UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, DC 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2019

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File Number: 001-36289

Genocea Biosciences, Inc.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**51-0596811**
(State or Other Jurisdiction of Incorporation or Organization)	(IRS Employer Identification No.)
100 Acorn Park Drive **Cambridge, Massachusetts**	**02140**
(Address of Principal Executive Offices)	(Zip Code)

Registrant's Telephone Number, Including Area Code: (617) 876-8191

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common stock, $0.001 par value per share	GNCA	NASDAQ Capital Market

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. **Yes** ☒ **No** ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). **Yes** ☒ **No** ☐

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. (Check one):

Large accelerated filer	☐	Accelerated filer	☒
Non-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 financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). **Yes** ☐ **No** ☒

As of July 23, 2019, there were 26,149,689 shares of the registrant's Common Stock, par value $0.001 per share, outstanding.

FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements that involve substantial risks and uncertainties. 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.

Any forward-looking statements in this Quarterly Report on Form 10-Q reflect our current views with respect to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed in our Annual Report on Form 10-K and other filings with the Securities Exchange Commission (the "SEC"), including the following:

- our estimates regarding the timing and amount of funds we require to conduct clinical trials for GEN-009, to continue preclinical studies and file an investigational new drug ("IND") for GEN-011, to continue preclinical studies for our other product candidates 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. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

This Quarterly Report on Form 10-Q includes 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.

Genocea Biosciences, Inc.
Form 10-Q
For the Quarter Ended June 30, 2019

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PART I. FINANCIAL INFORMATION
Item 1. Financial Statements

Genocea Biosciences, Inc.
Condensed Consolidated Balance Sheets
(unaudited)
(in thousands)

	June 30, 2019	December 31, 2018
Assets		
Current assets:		
Cash and cash equivalents	$ 58,670	$ 26,361
Prepaid expenses and other current assets	1,062	696
Total current assets	59,732	27,057
Property and equipment, net	2,813	2,582
Operating lease right-of-use asset	6,840	—
Restricted cash	316	316
Other non-current assets	1,061	1,160
Total assets	$ 70,762	$ 31,115
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 1,247	$ 1,659
Accrued expenses and other current liabilities	5,050	3,816
Operating lease liabilities	1,045	—
Current portion of long-term debt	2,673	5,257
Total current liabilities	10,015	10,732
Non-current liabilities:		
Warrant liability	5,389	3,472
Long-term debt, net of current portion and discount	11,059	9,565
Operating lease liabilities, net of current portion	5,861	—
Other non-current liabilities	—	11
Total liabilities	32,324	23,780
Commitments and contingencies (Note 9)		
Stockholders' equity:		
Preferred stock	701	701
Common stock	26	11
Additional paid-in capital	351,777	298,627
Accumulated deficit	(314,066)	(292,004)
Total stockholders' equity	38,438	7,335
Total liabilities and stockholders' equity	$ 70,762	$ 31,115

See accompanying notes to unaudited condensed consolidated financial statements.

Genocea Biosciences, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(unaudited)
(in thousands, except per share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Operating expenses:				
Research and development	$ 6,849	$ 5,316	$ 13,309	$ 12,591
General and administrative	3,217	4,472	6,234	7,581
Total operating expenses	10,066	9,788	19,543	20,172
Loss from operations	(10,066)	(9,788)	(19,543)	(20,172)
Other income (expense):				
Change in fair value of warrants	3,870	5,498	(1,917)	199
Interest expense, net	(299)	(241)	(601)	(442)
Other income (expense)	—	93	(1)	87
Total other income (expense)	3,571	5,350	(2,519)	(156)
Net loss	$ (6,495)	$ (4,438)	$ (22,062)	$ (20,328)
Comprehensive loss	$ (6,495)	$ (4,438)	$ (22,062)	$ (20,328)
Net loss per share - basic and diluted	$ (0.42)	$ (0.42)	$ (1.57)	$ (2.07)
Weighted-average number of common shares used in computing net loss per share	15,344	10,693	14,035	9,804

See accompanying notes to unaudited condensed consolidated financial statements.

Genocea Biosciences, Inc.
Condensed Consolidated Statements of Stockholders' Equity (Deficit)
(unaudited)
(in thousands)

	Common Shares		Preferred Shares	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Amount			
Balance at December 31, 2018	10,847	$ 11	$ 701	$ 298,627	$ (292,004)	$ 7,335
Issuance of common stock, net	3,200	3	—	14,023	—	14,026
Exercise of stock options	3	—	—	12	—	12
Stock-based compensation expense	—	—	—	429	—	429
Net loss	—	—	—	—	(15,567)	(15,567)
Balance at March 31, 2019	14,050	$ 14	$ 701	$ 313,091	$ (307,571)	$ 6,235
Issuance of common stock, net	12,074	12	—	38,155	—	38,167
Issuance of common stock; ESPP purchase	24	—	—	48	—	48
Exercise of stock options	2	—	—	9	—	9
Stock-based compensation expense	—	—	—	474	—	474
Net loss	—	—	—		(6,495)	(6,495)
Balance at June 30, 2019	26,150	$ 26	$ 701	$ 351,777	$ (314,066)	$ 38,438

	Common Shares		Preferred Shares	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Amount			
Balance at December 31, 2017	3,592	$ 3	$ —	$ 258,140	$ (264,193)	$ (6,050)
Issuance of common stock, net	6,790	7	701	35,156	—	35,864
Stock-based compensation expense	—	—	—	644	—	644
Net loss	—	—	—	—	(15,890)	(15,890)
Balance at March 31, 2018	10,382	$ 10	$ 701	$ 293,940	$ (280,083)	$ 14,568
Issuance of common stock, net	440	1	—	2,921	—	2,922
Issuance of common stock; ESPP purchase	6	—	—	31	—	31
Issuance of Warrants on Debt Modification	—	—	—	190	—	190
Stock-based compensation	—	—	—	592	—	592
Net loss	—	—	—	—	(4,438)	(4,438)
Balance at June 30, 2018	10,828	$ 11	$ 701	$ 297,674	$ (284,521)	$ 13,865

See accompanying notes to unaudited condensed consolidated financial statements.

Genocea Biosciences, Inc.
Condensed Consolidated Statements of Cash Flows
(unaudited)
(in thousands)

	Six Months Ended June 30,	
	2019	**2018**
Operating activities		
Net loss	$ (22,062)	$ (20,328)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation and amortization	550	543
Stock-based compensation	902	1,236
Allocation of proceeds to transaction expenses	—	2,115
Change in fair value of warrant liability	1,917	(2,315)
Gain on sale of equipment	(19)	(50)
Write-off of deferred financing fees	—	355
Non-cash interest expense	41	291
Changes in operating assets and liabilities	729	(5,222)
Net cash used in operating activities	(17,942)	(23,375)
Investing activities		
Purchases of property and equipment	(654)	(174)
Proceeds from sale of equipment	19	72
Net cash used in investing activities	(635)	(102)
Financing activities		
Proceeds from equity offerings, net	—	2,920
Proceeds from issuance of common stock, net	52,194	52,538
Payment of deferred financing costs	—	(127)
Proceeds from long-term debt	—	592
Repayment of long-term debt	(1,377)	(535)
Proceeds from exercise of stock options	21	—
Proceeds from the issuance of common stock under ESPP	48	31
Net cash provided by financing activities	50,886	55,419
Net increase in cash and cash equivalents	$ 32,309	$ 31,942
Cash, cash equivalents and restricted cash at beginning of period	26,677	12,589
Cash, cash equivalents and restricted cash at end of period	$ 58,986	$ 44,531
Supplemental cash flow information		
Cash paid for interest	$ 577	$ 508
Property and equipment included in accounts payable and accrued expenses	$ 127	$ —
Reclassification of warrants to additional paid-in capital	$ —	$ 190

See accompanying notes to unaudited condensed consolidated financial statements.

1. Organization and operations

The Company

Genocea Biosciences, Inc. (the "Company") is a biopharmaceutical company that was incorporated in Delaware on August 16, 2006 and has a principal place of business in Cambridge, Massachusetts. The Company seeks to discover and develop novel cancer immunotherapies using its ATLAS™ proprietary discovery platform. The ATLAS platform profiles each patient's $CD4^+$ and $CD8^+$ 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.

The Company's most advanced program is GEN-009, a personalized neoantigen cancer vaccine, for which it is 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. The Company is also advancing GEN-011, a neoantigen-specific adoptive T cell therapy program, as well as GEN-010, a follow-on neoantigen vaccine program.

The Company is devoting substantially all of its efforts to product research and development, initial market development, and raising capital. The Company has not generated any product revenue related to its primary business purpose to date and is subject to a number of risks similar to those of other early clinical stage companies, including dependence on key individuals, competition from other companies, the need and related uncertainty associated to the development of commercially viable products, and the need to obtain adequate additional financing to fund the development of its product candidates. The Company is also subject to a number of risks similar to other companies in the life sciences industry, including the uncertainty of success of its preclinical and clinical trials, dependence on third parties, the need to obtain additional financing, dependence on key individuals, regulatory approval of products, uncertainty of market acceptance of products, competition from companies with greater financial, technological and other resources, compliance with government regulations, protection of proprietary technology, and product liability. The Company has historical losses from operations and anticipates that it will continue to incur significant operating losses for the foreseeable future as it continues to develop its product candidates.

Effective May 22, 2019, the Company effected a reverse stock split of its 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 presented in these financial statements and related notes have been retroactively adjusted to reflect the one-for-eight reverse stock split.

Operating Capital Requirements

Under Accounting Standards Update ("ASU"), 2014-15, Presentation of Financial Statements-Going Concern (Subtopic 205-40), also referred to as Accounting Standards Codification ("ASC") 205-40 ("ASC 205-40"), the Company has the responsibility to evaluate whether conditions and/or events raise substantial doubt about its ability to meet its future financial obligations as they become due within one year after the date that the financial statements are issued. As required by ASC 205-40, this evaluation shall initially not take into consideration the potential mitigating effects of plans that have not been fully implemented as of the date the financial statements are issued. Management has assessed the Company's ability to continue as a going concern in accordance with the requirement of ASC 205-40.

As reflected in the condensed consolidated financial statements, the Company had available cash and cash equivalents of $58.7 million at June 30, 2019. The Company believes that its cash, cash equivalents and investments will fund its operations into the first quarter of 2021.

The Company plans to continue to fund its operations through public or private equity offerings, strategic transactions, proceeds from sales of its common stock under its at-the-market equity offering program, or by other means. However, adequate additional financing may not be available to the Company on acceptable terms, or at all. If the Company is unable to raise capital when needed, or on attractive terms, it may be forced to implement cost reduction strategies, including ceasing development of GEN-009, GEN-011, and other corporate programs and activities.

2. Summary of significant accounting policies

Basis of presentation

In the opinion of management, the accompanying unaudited condensed consolidated financial statements include all adjustments, consisting of normal recurring accruals necessary for a fair presentation of the Company's financial statements for interim periods in accordance with accounting principles generally accepted in the United States (U.S. GAAP).

We operate as one operating segment, which is discovering, researching and developing novel cancer immunotherapies.

