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

November 1, 2021
Date of Report (Date of earliest event reported)

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 November 1, 2021, Cabaletta Bio, Inc. (the "Company") announced its financial results for the third quarter ended September 30, 2021. A copy of the press release is being furnished as Exhibit 99.1 to this Report on Form 8-K.

Item 7.01 Regulation FD Disclosure.

On November 1, 2021, the Company posted to the "Investors & Media" section of the Company's website at *www.cabalettabio.com* an updated corporate presentation providing a corporate overview and updated development plan (the "Corporate Presentation"). A copy of the Corporate Presentation is attached hereto as Exhibit 99.2 and is incorporated by reference into this Item 7.01 of this Current Report on Form 8-K.

The information contained in Items 2.02 and 7.01 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, or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

Item 8.01 Other Events.

On November 1, 2021, the Company issued a press release announcing 28-day clinical data from the third dose cohort using 500 million DSG3-CAART cells in its ongoing DesCAARTes™ Phase 1 clinical trial of DSG3-CAART for the treatment of patients with mucosal-dominant pemphigus vulgaris. A copy of the full text of the press release referenced above is filed as Exhibit 99.3 to this Current Report on Form 8-K and is incorporated herein by reference into this Item 8.01 of this Current Report on Form 8-K.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

99.1	Press Release issued by the registrant on November 1, 2021, furnished herewith.
99.2	Cabaletta Bio, Inc. Corporate Presentation, dated November 2021, furnished herewith.
99.3	Press Release issued by the registrant on November 1, 2021, filed 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: November 1, 2021

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

Exhibit 99.1

Cabaletta Bio®

Cabaletta Bio Reports Third Quarter 2021 Financial Results and Provides Business Update

– Dose dependent increase in DSG3-CAART persistence observed in the third dose cohort with 500 million DSG3-CAART cells relative to the first two low dose cohorts in DesCAARTes™ Phase 1 clinical trial throughout the 28 days following infusion

– No dose limiting toxicities (DLTs) or clinically relevant adverse events observed as of October 31, 2021, in the first three dose cohorts

– Dosing initiated in fourth patient cohort at a dose of 2.5 billion DSG3-CAART cells. DesCAARTes™ trial advancing toward key milestones; top-line biologic activity data from first two low dose cohorts expected to be announced in 4Q21

– Lead preclinical program, MuSK-CAART, Investigational New Drug (IND) submission on track for 4Q21; PLA2R-CAART preclinical data to be presented at the American Society of Nephrology's Kidney Week that show potential as a precision therapy for patients with PLA2R membranous nephropathy

– Ended the quarter with $119.3M in cash, extending the cash runway to fund operations through at least 1Q23

PHILADELPHIA, Nov. 1, 2021 — Cabaletta Bio, Inc. (Nasdaq: CABA), a clinical-stage biotechnology company focused on the discovery and development of engineered T cell therapies for patients with B cell-mediated autoimmune diseases, today reported financial results for the third quarter ended September 30, 2021, and provided a business update.

"The DesCAARTes™ trial for DSG3-CAART for patients with mucosal-dominant pemphigus vulgaris has demonstrated encouraging momentum, with continued strong patient enrollment as well as new site and investigator engagement. Dose dependent increases in DSG3-CAART persistence in the third cohort through 28 days following infusion have been observed, as well as the continued absence of any DLTs or clinically relevant adverse events for the first three cohorts as of October 31, 2021. Our next anticipated data readout will include top-line biologic activity data from the first two low dose cohorts, which we expect to announce in the fourth quarter of 2021. We look forward to continuing to generate data on potential biologic activity as we proceed to higher dosing cohorts, with the goal of providing a targeted, highly effective, and potentially curative, therapy without generalized immunosuppression," said Steven Nichtberger, M.D., Chief Executive Officer and Co-founder of Cabaletta. "We are operating under a strengthened balance sheet as a result of $32 million in additional gross proceeds through our "at-the-market" (ATM) equity offering program. In addition to advancing the DesCAARTes™ trial, we are also focused on growing our novel pipeline. To that end, we expect to progress our two lead preclinical programs in the balance of the year with the submission of an IND to the FDA for MuSK-CAART being developed for patients with the MuSK form of myasthenia gravis, and a pre-IND interaction with the FDA to align on a development path for PLA2R-CAART being developed for patients with PLA2R-associated membranous nephropathy."

Autoimmune Disease-Focused Pipeline Highlights and Anticipated Upcoming Milestones

DSG3-CAART: Desmoglein 3 chimeric autoantibody receptor T (DSG3-CAART) cells as a potential treatment for patients with mucosal pemphigus vulgaris (mPV).

- Observance of dose dependent DSG3-CAART persistence and favorable safety profile through cohort three of the DesCAARTes™ Phase 1 trial: The Company announced today that three patient cohorts in the DesCAARTes™ Phase 1 trial have completed DSG3-CAART dosing as of October 31, 2021. The Company observed a dose dependent increase in persistence of DSG3-CAART in the third 500 million cell cohort relative to the first two low dose cohorts throughout the 28 days following infusion. In addition, no clinically relevant adverse events or DLTs were observed during the 28-day monitoring period post-infusion. These safety data were observed without preconditioning, and in the presence of circulating anti-DSG3 antibodies. This safety profile builds off 28-day safety data from three patients in the second cohort that the Company reported in August 2021.
- New site activations driving patient enrollment: As of October 31, 2021, three additional clinical sites were opened for recruitment, doubling the total number of activated DesCAARTes™ trial sites to six.
- Trial advancing through fourth patient cohort: Dosing was initiated in the fourth patient cohort at a dose of 2.5 billion DSG3-CAART cells. The Company anticipates announcing 28-day safety data for the fourth dose cohort in the first quarter of 2022.
- Near-term biologic activity data expected for the first two low dose cohorts: Cabaletta plans to announcetop-line biologic activity data from the first two low dose cohorts in the fourth quarter of 2021.

MuSK-CAART: Muscle Specific Kinase (MuSK) chimeric autoantibody receptor T (MuSK-CAART) cells as a potential treatment for patients with MuSK-associated myasthenia gravis.

- IND studies ongoing and Phase 1 trial planned for 2022: IND-enabling studies consistent with U.S. Food and Drug Administration (FDA) guidance received during the pre-IND meeting are ongoing. The Company remains on track to submit an IND to the FDA in the fourth quarter of 2021. This IND submission will incorporate clinical trial design and data insights from the DesCAARTes™ trial, including starting dose and dose fractionation regimen.
- GMP manufacturing secured with WuXi: The Company has implemented its manufacturing process with WuXi Advanced Therapies, Inc., its GMP manufacturing partner for the planned MuSK-CAART clinical study.

PLA2R-CAART: Phospholipase A2 receptor (PLA2R) chimeric autoantibody receptor T (PLA2R-CAART) cells as a potential treatment for patients with PLA2R-associated membranous nephropathy.

- Early preclinical validation of PLA2R-Chimeric AutoAntibody Receptor T cell candidates will be presented at ASN Kidney Week 2021: Preclinical data demonstrated that Chimeric Auto Antibody Receptor (CAAR) T cells specifically recognized and eliminated anti-PLA2R antibody-expressing B cells and membrane proteome arrays screened with PLA2R CAAR candidates did not identify off-target interactions. These data will be presented as an oral abstract by University of Pennsylvania professor Aimee Payne, M.D., Ph.D., Cabaletta Bio co-founder and Scientific Advisory Board co-chair, at the American Society of Nephrology (ASN) Kidney Week 2021.
- PLA2R-CAART advancing toward clinical development: Cabaletta expects to conduct apre-IND interaction with the FDA in the fourth quarter of 2021. The Company expects to discuss the future development path and determine its potential IND submission timing for the program.

Corporate Highlights

- Expanded executive leadership team with key appointment to support future growth: In September 2021, Michael Gerard was appointed general counsel. Mr. Gerard joined Cabaletta with a wide range of experience in strategic legal and corporate matters within the life sciences industry. Most recently, Mr. Gerard served as associate general counsel at Spark Therapeutics, Inc., where he supported the global gene therapy Manufacturing, Business Development, Technical Development, Supply Chain, Quality, Alliance Management, Real Estate, IT and Facilities teams.

Upcoming Events in the Fourth Quarter of 2021

- Cabaletta will participate in a fireside chat at the Guggenheim Securities 3rd Annual Neuro/Immunology Conference in November 2021.
- Cabaletta will participate in a fireside chat at the 4th Annual Evercore ISI HealthCONx Conference in November 2021.

Third Quarter 2021 Financial Results

The Company expects that its cash, cash equivalents and investments as of September 30, 2021, will enable it to fund its operating plan through at least the first quarter of 2023.

- Research and development expenses for the three months ended September 30, 2021, were $8.2 million, compared to $5.7 million for the same period in 2020.
- General and administrative expenses for the three months ended September 30, 2021, were $3.4 million, compared to $2.8 million for the same period in 2020.
- As of September 30, 2021, Cabaletta had cash, cash equivalents and investments of $119.3 million, compared to $108.7 million as of December 31, 2020. This increase primarily reflects net proceeds of $34.7 million from sales of common stock under Cabaletta's ATM offering program in the nine months ended September 30, 2021, partially offset by cash used in operations. In October 2021, the Company sold an additional 600,000 shares of its common stock through its ATM program, generating additional net proceeds of approximately $6.3 million.

