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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): January 8, 2024

CABALETTA BIO, INC.
(Exact name of registrant as specified in its charter)

Delaware	**001-39103**	**82-1685768**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(I.R.S. Employer Identification No.)**

2929 Arch Street, Suite 600, Philadelphia, PA	**19104**
(Address of principal executive offices)	**(Zip Code)**

(267) 759-3100
(Registrant's telephone number, including area code)

Not Applicable
(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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, par value $0.00001 per share	CABA	The Nasdaq Global Select Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

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. ☐

Item 2.02 Results of Operations and Financial Condition.

On January 8, 2024, Cabaletta Bio, Inc. ("Cabaletta" or the "Company") disclosed that its unaudited cash, cash equivalents and short-term investments as of December 31, 2023 was $241 million. This cash balance is inclusive of the sale of 4,760,899 shares of common stock in the fourth quarter of 2023 under the Company's "at-the-market" sales program ("ATM Program") pursuant to the Sales Agreement, dated March 16, 2023 with Cowen and Company, LLC ("TD Cowen") for aggregate gross proceeds of approximately $94.1 million, prior to deducting any discounts and fees under the Sales Agreement, at an average selling price of $19.76 per share.

The information contained in Item 2.02 of this Form 8-K is unaudited and preliminary and does not present all information necessary for an understanding of the Company's financial condition as of December 31, 2023. The audit of the Company's consolidated financial statements for the year ended December 31, 2023, is ongoing and could result in changes to the information set forth above.

The information contained in Item 2.02 of this Current Report on Form 8-K is being furnished and shall not be deemed to be "filed" for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section and shall not be incorporated by reference in any filing under the Securities Act of 1933, as amended (the "Securities Act"), or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

Item 7.01 Regulation FD Disclosure.

On January 8, 2024, the Company posted an updated corporation presentation (the "Corporate Presentation") to the "Investors & Media" section of the Company's website at *www.cabalettabio.com*. A copy of the Corporate Presentation is furnished herewith as Exhibit 99.1 to this Current Report on Form 8-K.

On January 8, 2024, the Company also issued a Press Release announcing that the U.S. Food and Drug Administration (the "FDA") granted separate Fast Track Designations to CABA-201, an investigational 4-1BB-containing fully human CD19-CAR T cell therapy, for the treatment of patients with dermatomyositis to improve disease activity and for the treatment of patients with systemic sclerosis ("SSc") to improve associated organ dysfunction (the "Press Release"). A copy of the Press Release is attached hereto as Exhibit 99.2 to this Current Report on Form 8-K.

The information contained in Item 7.01 of this Current Report on Form 8-K, including Exhibits 99.1 and 99.2 attached hereto, is being furnished and shall not be deemed to be "filed" for the purposes of Section 18 of the Exchange Act, or otherwise subject to the liabilities of that section and shall not be incorporated by reference in any filing under the Securities Act or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

Item 8.01 Other Events.

On January 8, 2024, the Company provided the following corporate updates:

- **Fast Track Designation.** The U.S. Food and Drug Administration has granted separate Fast Track Designations to CABA-201, an investigational 4-1BB-containing fully human CD19-CAR T cell therapy, for the treatment of patients with dermatomyositis to improve disease activity and for the treatment of patients with systemic sclerosis to improve associated organ dysfunction.
- **CABA-201 REstoring SElf-Tolerance (RESET™) Phase 1/2 Trials.** Cabaletta is evaluating CABA-201 in four Phase 1/2 clinical trials with a total of nine cohorts that can advance simultaneously, employing a similar parallel cohort design and starting dose of 1 x 10^6 cells/kg without a dose escalation requirement. Cabaletta anticipates reporting initial clinical efficacy and tolerability data for patients treated with CABA-201 from the Phase 1/2 trials in systemic lupus erythematosus ("SLE") and myositis in the first half of 2024 and in SSc and generalized myasthenia gravis ("gMG") in the second half of 2024.
- **Preclinical Portfolio Expansion for CABA-201 Indications.** In 2024, Cabaletta aims to broaden its portfolio with potential Investigational New Drug applications ("INDs") for CABA-201 in multiple additional autoimmune disease indications in which B cells play a key role. These new indications have a combined U.S. prevalence of over one million patients.

- **ATM Program.** During the fourth quarter of 2023, largely catalyzed by block inquiry from institutional investors, the Company sold 4,760,899 shares of its common stock under its ATM Program pursuant to the Sales Agreement. The Company raised approximately $94.1 million in gross proceeds prior to deducting any discounts and fees under the Sales Agreement or offering expenses, at an average selling price of $19.76 per share.
- **Cash Runway.** Based upon the Company's current operating plan, the Company believes that its existing cash, cash equivalents and short-term investments as of December 31, 2023 will enable it to fund its operating expenses and capital expenditure requirements into the first half of 2026.

Forward-Looking Statements

The information under this Item 8.01 contains "forward-looking statements" of the Company within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including without limitation, express or implied statements regarding its expectations regarding: Cabaletta's ability to broaden its portfolio with potential INDs for CABA-201 in multiple autoimmune disease indications; the anticipated market opportunities for CABA-201 in additional autoimmune indications; the Company's business plans and objectives; the Company's plans to progress four separate Phase 1/2 clinical trials of CABA-201 in subjects with gMG, SSc, SLE and myositis; Cabaletta's ability to enroll the requisite number of patients and dose each dosing cohort in the intended manner in its Phase 1/2 clinical trials of CABA-201; and the Company's anticipated use of capital, expenses and other future financial results, including the ability to fund operations into the first half of 2026. Any forward-looking statements in this Item 8.01 are based on management's current expectations and beliefs of future events, and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to: risks related to regulatory filings and potential clearance; the risk that signs of biologic activity or persistence may not inform long-term results; Cabaletta's ability to demonstrate sufficient evidence of safety, efficacy and tolerability in its preclinical studies and clinical trials of DSG3-CAART, MuSK-CAART and CABA-201; the risk that the results observed with the similarly-designed construct employed in the recent academic publications, including due to the dosing regimen, are not indicative of the results we seek to achieve with CABA-201; risks related to clinical trial site activation or enrollment rates that are lower than expected; risks related to unexpected safety or efficacy data observed during clinical studies; risks related to volatile market and economic conditions and public health crises; risks related to Cabaletta's ability to protect and maintain its intellectual property position; risks related to fostering and maintaining successful relationships with Cabaletta's collaboration and manufacturing partners; and the risk that the initial or interim results of preclinical studies or clinical studies will not be predictive of future results in connection with future studies. For a discussion of these and other risks and uncertainties, and other important factors, any of which could cause Cabaletta's actual results to differ from those contained in the forward-looking statements, see the section entitled "Risk Factors" in Cabaletta's most recent annual report on Form 10-K as well as discussions of potential risks, uncertainties, and other important factors in Cabaletta's other and subsequent filings with the Securities and Exchange Commission. All information in this Item 8.01 is as of the date of this Current Report on Form 8-K, and the Company undertakes no duty to update this information unless required by law.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

99.1	Cabaletta Bio, Inc. Corporate Presentation, dated January 2024, furnished herewith.
99.2	Press Release issued by the registrant on January 8, 2024, furnished herewith.
104	Cover Page Interactive Data File (embedded within the Inline XBRL Document).