The information included in this Quarterly Report on Form 10-Q should be read in conjunction with our audited consolidated financial statements and the accompanying notes included in our Annual Report on Form 10-K for the year ended December 31, 2018 ("2018 Form 10-K"). Our accounting policies are described in the "Notes to Consolidated Financial Statements" in our 2018 Form 10-K and updated, as necessary, in our Quarterly Reports on Form 10-Q. The December 31, 2018 condensed consolidated balance sheet data presented for comparative purposes was derived from our audited financial statements, but does not include all disclosures required by U.S. GAAP. The results of operations for the three and six months ended June 30, 2019 are not necessarily indicative of the operating results for the full year or for any other subsequent interim period.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, the Company's management evaluates its estimates, which include, but are not limited to, estimates related to clinical trial accruals, estimates related to prepaid and accrued research and development expenses, stock-based compensation expense, and warrants to purchase redeemable securities. The Company bases its estimates on historical experience and other market-specific or other relevant assumptions that it believes to be reasonable under the circumstances. Actual results may differ from those estimates or assumptions.

Summary of Significant Accounting Policies

There were no changes to significant accounting policies during the six months ended June 30, 2019, as compared to the those identified in the 2018 Form 10-K, except for the Company's adoption of ASC Topic 842, *Leases* on January 1, 2019. The following is the Company's new accounting policy for leases.

Leases

At the inception of the contract, the Company determines if an arrangement is a lease and has a lease term greater than 12 months. Leases that are concluded to be operating leases are included in operating lease right-of-use ("ROU") assets and operating lease liabilities in the consolidated balance sheets. Leases that are concluded to be finance leases are included in property and equipment and other current liabilities in the consolidated balance sheets.

ROU assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. As most of the Company's leases do not provide an implicit rate, the Company uses an estimate of its incremental borrowing rate based on the information available at the lease commencement date in determining the present value of lease payments. The Company uses the implicit rate when readily determinable. The operating lease ROU asset is reduced by deferred lease payments and unamortized lease incentives. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term. The Company has lease agreements with lease and non-lease components, which are generally accounted for separately. The non-lease components generally consist of common area maintenance that is expensed as incurred.

Recently adopted accounting standards

Standard	Description	Effect on the financial statements
ASU No. 2016-02, *Leases (Topic 842)*	In February 2016, the FASB established ASC Topic 842, *Leases*, (ASC 842) by issuing ASU No. 2016-02, which requires lessees to recognize leases on-balance sheet and disclose key information about leasing arrangements. Topic 842 was subsequently amended by ASU No. 2018-01, Land Easement Practical Expedient for Transition to Topic 842; ASU No. 2018-10, Codification Improvements to Topic 842, Leases; and ASU No. 2018-11, Targeted Improvements. The new standard establishes a right-of-use model ("ROU") that requires a lessee to recognize a ROU asset and lease liability on the balance sheet for all leases with a term longer than 12 months. Leases are classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the income statement. The Company adopted ASC 842 effective January 1, 2019.	The adoption of ASC 842 resulted in the Company recognizing ROU assets and related operating lease liabilities of $1.7 million and $1.8 million, respectively, in our condensed consolidated balance sheet as of January 1, 2019. The Company used the modified retrospective method of adoption, with January 1, 2019 as the effective date of initial application. The Company elected the short-term lease recognition exemption for all leases that qualify. The Company elected the package of practical expedients for leases that commenced prior to January 1, 2019, allowing it not to reassess (i) whether any expired or existing contracts contain leases, (ii) the lease classification for any expired or existing leases and (iii) the initial indirect costs for any existing leases.
ASU No. 2018-07, *Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*	In June 2018, the FASB issued ASU No. 2018-07, *Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*. The new standard largely aligns the accounting for share-based payment awards issued to employees and nonemployees by expanding the scope of ASC 718 to apply to nonemployee share-based transactions, as long as the transaction is not effectively a form of financing. The Company adopted ASU No. 2018-07 effective January 1, 2019.	The adoption of ASU No. 2018-07 did not have a material impact on the Company's condensed consolidated financial statements.

Recently issued accounting standards

Standard	Description	Effect on the financial statements
ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*	In June 2016, the FASB issued ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments,* which amends the impairment model by requiring entities to use a forward-looking approach based on expected losses to estimate credit losses on certain types of financial instruments, including trade receivables and available-for-sale debt securities. The new guidance will be effective for the Company beginning in the first quarter of 2020, with early adoption permitted.	The Company is currently evaluating the potential impact that this standard may have on its consolidated financial statements.
ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*	In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement* which requires public entities to disclose certain new information and modifies some disclosure requirements. The new guidance will be effective for fiscal years beginning after December 15, 2019 and for interim periods within those fiscal years.	The Company is currently evaluating the potential impact that this standard may have on its consolidated financial statements.
ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract.*	In August 2018, the FASB issued ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract.* ASU 2018-15 requires a customer in a cloud computing arrangement that is a service contract to follow the internal-use software guidance in Accounting Standards Codification 350-40 to determine which implementation costs to defer and recognize as an asset. The new guidance will be effective for annual periods, and interim periods within those annual periods, beginning after December 15, 2019.	The Company is currently evaluating the potential impact that this standard may have on its consolidated financial statements.

3. Fair value of financial instruments

The Company has certain financial assets and liabilities recorded at fair value which have been classified as Level 1, 2 or 3 within the fair value hierarchy as described in the accounting standards for fair value measurements.

- Level 1 - Fair values are determined by utilizing quoted prices (unadjusted) in active markets for identical assets or liabilities that the Company has the ability to access;
- Level 2 - Fair values are determined by utilizing quoted prices for similar assets and liabilities in active markets or other market observable inputs such as interest rates, yield curves and foreign currency spot rates; and
- Level 3 - Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable.

The Company's financial assets consist of cash equivalents and the Company's financial liabilities consist of warrant liability.

The fair value of the Company's cash equivalents is determined using quoted prices in active markets. Our cash equivalents consist of money market funds. The Company's cash equivalents have been classified as Level 1.

The fair value of the Company's warrant liability is determined using a Monte Carlo simulation. See **Note 7. Warrants**. The assumptions used in calculating the estimated fair value of the warrants represent the Company's best estimates and include probabilities of settlement scenarios, future changes in the Company's stock price, risk-free interest rates, volatility and probability of the Company being acquired. The estimates are based, in part, on subjective assumptions and could differ materially in the future. The Company's warrant liability has been classified as Level 3.

	Total	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
June 30, 2019				
Assets:				
Cash equivalents	$ 19,802	$ 19,802	$ —	$ —
Total assets	$ 19,802	$ 19,802	$ —	$ —
Liabilities:				
Warrant liability	$ 5,389	$ —	$ —	$ 5,389
Total liabilities	$ 5,389	$ —	$ —	$ 5,389
December 31, 2018				
Assets:				
Cash equivalents	$ 24,651	$ 24,651	$ —	$ —
Total assets	$ 24,651	$ 24,651	$ —	$ —
Liabilities:				
Warrant liability	$ 3,472	$ —	$ —	$ 3,472
Total liabilities	$ 3,472	$ —	$ —	$ 3,472

The following table reflects the change in the Company's Level 3 warrant liability from December 31, 2018 through June 30, 2019:

	Warrant Liability
Balance at December 31, 2018	$ 3,472
Change in fair value	1,917
Balance at June 30, 2019	$ 5,389

4. Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consisted of the following (in thousands):

	June 30, 2019	December 31, 2018
Research and development	$ 1,462	$ 759
Payroll and employee-related	1,491	2,147
Other current liabilities	2,097	910
Total	$ 5,050	$ 3,816

5. Long-term debt

In Q2 2018, the Company entered into an amended and restated loan and security agreement (the "2018 Term Loan") with Hercules Capital, Inc. ("Hercules"), which provided a $14.0 million term loan. The 2018 Term Loan will mature on May 1, 2021 and accrues interest at a floating rate per annum equal to the greater of (i) 7.75% or (ii) the sum of 2.75% plus the prime rate. The 2018 Loan Agreement provided for interest-only payments until June 1, 2019. Since the Company met certain performance milestones, interest-only payments have been extended until June 1, 2020. Thereafter, payments will include equal installments of principal and interest through maturity. The 2018 Term Loan may be prepaid subject to a prepayment charge. The Company is obligated to pay an additional end of term charge of 6.7%.

The 2018 Term Loan is secured by a lien on substantially all assets of the Company, other than intellectual property. Hercules has a perfected first-priority security interest in certain cash, cash equivalents and investment accounts. The 2018 Term Loan contains non-financial covenants, representations and a ("Material Adverse Effect") provision. There are no financial covenants. A Material Adverse Effect means a material adverse effect upon: (i) the business, operations, properties, assets or condition (financial or otherwise) of the Company; or (ii) the ability of the Company to perform the secured obligations in accordance with the terms of the loan documents, or the ability of agent or lender to enforce any of its rights or remedies with respect to the secured obligations; or (iii) the collateral or agent's liens on the collateral or the priority of such liens. Any event that has a Material Adverse Effect or would reasonably be expected to have a Material Adverse Effect is an event of default under the Loan Agreement and repayment of amounts due under the Loan Agreement may be accelerated by Hercules under the same terms as an event of default. As of June 30, 2019, the Company was in compliance with all covenants of the 2018 Term Loan. The 2018 Term Loan is automatically redeemable upon a change in control. The Company believes acceleration of the repayment of amounts outstanding under the loan is remote, and therefore the debt balance is classified according to the contractual payment terms at June 30, 2019.

In connection with a previously issued term loan in 2014 and the 2018 Term Loan, the Company issued common stock warrants to Hercules (the "First Warrant and Second Warrant", respectively). See **Note 7. Warrants**.

As of June 30, 2019 and December 31, 2018, the Company had outstanding borrowings of $13.7 million and $14.8 million, respectively. Interest expense was $0.4 million for each of the three months ended June 30, 2019 and 2018 and $0.9 million and $0.8 million for the six months ended June 30, 2019 and 2018, respectively. At June 30, 2019, the 2018 Term Loan bears an effective interest rate of 11.4%.

Future principal payments, including the End of Term Charges, are as follows (in thousands):

	June 30, 2019
2019	$ 542
2020	7,399
2021	6,462
Total	$ 14,403

The Company's balance sheet classification has been updated to reflect the extension of interest only payments.

6. Stockholders' equity

As of June 30, 2019, the Company has authorized 85,000,000 shares of common stock at $0.001 par value per share and 25,000,000 shares of preferred stock at $0.001 par value per share. As of June 30, 2019, 26,149,689 shares of common stock and 1,635 shares of preferred stock were issued and outstanding. As of December 31, 2018, 10,846,397 shares of common stock were issued and outstanding and 1,635 shares of preferred stock were issued and outstanding.

2019 Public Offering

On June 21, 2019, the Company entered into an underwriting agreement relating to the underwritten public offering of 10,500,000 shares of the Company's common stock, par value $0.001 per share, at a price to the public of $3.50 per share, for gross proceeds of approximately $36.8 million (the "2019 Public Offering").