About Cabaletta Bio

Cabaletta Bio is a clinical-stage biotechnology company focused on the discovery and development of engineered T cell therapies, and exploring their potential to provide a deep and durable, perhaps curative, treatment, for patients with B cell-mediated autoimmune diseases. The Cabaletta Approach to selective B cell Ablation (CABA™) platform, in combination with Cabaletta's proprietary technology, utilizes CAAR T cells that are designed to selectively bind and eliminate only specific autoantibody-producing B cells while sparing normal antibody-producing B cells, which are essential for human health. The Company's lead product candidate, DSG3-CAART, is being evaluated in the DesCAARTes™ phase 1 clinical trial as a potential treatment for patients with mucosal pemphigus vulgaris, a prototypical B cell-mediated autoimmune disease. The FDA granted Fast Track Designation for DSG3-CAART in May 2020. For more information about the DesCAARTes™ Phase 1 clinical trial, please visit our website (DesCAARTes™ Phase 1 Trial). The Company's lead preclinical product candidate, MuSK-CAART, is in IND-enabling studies and is designed as a potential treatment for patients with MuSK-associated myasthenia gravis. For more information, visit www.cabalettabio.com.

University of Pennsylvania Financial Disclosure

Dr. Payne is a University of Pennsylvania (Penn) faculty member, scientific collaborator, key advisor, and co-founder of Cabaletta Bio. As such, she holds an equity stake in the Company, her laboratory at Penn receives sponsored research funding from Cabaletta Bio, and as an inventor of the licensed technology she may receive additional future financial benefits under licenses granted by Penn to Cabaletta Bio. The University of Pennsylvania may also receive future financial benefit under licenses it has granted to Cabaletta Bio.

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 expectations regarding: the progress and results of its DesCAARTes™ Phase 1 trial, including Cabaletta's ability to enroll the requisite number of patients, dose each dosing cohort in the intended manner, and progress the trial; the expected timing and significance around the announcement of 28-day safety for the fourth dose cohort in the first quarter of 2022 andtop-line biologic activity data for the first two low dose cohorts in the fourth quarter of 2021; the expectation that Cabaletta may improve outcomes for patients suffering from mPV; the progress of its MuSK-CAART program, including the completion and expected results of its ongoing IND-enabling studies and plans to submit an IND application or equivalent regulatory filing for MuSK-CAART in the fourth quarter of 2021; Cabaletta's plans to conduct a pre-IND interaction with the FDA for PLA2R-CAART in the fourth quarter of 2021; the effectiveness and timing of product candidates that Cabaletta may develop, including in collaboration with academic partners; presentation of additional data at upcoming scientific conferences, and other preclinical data; expectations regarding the design, implementation, timing and success of its current and planned clinical trials and the successful completion of nonclinical studies; planned potential timing and advancement of its preclinical studies and clinical trials and related regulatory submissions; ability to continue its growth and realize the anticipated contribution of the members of its board of directors and executives to its operations and progress; the impact of COVID-19 on the timing, progress, interpretability of data, and results of ongoing or planned preclinical and clinical trials; statements regarding regulatory filings regarding its development programs; use of capital, expenses, future accumulated deficit and other financial results in the future; and ability to fund operations through at least the first quarter of 2023.

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: the risk that signs of biologic activity may not inform long-term results; Cabaletta's ability to demonstrate sufficient evidence of safety, efficacy and tolerability in its preclinical and clinical trials of DSG3-CAART; 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 the impact of public health epidemics, such as the COVID-19 pandemic, affecting countries or regions in which we have operations or do business; Cabaletta's ability to retain and recognize the intended incentives conferred by Fast Track Designation for DSG3-CAART for improving healing of mucosal blisters in patients with mucosal pemphigus vulgaris, respectively; risks related to Cabaletta's ability to protect and maintain its intellectual property position; uncertainties related to the initiation and conduct of studies and other development requirements for its product candidates; 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.

CABALETTA BIO, INC.
SELECTED FINANCIAL DATA
(unaudited; in thousands, except share and per share data)

Statements of Operations

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2021	2021	2020
	unaudited		unaudited	
Operating expenses:				
Research and development	$ 8,169	$ 5,650	$ 22,575	$ 15,601
General and administrative	3,394	2,766	9,845	8,902
Total operating expenses	11,563	8,416	32,420	24,503
Loss from operations	(11,563)	(8,416)	(32,420)	(24,503)
Other income:				
Interest income	3	23	19	473
Net loss	(11,560)	(8,393)	(32,401)	(24,030)
Net loss per share of voting and non-voting common stock, basic and diluted	$ (0.45)	$ (0.36)	$ (1.31)	$ (1.09)

Selected Balance Sheet Data

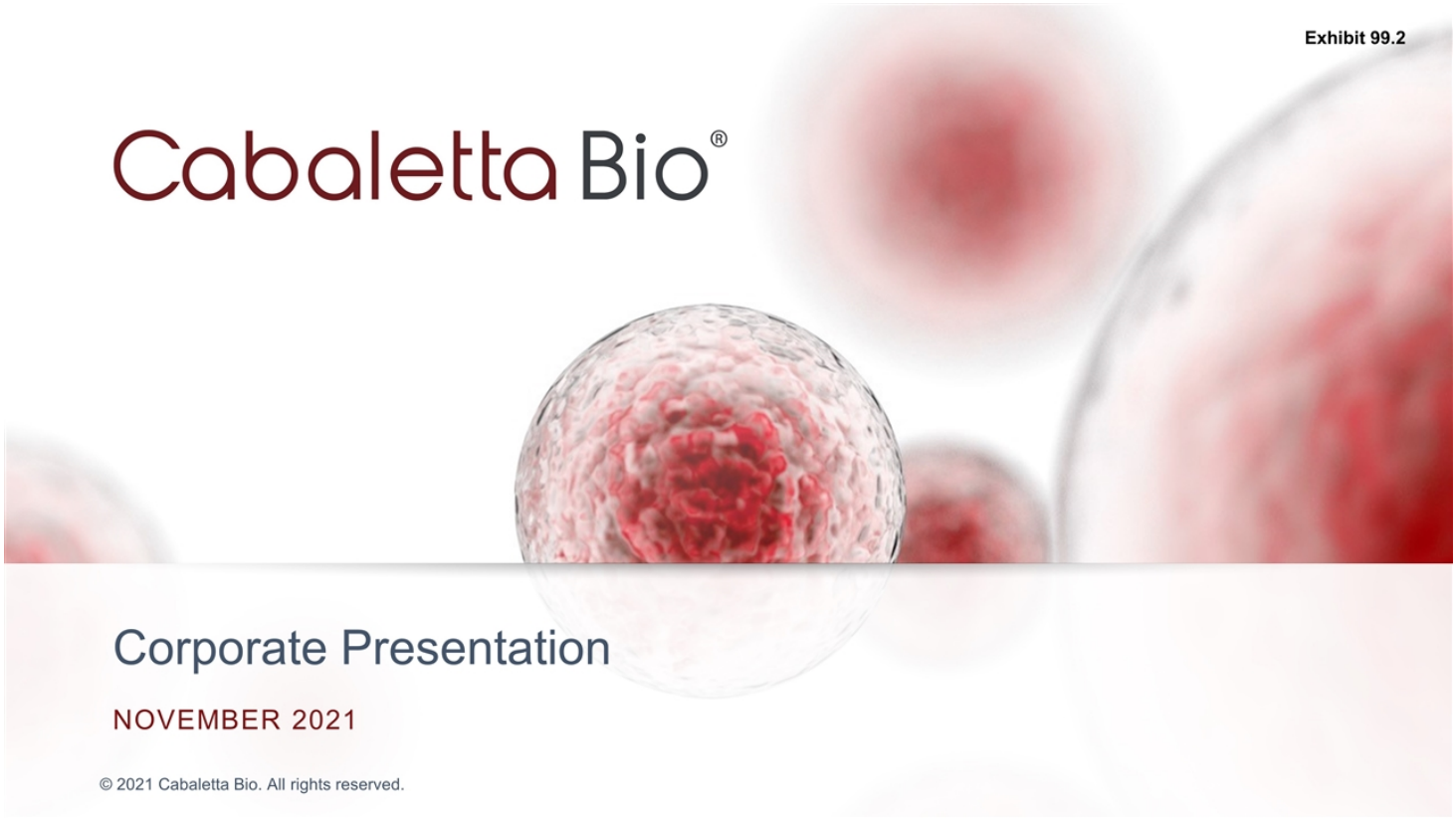
	September 30, 2021	December 31, 2020
	(unaudited)	
Cash, cash equivalents and investments	$ 119,260	$ 108,662
Total assets	122,638	114,724
Total liabilities	6,023	5,180
Total stockholders' equity	116,615	109,544

Contacts:
Anup Marda
Chief Financial Officer
investors@cabalettabio.com

Sarah McCabe
Stern Investor Relations, Inc.
212-362-1200
sarah.mccabe@sternir.com