SIGNATURE

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

CABALETTA BIO, INC.

Date: January 8, 2024

By: /s/ Steven Nichtberger
Steven Nichtberger, M.D.
President and Chief Executive Officer

Exhibit 99.1

Cabaletta Bio®

Corporate Presentation

JANUARY 2024

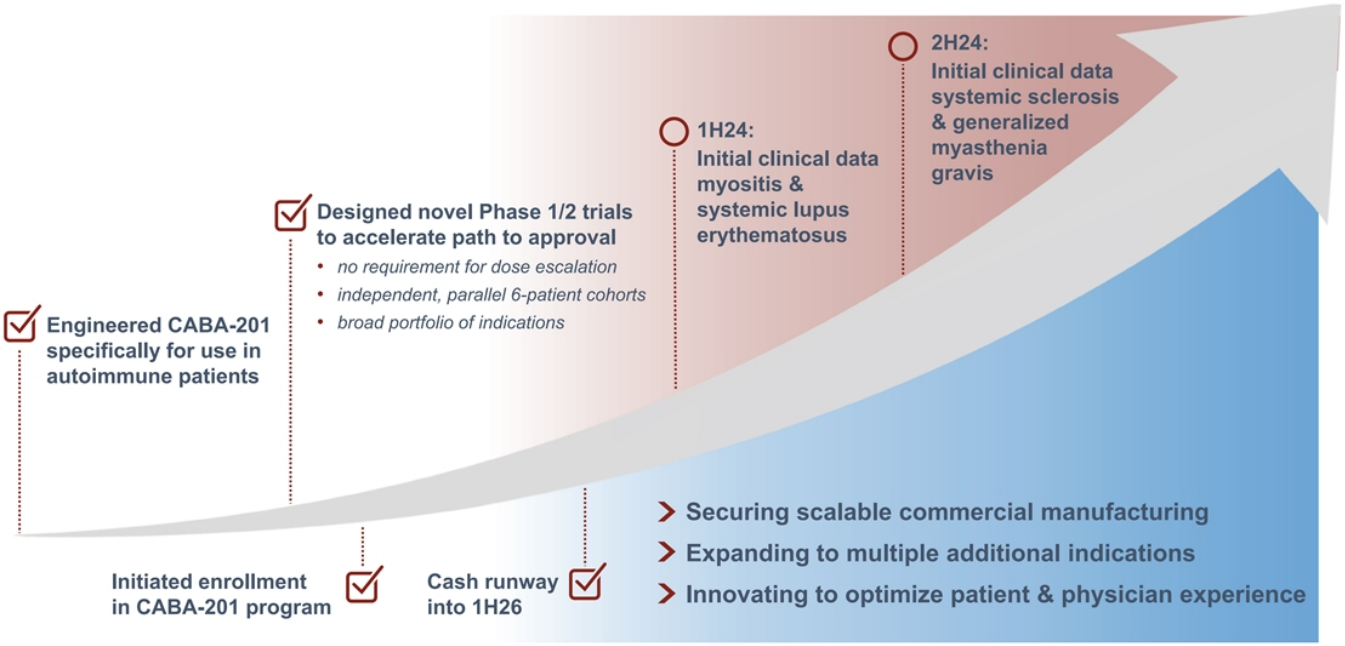
Disclaimer

The following presentation, including any printed or electronic copy of these slides, the talks given by the presenters, the information communicated during any delivery of the presentation and any question and answer session and any document or material distributed at or in connection with the presentation (collectively, the "Presentation") has been prepared by Cabaletta Bio, Inc. ("we," "us," "our," "Cabaletta" or the "Company") and is made for informational purposes only. This Presentation does not purport to be a prospectus, to be complete or to contain all of the information you may desire. Statements contained herein are made as of the date of this Presentation unless stated otherwise, and this Presentation shall not under any circumstances create an implication that the information contained herein is correct as of any time after such date or that information will be updated or revised to reflect information that subsequently becomes available or changes occurring after the date hereof. This Presentation may contain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 relating to our business, operations, and financial conditions, and include, but are not limited to, express or implied statements regarding our current beliefs, expectations and assumptions regarding: our business, future plans and strategies for our CAAR T and CARTA technologies; our ability to grow our autoimmune-focused pipeline; the ability to capitalize on and potential benefits resulting from our research and translational insights; the anticipated market opportunities for CABA-201 in patients with autoimmune diseases; the Company's business plans and objectives; our expectations around the potential success and therapeutic benefits of CABA-201, including our belief that CABA-201 may enable an "immune system reset"; our plans for Phase 1/2 clinical trials of CABA-201 in patients with systemic lupus erythematosus (SLE), myositis, SSc, and generalized myasthenia gravis (gMG), including our anticipated progress, enrollment, clinical trial design, and ability to leverage our experience in autoimmune cell therapy; our planned initial clinical data read-out in the first half of 2024 for patients with myositis and SLE treated with CABA-201; our planned initial clinical data read-out in the second half of 2024 for patients with SSc and gMG treated with CABA-201; our ability to enroll the requisite number of patients, dose each dosing cohort in the intended manner, and advance the trial as planned in our Phase 1/2 clinical trials of CABA-201; the ability to retain and recognize the intended incentives conferred by any Fast Track Designations for CABA-201; the timing any planned regulatory filings for our development programs; the progress and results of our DesCAARTes™ Phase 1 trial, including the significance and impact around reported safety and clinical and translational data of cohorts from our DesCAARTes™ and MusCAARTes™ Phase 1; the therapeutic potential and clinical benefits of our product candidates; the expectation that Cabaletta may improve outcomes for patients suffering from SLE, SSc, myositis, gMG, mucosal pemphigus vulgaris, MuSK myasthenia gravis, or other autoimmune diseases; the ability of our clinical strategy to reduce risk, maximize reach and accelerate timelines of our Phase 1/2 clinical trials of CABA-201; our ability to optimize and scale the patient and provider experience; our ability to successfully complete our preclinical and clinical studies for our product candidates, including our ability to enroll the requisite number of patients, dose each dosing cohort in the intended manner, and progress the trial; our ability to obtain and maintain regulatory approval of our product candidates, including our expectations regarding the intended incentives conferred by and ability to retain Orphan Drug Designation and Fast Track Designations for our product candidates, as applicable; our ability to accelerate our pipeline and to develop meaningful therapies for patients, including in collaboration with academic and industry partners and the ability to optimize such collaborations on our development programs; our ability to contract with third-party suppliers and manufacturers, implement an enhanced manufacturing process and further develop our internal manufacturing strategy, capabilities and facilities; our potential commercial opportunities, including value and addressable market, for our product candidates; and our expectations regarding our use of capital and other financial results, including our ability to fund operations into the first half of 2026. Words such as, but not limited to, "look forward to," "believe," "expect," "anticipate," "estimate," "intend," "plan," "would," "should" and "could," and similar expressions or words, identify forward-looking statements.