Under the terms of the underwriting agreement for the 2019 Public Offering, the Company also granted the underwriters an option to purchase up to an additional 1,575,000 shares of common stock ("Overallotment Option"). On June 26, 2019, the underwriters exercised this option in full. The Company received approximately $5.5 million in gross proceeds from the underwriter's exercise of the Overallotment Option.

In connection with the 2019 Public Offering, inclusive of the Overallotment Option, the Company incurred approximately $3.9 million of offering-related expenses, resulting in total net proceeds of $38.4 million.

Private Placement

In February 2019, the Company completed a private placement financing transaction (the "Private Placement"). The Company issued 3,199,998 shares (the "Shares") of common stock, prefunded warrants (the "Pre-Funded Warrants") to purchase 531,250 shares of common stock (the "Pre-Funded Warrant Shares"), and warrants (the "Private Placement Warrants") to purchase up to 932,812

shares of common stock (the "Warrant Shares"). The Shares, Pre-Funded Warrants and Private Placement Warrants (collectively, the "Units") were sold at a purchase price of $4.02 per Unit. The Company received net cash proceeds of approximately $13.8 million for the purchase of the Shares, Pre-Funded Warrant Shares and Warrant Shares. See **Note 7. Warrants**.

The Company had the option to issue additional shares of common stock in a second closing (the "Second Closing") for gross proceeds of up to $24.2 million. The occurrence of the Second Closing was conditioned on top-line results from Part A of our Phase 1/2a clinical trial for GEN-009 and a decision by our board of directors to proceed with the Second Closing. In June 2019, the Company announced top-line results from this trial but elected not to proceed with the Second Closing. In lieu of the Second Closing the Company proceeded with the 2019 Public Offering.

2018 Public Offering

In January 2018, the Company entered into two underwriting agreements, the first relating to the underwritten public offering of 6,670,625 shares of the Company's common stock, par value $0.001 per share, and accompanying warrants to purchase up to 3,335,313 shares of common stock ("2018 Public Offering Warrants"), at a combined price of $8.00 per share, for gross proceeds of approximately $53.4 million (the "2018 Common Stock Offering") and the second relating to the underwritten public offering of 1,635 shares of the Company's Series A convertible preferred stock, par value $0.001 per share, which are convertible into 204,375 shares of common stock, and accompanying warrants to purchase up to 102,188 shares of common stock for gross proceeds of approximately $1.6 million (the "Preferred Stock Offering," and together with the 2018 Common Stock Offering, the "January 2018 Financing"). The Company also granted the underwriters an Overallotment Option ("Overallotment Option") to purchase up to an additional 1,000,594 shares of common stock and/or additional warrants to purchase up to 500,297 shares of common stock. The underwriters exercised their Overallotment Option and acquired additional warrants to purchase up to 299,475 shares of common stock.

Preferred Stock

Each share of preferred stock is convertible at any time at the option of the holder, provided that the holder will be prohibited from converting the preferred stock into shares of common stock if, as a result of such conversion, the holder, together with its affiliates, would own more than 9.99% of the total number of shares of common stock then issued and outstanding. Each share of preferred stock is convertible into 125 shares of common stock, subject to certain adjustments upon stock dividends and stock splits.

The preferred stock ranks *pari passu* on an as-converted to common stock basis with the common stock as to distributions of assets upon the Company's liquidation, dissolution or winding up, whether voluntarily or involuntarily, or a "Fundamental Transaction," as defined in the Certificate of Designation. Shares of preferred stock have no voting rights, except as required by law and except that the consent of the holders of a majority of the outstanding preferred stock is required to amend the terms of the preferred stock. The holders of preferred stock shall be entitled to receive dividends in the same form as dividends actually paid on shares of common stock when, as and if such dividends are declared and paid on shares of the common stock, on an as-if-converted-to-common stock basis.

The Company determined that the preferred stock should be equity classified in accordance with ASC 480, *Distinguishing Liabilities from Equity* ("ASC 480") for the periods ended June 30, 2019 and December 31, 2018, respectively. For the six months ended June 30, 2018, the Company recorded $0.3 million in additional paid-in capital as a result of the preferred stock's beneficial conversion feature.

Issuance Costs

In connection with the January 2018 Financing, the Company incurred approximately $4.0 million of issuance costs. The Company allocated approximately $2.6 million of the issuance costs to the common and preferred stock, and recorded these amounts within additional paid-in capital, and approximately $1.4 million of the issuance costs to the 2018 Public Offering Warrants. As the 2018 Public Offering Warrants were classified as liabilities, the Company immediately expensed the issuance costs allocated to the 2018 Public Offering Warrants in the three months ended March 31, 2018.

Warrants

See **Note 7. Warrants.**

Hercules

In connection with the 2018 Loan Agreement with Hercules, see **Note 5. Long-term debt**, the Company also entered into an amendment to the November 2014 equity rights letter agreement (the "Amended Equity Rights Letter Agreement"). Hercules has the right to participate in any one or more subsequent private placement equity financings of up to $2.0 million on the same terms and conditions as purchases by the other investors in each subsequent equity financing. The Amended Equity Rights Letter Agreement will terminate upon the earlier of (1) such time when Hercules has purchased $2.0 million of subsequent equity financing securities in the aggregate, and (2) the later of (a) the repayment of all indebtedness under the Loan Agreement, or (b) the expiration or termination of the exercise period for the Second Warrant. See **Note 7. Warrants**.

At-the-market equity offering program

In 2015, the Company entered into an agreement, as amended, with Cowen and Company, LLC to establish an at-the-market equity offering program ("ATM") pursuant to which it was able to offer and sell up to $50 million of its common stock at prevailing market prices from time to time. Through June 30, 2019, the Company has sold an aggregate of approximately 0.5 million shares under the ATM and received approximately $4.0 million in net proceeds after deducting commissions.

7. Warrants

As of June 30, 2019, the Company had the following potentially issuable shares of common stock related to unexercised warrants outstanding:

	Shares	Exercise price	Expiration date	Classification
First Warrant	9,216	$ 65.92	Q4 2019	Equity
Second Warrant	41,177	$ 6.80	Q2 2023	Equity
2018 Public Offering Warrants	3,616,944	$ 9.60	Q1 2023	Liability
Private Placement Warrants	932,812	$ 4.52	Q1 2024	Equity
Pre-Funded Warrants	531,250	$ 0.08	Q1 2039	Equity
	5,131,399			

First and Second Warrant

The exercise price and the number of shares are subject to adjustment upon a merger event, reclassification of the shares of common stock, subdivision or combination of the shares of common stock or certain dividends payments. The Company determined that the First and Second Warrant should be equity classified in accordance with ASC 480 for all periods presented.

2018 Public Offering Warrants

The exercise price and the number of shares are subject to adjustment upon a merger event, reclassification of the shares of common stock, subdivision or combination of the shares of common stock or certain dividends payments. In the event of an "Acquisition," defined generally to include a merger or consolidation resulting in the sale of 50% or more of the voting securities of the Company, the sale of all, or substantially all, of the assets or voting securities of the Company, or other change of control transaction, as defined in the 2018 Public Offering Warrants, the Company will be obligated to use its best efforts to ensure that the holders of the 2018 Public Offering Warrants receive new warrants from the surviving or acquiring entity (the "Acquirer"). The new warrants to purchase shares in the Acquirer shall have the same expiration date as the 2018 Public Offering Warrants and a strike price that is based on the proportion of the value of the Acquirer's stock to the Company's common stock. If the Company is unable, despite its best efforts, to cause the Acquirer to issue new warrants in the Acquisition as described above, then, if the Company's stockholders are to receive cash in the Acquisition, the Company will settle the 2018 Public Offering Warrants in cash and if the Company's stockholders are to receive stock in the Acquisition, the Company will issue shares of its common stock to each Warrant holder.

The Company determined that the 2018 Public Offering Warrants should be liability classified in accordance with ASC 480. As the 2018 Public Offering Warrants are liability-classified, the Company remeasures the fair value of the Warrants at each reporting date. The Company initially recorded the 2018 Public Offering Warrants at their estimated fair value of approximately $18.2 million. In connection with the Company's remeasurement of the 2018 Public Offering Warrants to fair value, the Company recorded income of approximately $3.9 million and $5.5 million for the three months ended June 30, 2019 and 2018, respectively, and expense of $1.9 million and $2.3 million of income for the six months ended June 30, 2019 and June 30, 2018, respectively. The fair value of the

warrant liability is approximately $5.4 million and $3.5 million as of June 30, 2019 and December 31, 2018, respectively. See **Note 3. Fair Value Measurements.**

The following table details the assumptions used in the Monte Carlo simulation models used to estimate the fair value of the Warrant Liability as of June 30, 2019 and December 31, 2018, respectively:

	June 30, 2019	December 31, 2018
Stock price	$ 3.92	$ 2.32
Volatility	121.5%	111.3%
Remaining term (years)	3.6	4.1
Expected dividend yield	—	—
Risk-free rate	1.7%	2.4%-2.5%
Range of annual acquisition event probability	15.0%-30.0%	0.0%-30.0%

Private Placement and Prefunded Warrants

The exercise price of the warrants is subject to appropriate adjustment in the event of stock dividends, subdivisions, stock splits, stock combinations, reclassifications, reorganizations or a change of control affecting our common stock. The Company determined that the Private Placement Warrants and the Pre-Funded Warrants should be equity classified in accordance with ASC 480 for the period ended June 30, 2019. The Company also determined that the Pre-Funded Warrants should be included in the determination of basic earnings per share in accordance with ASC 260, *Earnings per Share*.

8. Stock and employee benefit plans

Stock-based compensation expense

Total stock-based compensation expense is recognized for stock options and restricted stock awards granted to employees and non-employees and has been reported in the Company's condensed consolidated statements of operations as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Research and development	$ 170	$ 159	$ 352	$ 300
General and administrative	304	433	551	936
Total	$ 474	$ 592	$ 903	$ 1,236

Stock options

The following table summarizes stock option activity for employees and non-employees (shares in thousands):

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (years)	Aggregate Intrinsic Value
Outstanding at December 31, 2018	893	$ 18.79		$ —
Granted	501	$ 4.66		
Exercised	(5)	$ 4.32		
Cancelled	(104)	$ 25.24		
Outstanding at June 30, 2019	1,285	$ 12.81	8.32	$ 1,435
Exercisable at June 30, 2019	402	$ 25.57	6.38	$ —

Performance-based awards

The Company granted stock awards to certain employees, executive officers and consultants, which contain performance-based vesting criteria. Milestone events are specific to the Company's corporate goals, which include, but are not limited to, certain clinical development milestones, business development agreements, and capital fundraising events. Stock-based compensation expense associated with these performance-based stock options is recognized if the performance conditions are considered probable of being achieved, using management's best estimates. The Company determined that none of the performance-based milestones were probable of achievement during the three and six months ended June 30, 2019, and did not recognize stock-based compensation expense for this period. As of June 30, 2019, there were 7,042 performance-based common stock awards outstanding for which the probability of achievement was not deemed probable.