Exhibit 99.2

Cabaletta Bio®



Corporate Presentation

NOVEMBER 2021

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 CAR T technology and CABA platform; the progress and results of our DesCAARTes™ Phase 1 trial, including our ability to enroll the requisite number of patients, dose each dosing cohort in the intended manner, and progress the trial; the expected announcement of biologic activity data for the first and second cohorts in the fourth quarter of 2021; the expected announcement of additional biologic activity data for the third dose cohort in the first quarter of 2022 as well as 28-day safety data for the fourth dose cohort in the first quarter of 2022; the therapeutic potential and clinical benefits of our product candidates; our ability to successfully complete our preclinical and clinical studies for our product candidates, including our ongoing Phase 1 DesCAARTes™ trial, MuSK-CAART study and other discovery programs; our ability to obtain and maintain regulatory approval of our product candidates, including our planned IND submission for our MuSK-CAART program; our plans to conduct a pre-IND meeting with the FDA for PLA2R-CAART in the fourth quarter of 2021; the further expansion and development of our modular CABA platform across a range of autoimmune diseases; our ability to contract with third-party suppliers and manufacturers and further develop our internal manufacturing strategy, capabilities and facilities; our potential commercial opportunities, including value and addressable market, for our product candidates; our expectations regarding our use of capital and other financial results during 2021; and our ability to fund operations through at least the first quarter of 2023. 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 and clinical trials of DSG3-CAART, 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 relationship with third parties, uncertainties related to regulatory agencies' evaluation of regulatory filings and other information related to our product candidates, 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, the impact of COVID-19 on the timing, progress, interpretability of data, and results of ongoing or planned clinical trials and risks relating to as a result of extraordinary events or circumstances such as the COVID-19 pandemic, and any business interruptions to our operations or to those of our clinical sites, manufacturers, suppliers, or other vendors resulting from the COVID-19 pandemic or similar public health crisis. 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 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®

Cabaletta overview

Developing highly specific CAAR T products to treat B cell-mediated autoimmune diseases

- Where there is a biologic opportunity for deep and durable, perhaps curative, responses
- Leveraging a clinically validated CAR T product design and manufacturing process through Penn alliance

DesCAARTes™ trial enrolling patients with mucosal pemphigus vulgaris (mPV) at 2.5B cell dose

- Dose dependent increase in DSG3-CAART persistence observed in third cohort relative to 1st 2 low dose cohorts throughout 28 days following infusion
- No DLTs or clinically relevant AEs observed to date[1] following completion of first 3 dose cohorts (20M, 100M & 500M cells)
  - Without lymphodepletion but in the presence of circulating anti-DSG3 antibodies
- Dosing initiated in 4th dose cohort (2.5B cells); 28 day safety data expected to be announced in 1Q22[2]
- Plan to announce top-line biologic activity data from the 1st 2 low dose cohorts (20M and 100M cells) in 4Q21

Preclinical pipeline led by MuSK-CAART for myasthenia gravis – IND filing planned in 4Q21

- PLA2R-CAART pre-IND interaction with FDA anticipated in 4Q21 for PLA2R positive primary membranous nephropathy patients
- Product portfolio[3] currently targeting diseases that affect over 80,000 patients in the US

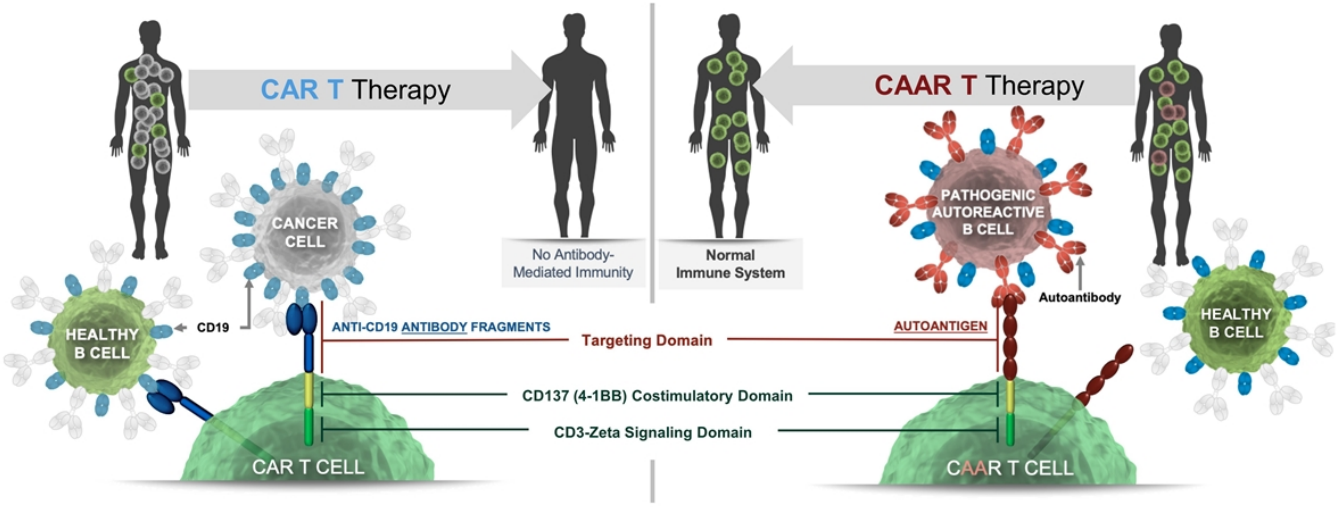
Cash runway through at least 1Q23 with $119.3M in cash and investments as of September 30, 2021

** 20M, 100M, 500M & 2.5B refers to the number of DSG3-CAART cells infused for patients in dosing cohorts 1 to 4 (M – millions; B – billions).*

1. As of October 31, 2021.
2. Assumes no dose-limiting toxicities are observed during cohort and uninterrupted enrollment occurs in the trial.
3. Includes five disclosed product candidates and two undisclosed pipeline disease targets in our pipeline.

Our scientific platform leverages clinically validated CAR T technology

CAAR T product candidates are designed for selective and specific elimination of the pathogenic B cells



Chimeric **A**ntigen **R**eceptor **T** cell

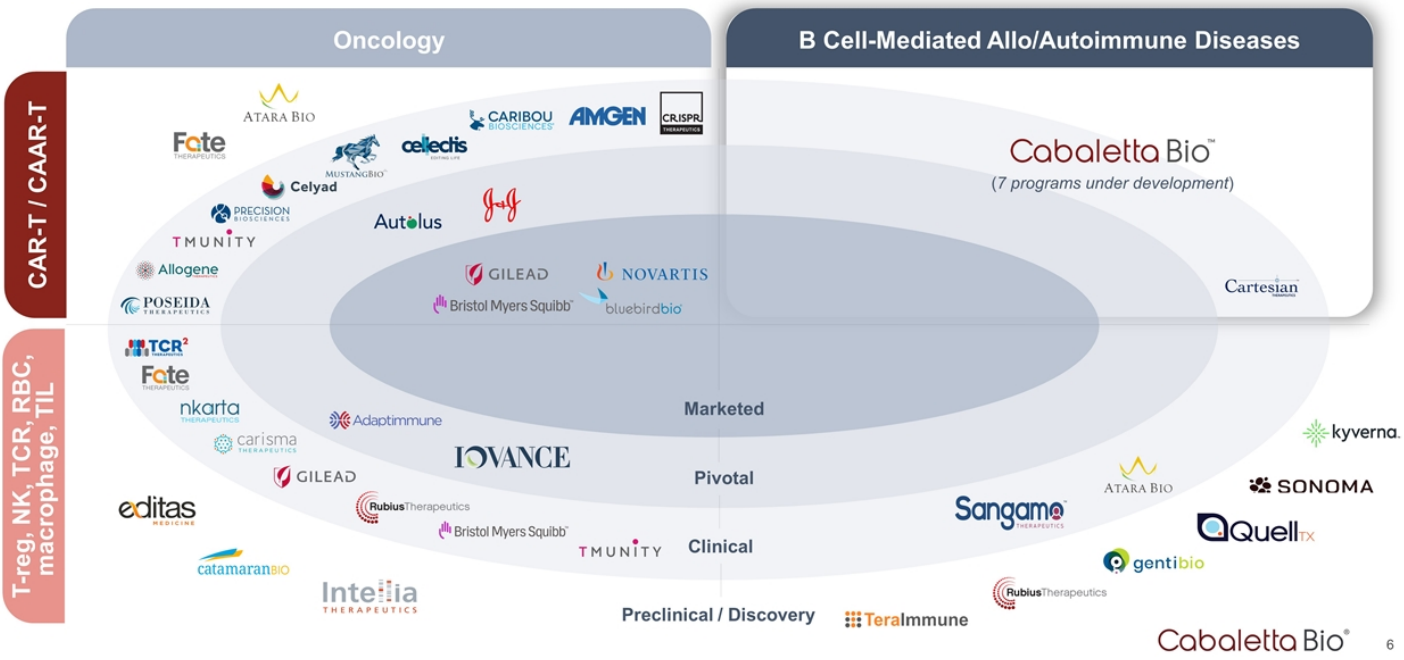
Kymriah

Chimeric **A**uto**A**ntibody **R**eceptor **T** cell

CABA CAAR T

Cabaletta: Advancing targeted cell therapy to autoimmunity

Foundational CAR T technology clinically validated in treating B cell-mediated cancers