Various risks, uncertainties and assumptions could cause actual results to differ materially from those anticipated or implied in our forward-looking statements. Such risks and uncertainties include, but are not limited to, risks related to the success, cost, and timing of our product candidate development activities and preclinical studies and clinical trials, risks related to our ability to demonstrate sufficient evidence of safety, efficacy and tolerability in our preclinical studies and clinical trials of CABA-201, DSG3-CAART and MuSK-CAART, the risk that the results observed with the similarly-designed construct, including, but not limited to, due to dosing regimen, are not indicative of the results we seek to achieve with CABA-201, our plans to evaluate additional cohorts in the DesCAARTes™ trial, including a cohort implementing a pre-treatment regimen, the risk that signs of biologic activity or persistence may not inform long-term results, the risk that persistence observed with effective CART-19 oncology studies in combination with lymphodepletion is not indicative of, or applicable to, clinical responses in patients with mPV, risks related to clinical trial site activation or enrollment rates that are lower than expected, our ability to protect and maintain our intellectual property position, risks related to our relationships with third parties, uncertainties related to regulatory agencies' evaluation of regulatory filings and other information related to our product candidates, our ability to retain and recognize the intended incentives conferred by any Orphan Drug Designations and Fast Track Designations, risks related to regulatory filings and potential clearance, the risk that any one or more of our product candidates will not be successfully developed and commercialized, the risk that the results of preclinical studies or clinical studies will not be predictive of future results in connection with future studies, and risks related to volatile market and economic conditions and public health crises. New risks and uncertainties may emerge from time to time, and it is not possible to predict all risks and uncertainties. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise. Although we believe the expectations reflected in such forward-looking statements are reasonable, we can give no assurance that such expectations will prove to be correct. Accordingly, you are cautioned not to place undue reliance on these forward-looking statements. No representations or warranties (expressed or implied) are made about the accuracy of any such forward-looking statements. For a discussion of these and other risks and uncertainties, and other important factors, any of which could cause our actual results to differ materially from those contained in the forward-looking statements, see the section entitled "Risk Factors" in our most recent annual report on Form 10-K, as well as discussions of potential risks, uncertainties, and other important factors in our other and subsequent filings with the Securities and Exchange Commission. Certain information contained in this Presentation relates to or is based on studies, publications, surveys and other data obtained from third-party sources and the Company's own internal estimates and research. While the Company believes these third-party sources to be reliable as of the date of this Presentation, it has not independently verified, and makes no representation as to the adequacy, fairness, accuracy or completeness of, any information obtained from third-party sources. The Company is the owner of various trademarks, trade names and service marks. Certain other trademarks, trade names and service marks appearing in this Presentation are the property of third parties. Solely for convenience, the trademarks and trade names in this Presentation are referred to without the ® and TM symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto.

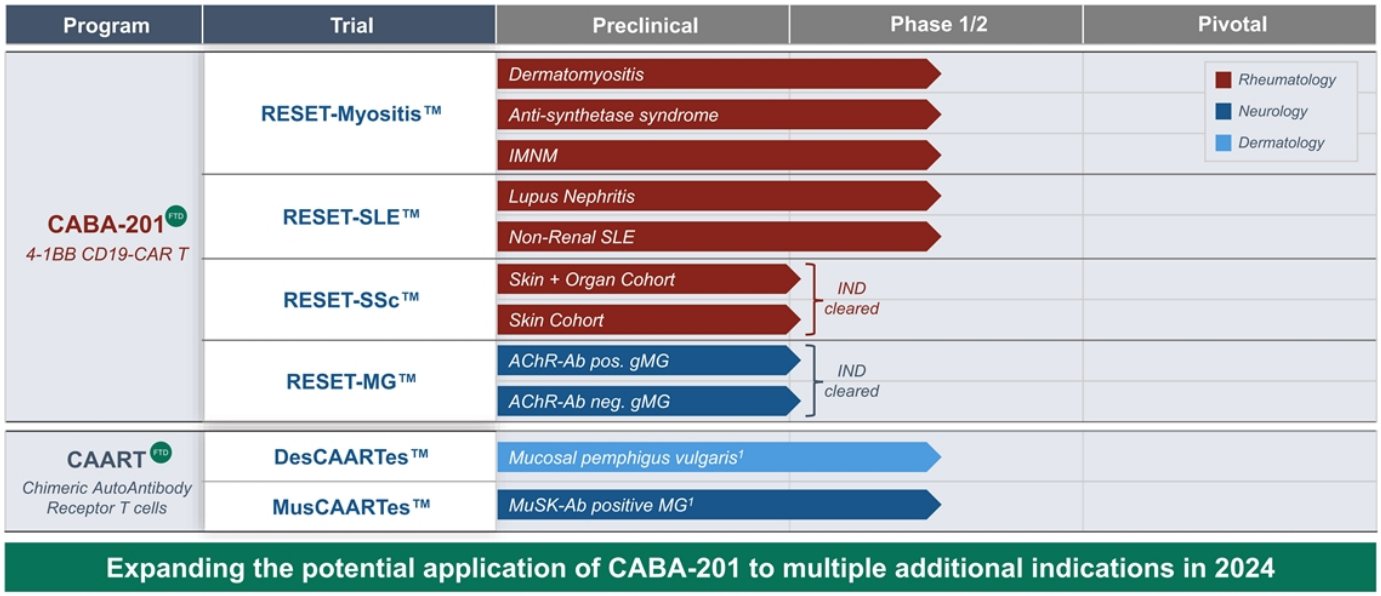
Cabaletta Bio®

Realizing the vision to transform autoimmune disease treatment



Pipeline targeting autoimmune diseases with high unmet need

Innovative and scalable clinical strategy with potential for accelerated development path