Employee stock purchase plan

On February 10, 2014, the Company's board of directors adopted the 2014 Employee Stock Purchase Plan (the "2014 ESPP"). The 2014 ESPP, as amended, authorizes the issuance of up to 337,597 shares of common stock to participating eligible employees. The 2014 ESPP provides for six-month option periods commencing on January 1 and ending June 30, and commencing July 1 and ending December 31 of each calendar year. The stock-based compensation expense related to the 2014 ESPP was insignificant for the three and six months ended June 30, 2019 and 2018, respectively.

9. Commitments and contingencies

Lease commitments

In May 2019, the Company entered into a lease extension for office and laboratory space through February 2025. The Company also has a lease for additional office space through February 2020. The right to use asset and lease liability were calculated using an incremental borrowing rate of 8.25% and 10%, respectively. For the three months ended June 30, 2019 and 2018 rent expense was $0.3 million and $0.4 million, respectively. For the six months ended June 30, 2019 and 2018 rent expense was $0.7 million and $0.8 million, respectively.

In March 2019, the Company entered into a sublease agreement for a portion of the office space lease through February 2020. Since the Company retained its obligations under the sublease, it did not adjust the lease liability, however the sublease is being reflected as a reduction of lease expense.

Maturities of lease liabilities are as follows (in thousands):

	June 30, 2019
2019	$ 821
2020	1,477
2021	1,474
2022	1,510
2023 and thereafter	3,401
Total lease payments	8,683
Less imputed interest	(1,777)
Total	$ 6,906

At June 30, 2019 and December 31, 2018, the Company has an outstanding letter of credit of $0.3 million with a financial institution related to a security deposit for the office and lab space lease, which is secured by cash on deposit and expires on February 28, 2025.

Litigation

Pending Litigation:

Emerson v. Genocea Biosciences et al., U.S. District Court (Mass.), Civil Action No. 17-cv-12137-PBS (the "*Emerson* Action"). In 2017, three purported shareholders filed placeholder complaints against Genocea and certain of its officers alleging violations of the federal securities laws in connection with the Company's disclosures related to GEN-003, a Phase 3-ready investigational immunotherapy for the treatment of genital herpes infections. On February 12, 2018, the Court appointed the Genocea Investor Group (a group of five purported shareholders) as lead plaintiff in the consolidated proposed class action, and appointed Scott+Scott LLP, Levi & Korsinsky LLP, and Block & Leviton LLP as lead counsel. The lead plaintiff filed an amended complaint

on March 29, 2018. Defendants filed a motion to dismiss on May 14, 2018. The lead plaintiff filed an opposition to defendants' motion to dismiss on June 28, 2018, as well as a motion to strike certain documents attached to defendants' motion to dismiss, on June 29, 2018. Defendants filed a reply in further support of the dismissal motion, and an opposition to plaintiffs' motion to strike, on July 30, 2018. The court held oral argument on the motion to dismiss and motion to strike on September 25, 2018. On December 6, 2018, the court granted defendants' motion to dismiss and, because the court's decision did not consider the documents plaintiffs sought to strike, did not rule on plaintiffs' motion to strike. On January 7, 2019, plaintiffs filed a notice of appeal in the District of Massachusetts to appeal the court's order granting defendants' motion to dismiss. The appeal, captioned *Yuksel v. Genocea Biosciences, Inc., et al.*, U.S. Court of Appeal for the First Circuit, Case No. 19-1036, was docketed in the First Circuit on January 15, 2019. By order dated January 29, 2019, the First Circuit set a deadline of March 11, 2019 for plaintiffs' opening brief. Shortly thereafter, however, plaintiffs made a settlement offer to defendants, and the parties subsequently entered into a settlement agreement and general release on April 22, 2019. In connection with the settlement agreement, the parties fully and finally resolved the *Emerson* Action, including the entry of a general release, and plaintiffs agreed to request a voluntary dismissal of the appeal with prejudice pursuant to Federal Rule of Appellate Procedure 42(b). On May 9, 2019, plaintiffs filed the voluntarily dismissal motion. The Court dismissed the *Emerson* Action on May 23, 2019.

Kahr v. William Clark et al., U.S. District Court (Del.), Civil Action No. 18-cv-00186-MN. On January 31, 2018, Barry Kahr, a purported Genocea shareholder, filed a putative shareholder derivative complaint against certain of the Company's officers and directors (including certain former officers and directors), naming the Company as the nominal defendant. The complaint alleged violations of the Securities Exchange Act of 1934, as amended, and Rule 14a-9 in connection with disclosures made in the Company's Schedule 14A Proxy Statement, filed with the SEC on April 21, 2017. The complaint also alleged claims for breach of fiduciary duty, unjust enrichment, and waste of corporate assets. On May 1, 2018, the parties filed a joint stipulation and proposed order agreeing to stay the action until, *inter alia*, the entry of an order granting or denying any motion to dismiss the *Emerson* Action. On May 9, 2018, the court entered the joint stipulation agreeing to stay the action.

On August 10, 2018, the parties, along with the plaintiff from the *Howard* action, detailed below, filed a joint stipulation and proposed order agreeing to, *inter alia*, consolidate the *Kahr* and *Howard* actions into an action captioned *In re Genocea Biosciences, Inc. Derivative Litigation*, U.S. District Court (Del.), Civil Action No. 18-cv-00186-MN (the "Genocea Consolidated Derivative Action"). The joint stipulation also proposed to stay the consolidated action pursuant to the same terms as the stay order entered in *Kahr*, and allow the Rosen Law Firm, P.A. and Gainey McKenna & Egleston to serve as co-lead counsel for plaintiffs in the consolidated action. On August 24, 2018, the court entered the joint stipulation agreeing to consolidate the *Kahr* and *Howard* actions, and stay the Genocea Consolidated Derivative Action. On February 4, 2019, the parties filed a joint stipulation and proposed order agreeing to extend the stay order until, *inter alia*, the resolution of the First Circuit appeal in the *Emerson* Action. On February 5, 2019, the court entered the joint stipulation agreeing to extend the stay. However, following the dismissal of the *Emerson* action, the plaintiff from the *Kahr* action, along with the plaintiff from the *Howard* action, detailed below, voluntarily dismissed the Genocea Consolidated Derivative Action on July 1, 2019. The court closed the *Kahr* action on July 1, 2019.

Howard v. William Clark et al., U.S. District Court (Del.), Civil Action No. 18-cv-00912-MN. On June 20, 2018, Julie Howard, a purported Genocea shareholder, filed a putative shareholder derivative complaint against certain of the Company's officers and directors (including one former officer), naming the Company as the nominal defendant. The complaint alleged violations of the Securities Exchange Act of 1934, as amended, and Rule 14a-9 in connection with disclosures made in the Company's Schedule 14A Proxy Statement, filed with the SEC on April 21, 2017. The complaint also alleged claims for breach of fiduciary duty, unjust enrichment, and waste of corporate assets. As detailed above, the *Howard* action was consolidated with the *Kahr* action into the Genocea Consolidated Derivative Action, which the court stayed until, *inter alia*, the resolution of the First Circuit appeal in the *Emerson* Action. Following the dismissal of the *Emerson* action, however, the plaintiff from the *Kahr* action voluntarily dismissed the Genocea Consolidated Derivative Action on July 1, 2019. The court closed the *Howard* action on July 1, 2019.

10. Net loss per share

The Company computes basic and diluted loss per share using a methodology that gives effect to the impact of outstanding participating securities (the "two-class method"). For both the three and six-month periods ended June 30, 2019 and 2018, respectively, there is no income allocation required under the two-class method or dilution attributed to weighted average shares outstanding in the calculation of diluted loss per share.

The following common stock equivalents, presented on an as converted basis, were excluded from the calculation of net loss per share for the periods presented, due to their anti-dilutive effect (in thousands):

	Six Months Ended June 30,	
	2019	2018
Stock options	1,285	713
Warrants	4,600	3,668
ESPP	265	—
Total	6,150	4,381

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following information should be read in conjunction with the unaudited consolidated financial information and the notes thereto included in this Quarterly Report on Form 10-Q. The following disclosure contains forward-looking statements that involve risk and uncertainties. Our actual results and timing of certain events could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including those discussed in our Annual Report on Form 10-K.

Overview

We are a biopharmaceutical company that seeks to discover and develop novel cancer immunotherapies using the ATLAS™ proprietary discovery platform. The ATLAS platform profiles each patient's $CD4^+$ and $CD8^+$ T cell immune responses to every potential target or "antigen" in that patient's tumor. We believe 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. We believe 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 follow-on 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. This approach has shown efficacy in hematologic malignancies and, more recently, certain solid tumors. 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 optimal antigens for such immunotherapies 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. An effective antigen selection system must therefore account for each patient's tumor and T cell repertoire.

The ATLAS platform is designed to do just this. 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 a comprehensive 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.

The T cell responses we have seen appear to challenge previous assumptions in the field - specifically, that all neoantigens are either "good ," meaning targets of effective anti-tumor responses, or irrelevant. Using ATLAS, we have profiled approximately 200 cancer patients' $CD4^+$ and $CD8^+$ T cell responses to their tumors. At the meeting of the Society for Immunotherapy of Cancer in November 2018, we presented data from preclinical research in which ATLAS-identified inhibitory neoantigens promoted tumor progression, reinforcing the importance of accounting for each patient's pre-existing immune responses in antigen selection, and suggesting the high stakes for choosing the right antigens. We are not aware of another platform that is capable of employing this comprehensive neoantigen profiling.

The ATLAS portfolio comprises three patent families. The first two families comprise issued U.S. patents, with patent terms until at least 2031 and 2030 respectively, as well as issued foreign patents and pending U.S. and foreign applications. The third is directed to ATLAS-based methods for cancer diagnosis, prognosis and patient selection, as well as related compositions. This patent family currently comprises a pending PCT application and a pending U.S. application. Patents issuing from these applications are expected to have a patent term until at least March 2038.

Our Immuno-Oncology Programs

Our cancer immunotherapies consist of vaccines that are designed to educate T cells to recognize and attack specific targets, as well as cellular therapies intended to introduce T cells that have been educated to attack these targets, thereby killing cancer cells. We are developing personalized cancer vaccines using our proprietary ATLAS platform to identify patient-specific neoantigens that are associated with that individual's pre-existing immune responses to a tumor.

Data published in recent years indicate that an individual's response to neoantigens drives the efficacy of immune checkpoint inhibitor, or ICI, therapy and that it is possible to vaccinate an individual against his or her own neoantigens. We believe that 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 his or her 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. Using ATLAS to identify specific neoantigens, we then manufacture a personalized vaccine for each patient using only those neoantigens determined by ATLAS to be stimulatory to that patient's immune system.

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

Vaccine Candidate	Program	Stage of Development	Next Milestones	Anticipated Timeline
GEN-009	Neoantigen cancer vaccine	Phase 1/2a	Additional monotherapy results from Part A of clinical trial	Fourth quarter of 2019
			Preliminary results from Part B of clinical trial	Mid-2020
GEN-011	Neoantigen adoptive T cell therapy	Preclinical	IND filing	First half of 2020
			Preliminary results of clinical trial	Second half of 2020
GEN-010	Neoantigen cancer vaccine	Preclinical	Next-generation delivery technology	Ongoing

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; and
- Part B of the trial, which we have recently initiated, 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 tumors.