CABA platform may apply across a range of autoimmune diseases

Biologic opportunity for cure or treatment may be possible in dozens of B-cell mediated autoimmune diseases*

Neurology
- Myasthenia Gravis[1,2,3,5]
- Neuromyelitis Optica[3]
- Chronic Inflammatory Demyelinating Polyneuropathy[1,2]
- Anti-NMDAR Encephalitis[3]
- Lambert-Eaton Syndrome[5]

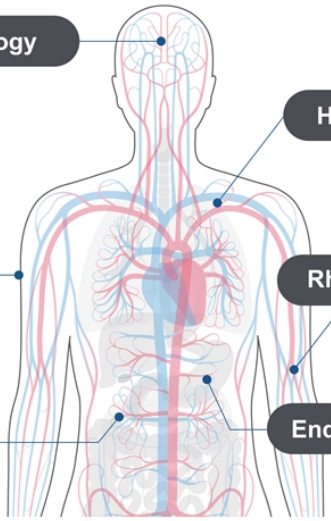
Hematology
- Immune Thrombocytopenic Purpura[3]
- Thrombotic Thrombocytopenic Purpura[1,2,3]
- Antiphospholipid Syndrome[4,5]
- Autoimmune Hemolytic Anemia[3]

Dermatology
- Pemphigus Vulgaris[1,2,3]
- Pemphigus Foliaceus[1,2,3]
- Epidermolysis Bullosa Acquisita[3]
- Bullous Pemphigoid[1,2,3]

Rheumatology
- Rheumatoid Arthritis[2,3,4]
- Systemic lupus erythematosus[3,4,5]
- ANCA-Associated Vasculitis[3,4,5]
- Myositis[5]

Nephrology
- Lupus Nephritis[3,4]
- Membranous Nephropathy[1,2,3]
- Goodpasture's Syndrome[1,2,3,4]

Endocrinology
- Type 1 Diabetes[3]
- Graves' Disease[3,5]
- Hashimoto's Disease[5]



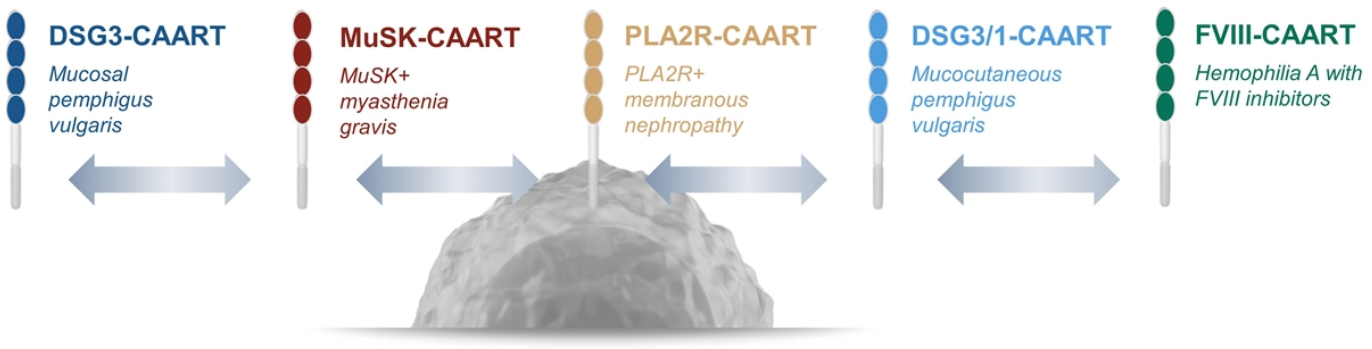
** Illustrative list of diseases where biologic opportunity for cure or treatment may be possible.*

1. Koneczny, Inga. "Update on IgG4-mediated autoimmune diseases: new insights and new family members." Autoimmunity Reviews (2020): 102646.
2. Huijbers, Maartje G., et al. "IgG4-mediated autoimmune diseases: a niche of antibody-mediated disorders." Annals of the New York Academy of Sciences 1413.1 (2018): 92.
3. Ludwig, Ralf J., et al. "Mechanisms of autoantibody-induced pathology." Frontiers in immunology 8 (2017): 603.
4. Suurmond, Jolien, and Betty Diamond. "Autoantibodies in systemic autoimmune diseases: specificity and pathogenicity." The Journal of clinical investigation 125.6 (2015): 2194-2202.
5. Xiao, Ze Xiu, Joseph S. Miller, and Song Guo Zheng. "An updated advance of autoantibodies in autoimmune diseases." Autoimmunity Reviews (2020): 102743.

Modular platform with “plug-and-play” architecture

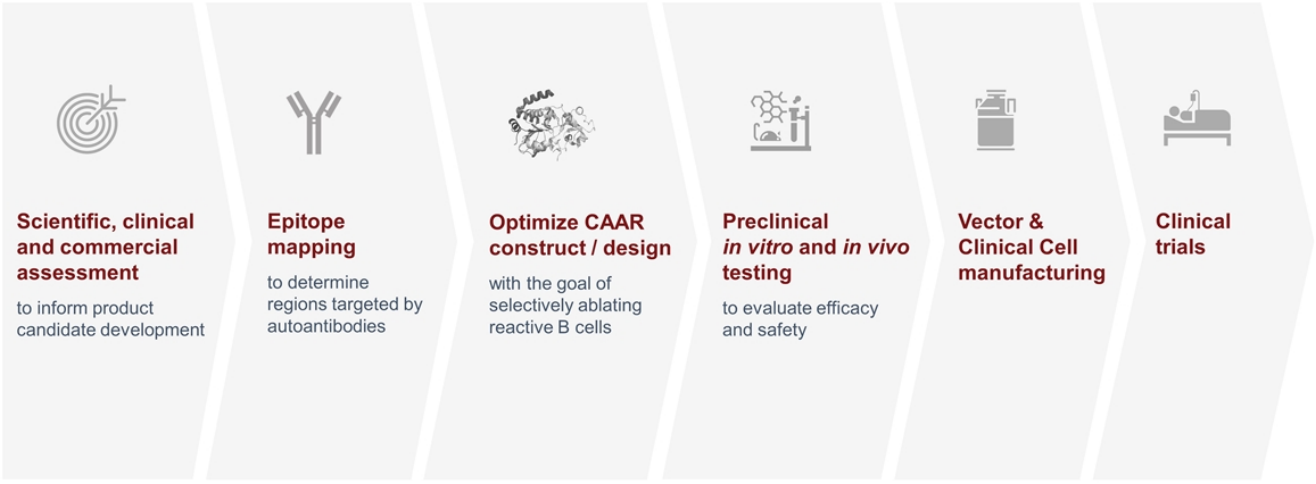
Technology foundation designed to enable a portfolio of programs targeting B cell-mediated diseases

Swapping the extracellular domain, or autoantigen, creates **new product candidates**

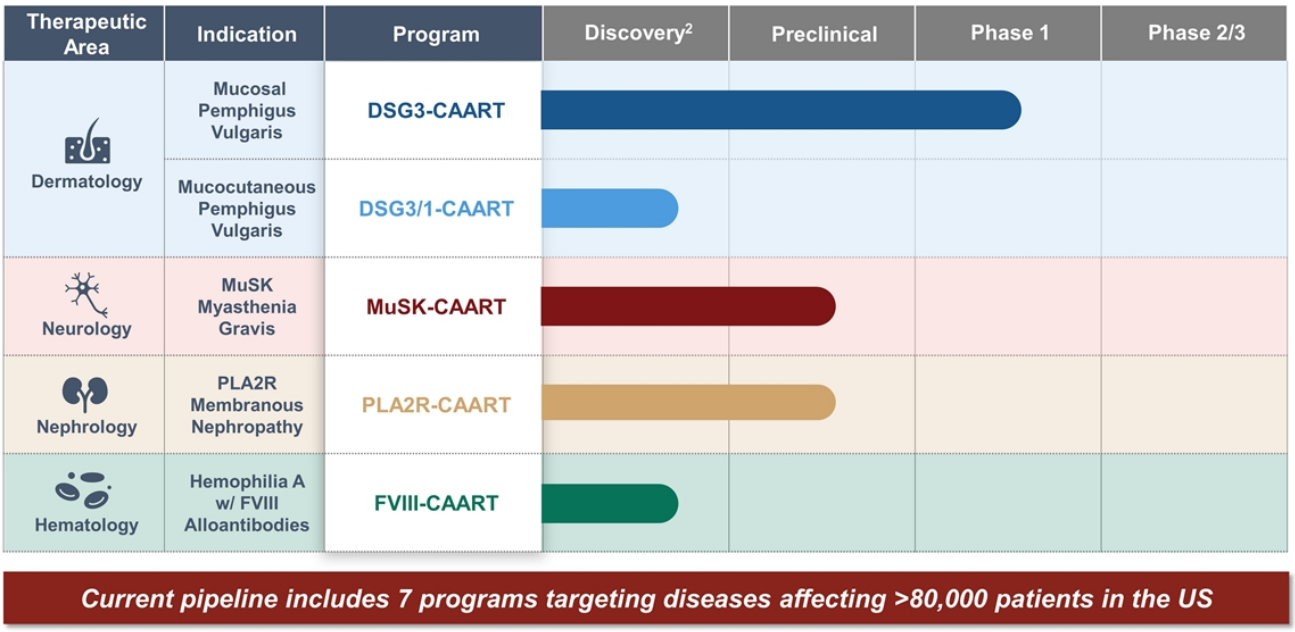


Clinically validated engineered T cell platform is the foundational technology

CABA (Cabaletta Approach for Selective B cell Ablation) platform



Pipeline[1] includes multiple disease targets where cure is possible



Current pipeline includes 7 programs targeting diseases affecting >80,000 patients in the US

1. Two additional undisclosed disease targets added to our pipeline portfolio through expansion of our Sponsored Research Agreement with the University of Pennsylvania are not shown.
2. In our discovery stage, we perform epitope mapping and optimize CAAR construct and design.