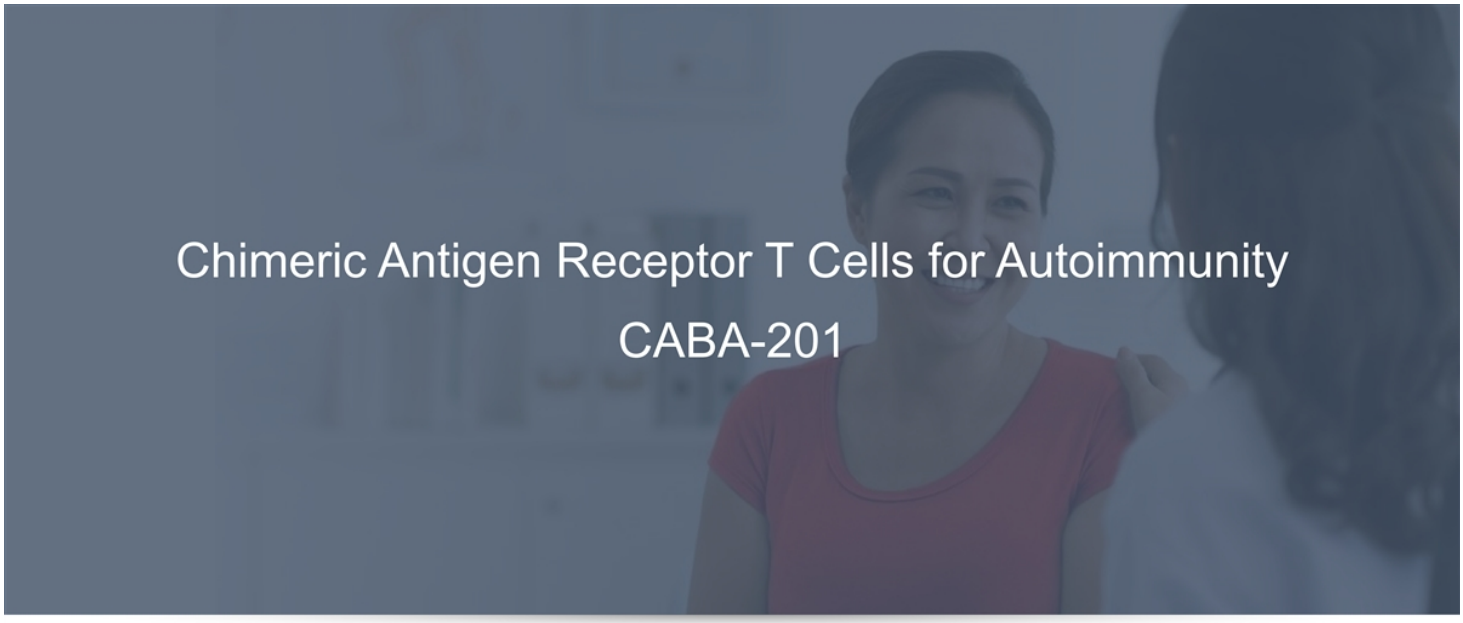


Expanding the potential application of CABA-201 to multiple additional indications in 2024

RESET™ – **RE**storing **SE**lf-**T**olerance; IMNM – Immune-mediated necrotizing myopathy; SLE – Systemic lupus erythematosus; Ab – Antibody; AChR – Acetylcholine receptor; gMG – Generalized myasthenia gravis

1. Currently being evaluated in a Phase 1 trial.

● FDA Fast Track Designation received in dermatomyositis, SLE, lupus nephritis, systemic sclerosis, mucosal pemphigus vulgaris, and MuSK-Ab positive MG.



Cabaletta Bio®

Academic data: Immune system reset in autoimmune patients

Promising clinical responses in 15 patients across several autoimmune diseases with 4-1BB CD19-CAR T[1,2]

100%
Objective clinical response rate in SLE, myositis, SSc

T cell expansion & B cell depletion within 1st month enabled robust clinical improvement by 3 months

<7%
Rate of CRS more severe than fever (1/15)

11/15 patients reported by Erlangen group with CRS, 10/11 with fever*

Single grade 1 ICANS event reported (transient dizziness)

**One grade 2 CRS (increased oxygen requirement in patient with pre-existing lung disease[3])*

2+
Years of SLE durable drug-free remission

Up to 28 months of follow-up with no relapses in any of the 15 patients reported by Erlangen group, off immunosuppressive agents[2]

3-7
Months to naïve B cell repopulation

In patients with >3 months of follow-up, complete B cell elimination followed by return of healthy naïve B cells within median of ~4 months

CRS – Cytokine release syndrome; ICANS – Immune effector cell-associated neurotoxicity syndrome

1. Mueller F, et al. CD19-Targeted CAR-T Cells in Refractory Systemic Autoimmune Diseases: A Monocentric Experience from the First Fifteen Patients [ASH presentation; Dec 9, 2023].
2. The construct utilized in these studies has a similar design to CABA-201, sharing the 4-1BB costimulatory domain, but is a different construct.
3. Taubmann J, et al. Efficacy and Safety of CAR-T-Cell Treatment in Refractory Antisynthetase Syndrome – Data of the First Three Patients [ACR abstract; Nov 14, 2023].