At the Annual Meeting of the American Society of Clinical Oncology in June 2019, we presented the first peer-reviewed data from Part A of the ongoing clinical trial. In the data from the first five evaluable patients:

- 100% of patients had measurable $CD4^+$ and $CD8^+$ T cell responses to their GEN-009 vaccine;
- Responses were detected for 91% of the administered vaccine neoantigens (N=5);
- GEN-009 elicited $CD8^+$ T cell responses *ex vivo*, which is a measure of effector function, for 47% of vaccine neoantigens (N=5);
- GEN-009 elicited broad immune responses using an *in vitro* stimulation assay, which is a measure of central memory, with 86% of neoantigens eliciting a $CD4^+$ response (N=5) and 33% of neoantigens eliciting a $CD8^+$ response (N=2); and
- GEN-009 was well tolerated, with no dose-limiting toxicities observed.

We currently anticipate reporting the first GEN-009 results from Part B of the trial in mid-2020. As with any open label study, we may slow or pause accrual for Part B to evaluate a smaller set of patients in an effort to assure that a preliminary clinical signal is seen.

In addition to GEN-009, we also are advancing preclinical work on GEN-011, an adoptive T cell therapy to neoantigens identified by ATLAS, for which we expect to file an IND with the U.S. Food and Drug Administration in the first half of 2020, with preliminary clinical results anticipated in the second half of 2020.

We also 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.

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

Financing and business operations

We commenced business operations in August 2006. We have financed our operations primarily through the issuance of our equity securities, debt financings, and amounts received through grants. As of June 30, 2019, we had received an aggregate of $396.8 million in gross proceeds from the issuance of equity securities and gross proceeds from debt facilities and an aggregate of $7.9 million from grants. At June 30, 2019, our cash and cash equivalents were $58.7 million.

Since inception, we have incurred significant operating losses. Our net losses were $22.1 million for the six months ended June 30, 2019, and our accumulated deficit was $314.1 million as of June 30, 2019. We expect to incur significant expenses and increasing operating losses for the foreseeable future. Our net losses may fluctuate significantly from quarter-to-quarter and year-to-year. We will need to generate significant revenue to achieve profitability, and we may never do so.

In June 2019, we completed an underwritten public offering in which we sold 10.5 million shares of our common stock at a price of $3.50 per share, for gross proceeds of approximately $36.8 million. This underwritten public offering also included an overallotment option for the underwriters for 1.6 million shares, which they exercised in full on June 26, 2019. This generated additional gross proceeds of $5.5 million. The Company incurred approximately $3.9 million of offering-related expenses, resulting in total net proceeds of $38.4 million.

In February 2019, we completed a private placement financing transaction in which we issued Shares, Pre-funded Warrant Shares and Warrants for net cash proceeds of approximately $13.8 million.

Costs related to clinical trials can be unpredictable and there can be no guarantee that our current balances of cash and cash equivalents combined with proceeds received from other sources, will be sufficient to fund our trials or operations through this period. These funds will not be sufficient to enable us to conduct pivotal clinical trials for, seek marketing approval for, or commercially launch GEN-009, GEN-011 or any other product candidate. Accordingly, we will be required to obtain further funding through public or private equity offerings, debt financings, collaboration and licensing arrangements, or other sources. Adequate additional financing may not be available to us on acceptable terms, or at all, which could result in a decision to pause or delay development or advancement of clinical trials for one or more of our product candidates. Similarly, we may decide to pause or delay development or advancement of clinical trials for one or more of our product candidates if we believe that such development or advancement is imprudent or impractical.

Financial Overview

Research and development expenses

Research and development expenses consist primarily of costs incurred to advance our preclinical and clinical candidates, which include:

- personnel-related expenses, including salaries, benefits, stock-based compensation expense, and travel;
- expenses incurred under agreements with contract research organizations, contract manufacturing organizations, consultants, and other vendors that conduct our clinical trials and preclinical activities;
- costs of acquiring, developing, and manufacturing clinical trial materials and lab supplies; and
- facility costs, depreciation, and other expenses, which include direct and allocated expenses for rent and maintenance of facilities, insurance, and other supplies.

The following table identifies research and development expenses for our product candidates as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Discovery and pre-IND	$ 1,253	$ 4,452	$ 2,041	$ 10,511
Phase 1/2a programs	4,588	—	9,308	—
Other research and development	1,008	864	1,960	2,080
Total research and development	$ 6,849	$ 5,316	$ 13,309	$ 12,591

Discovery and Pre-IND includes costs incurred to support our discovery research and translational science efforts up to the initiation of Phase 1 development. Phase 1/2a programs are Phase 1 or Phase 2 development activities. Other research and development includes costs that are not specifically allocated to active product candidates, including facilities costs, depreciation expense, and other costs.

We expect that our overall research and development expenses will increase due to our continued development of our clinical operations and our supply chain capabilities for our GEN-009 program, as well as our advancement of GEN-011 through preparation and submission of an IND and subsequent initiation of a clinical trial.

General and administrative expenses

General and administrative expenses consist principally of salaries and related costs for personnel, including stock-based compensation and travel, in executive and other administrative functions. Other general and administrative expenses include facility costs, communication expenses, and professional fees associated with corporate and intellectual property legal expenses, consulting, and accounting services.

We anticipate that our general and administrative expenses will increase in the future to support the continued research and development of our product candidates and to operate as a public company. Additionally, if and when we believe regulatory approval of our first product candidate appears likely, we anticipate that we will increase costs in preparation for commercial operations.

Other income (expense)

Other income (expense) consists of the change in warranty liability, interest expense, net of interest income, and other expense for miscellaneous items, such as transaction expenses.

Critical Accounting Policies and Significant Judgments and Estimates

We believe that several accounting policies are important to understanding our historical and future performance. We refer to these policies as critical because these specific areas generally require us to make judgments and estimates about matters that are uncertain at the time we make the estimate, and different estimates—which also would have been reasonable—could have been used. The preparation of financial statements in conformity with U.S. GAAP requires us to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, we evaluate estimates, which include prepaid and accrued research and development expenses, stock-based compensation expense, and the fair value of our warrant liability. We base our estimates on historical experience and other market-specific or other relevant assumptions that we believe to be reasonable under the circumstances. Actual results may differ materially from those estimates or assumptions.

There were no changes to our critical accounting policies during the six months ended June 30, 2019, as compared to the those identified in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018. It is important that the discussion of our operating results that follow be read in conjunction with the critical accounting policies disclosed in our Annual Report on Form 10-K, as filed with the SEC on February 28, 2019.

Results of Operations

Comparison of the three months ended June 30, 2019 and June 30, 2018

(in thousands)	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Increase (Decrease)
Operating expenses:			
Research and development	$ 6,849	$ 5,316	$ 1,533
General and administrative	3,217	4,472	(1,255)
Total operating expenses	10,066	9,788	278
Loss from operations	(10,066)	(9,788)	278
Other income (expense):			
Change in fair value of warrants	3,870	5,498	1,628
Interest expense, net	(299)	(241)	58
Other income (expense)	—	93	93
Total other income	3,571	5,350	1,779
Net loss	$ (6,495)	$ (4,438)	$ 2,057

Research and development expenses

Research and development expenses increased $1.5 million in the three months ended June 30, 2019, as compared to the three months ended June 30, 2018. The increase was primarily due to increased external manufacturing costs to support GEN-009 clinical trials partially offset by decreased consulting expenses.

General and administrative expenses

General and administrative expenses decreased $1.3 million in the three months ended June 30, 2019, as compared to the three months ended June 30, 2018. The decrease was primarily due to a reduction in legal expenses partially offset by increased headcount.

Change in fair value of warrants

Change in fair value of warrants reflects non-cash change in fair value of warrants. Certain warrants issued in 2018 were recorded at their fair value on the date of issuance and are remeasured at the end of each reporting period.

Interest expense, net

Interest expense, net, consists primarily of interest expense on our long-term debt facilities and non-cash interest related to the amortization of debt discount and issuance costs, offset by interest earned on our cash equivalents.

Comparison of the six months ended June 30, 2019 and June 30, 2018

(in thousands)	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018	Increase (Decrease)
Operating expenses:			
Research and development	$ 13,309	$ 12,591	$ 718
General and administrative	6,234	7,581	(1,347)
Total operating expenses	19,543	20,172	(629)
Loss from operations	(19,543)	(20,172)	(629)
Other income (expense):			
Change in fair value of warrants	(1,917)	199	(2,116)
Interest expense, net	(601)	(442)	159
Other income (expense)	(1)	87	(88)
Total other expense	(2,519)	(156)	2,363
Net loss	$ (22,062)	$ (20,328)	$ 1,734

Research and development expenses

Research and development expenses increased $0.7 million in the six months ended June 30, 2019, as compared to the six months ended June 30, 2018. The increase was primarily due to higher external manufacturing costs to support GEN-009 clinical trials and increased headcount-related costs to support GEN-009 clinical trials, partially offset by decreased consulting expenses.

General and administrative expenses

General and administrative expenses decreased $1.3 million in the six months ended June 30, 2019, as compared to the six months ended June 30, 2018. The decrease was primarily due to a reduction in legal expenses partially offset by increased headcount.

Change in fair value of warrants

Change in fair value of warrants reflects non-cash change in fair value of warrants. Certain warrants issued in 2018 were recorded at their fair value on the date of issuance and are remeasured as of any warrant exercise date and at the end of each reporting period.

Interest expense, net

Interest expense, net, consists primarily of interest expense on our long-term debt facilities and non-cash interest related to the amortization of debt discount and issuance costs, offset by interest earned on our cash equivalents.

Liquidity and Capital Resources

Overview

Since our inception through June 30, 2019, we have received an aggregate of $396.8 million in gross proceeds from the issuance of equity securities and gross proceeds from debt facilities and an aggregate of $7.9 million from grants. At June 30, 2019, our cash and cash equivalents were $58.7 million.

There have been no sales under our ATM during fiscal year 2019.

Operating Capital Requirements

Our primary uses of capital are for compensation and related expenses, manufacturing costs for pre-clinical and clinical materials, third-party clinical trial research and development services, laboratory and related supplies, clinical costs, legal and other regulatory expenses, and general overhead costs. We expect these costs will continue to be the primary operating capital requirements for the near future.

We expect that our existing cash and cash equivalents, as of June 30, 2019, are sufficient to support our operations into the first quarter of 2021. We had available cash and cash equivalents of $58.7 million at June 30, 2019. In addition, we had a loss from operations of $10.1 million and cash used in operating activities of $17.9 million for the six months ended June 30, 2019.