Data from the DesCAARTes™ trial provides read-through to pipeline

Manufacturing

- Strong operating partnership with Penn CVPF manufacturing organization
- Use of validated process from CAR T experience at Penn helps mitigate risk
- 100% success rate for DesCAARTes™ trial manufacturing to date[1]

Clinical data

- Dose-dependent DSG3-CAART persistence in third cohort relative to 1st 2 low dose cohorts
  - Observed throughout 28 days following infusion
- No DLTs or any clinically relevant toxicities observed to date[1] in the first 3 cohorts
  - Without lymphodepletion, but in the presence of circulating anti-DSG3 antibodies
- Top-line biologic activity data in first 2 low dose cohorts to be announced 4Q21

Biologic Activity Indicators

- We are evaluating:
  - Persistence of DSG3-CAART detected via qPCR
  - Change in level of DSG3 antibodies (targeting persistent reduction)
  - Reduced mPV therapy and absence of new systemic rescue therapy
  - Change in disease activity based on clinically validated scales (e.g. PDAI, ODSS)

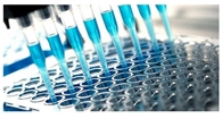
1. As of October 31, 2021.

Cabaletta Bio®

PV is an optimal lead indication for CAAR T therapy

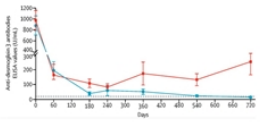
DSG3 antibodies are widely considered to be necessary and sufficient to cause PV[1]

1



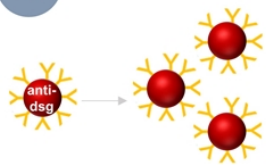
Serum anti-DSG3 **antibodies are 98 - 100% sensitive *and* specific**[2]

2



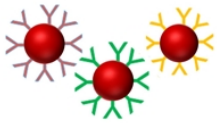
Depletion of B cells by rituximab[3] or antibody by plasmapheresis **transiently improves clinical disease**

3



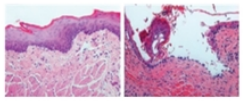
Incomplete B cell depletion by rituximab leads to PV recurrences, with **identical disease-causing B cell clones**[4,5]

4



The B cell repertoire and **antigenic epitopes** on DSG1/3 **are well understood**[6], and formed the basis for DSG3 and DSG1 CAAR designs

5

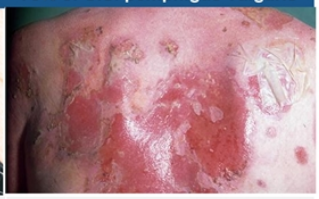


The DSG3 CAAR has **published animal model** proof-of-concept validation[7]

1. Spindler, Volker, et al. "Mechanisms causing loss of keratinocyte cohesion in pemphigus." Journal of Investigative Dermatology 138.1 (2018): 32-37.
2. Schmidt, Enno, et al. "Novel ELISA systems for antibodies to desmoglein 1 and 3." Experimental dermatology 19.5 (2010): 458-463.
3. Joly, Pascal, et al. "First-line rituximab combined with short-term prednisone versus prednisone alone for the treatment of pemphigus (Ritux 3): a prospective, multicentre, parallel-group, open-label randomised trial." The Lancet 389.10083 (2017): 2031-2040.
4. Mouquet, Hugo, et al. "B-cell depletion immunotherapy in pemphigus: effects on cellular and humoral immune responses." Journal of Investigative Dermatology 128.12 (2008): 2859-2869.
5. Hammers, Christoph M., et al. "Persistence of anti-desmoglein 3 IgG+ B-cell clones in pemphigus patients over years." Journal of Investigative Dermatology 135.3 (2015): 742-749.
6. Ohyama, Bungo, et al. "Epitope spreading is rarely found in pemphigus vulgaris by large-scale longitudinal study using desmoglein 2–based swapped molecules." Journal of investigative dermatology 132.4 (2012): 1158-1168.
7. Ellebrecht, Christoph T., et al. "Reengineering chimeric antigen receptor T cells for targeted therapy of autoimmune disease." Science 353.6295 (2016): 179-184.

Overview of Pemphigus Vulgaris

Current treatments require broad immunosuppression associated with safety risks and transient efficacy

	Mucosal PV[1] 25% of U.S. pemphigus vulgaris	Mucocutaneous PV[2] 75% of U.S. pemphigus vulgaris
		
Associated Antibody	**Anti-DSG3**	**Anti-DSG3 + Anti-DSG1**
Clinical Signs	Painful blisters of the mucous membranes (mouth, nose, larynx, esophagus, eyes, genitalia, rectum)	Blisters on orifices and skin
US Disease Prevalence	**3,250 to 4,750**	**9,750 to 14,250**

Current Treatment Landscape

Broad immunosuppression[3,6]

- Modestly effective
- Poorly tolerated

Rituximab plus steroids (~3,500 mg/yr)[4]

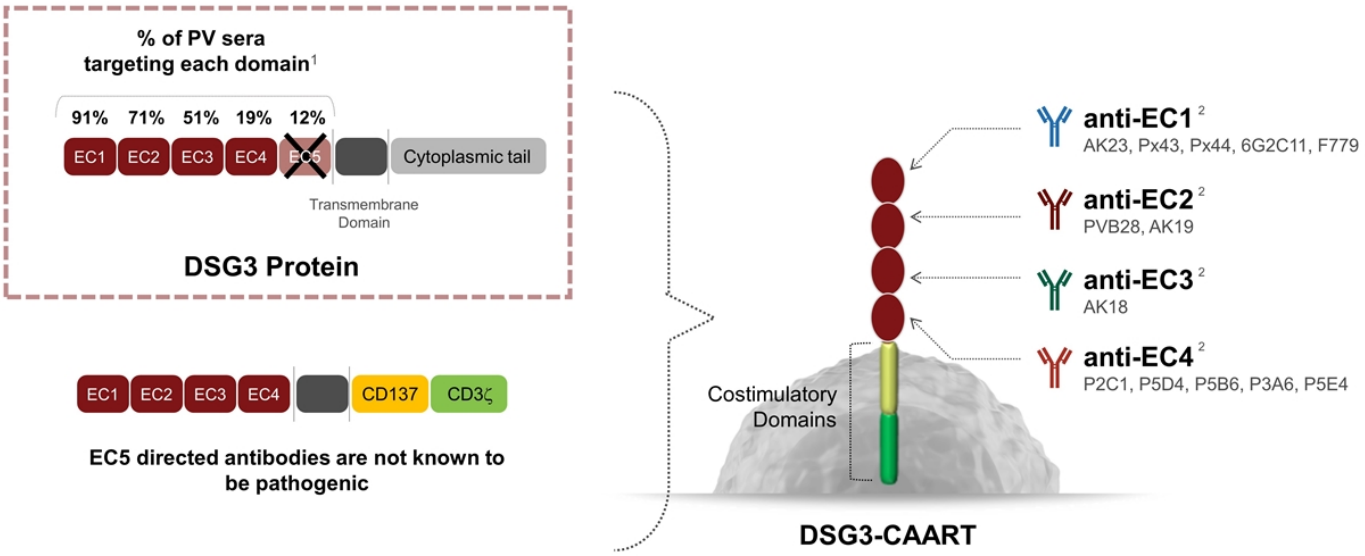
- Response: ~40% of patients achieved a 16-week period with no lesions or medicines during 1 yr[4,5]
- 22% annual serious adverse event (SAE) rate[4]
  - 4-9%[3,4,5] annual risk of severe infection in PV
- Real world data indicate:
  - *Transient* remission ~ 70% CROT[6]:
    - ~30% relapse in 1 year[6]
    - >50% relapse within 2 years[6]
  - ~30% never achieve CROT[6]
  - ~1.9% lifetime risk of fatal infection[7]

CROT = 8+ weeks without lesions while off systemic therapy

1. Image credit: D@nderm.
2. http://www.vgrd.org/archive/cases/2004/pv/DSCN4996%20copy.JPG
3. Joly, Pascal, et al. "First-line rituximab combined with short-term prednisone versus prednisone alone for the treatment of pemphigus (Ritux 3): a prospective, multicentre, parallel-group, open-label randomised trial." The Lancet 389.10083 (2017): 2031-2040.
4. Werth, Victoria P., et al. "Rituximab versus Mycophenolate Mofetil in Patients with Pemphigus Vulgaris." New England Journal of Medicine (2021).
5. Rituximab label, 08/2020 revision.
6. Kushner, Carolyn J., et al. "Factors Associated With Complete Remission After Rituximab Therapy for Pemphigus." JAMA dermatology (2019).
7. Tony, Hans-Peter, et al. "Safety and clinical outcomes of rituximab therapy in patients with different autoimmune diseases: experience from a national registry (GRAID)." Arthritis research & therapy 13.3 (2011): 1-14.