CABA-201

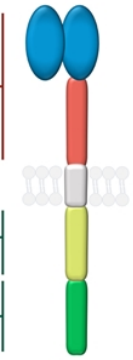
CABA-201: CD19-CAR T specifically designed for autoimmunity

Cabaletta's CD19 binder with similar *in vitro* & *in vivo* activity to FMC63[1,2] (binder used in academic studies[3,4])

Fully human anti-CD19 binder
Similar binding affinity & biologic activity to FMC63, with binding to the same epitope[1,2]

4-1BB costimulatory domain
Same co-stim. domain as used in academic studies

CD3-Zeta signaling domain



CABA-201[6]

Clinical data reported by IASO using licensed CD19 binder in oncology[5]

- **Fully human binder**
  Evaluated as dual-CAR combined with CD22 binder with standard Flu/Cy preconditioning
- **Data reported in ~20 patients to date**
  B cell leukemia and lymphoma in IIT in China
- **Safety data supports autoimmune development**

IIT – Investigator-initiated trial; Flu/Cy – Fludarabine/Cyclophosphamide

1. Peng, Binghao J, et al. "Preclinical specificity and activity of CABA-201, a fully human 4-1BB containing CD19 CAR T therapy for treatment-resistant autoimmune disease." Poster presented at: American Society Gene and Cell Therapy 26th Annual Meeting; 2023 May 19; Los Angeles, CA.
2. Dai, Zhenyu, et al. "Development and functional characterization of novel fully human anti-CD19 chimeric antigen receptors for T-cell therapy." Journal of Cellular Physiology 236.8 (2021): 5832-5847.
3. Mackensen, Andreas, et al. "Anti-CD19 CAR T cell therapy for refractory systemic lupus erythematosus." Nature Medicine (2022): 1-9.
4. Müller, Fabian, et al. "CD19-targeted CAR T cells in refractory antisynthetase syndrome." The Lancet (2023).
5. Evaluated as part of CT120, a dual-CD19xCD22 CAR T product candidate under development by Nanjing IASO Biotherapeutics, Co., Ltd. (IASO Bio).
6. Transmembrane domain in CABA-201 is CD8α vs. TNFRSF19 (Troy) utilized in the academic construct. The two transmembrane domains have not been shown to have a significant difference in function or IFN-γ production in preclinical studies. The CD8α transmembrane domain is employed in tisagenlecleucel.

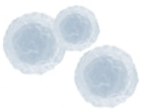
CABA-201

REstoring **SE**lf-**T**olerance (**RESET**™) Phase 1/2 trials advancing

SLE & myositis trials currently recruiting, with a broadening portfolio to realize the potential of CABA-201

Phase 1/2 Trials — **Preclinical**

Rheum
Neuro
Undiscl.

Myositis	SLE	SSc	gMG	2024
				
♀>♂	♀>♂	♀>♂	♀>♂	
Typical onset middle age Only FDA-approved therapy is IVIg in DM High mortality due to lung & cardiac involvement	Affects young women & people of color ~40% with lupus nephritis, which carries ~25% risk of death or ESRD within 10y	Middle age onset common Progressive skin & organ fibrosis with lung, cardiac, renal damage Average survival of 12y	Bimodal age of onset Profound weakness that can be disabling Risk for myasthenic crises, with respiratory failure	Autoimmune diseases in which B cells play a key role
U.S. Prevalence				
~66k	**~160-320k**	**~88k**	**~55k**	**Over 1 million**

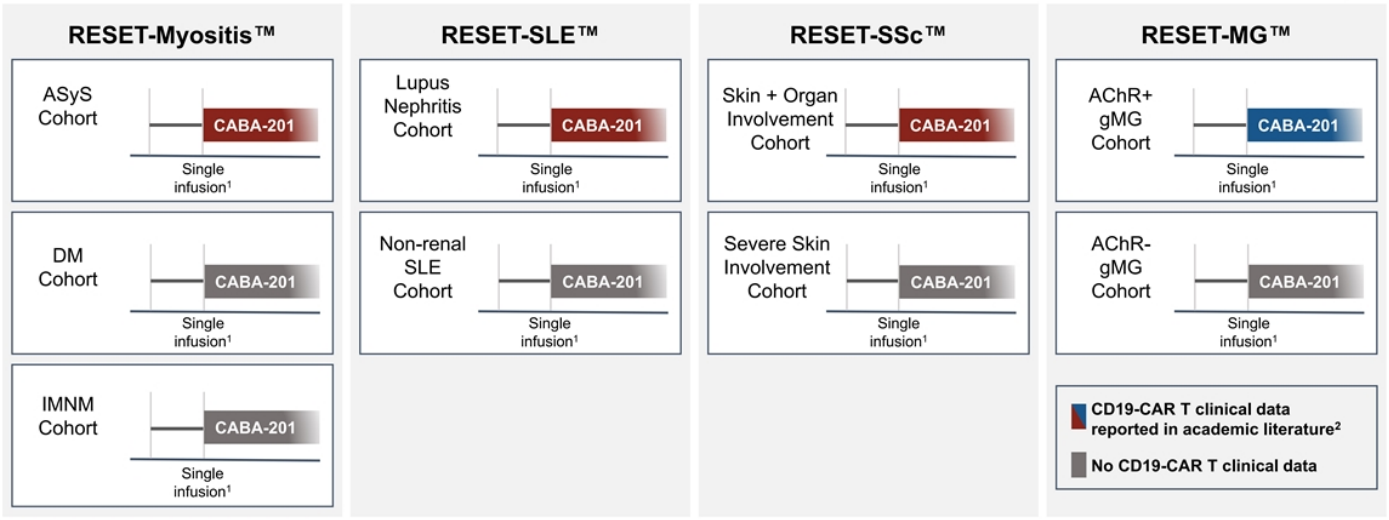
Current therapies offer modest efficacy & often result in chronic and broad immunosuppression

SLE – Systemic lupus erythematosus; DM – Dermatomyositis; SSc – Systemic sclerosis; gMG – Generalized myasthenia gravis; ESRD – End-stage renal disease

CABA-201

Clinical strategy to reduce risk, maximize reach & accelerate timelines

Broad investigation of CABA-201 in well-defined patient populations with the same dose & similar design



Each cohort to include 6 patients treated with an identical dose – without dose escalation requirement – and designed to inform discussions with FDA on registrational path for each indication

SLE – Systemic lupus erythematosus; SSc – Systemic sclerosis; gMG – Generalized myasthenia gravis; ASyS – Anti-synthetase syndrome; DM – Dermatomyositis; IMNM – Immune-mediated necrotizing myopathy

1. Subjects will be treated with a standard preconditioning regimen consisting of fludarabine and cyclophosphamide prior to a single dose CABA-201, followed by short inpatient stay
2. The data reported in the academic literature does not employ CABA-201.