We have based our projections of operating capital requirements on assumptions that may prove to be incorrect and we may use all of our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of pharmaceutical products, we are unable to estimate the exact amount of our operating capital requirements. Our future funding requirements will depend on many factors, including, but not limited to:

- the timing and costs of our planned clinical trials for GEN-009;
- the progress, timing, and costs of manufacturing GEN-009 for planned clinical trials;
- the outcome, timing, and costs of seeking regulatory approvals, including an IND for GEN-011;
- the initiation, progress, timing, costs, and results of preclinical studies and clinical trials for our other product candidates and potential product candidates;
- the terms and timing of any future collaborations, grants, licensing, consulting, or other arrangements that we may establish;
- the amount and timing of any payments we may be required to make, or that we may receive, in connection with the licensing, filing, prosecution, defense and enforcement of any patents or other intellectual property rights, including milestone payments, royalty payments and patent prosecution fees that we are obligated to pay pursuant to our license agreements;
- the costs of preparing, filing, and prosecuting patent applications, maintaining and protecting our intellectual property rights, and defending against intellectual property related claims;
- the extent to which we in-license or acquire other products and technologies;
- the receipt of marketing approval;
- the costs of commercialization activities for GEN-009 and other product candidates, if we receive marketing approval, including the costs and timing of establishing product sales, marketing, distribution, and manufacturing capabilities;
- revenue received from commercial sales of our product candidates.

We will need to obtain substantial additional funding in order to complete clinical trials and receive regulatory approval for GEN-009, GEN-011 and our other product candidates. To the extent that we raise additional capital through the sale of our common stock, convertible securities, or other equity securities, the ownership interests of our existing stockholders may be materially diluted and the terms of these securities could include liquidation or other preferences that could adversely affect the rights of our existing stockholders. In addition, debt financing, if available, would result in increased fixed payment obligations and may involve agreements that include restrictive covenants that limit our ability to take specific actions, such as incurring additional debt, making capital expenditures, or declaring dividends, that could adversely affect our ability to conduct our business. If we are unable to raise capital when needed or on attractive terms, we could be forced to significantly delay, scale back, or discontinue the development of GEN-009, GEN-011 or our other product candidates, seek collaborators at an earlier stage than otherwise would be desirable or on terms that are less favorable than might otherwise be available, and relinquish or license, potentially on unfavorable terms, our rights to GEN-009, GEN-011 or our other product candidates that we otherwise would seek to develop or commercialize ourselves.

Cash Flows

The following table summarizes our sources and uses of cash for each of the periods below (in thousands):

	Six Months Ended June 30,	
	2019	2018
Net cash used in operating activities	$ (17,942)	$ (23,375)
Net cash used in investing activities	(635)	(102)
Net cash provided by financing activities	50,886	55,419
Net increase in cash and cash equivalents	$ 32,309	$ 31,942

Operating Activities

Net cash used in operating activities decreased $5.4 million for the six months ended June 30, 2019 compared to the six months ended June 30, 2018. The decrease in net cash used was due primarily due to favorable changes in working capital attributable to accounts payable and accrued expenses.

Investing Activities

Net cash used in investing activities increased $0.5 million for the six months ended June 30, 2019 compared to the six months ended June 30, 2018. The increase in net cash used was primarily due to fixed asset additions.

Financing Activities

Net cash provided by financing activities decreased $4.5 million for the six months ended June 30, 2019 compared to the six months ended June 30, 2018. In the six months ended June 30, 2018, the 2018 Public Offering generated net proceeds of $51.7 million and shares of common stock issued pursuant to our ATM facility generated net proceeds of $2.9 million, whereas in the six months ended June 30, 2019, the Private Placement generated net proceeds of $13.8 million and the 2019 Public Offering generated net proceeds of $38.4 million.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

Item 3. Quantitative and Qualitative Disclosures about Market Risks

We are exposed to market risk related to changes in interest rates. As of June 30, 2019, we had cash and cash equivalents of $58.7 million, consisting primarily of money market funds. Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S. interest rates. Since our investments are limited to money market funds, an immediate 100 basis point change in interest rates would not have a material effect on the fair market value of our portfolio.

We are also exposed to market risk related to change in foreign currency exchange rates. We contract with certain vendors that are located in Europe which have contracts denominated in foreign currencies. We are subject to fluctuations in foreign currency rates in connection with these agreements. We do not currently hedge our foreign exchange rate risk. As of June 30, 2019, we had minimal liabilities denominated in foreign currencies.

Item 4. Controls and Procedures

Management's Evaluation of our Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Securities Exchange Act of 1934, as amended, is (1) recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms and (2) accumulated and communicated to our management, including our principal executive officer and principal financial officer, to allow timely decisions regarding required disclosure.

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2019 (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended). Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our principal executive officer and principal financial officer have concluded based upon the evaluation described above that, as of June 30, 2019, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control Over Financial Reporting

During the six months ended June 30, 2019, there have been no changes in our internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15(d)-15(f) promulgated under the Securities Exchange Act of 1934, as amended, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

In the ordinary course of business, we are from time to time involved in lawsuits, claims, investigations, proceedings, and threats of litigation relating to intellectual property, commercial arrangements and other matters. Except as discussed below, we do not believe we are currently party to any pending legal action, arbitration proceeding or governmental proceeding, the outcome of which, if determined adversely to us, would individually or in the aggregate be reasonably expected to have a material adverse effect on our business or operating results. We are not a party to any material proceedings in which any director, member of senior management or affiliate of ours is either a party adverse to us or our subsidiaries or has a material interest adverse to us or our subsidiaries.

Pending Litigation:

Emerson v. Genocea Biosciences et al., U.S. District Court (Mass.), Civil Action No. 17-cv-12137-PBS (the "*Emerson* Action"). In 2017, three purported shareholders filed placeholder complaints against Genocea and certain of its officers alleging violations of the federal securities laws in connection with the Company's disclosures related to GEN-003, a Phase 3-ready investigational immunotherapy for the treatment of genital herpes infections. On February 12, 2018, the Court appointed the Genocea Investor Group (a group of five purported shareholders) as lead plaintiff in the consolidated proposed class action, and appointed Scott+Scott LLP, Levi & Korsinsky LLP, and Block & Leviton LLP as lead counsel. The lead plaintiff filed an amended complaint on March 29, 2018. Defendants filed a motion to dismiss on May 14, 2018. The lead plaintiff filed an opposition to defendants' motion to dismiss on June 28, 2018, as well as a motion to strike certain documents attached to defendants' motion to dismiss, on June 29, 2018. Defendants filed a reply in further support of the dismissal motion, and an opposition to plaintiffs' motion to strike, on July 30, 2018. The court held oral argument on the motion to dismiss and motion to strike on September 25, 2018. On December 6, 2018, the court granted defendants' motion to dismiss and, because the court's decision did not consider the documents plaintiffs sought to strike, did not rule on plaintiffs' motion to strike. On January 7, 2019, plaintiffs filed a notice of appeal in the District of Massachusetts to appeal the court's order granting defendants' motion to dismiss. The appeal, captioned *Yuksel v. Genocea Biosciences, Inc., et al.*, U.S. Court of Appeal for the First Circuit, Case No. 19-1036, was docketed in the First Circuit on January 15, 2019. By order dated January 29, 2019, the First Circuit set a deadline of March 11, 2019 for plaintiffs' opening brief. Shortly thereafter, however, plaintiffs made a settlement offer to defendants, and the parties subsequently entered into a settlement agreement and general release on April 22, 2019. In connection with the settlement agreement, the parties fully and finally resolved the *Emerson* Action, including the entry of a general release, and plaintiffs agreed to request a voluntary dismissal of the appeal with prejudice pursuant to Federal Rule of Appellate Procedure 42(b). On May 9, 2019, plaintiffs filed the voluntarily dismissal motion. The Court dismissed the *Emerson* Action on May 23, 2019.

Kahr v. William Clark et al., U.S. District Court (Del.), Civil Action No. 18-cv-00186-MN. On January 31, 2018, Barry Kahr, a purported Genocea shareholder, filed a putative shareholder derivative complaint against certain of the Company's officers and directors (including certain former officers and directors), naming the Company as the nominal defendant. The complaint alleged violations of the Securities Exchange Act of 1934, as amended, and Rule 14a-9 in connection with disclosures made in the Company's Schedule 14A Proxy Statement, filed with the SEC on April 21, 2017. The complaint also alleged claims for breach of fiduciary duty, unjust enrichment, and waste of corporate assets. On May 1, 2018, the parties filed a joint stipulation and proposed order agreeing to stay the action until, *inter alia*, the entry of an order granting or denying any motion to dismiss the *Emerson* Action. On May 9, 2018, the court entered the joint stipulation agreeing to stay the action.

On August 10, 2018, the parties, along with the plaintiff from the *Howard* action, detailed below, filed a joint stipulation and proposed order agreeing to, *inter alia*, consolidate the *Kahr* and *Howard* actions into an action captioned *In re Genocea Biosciences, Inc. Derivative Litigation*, U.S. District Court (Del.), Civil Action No. 18-cv-00186-MN (the "Genocea Consolidated Derivative Action"). The joint stipulation also proposed to stay the consolidated action pursuant to the same terms as the stay order entered in *Kahr*, and allow the Rosen Law Firm, P.A. and Gainey McKenna & Egleston to serve as co-lead counsel for plaintiffs in the consolidated action. On August 24, 2018, the court entered the joint stipulation agreeing to consolidate the *Kahr* and *Howard* actions, and stay the Genocea Consolidated Derivative Action. On February 4, 2019, the parties filed a joint stipulation and proposed order agreeing to extend the stay order until, *inter alia*, the resolution of the First Circuit appeal in the *Emerson* Action. On February 5, 2019, the court entered the joint stipulation agreeing to extend the stay. However, following the dismissal of the *Emerson* action, the plaintiff from the *Kahr* action, along with the plaintiff from the *Howard* action, detailed below, voluntarily dismissed the Genocea Consolidated Derivative Action on July 1, 2019. The court closed the *Kahr* action on July 1, 2019.

Howard v. William Clark et al., U.S. District Court (Del.), Civil Action No. 18-cv-00912-MN. On June 20, 2018, Julie Howard, a purported Genocea shareholder, filed a putative shareholder derivative complaint against certain of the Company's officers and directors (including one former officer), naming the Company as the nominal defendant. The complaint alleged violations of the Securities Exchange Act of 1934, as amended, and Rule 14a-9 in connection with disclosures made in the Company's Schedule 14A

Proxy Statement, filed with the SEC on April 21, 2017. The complaint also alleged claims for breach of fiduciary duty, unjust enrichment, and waste of corporate assets. As detailed above, the *Howard* action was consolidated with the *Kahr* action into the Genocea Consolidated Derivative Action, which the court stayed until, *inter alia*, the resolution of the First Circuit appeal in the *Emerson* Action. Following the dismissal of the *Emerson* action, however, the plaintiff from the *Kahr* action voluntarily dismissed the Genocea Consolidated Derivative Action on July 1, 2019. The court closed the *Howard* action on July 1, 2019.

The Company does not have contingency reserves established for any litigation liabilities.

Item 1A. Risk Factors

There have been no material changes from the risk factors set forth in the Company's Annual Report Form 10-K for the year ended December 31, 2018.

Item 5. Other Information.

The following disclosure is provided in accordance with and in satisfaction of the requirements of Item 2.02 "*Results of Operations and Financial Condition*" of Form 8-K:

On July 25, 2019, Genocea announced its financial results for the quarter ended June 30, 2019 and commented on certain corporate accomplishments and plans. The full text of the press release issued in connection with the announcement is furnished as Exhibit 99.1 hereto.