DSG3-CAART is designed to bind all known pathogenic autoantibodies

Inclusion of all disease-relevant epitopes enables a ‘one-size-fits-all’ approach for patients with mPV



1. Ohyama, Bungo, et al. "Epitope spreading is rarely found in pemphigus vulgaris by large-scale longitudinal study using desmoglein 2–based swapped molecules." Journal of investigative dermatology 132.4 (2012): 1158-1168.
2. Antibodies that target the specific extracellular domain are shown below each extracellular domain.

DSG3-CAART preclinical data[1,2]

No evidence of toxicity at clinically relevant doses with selective and specific target engagement

	INDICATOR	RESULTS
Tolerability	***In vitro* off-target toxicity**	No specific cytotoxicity at clinically relevant cell numbers vs FcγR-expressing cells No confirmed interactions with human membrane proteins
	***In vivo* off-target toxicity**	No off-target effects detected at clinically relevant doses
Target Engagement	**Anti-DSG3 autoantibody titer**	Serologic 'remission' – dose-dependent elimination of anti-DSG3 B cells and antibodies
	CAAR T cell engraftment	Dose-dependent increase in CAAR-positive cells observed via flow cytometry
	Tissue blistering	Histologic 'remission' – no blistering of oral mucosa
	Anti-DSG3 hybridoma outgrowth	Significantly delayed outgrowth despite soluble anti-DSG antibodies

1. Ellebrecht, Christoph T., et al. "Reengineering chimeric antigen receptor T cells for targeted therapy of autoimmune disease." Science 353.6295 (2016): 179-184.
2. Lee, Jinmin, et al. "Antigen-specific B-cell depletion for precision therapy of mucosal pemphigus vulgaris." The Journal of Clinical Investigation (2020).

DesCAARTes™:

Phase 1 clinical trial in mucosal-dominant PV (mPV) patients

Open-label study to determine the maximum tolerated dose & fractionation of DSG3-CAART

Major Inclusion Criteria

- Age: ≥18
- Inadequately managed by standard immunosuppressive therapies
- Confirmed diagnosis
- Active disease
- Anti-DSG3 antibody positive

Major Exclusion Criteria

- Rituximab recently administered
- Prednisone > 0.25mg/kg/day
- Other autoimmune disorder requiring immunosuppressive therapies
- Recent investigational treatment
- ALC < 1,000 at screening

SCREENING → MANUFACTURING → TREATMENT (~1 WEEK) → MONITORING (2-4 WEEKS) → Next Patient

Part	Cohort	# Subjects
A – Dose Escalation Fractionated infusion at increasing dose levels	A1-A4	3 (+3) per cohort
B – Dose Consolidation Consolidating selected dose fractions into a single infusion	B1-B2	3 (+3) per cohort
C – Expansion[1] Expanded subject enrollment at final selected dose	C	~12
	Total	**~30 (+18)**

Study Endpoint & Objectives

Primary Endpoint: Adverse Events, including Dose Limiting Toxicity (DLT)

- DLTs include any grade 3 or 4 CRS or neurotoxicity, or any grade 2 CRS or neurotoxicity that failed to improve to ≤ Grade 1 or baseline within 7 days

Secondary Objectives: DSG3 ELISA titer changes, CAAR T expansion/persistence, change in PDAI, rate of/time to/duration of remission, manufacturing success rate

1. FDA has requested, and the Company has agreed, that we will share data from part A to inform a discussion on the optimal design of part C. According to FDA advice, the submission of part A data is not gating to planned enrollment in part B.

DesCAARTes™ clinical trial assessments and timeframes

Safety assessed acutely, at 28 days and at 3 months, with data on biologic activity within 6 months

Day 28 safety data

Infusion of DSG3-CAART in context of circulating soluble Ab

Other safety measures

- CRS / neurotoxicity
- Other adverse events

Primary safety endpoint at 3 months

Potential for disease flare during planned steroid taper

Early evaluations of efficacy includes[1]:

- Persistence of DSG3-CAART detected via qPCR
- Change in level of DSG3 antibodies (targeting persistent reduction)
- Reduced mPV therapy and absence of new systemic rescue therapy
- Change in disease activity based on clinically validated scales
  - e.g. PDAI, ODSS

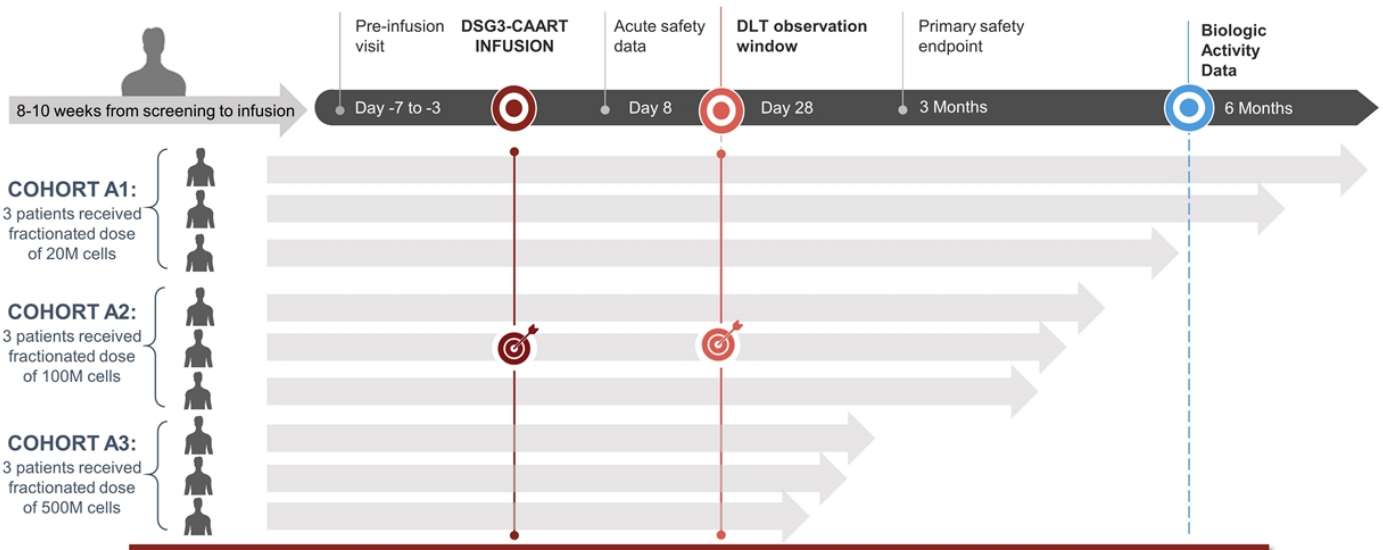
Data expected within 6 months of completion for each cohort

** Clearance of 28-day observation window without DLTs required to initiate next dosing cohort.*

1. This information represents data that we believe can be used to inform potential efficacy endpoints in future clinical development.
2. Spindler, Volker, et al. "Mechanisms causing loss of keratinocyte cohesion in pemphigus." Journal of Investigative Dermatology 138.1 (2018): 32-37.

No DLTs observed to date in 1st 3 cohorts of DesCAARTes™ trial

DSG3-CAART persistence observed via qPCR across cohorts

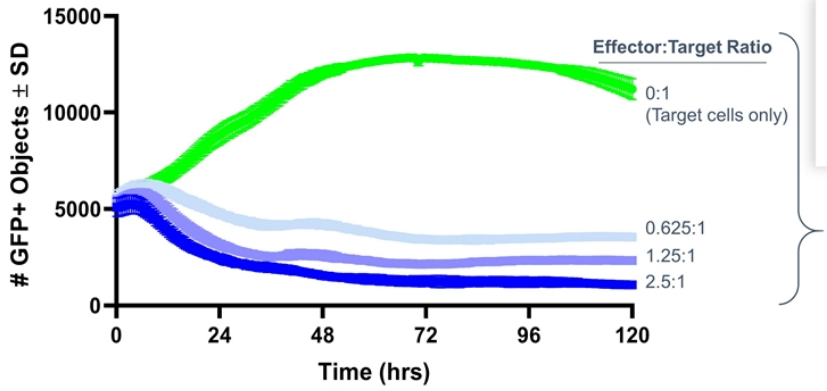


No clinically meaningful adverse events in any subject to date[1], enabling progression to cohort A4 with dose of 2.5B cells

1. As of October 31, 2021.

Manufactured DSG3-CAART cells exhibit target elimination *in vitro*

100% success rate for manufacturing of DSG3-CAART cells in DesCAARTes™ trial to date[1]



DSG3-CAART cells successfully engage & eliminate DSG3 antibody expressing target cells *in vitro*