RESET-Myositis™: Phase 1/2 study design for CABA-201

Currently enrolling patients with active myositis with DM, ASyS or IMNM subtypes

Screening

Key inclusion criteria

- Adults 18-65y
- Clinical IIM diagnosis
- Subtype based on serology
- Disease activity despite standard of care
- Recommended vaccines

Key exclusion criteria

- Cancer associated myositis
- Significant lung or cardiac impairment
- Treatment with anti-B cell agent within prior ~6 months
- Treatment with biologic agent within prior ~3 months

Phase 1/2 Study Design

Open-label trial with parallel 6-subject cohorts

DM
CABA-201
Single dose of 1x10⁶ cells/kg[1]

ASyS
CABA-201
Single dose of 1x10⁶ cells/kg[1]

IMNM
CABA-201
Single dose of 1x10⁶ cells/kg[1]

Equivalent to dose of 4-1BB CD19-CAR T used in academic report along with standard preconditioning[1,2]

Study Objectives

Primary objective

Safety & tolerability within 28 days of infusion

Categories of key secondary objectives

- **Myositis clinical activity**
- **Functional & radiographic evidence of disease**
- **Myositis serology**
- **Pharmacokinetics / pharmacodynamics**

IIM – Idiopathic inflammatory myopathy; DM – Dermatomyositis; ASyS – Anti-synthetase syndrome; IMNM – Immune-mediated necrotizing myopathy

1. Subjects will be treated with a standard preconditioning regimen consisting of fludarabine and cyclophosphamide prior to a single dose CABA-201, followed by short inpatient stay.
2. Mackensen, Andreas, et al. "Anti-CD19 CAR T cell therapy for refractory systemic lupus erythematosus." Nature Medicine (2022): 1-9.

RESET-SLE™: Phase 1/2 study design for CABA-201

Currently enrolling patients with active SLE with or without renal involvement

Screening

Key inclusion criteria

- Adults 18-65y
- Clinical SLE diagnosis
- Confirmatory serology
- Disease activity despite standard of care
- Recommended vaccines

Key exclusion criteria

- Treatment with anti-B cell agent within prior ~6 months
- Treatment with biologic agent within prior ~3 months

Phase 1/2 Study Design

Open-label trial with parallel 6-subject cohorts

SLE with lupus nephritis — **CABA-201** — *Single dose of 1x10⁶ cells/kg[1]*

SLE without renal disease — **CABA-201** — *Single dose of 1x10⁶ cells/kg[1]*

Equivalent to dose of 4-1BB CD19-CAR T used in academic report along with standard preconditioning[1,2]

Study Objectives

Primary objective

Safety & tolerability within 28 days of infusion

Categories of key secondary objectives

- **SLE clinical activity**
- **SLE serology**
- **Pharmacokinetics / pharmacodynamics**

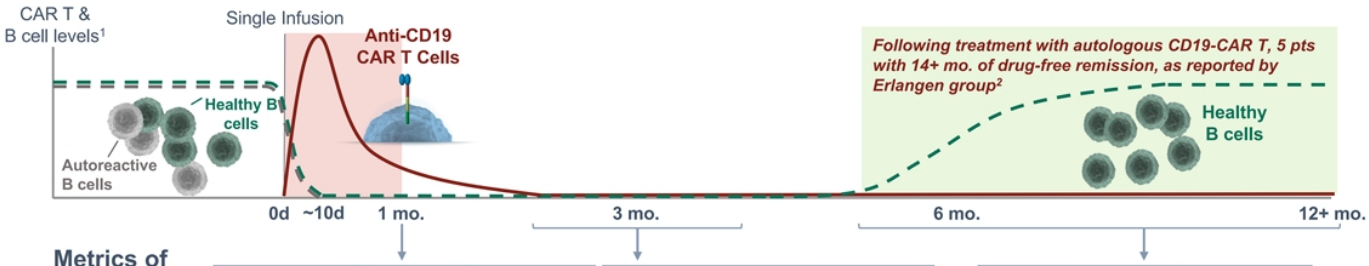
Similarly designed Phase 1/2 trials – RESET-SSc™ & RESET-MG™ – advancing in SSc & gMG

SLE – Systemic lupus erythematosus; SSc – Systemic sclerosis; gMG – Generalized myasthenia gravis

1. Subjects will be treated with a standard preconditioning regimen consisting of fludarabine and cyclophosphamide prior to a single dose CABA-201, followed by short inpatient stay.
2. Mackensen, Andreas, et al. "Anti-CD19 CAR T cell therapy for refractory systemic lupus erythematosus." Nature Medicine (2022): 1-9.

Evaluation metrics to assess outcomes of CAR T in autoimmunity

For CABA-201, translational effects in 1st month may inform clinical outcomes at 3 months



Metrics of evaluation	Within 1 month	~3 months	5-12+ months
Translational measures	❑ CAR T expansion: Magnitude & timing ❑ B cell depletion: Timing & depth	❑ Autoantibody changes ❑ Vaccine titer changes ❑ Inflammatory marker changes	❑ Time to B cell repopulation ❑ Autoantibody changes ❑ Vaccine titer changes
Clinical data	❑ Rate of CRS more severe than fever ❑ Rate & grade of ICANS ❑ Rate & severity of infection	❑ Early efficacy signals ❑ Rate & severity of infection	❑ Durability of clinical activity ❑ Rate & severity of infection
Patient experience	❑ Hospitalization requirements ❑ Preconditioning & infusion regimen	❑ Concomitant medications, if any	❑ Concomitant medications, if any

SLE – Systemic lupus erythematosus; SSc – Systemic sclerosis; gMG – Generalized myasthenia gravis

1. Illustrative graphic, adapted from Taubmann, J., et al. "OP0141 Long Term Safety and Efficacy Of CAR-T Cell Treatment in Refractory SLE-Data from the First Seven Patients." (2023): 93-94.
2. Mueller F, et al. CD19-Targeted CAR-T Cells in Refractory Systemic Autoimmune Diseases: A Monocentric Experience from the First Fifteen Patients [ASH abstract; Nov 28, 2023].

Manufacturing strategy

Staged approach allows for efficient allocation of capital while leveraging experienced partners

Early Phase:
Penn, CDMOs & CABA Process

Ongoing

- **Penn has reliably provided timely product for years**
- **Commercial CDMO partnerships have expanded our vector and cell product supply**

Oxford Biomedica

WuXi AppTec

Late Phase & Commercial:
Scale-Up & Commercialization

Data-gated, staged investment

- **Evaluating potential paths to commercial-ready manufacturing:**
  - **Expansion of CDMO relationships**
  - **Cabaletta-operated facility**
  - **Strategic partnership(s)**
- **Continuous focus on innovations to address scale**

Preparations ongoing to implement commercial-ready process in advance of pivotal studies

Securing & expanding our leadership in autoimmune cell therapy

Rapidly advancing to address patient need

Advancing the RESET™ clinical trials with the goal of delivering on our commitment to patients

Myositis

Systemic lupus erythematosus

Systemic sclerosis

Generalized myasthenia gravis

- Minimizing the requirement for inpatient stay
- Optimizing the preconditioning regimen
- Reducing the burden of apheresis
- Innovating to address scale in autoimmune disease