The following disclosure is provided in accordance with and in satisfaction of the requirement of Item 5.02 *"Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers"* of Form 8-K:

On July 22, 2019, Pamela Carroll resigned as Senior Vice President, Immuno-oncology, effective August 13, 2019 ("Separation Date"), to pursue other professional opportunities. The Company and Ms. Carroll entered into a Separation Agreement (the "Separation Agreement") in connection with the termination of Ms. Carroll's employment with the Company. Pursuant to the Separation Agreement, Ms. Carroll will receive the following benefits: (i) cash payment of her monthly base salary for 6 months, and (ii) payment of monthly COBRA premiums until the earlier of the conclusion of 6 months following the Separation Date or the date that she is no longer eligible for COBRA or Company benefit plans. Additionally, all unvested stock options granted by the Company to Ms. Carroll prior to the Separation Date, which are outstanding as of the Separation Date, and vest only based on the passage of time, by their terms, and which would have vested during the six (6) month period immediately following the Separation Date, shall, notwithstanding the terms of the equity compensation plans and award agreements to which such stock options are subject, automatically become fully vested as of the date of the Separation Agreement.

Item 6. Exhibits

Exhibit Number	Exhibit
3.1	Certificate of Amendment to Restated Certificate of Incorporation of Genocea Biosciences, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, File No. 001-36289, filed on May 21, 2019)
10.1*	Separation Agreement dated July 22, 2019 between Genocea Biosciences, Inc. and Pamela Carroll
31.1	Certification pursuant to Section 302 of Sarbanes Oxley Act of 2002 by Chief Executive Officer
31.2	Certification pursuant to Section 302 of Sarbanes Oxley Act of 2002 by Chief Financial Officer
32.1	Certification of periodic financial report pursuant to Section 906 of Sarbanes Oxley Act of 2002 by Chief Executive Officer
32.2	Certification of periodic financial report pursuant to Section 906 of Sarbanes Oxley Act of 2002 by Chief Financial Officer
101	The following materials from the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, formatted in XBRL (eXtensible Business Reporting Language): (i) Condensed Consolidated Balance Sheets as of June 30, 2019 and December 31, 2018, (ii) Condensed Consolidated Statements of Operations and Comprehensive Income for the three and six months ended June 30, 2019 and 2018, (iii) Condensed Consolidated Statements of Stockholders' Equity (Deficit) for the six months ended June 30, 2019 and 2018, (iv) Condensed Consolidated Statements of Cash Flows for the six months ended June 30, 2019 and 2018 and (v) Notes to Unaudited Condensed Consolidated Financial Statements

* Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Genocea Biosciences, Inc.

Date: July 25, 2019

By: /s/ WILLIAM D. CLARK

William D. Clark

President and Chief Executive Officer and Director

(Principal Executive Officer)

Date: July 25, 2019

By: /s/ DIANTHA DUVALL

Diantha Duvall

Chief Financial Officer

(Principal Financial and Accounting Officer)

July 22, 2019

Pam Carroll

Dear Pam:

As we have discussed, this letter separation and transition agreement (this "Agreement") confirms the terms of the remainder of your employment with Genocea Biosciences, Inc. (the "Company") and your separation from the Company, as follows:

1. Transition Period and Separation Date.

(a) Effective as of July 22, 2019 (the "Transition Date") through the date that your employment terminates (the "Separation Date"), you will continue to be employed by the Company on a full-time basis. Provided that you comply in full with your obligations hereunder, it is expected that the Separation Date will be August 13, 2019. The period beginning on the Transition Date and concluding on the Separation Date is referred to herein as the "Transition Period".

(b) During the Transition Period, you will continue to receive your base salary, payable at the rate in effect as of the date hereof, and to participate in all employee benefit plans of the Company in accordance with the terms of those plans. During the Transition Period, you will perform duties as may be assigned to you from time to time by the President and CEO or his designee, and to assist with the transition of your duties and responsibilities to any Company designees. You will continue to devote your best professional efforts to the Company, and to abide by all Company policies and procedures as in effect from time to time.

(c) The Company may terminate your employment during the Transition Period upon notice to you. If the Company terminates your employment for Cause (as defined herein) or if you voluntarily resign, you will not be eligible to receive the severance benefits described in Section 3 hereof. For purposes of this Agreement, Cause, as determined by the Company in its reasonable judgment, means (i) your failure to perform, or negligence in the performance of, your duties and responsibilities to the Company or any of its Affiliates (as defined below); (ii) your material breach of this Agreement or any other agreement between you and the Company or any of its Affiliates; (iii) your commission of a felony or other crime involving moral turpitude; or (iv) other conduct by you that is or could reasonably be

expected to be harmful to the business interests of the Company or any of its Affiliates. For purposes of this Agreement, "Affiliates" means all persons and entities directly or indirectly controlling, controlled by or under common control with the Company, where control may be by management authority, equity interest or otherwise.

2. **Final Salary and Vacation Pay.** You will receive, on the Separation Date, pay for all work you performed for the Company through the Separation Date, to the extent not previously paid, as well as pay, at your final base rate of pay, for any vacation days you had earned but not used as of the Separation Date, determined in accordance with Company policy and as reflected on the books of the Company. You will receive the payments described in this Section 2 regardless of whether or not you sign this Agreement.

3. **Severance Benefits.** In consideration of your acceptance of this Agreement and subject to your meeting in full your obligations under it, including your obligation to execute a post-employment general release and waiver of claims in the form attached hereto as Exhibit A (the "Release") and your Continuing Obligations, and in full consideration of any rights you may have under the letter agreement between you and the Company dated June 28, 2016 (the "Employment Agreement"), which you signed on June 30, 2016:

(a) The Company will pay you your salary, at your final base rate of pay, for a period of six (6) months following the Separation Date (the "Severance Period"). Severance payments will be made in the form of salary continuation and will begin on the next regular Company payday which is at least thirty (30) business days following the Separation Date. The first payment will be retroactive to the day following the Separation Date.

(b) Except for the accelerated vesting benefit detailed in this Section, your rights and obligations with respect to any stock options granted to you by the Company (the "Options") shall be governed by the Genocea Biosciences, Inc. Amended and Restated 2014 Equity Incentive Plan (the "Plan") [Stock Option Agreements dated, 7/18/16, 2/28/17, 2/8/18, 11/6/18, 2/7/19 (the "Award Agreements"]. The Plan Administrator will take all actions necessary to accelerate the vesting of Options that would otherwise vest over the six (6) months immediately following the Separation Date if you remained employment throughout such six (6) month period. The acceleration of vesting will be effective as of the Separation Date. After giving effect to such acceleration of vesting, all remaining unvested Options shall be forfeited as of the Separation Date without payment of any consideration in accordance with their terms.

(c) If you are enrolled in the Company's group medical, dental and/or vision plans on the Separation Date, you may elect to continue your participation and that of

your eligible dependents in those plans for a period of time pursuant to the federal law known as "COBRA" or similar applicable state law (together, "COBRA"). You may make such an election whether or not you accept this Agreement. However, if you accept this Agreement and you timely elect to continue your participation and that of your eligible dependents in such plans, the Company will contribute its portion to the premium costs of your COBRA continuation coverage at the same rate that it contributes from time to time to group medical, dental, and/or vision insurance premiums for its active employees until the earlier of (i) the end of the Severance Period or (ii) the date you and your dependents are no longer entitled to coverage under COBRA or Company plans (the "COBRA Period"). Notwithstanding the foregoing, in the event that the Company's payment of the COBRA premium contributions as described in this Section would subject the Company to any tax or penalty under Section 105(h) of the Internal Revenue Code of 1986, as amended, the Patient Protection and Affordable Care Act, as amended, any regulations or guidance issued thereunder, or any other applicable law, in each case, as determined by the Company, then you and the Company agree to work together in good faith to restructure such benefit.

4. **Acknowledgement of Full Payment and Withholding.**

(a) You acknowledge and agree that the payments provided under Section 2 of this Agreement are in complete satisfaction of any and all compensation or benefits due to you from the Company, whether for services provided to the Company or otherwise, through the Separation Date and that, except as expressly provided under this Agreement, no further compensation or benefits are owed or will be paid to you.

(b) All payments made by the Company under this Agreement shall be reduced by any tax or other amounts required to be withheld by the Company under applicable law and all other lawful deductions authorized by you.

5. **Status of Employee Benefits, Paid Time Off, Expenses and Equity Awards**

(a) Subject to Section 3(c), your participation in all employee benefit plans of the Company will end as of the Separation Date, in accordance with the terms of those plans.

(b) Within two (2) weeks following the Separation Date, you must submit your final expense reimbursement statement reflecting all business expenses you incurred through the Separation Date, if any, for which you seek reimbursement, and, in accordance with Company policy, reasonable substantiation and documentation for the same. The Company will reimburse you for your authorized and documented expenses within thirty (30) days of receiving

such statement pursuant to its regular business practice.

(c) Your rights and obligations with respect to any equity awards granted to you by the Company which had vested as of the Separation Date shall be governed by the applicable equity plan, grant agreement and any agreements or other requirements applicable to those equity awards. All equity awards which are unvested as of the Separation Date have been cancelled as of that date.

6. **Continuing Obligations, Confidentiality and Non-Disparagement.**

(a) You acknowledge that you continue to be bound by your obligations under the At-Will Employment, Confidential Information, Invention Assignment and Non-Competition Agreement with the Company that you entered into on October 2, 2018 and the Non-Disclosure Agreement will that Company that you entered into on October 9, 2018 (collectively, the "Employee Agreements", attached hereto as Exhibit A), that survive the termination of your employment by necessary implication or the terms thereof (the "Continuing Obligations").

(b) Subject to Section 9(b) of this Agreement, you agree that you will not disclose this Agreement or any of its terms or provisions, directly or by implication, except to members of your immediate family and to your legal and tax advisors, and then only on condition that they agree not to further disclose this Agreement or any of its terms or provisions to others.

(c) Subject to Section 9(b) of this Agreement, you agree that you will never disparage or criticize the Company or its Affiliates (as defined below), or any of their business, management or products or services, and that you will not otherwise do or say anything that could disrupt the good morale of employees of the Company or any of its Affiliates or harm the interests or reputation of the Company or any of its Affiliates.

7. **Return of Company Documents and Other Property.** In signing this Agreement, you represent and warrant that you have returned to the Company any and all documents, materials and information (whether in hardcopy, on electronic media or otherwise) related to the business of the Company and its Affiliates (whether present or otherwise), and all keys, access cards, credit cards, computer hardware and software, telephones and telephone-related equipment and all other property of the Company or any of its Affiliates in your possession or control. Further, you represent and warrant that you have not retained any copy or derivation of any documents, materials or information (whether in hardcopy, on electronic media or otherwise) of the Company or any of its Affiliates. Recognizing that your employment with the Company terminates as of the Separation Date, you represent and warrant that you will not, following the Separation Date, for any purpose, attempt to access or use any computer or

computer network or system of the Company or any of its Affiliates, including without limitation the electronic mail system. Further, you acknowledge that you have disclosed to the Company all passwords necessary or desirable to obtain access to, or that would assist in obtaining access to, all information which you have password-protected on any computer equipment, network or system of the Company or any of its Affiliates.