Samples run in triplicate

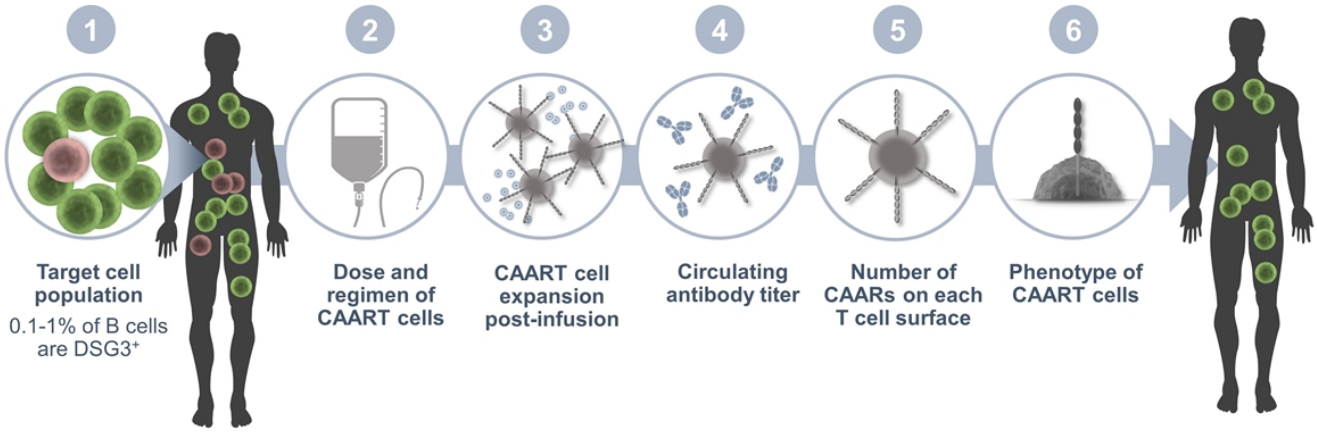
1 × 10^5 target cells per well

Manufacturing partnership with Penn is delivering necessary quality & capacity for the clinical trial requirements

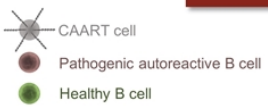
1. As of October 31, 2021.

Potential drivers of biologic activity in autoimmune disease

Range of strategies to consider for targeted cell therapy approaches in patients with autoimmune diseases



Many options exist to optimize product and patient profiles



Accelerating timelines for DesCAARTes™ trial with three new sites

Rapid cadence of trial recruitment may enable enrollment & dosing of first 4 cohorts by end of 2021[1]

- Growing clinical site network with high investigator engagement
- Expanding relationships with patient advocacy organizations
- Opportunities to accelerate development (ORPHAN DRUG, FAST TRACK)

	Milestone	1Q 2021	2Q 2021	3Q 2021	4Q 2021	1Q 2022
DSG3-CAART: DesCAARTes™ Data	1st cohort (*20M*)[2]	COMPLETED				
	2nd cohort (*100M*)[2]					
	3rd cohort (*500M*)[2]					
	4th cohort[1](*2.5B*)[2]					

28-Day Safety

Top-line Biologic Activity

Accelerating development & learnings from DesCAARTes™ trial to inform MuSK-CAART & future programs

1. Assumes no dose-limiting toxicities are observed during cohort and uninterrupted enrollment occurs in the trial.
2. Number of transduced cells.

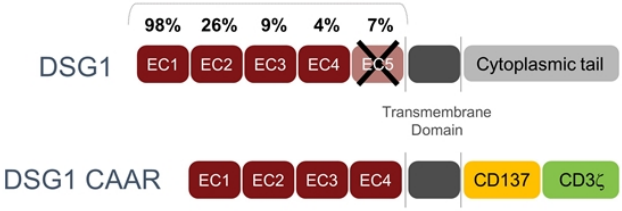
DSG3/1 CAART for mucocutaneous PV (mcPV)

Plan to submit an IND after review of DSG3-CAART safety and biologic activity data with FDA

DSG3/1 CAARs designed for mcPV

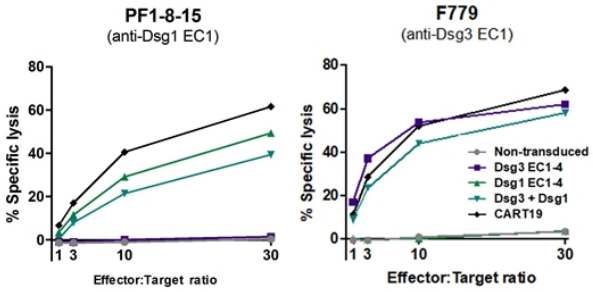
- DSG3 and DSG1 autoantibodies
- Most severe and common form of PV (~75%)
- Mucosal blistering, plus skin erosion and blistering
- Managed with immune suppression, similar to mPV
  - High risk of relapse
  - Potential for hospitalizations and fatal infections

% of PV sera targeting each domain[1]



DSG1-CAART and DSG3-CAART both demonstrated specific cytotoxicity *in vitro*[2]

- Together, DSG1-CAART and DSG3-CAART demonstrated cytotoxicity towards anti-DSG3 and anti-DSG1 B cells



1. Ohyama, Bungo, et al. "Epitope spreading is rarely found in pemphigus vulgaris by large-scale longitudinal study using desmoglein 2–based swapped molecules." Journal of investigative dermatology 132.4 (2012): 1158-1168.
2. As presented at the 2018 International Investigative Dermatology conference.

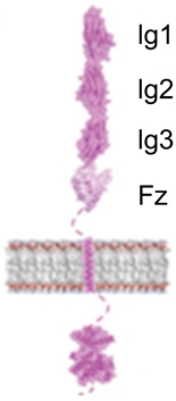
Cabaletta Bio®

High unmet need in MuSK myasthenia gravis; a valuable CAAR target

All known extracellular domains can be included in the CAAR design

Similarities to pemphigus support clinical potential of CAAR T in MuSK MG

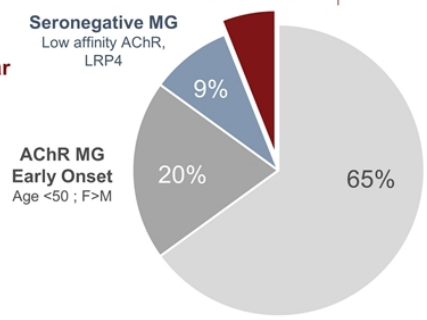
1. Autoantibody titers drop after rituximab[1,2]
2. Pathogenic B cells are incompletely eliminated by rituximab and persist during relapse[3]



MuSK has similar modular structure and size as DSG3

MuSK MG
6.0 - 7.5%

- Typically more severe
- Limited treatment options
- Early onset – 7:1 females

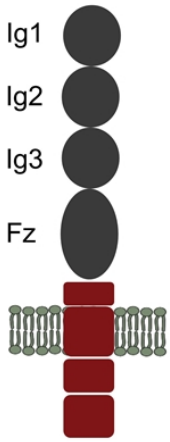


Total US MG Prevalence: 50,000 to 80,000 patients

1. Hain, Berit, et al. "Successful treatment of MuSK antibody–positive myasthenia gravis with rituximab." Muscle & Nerve: Official Journal of the American Association of Electrodiagnostic Medicine 33.4 (2006): 575-580.
2. Illa, Isabel, et al. "Sustained response to Rituximab in anti-AChR and anti-MuSK positive Myasthenia Gravis patients." Journal of neuroimmunology 201 (2008): 90-94.
3. Jiang, Ruoyi, et al. "Single-cell repertoire tracing identifies rituximab-resistant B cells during myasthenia gravis relapses." JCI insight 5.14 (2020).

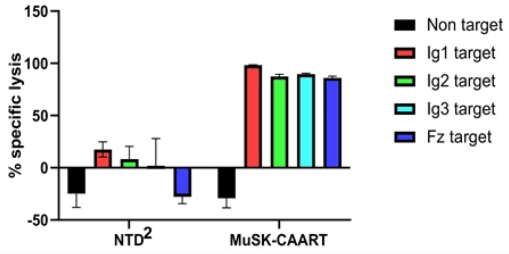
MuSK-CAART showed *in vitro* selective & specific target engagement[1]

Additional *in vitro* studies demonstrated no confirmed off-target toxicity observed with MuSK-CAART to date

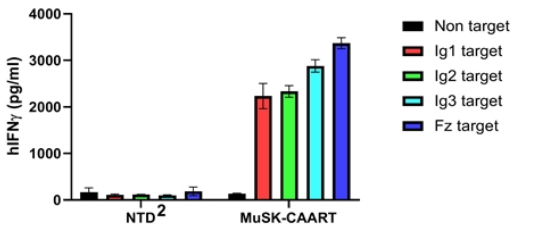


MuSK-CAART

MuSK-CAART cytotoxicity vs all epitopes tested[3]



Pro-inflammatory cytokine production[3]



MuSK-CAART observed to be specific for anti-MuSK antibody expressing cells *in vitro*