Broadening potential to serve patients

Biologic opportunity for potential cure or paradigm-shifting treatment may be possible in dozens of autoimmune diseases

Rheumatology	• Rheumatoid arthritis • ANCA-associated vasculitis • Sjogren's syndrome
Neurology	• Multiple sclerosis • Neuromyelitis optica • CIDP
Nephrology	• Membranous nephropathy • Goodpasture's syndrome
Dermatology	• Pemphigus vulgaris • Pemphigus foliaceus • Epidermolysis bullosa acquisita • Bullous pemphigoid
Hematology	• Immune thrombocytopenic purpura • Thrombotic thrombocytopenic purpura • Antiphospholipid syndrome • Autoimmune hemolytic anemia
Endocrinology	• Type 1 diabetes • Graves' disease • Hashimoto's disease

Cabaletta Bio®

Cabaletta Bio leadership

LEADERSHIP TEAM

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President, CEO & Chairman

MERCK · tengion · Penn

Samik Basu, M.D.
Chief Scientific Officer

Adaptimmune · MERCK

Gwendolyn Binder, Ph.D.
President, Science & Technology

Adaptimmune · Penn

David J. Chang, M.D., M.P.H., FACR
Chief Medical Officer

AstraZeneca · gsk · Penn

Arun Das, M.D.
Chief Business Officer

Goldman Sachs · Penn · Children's Hospital of Philadelphia

Michael Gerard
General Counsel

Spark · SANDOZ A Novartis Division

Heather Harte-Hall
Chief Compliance Officer

Adaptimmune · Pfizer

Anup Marda
Chief Financial Officer

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Martha O'Connor
Chief HR Officer

Bristol-Myers Squibb · accentureconsulting

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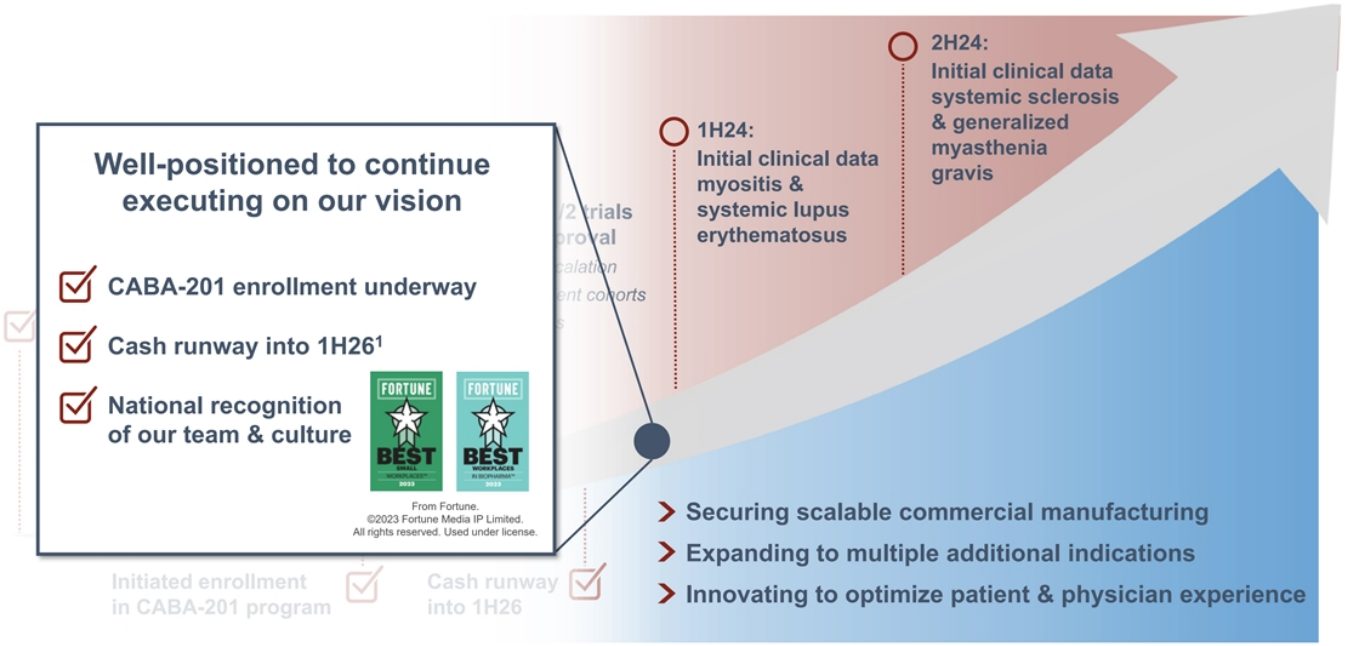
Track record of operational success evaluating novel cell therapy candidates in autoimmunity across preclinical, clinical, manufacturing & regulatory domains

Realizing the vision to transform autoimmune disease treatment



1. Inclusive of $94M of gross proceeds raised via 'at-the-market' sales program in 4Q23.

Cabaletta Bio®

Corporate Presentation

JANUARY 2024

Cabaletta Bio®

Cabaletta Bio Receives Additional FDA Fast Track Designations for CABA-201 in Dermatomyositis and Systemic Sclerosis

– Second and third FDA Fast Track Designations for CABA-201, following the systemic lupus erythematosus (SLE) and lupus nephritis (LN) designation, providing the opportunity for expedited development and review of CABA-201 for the treatment of these autoimmune diseases –

PHILADELPHIA, Jan. 8, 2024 — Cabaletta Bio, Inc. (Nasdaq: CABA), a clinical-stage biotechnology company focused on developing and launching the first curative targeted cell therapies for patients with autoimmune diseases, today announced that the U.S. Food and Drug Administration (FDA) has granted separate Fast Track Designations to CABA-201, an investigational 4-1BB-containing fully human CD19-CAR T cell therapy, for the treatment of patients with dermatomyositis to improve disease activity and for the treatment of patients with systemic sclerosis (SSc) to improve associated organ dysfunction.

"The additional Fast Track Designations for CABA-201 in both dermatomyositis and systemic sclerosis, the second and third Fast Track Designations for CABA-201, provide the opportunity for expedited development and review of CABA-201 for the treatment of these autoimmune indications where there is a significant unmet need, despite currently available therapies," said David J. Chang, M.D., Chief Medical Officer of Cabaletta. "We believe these designations potentially accelerate our ability to launch the first targeted, and potentially curative, cell therapy for autoimmune diseases driven by B cells. We look forward to continuing to leverage our research and translational insights along with our efficient trial designs in order to progress these programs forward for patients in need of better outcomes."