8. **Employee Cooperation.** You agree to cooperate with the Company and its Affiliates hereafter with respect to all matters arising during or related to your employment, including but not limited to all matters in connection with any governmental investigation, litigation or regulatory or other proceeding which may have arisen or which may arise following the signing of this Agreement. The Company will reimburse your out-of-pocket expenses incurred in complying with Company requests hereunder, provided such expenses are authorized by the Company in advance.

9. **General Release of Claims.**

(a) In exchange for the special severance pay and benefits provided to you under this Agreement, to which you would not otherwise be entitled, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, on your own behalf and that of your heirs, executors, administrators, beneficiaries, personal representatives and assigns, you agree that this Agreement shall be in complete and final settlement of any and all causes of action, rights and claims, whether known or unknown, that you have had in the past, now have, or might now have, in any way related to, connected with or arising out of your employment or your other association with the Company or any of its Affiliates or the termination of the same or pursuant to the Employment Agreement, Title VII of the Civil Rights Act, the Americans with Disabilities Act, the Age Discrimination in Employment Act, as amended by the Older Workers Benefit Protection Act, the Employee Retirement Income Security Act, the wage and hour, wage payment and/or fair employment practices laws and statutes of the state or states in which you have provided services to the Company or any of its Affiliates (each as amended from time to time), and/or any other federal, state or local law, regulation or other requirement, and you hereby release and forever discharge the Company, its Affiliates and all of their respective past, present and future directors, shareholders, officers, members, managers, general and limited partners, employees, employee benefit plans, administrators, trustees, agents, representatives, predecessors, successors and assigns, and all others connected with any of them, both individually and in their official capacities, from any and all such causes of action, rights and claims. This release shall not apply to (i) claims for indemnification in your capacity as an officer or director of the Company under the Company's Certificate of Incorporation, Bylaws or written agreement, if any, providing for director or officer indemnification, (ii) rights to receive insurance payments under any policy maintained by the

Company and (iii) rights to receive retirement benefits that are accrued and fully vested as of the Separation Date.

(b) Nothing contained in this Agreement shall be construed to prohibit you from filing a charge with or participating in any investigation or proceeding conducted by the federal Equal Employment Opportunity Commission or a comparable state or local agency, provided, however, that you hereby agree to waive your right to recover monetary damages or other individual relief in any such charge, investigation or proceeding or any related complaint or lawsuit filed by you or by anyone else on your behalf. Nothing in this Agreement or the Employee Agreements limits, restricts or in any other way affects your communicating with any governmental agency or entity, or communicating with any official or staff person of a governmental agency or entity, concerning matters relevant to the governmental agency or entity.

(c) This Agreement, including the general release of claims set forth in Section 9(a), creates legally binding obligations and the Company and its Affiliates therefore advise you to consult an attorney before signing this Agreement. In signing this Agreement, you give the Company and its Affiliates assurance that you have signed it voluntarily and with a full understanding of its terms; that you have had sufficient opportunity of not less than twenty-one (21) days, before signing this Agreement, to consider its terms and to consult with an attorney, if you wished to do so, or to consult with any other of those persons to whom reference is made in Section 6(b) above; and that, in signing this Agreement, you have not relied on any promises or representations, express or implied, that are not set forth expressly in this Agreement.

(d) You agree to sign the Release by the later of seven (7) days following the Separation Date and twenty-one (21) days following the date hereof (and in no event before the Separation Date). You further agree that a signed and unrevoked Release is an express condition to your receipt and retention of the severance benefits described in Section 3 above.

10. **Miscellaneous.**

(a) This Agreement constitutes the entire agreement between you and the Company, and supersedes all prior and contemporaneous communications, agreements and understandings, whether written or oral, with respect to your employment, its termination and all related matters, excluding only the Continuing Obligations and your obligations with respect to the securities of the Company, all of which shall remain in full force and effect in accordance with their terms.

(b) This Agreement may not be modified or amended, and no breach shall be deemed to be waived, unless agreed to in writing by you and the Chief Executive Officer of the

Company or his or her expressly authorized designee. The captions and headings in this Agreement are for convenience only, and in no way define or describe the scope or content of any provision of this Agreement.

(c) The obligation of the Company to make payments to you or on your behalf under this Agreement, and your right to retain the same, is expressly conditioned upon your continued full performance of your obligations under this Agreement and the Continuing Obligations

(d) This is a Massachusetts contract and shall be governed and construed in accordance with the laws of the Commonwealth of Massachusetts, without regard to any conflict of laws principles that would result in the application of the laws of another jurisdiction. You agree to submit to the exclusive jurisdiction of the courts of the Commonwealth of Massachusetts in connection with any dispute arising out of this Agreement.

If the terms of this Agreement are acceptable to you, please sign, date and return it to me after your Separation Date and within twenty-one (21) days of the date you receive it. You may revoke this Agreement at any time during the seven-day period immediately following the date of your signing by notifying me in writing of your revocation within that period. If you do not revoke this Agreement, then, on the eighth day following the date that you signed it, this Agreement shall take effect as a legally binding agreement between you and the Company on the basis set forth above. The enclosed copy of this letter, which you should also sign and date, is for your records.

Formalities aside, I want to take this opportunity to thank you for all of your efforts on behalf of the Company and to wish you well in your future endeavors.

Sincerely,

GENOCEA BIOSCIENCES, INC.

By: 
William Clark
President and Chief Executive Officer

Accepted and agreed:

Signature: 

Date: July 22, 2019

Exhibit A
Post-Employment General Release and Waiver of Claims
[Date]

For and in consideration of certain benefits to be provided to me under the separation and transition agreement between Genocea Biosciences, Inc. (the "Company") and me, dated as of July 19, 2019 (the "Agreement"), which are conditioned on my signing this General Release and Waiver of Claims (this "Release of Claims") and on my compliance with the Continuing Obligations, and to which I am not otherwise entitled, and other good and valuable consideration, the receipt and sufficiency of which I hereby acknowledge, on my own behalf and on behalf of my heirs, executors, administrators, beneficiaries, representatives, successors and assigns, and all others connected with or claiming through me, I hereby release and forever discharge the Company and its affiliates, and all of their respective past, present and future officers, directors, shareholders, employees, employee benefits plans, administrators, trustees, agents, representatives, consultants, successors and assigns, and all those connected with any of them, in their official and individual capacities (collectively, the "Released Parties"), from any and all causes of action, suits, rights and claims, demands, damages and compensation of any kind and nature whatsoever, whether at law or in equity, whether now known or unknown, suspected or unsuspected, contingent or otherwise, which I now have or ever have had against the Released Parties, or any of them, in any way related to, connected with or arising out of my employment and/or other relationship with the Company or any of its affiliates, or pursuant to Title VII of the Civil Rights Act, the Americans With Disabilities Act, the Family and Medical Leave Act, the Age Discrimination in Employment Act (as amended by the Older Workers Benefit Protection Act), the Employee Retirement Income Security Act, the wage and hour, wage payment and fair employment practices laws of the state or states in which I have provided services to the Company (each as amended from time to time) and/or any other federal, state or local law, regulation, or other requirement (collectively, the "Claims") through the date that I sign this Release of Claims, and I hereby waive all such Claims.

I understand that nothing contained in this Release of Claims shall be construed to prohibit me from filing a charge with or participating in any investigation or proceeding conducted by the federal Equal Employment Opportunity Commission or a comparable state or local agency, provided, however, that I hereby agree to waive my right to recover monetary damages or other individual relief in any such charge, investigation or proceeding or any related complaint or lawsuit filed by me or by anyone else on my behalf. I further understand that nothing contained herein limits, restricts or in any other way affects my communicating with any governmental agency or entity, or communicating with any official or staff person of a governmental agency or entity, concerning matters relevant to such governmental agency or entity.

I represent and warrant that, in accordance with Section 7 of the Agreement, I have returned to the Company any and all documents and other property of the Company and its Affiliates that I had in my possession, custody or control on the date my employment with the Company terminated and that I have retained no such property. Without limiting the foregoing, I also represent and warrant that I have retained no copy of any such documents, materials or information.

I acknowledge that this Release of Claims creates legally binding obligations, and that the Company has advised me to consult an attorney before signing it. I further acknowledge that I may not sign this Release of Claims prior to the Separation Date (as such term is defined in the Agreement). In signing this Release of Claims, I give the Company assurance that I have signed it voluntarily and with a full understanding of its terms; that I have had sufficient opportunity of not less than twenty-one (21) days before signing this Release of Claims to consider its terms and to consult with an attorney, if I wished to do so, or to consult with any person to whom reference is made in Section 6(b) of the Agreement; and that I have not relied on any promises or representations, express or implied, that are not set forth expressly in this Release of Claims. I understand that I will have seven (7) days after signing this Release of Claims to revoke my signature, and that, if I intend to revoke my signature, I must do so in writing addressed and delivered to William Clark prior to the end of the seven (7)-day revocation period. I understand that this Release of Claims will become effective upon the eighth (8th) day following the date that I sign it, provided that I do not revoke my acceptance in accordance with the immediately preceding sentence.

This Release of Claims constitutes the entire agreement between me and the Company and supersedes all prior and contemporaneous communications, agreements and understandings, whether written or oral, with respect to my employment, its termination and all related matters, excluding only the Agreement and the Continuing Obligations (as such term is defined in the Agreement), which shall remain in full force and effect in accordance with their terms. This Release of Claims may not be modified or amended, and no breach shall be deemed to be waived, unless agreed to in writing by me and the Chief Executive Officer of the Company or his/her expressly authorized designee.

Accepted and agreed:

Signature: _____
Pam Carroll

Date: _____

Exhibit 31.1

CERTIFICATION PURSUANT TO
SECURITIES EXCHANGE ACT RULES 13a-14 and 15d-14
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, William D. Clark, President and Chief Executive Officer and Director , certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Genocea Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and

    d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ WILLIAM D. CLARK

William D. Clark
President and Chief Executive Officer and Director
(Principal Executive Officer)

Date: July 25, 2019

Exhibit 31.2

CERTIFICATION PURSUANT TO
SECURITIES EXCHANGE ACT RULES 13a-14 and 15d-14
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Diantha Duvall, *Chief Financial Officer (Principal Financial and Accounting Officer)*, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Genocea Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and

    d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ DIANTHA DUVALL

Diantha Duvall

Chief Financial Officer (Principal Financial and Accounting Officer)

Date: July 25, 2019

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Genocea Biosciences, Inc. (the "Company") for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, the undersigned, William D. Clark, as the President and Chief Executive Officer and Director of the Company, does hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ WILLIAM D. CLARK
William D. Clark
President and Chief Executive Officer and Director
(Principal Executive Officer)

Date: July 25, 2019

* A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished solely pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code) and is not being filed as part of the Form 10-Q or as a separate disclosure document.

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Genocea Biosciences, Inc. (the "Company") for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, the undersigned, Diantha Duvall, as the Principal Financial Officer of the Company, do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ DIANTHA DUVALL
Diantha Duvall
Chief Financial Officer (Principal Financial and Accounting Officer)

Date: July 25, 2019

*A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished solely pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code) and is not being filed as part of the Form 10-Q or as a separate disclosure document.