Exhibit 21.1 to the Company's Form 10-K, File No. 001-36289, filed on February 17, 2016)</u></a>
23.1**	<a href="#"><u>Consent of Ernst &amp; Young LLP</u></a>
23.2*	Consent of Ropes & Gray LLP (included in Exhibit 5.1)
24.1	Power of Attorney (included on signature page)

\* To be filed by amendment.

\*\* Filed herewith.

† Indicates a management contract or compensatory plan.

+ Certain confidential information contained in this exhibit has been omitted because it (i) is not material and (ii) would be competitively harmful if publicly disclosed.

**(b) Financial statement schedules**

Schedules not listed above have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

**Item 17. Undertakings**

The undersigned Registrant hereby undertakes to provide to the underwriters at the closing specified in the

underwriting agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

The undersigned Registrant hereby undertakes that:

- (1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.
- (2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

## Signatures

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant has duly caused this Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Cambridge, Commonwealth of Massachusetts, on June 7, 2019.

### GENOCEA BIOSCIENCES, INC.

By:           /s/ WILLIAM CLARK            
 William Clark  
*President and Chief Executive Officer*  
*(Principal Executive Officer)*

We, the undersigned directors and officers of Genoclea Biosciences, Inc. (the "Company"), hereby severally constitute and appoint William Clark, Diantha Duvall and Derek Meisner, and each of them singly, our true and lawful attorneys, with full power to them, and to each of them singly, to sign for us and in our names in the capacities indicated below, the registration statement on Form S-1 filed herewith, and any and all pre-effective and post-effective amendments to said registration statement, and any registration statement filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended, in connection with the registration under the Securities Act of 1933, as amended, of equity securities of the Company, and to file or cause to be filed the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as each of us might or could do in person, and hereby ratifying and confirming all that said attorneys, and each of them, or their substitute or substitutes, shall do or cause to be done by virtue of this Power of Attorney.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement on Form S-1 has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
<u>          /s/ William Clark          </u> William Clark	President and Chief Executive Officer and Director (Principal Executive Officer)	June 7, 2019
<u>          /s/ Diantha Duvall          </u> Diantha Duvall	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	June 7, 2019
<u>          /s/ Kenneth Bate          </u> Kenneth Bate	Director	June 7, 2019
<u>          /s/ Ali Behbahani          </u> Ali Behbahani	Director	June 7, 2019
<u>          /s/ Katrine Bosley          </u> Katrine Bosley	Director	June 7, 2019
<u>          /s/ Ronald Cooper          </u> Ronald Cooper	Director	June 7, 2019
<u>          /s/ Michael Higgins          </u> Michael Higgins	Director	June 7, 2019
<u>          /s/ Howard Mayer          </u> Howard Mayer, M.D.	Director	June 7, 2019
<u>          /s/ George Siber          </u> George Siber, M.D.	Director	June 7, 2019

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the reference to our firm under the caption "Experts" in the Registration Statement (Form S-1) and related Prospectus of Genoclea Biosciences, Inc. for the registration of \$50,000,000 of its common stock and to the incorporation by reference therein of our report dated February 28, 2019, with respect to the consolidated financial statements of Genoclea Biosciences, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2018, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts  
June 7, 2019