CABA-201 is designed to deeply and transiently deplete CD19-positive B cells following a one-time infusion, which may enable an "immune system reset" with the potential for durable remission off therapy in patients with autoimmune diseases. To date, Cabaletta has received clearance from the FDA for Investigational New Drug (IND) applications for CABA-201 in multiple autoimmune conditions including systemic lupus erythematosus (SLE), myositis, SSc and generalized myasthenia gravis (gMG). Cabaletta is conducting four Phase 1/2 clinical trials with a total of nine cohorts that can advance simultaneously, employing a similar parallel cohort design and starting dose of 1 x 10^6 cells/kg without a dose escalation requirement.

About Fast Track Designation

The FDA's Fast Track process is intended to facilitate the expedited development and review of therapeutics intended to treat serious or life-threatening conditions and to address unmet medical needs. Companies that receive Fast Track Designation are eligible for several potential benefits, including the opportunity for more frequent meetings and interactions with the FDA during clinical development as well as eligibility for accelerated approval and/or priority review, if relevant criteria are met. Companies may also be allowed to submit sections of their Biologics License Application on a rolling basis.

About Dermatomyositis

Dermatomyositis (DM) is an autoimmune disease that can lead to severe functional impairment that may be life-threatening despite best available standard of care. It is characterized by a skin rash along with muscle inflammation and weakness. Although the pathophysiology of DM is not well understood, it is thought to be a subtype of myositis that is driven by B cells. DM affects approximately 43,000 patients in the U.S. alone, and typically affects middle-aged individuals, particularly women. Current treatment typically involves medications to suppress the immune system and/or chronic intensive therapies such as intravenous immunoglobulin, or IVIg. Despite these therapies, a significant portion of DM patients have disease that remains refractory to existing medications.

About Systemic Sclerosis

SSc is a rare and potentially fatal chronic autoimmune disease characterized by progressive skin and internal organ fibrosis that can be life-threatening, including interstitial lung disease, pulmonary hypertension, and scleroderma renal crisis. Although the etiology of SSc is not well understood, the pathogenic role of autoantibodies and B cells in SSc provides a rationale for studying CAR T therapy in this population. SSc affects approximately 88,000 patients in the U.S., and typically affects middle-aged individuals, particularly women. Standard treatment options, which have modest effects, include generalized immunosuppressive agents or drugs targeted to specific symptomatic manifestations. Autologous hematopoietic stem cell transplant may provide some benefits in organ involvement, but carries significant risks, including mortality, infertility, and secondary autoimmune disease, limiting its potential to be applied broadly. Due to the lack of adequate treatments, the risk of mortality in systemic sclerosis remains high, with an average survival of approximately 12 years following diagnosis.

About Cabaletta Bio

Cabaletta Bio (Nasdaq: CABA) is a clinical-stage biotechnology company focused on the discovery and development of engineered T cell therapies that have the potential to provide a deep and durable, perhaps curative, treatment for patients with autoimmune diseases. The CABA™ platform encompasses two strategies: the CARTA (chimeric antigen receptor T cells for autoimmunity) strategy, with CABA-201, a 4-1BB-containing fully human CD19-CAR T, as the lead product candidate being evaluated in systemic lupus erythematosus, myositis, systemic sclerosis and generalized myasthenia gravis, and the CAART (chimeric autoantibody receptor T cells) strategy, with multiple clinical-stage candidates, including DSG3-CAART for mucosal pemphigus vulgaris and MuSK-CAART for MuSK myasthenia gravis. The expanding CABA™ platform is designed to develop potentially curative therapies that offer deep and durable responses for patients with a broad range of autoimmune diseases. Cabaletta Bio's headquarters and labs are located in Philadelphia, PA.

Forward-Looking Statements

This press release contains "forward-looking statements" of Cabaletta Bio within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including without limitation, express or implied statements regarding: Cabaletta's ability to retain and recognize the intended incentives conferred by Fast Track Designations for CABA-201 in patients with SLE and LN, dermatomyositis and SSc; Cabaletta's expectations around the potential success and therapeutic benefits of CABA-201, including its belief that CABA-201 may enable an "immune system reset" and provide deep and durable responses in patients across an increasing number

of autoimmune diseases; Cabaletta's belief that it is making meaningful progress toward the development and potential launch of the first targeted, and perhaps curative, cellular therapies for patients with autoimmune diseases; the Company's advancement of separate Phase 1/2 clinical trials of CABA-201 in patients with SLE, myositis, SSc and gMG; Cabaletta's ability to leverage its research and translational insights; and the Company's expectations for the efficiency of the trial design for its Phase 1/2 clinical trials of CABA-201.

Any forward-looking statements in this press release are based on management's current expectations and beliefs of future events, and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to: risks related to regulatory filings and potential clearance; the risk that signs of biologic activity or persistence may not inform long-term results; Cabaletta's ability to demonstrate sufficient evidence of safety, efficacy and tolerability in its preclinical studies and clinical trials of DSG3-CAART, MuSK-CAART and CABA-201; the risk that the results observed with the similarly-designed construct employed in the recent academic publications, including due to the dosing regimen, are not indicative of the results we seek to achieve with CABA-201; risks related to clinical trial site activation or enrollment rates that are lower than expected; risks related to unexpected safety or efficacy data observed during clinical studies; risks related to volatile market and economic conditions and public health crises; Cabaletta's ability to retain and recognize the intended incentives conferred by Orphan Drug Designation and Fast Track Designation for its product candidates, as applicable; risks related to Cabaletta's ability to protect and maintain its intellectual property position; risks related to fostering and maintaining successful relationships with Cabaletta's collaboration and manufacturing partners; uncertainties related to the initiation and conduct of studies and other development requirements for its product candidates; the risk that any one or more of Cabaletta's product candidates will not be successfully developed and/or commercialized; and the risk that the initial or interim results of preclinical studies or clinical studies will not be predictive of future results in connection with future studies. For a discussion of these and other risks and uncertainties, and other important factors, any of which could cause Cabaletta's actual results to differ from those contained in the forward-looking statements, see the section entitled "Risk Factors" in Cabaletta's most recent annual report on Form 10-K as well as discussions of potential risks, uncertainties, and other important factors in Cabaletta's other filings with the Securities and Exchange Commission. All information in this press release is as of the date of the release, and Cabaletta undertakes no duty to update this information unless required by law.

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