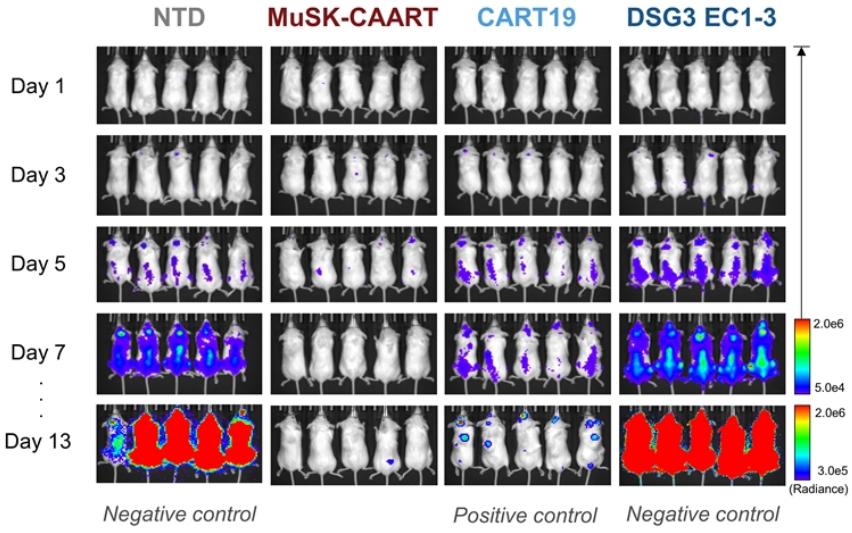
- No off-target toxicity observed *in vitro*
  - ~6,000 human membrane proteins evaluated
- No on-target toxicity observed *in vitro*
  - Cellular assays to evaluate cytotoxicity against native ligand LRP4

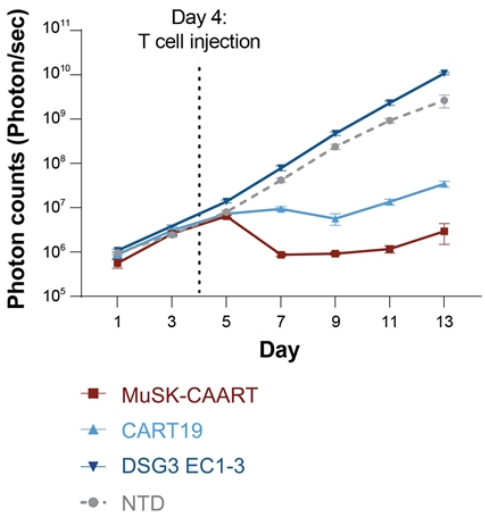
MuSK-CAART program on track for IND filing in 4Q21

1. https://cabalettabio.com/technology/posters-publications.
2. NTD = non transduced T cell control against the same target cells
3. Target cells are the pre B cell line, Nalm-6, genetically modified to express anti-MuSK antibodies specific for one of the MuSK domains, Ig1, Ig2, Ig3, or Fz

MuSK-CAART demonstrated specific *in vivo* target engagement[1]

MuSK-CAART eliminated anti-MuSK target cells[2] in an animal model where CART19 cells were a positive control





1. https://cabalettabio.com/technology/posters-publications.
2. Target cells represent a B cell tumor line (CD19 positive) that has been modified to express the anti-MuSK antibody.

Cabaletta Bio®

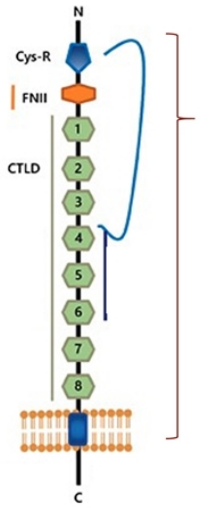
Preclinical stage CAART program in membranous nephropathy

Primary MN is an immune-mediated kidney disease with anti-PLA2R antibodies in ~75% of patients

Membranous nephropathy (MN) is a type of glomerular disease that causes nephrotic syndrome and may lead to kidney failure

Accumulating evidence of a correlation between PLA2R antibodies and disease activity, remission and relapse in primary MN

1. PLA2R autoantibody levels routinely used as diagnostic and prognostic markers
2. Autoantibody titer shown to precede and rise rapidly before clinical manifestations
3. Co-localization of antigen & PLA2R antibodies at site of damage in kidney



PLA2R+ MN is attractive for CAAR development

- Single pass transmembrane protein with distinct immunogenic regions
- Epitopes are well-defined
- IgG4-dominant disease, similar to PV and MuSK MG

Preclinical data to be presented at ASN Kidney Week supporting PLA2R-CAART as a potential precision therapy for patients with PLA2R MN; pre-IND interaction with FDA anticipated to occur in 4Q21

Changing treatment paradigm highlights the role of B cells in disease

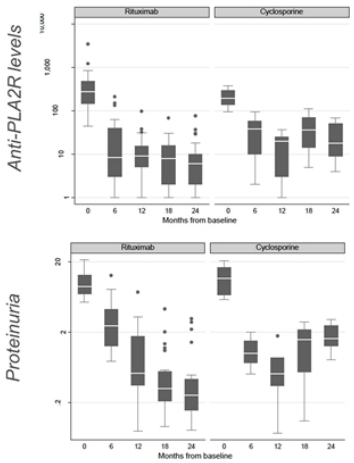
Opportunity to develop antigen-targeted therapy to address significant unmet need

High unmet need despite B cell-depleting therapies

- Rituximab increasing 1st line for medium to high-risk pts
  - 1/3 cure; 1/3 relapse; 1/3 fail[1]
  - Relapse of nephrotic syndrome occurs within 2-4 years
  - Preceded by return of B cells & PLA2R autoantibodies
- Patients with higher anti-PLA2R levels at baseline and with epitope spreading less likely to respond to rituximab
- Up to 30% of diagnosed patients develop ESRD

MENTOR trial results:

Antibody levels & proteinuria by group in patients with complete or partial remission at month 24

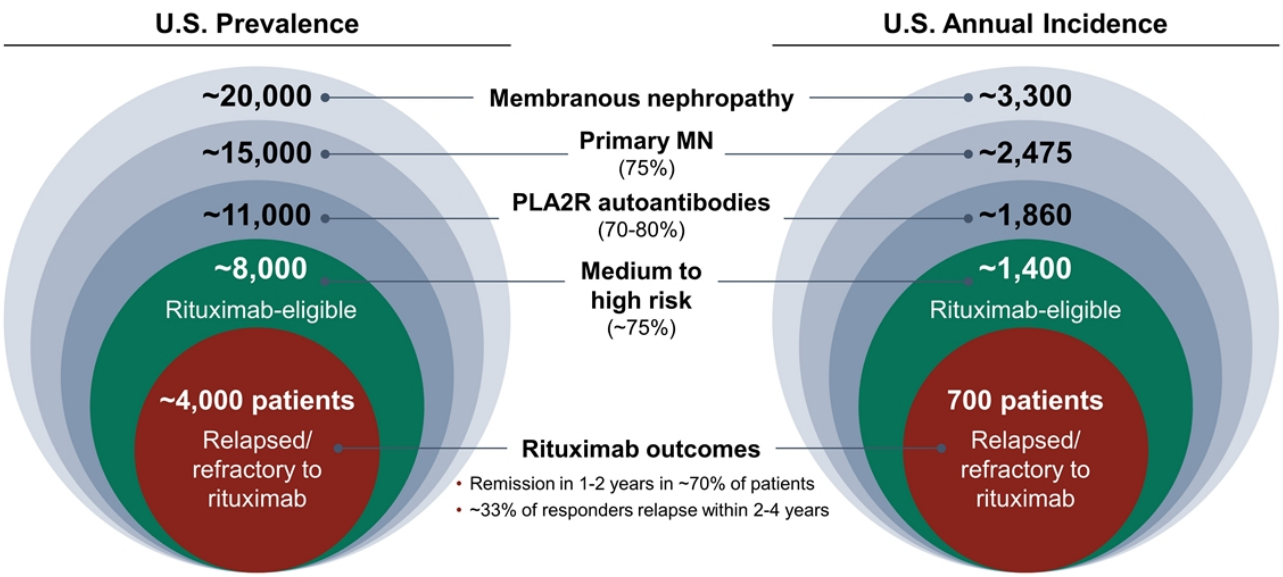


PLA2R antibody levels correlate with proteinuria, a commonly used surrogate endpoint

1. Accelerated rituximab clearance secondary to renal damage in patients with MN thought to be a major driver of limited drug effect.

Potential addressable market for PLA2R-CAART

Eligible population prevalence of ~4,000 to 8,000 patients & annual incidence of ~700 to 1,400 patients



Cabaletta Bio®

Manufacturing strategy

Three-stage approach allows for efficient allocation of capital while leveraging experienced partners

Stage 1: Penn DSG3-CAART Phase 1[1]	**Stage 2:** CDMOs & CABA Process MuSK-CAART Phase 1	**Stage 3:** Cabaletta Facility Commercialization & Scale-Up
2019 –	2021 –	Data-gated investment
Penn; Children's Hospital of Philadelphia	OxfordBioMedica; WuXi AppTec	Cabaletta Bio®
• Cell processing capacity secured through Penn partnership • SOPs previously used to develop an FDA approved product • Clinical vector validated	• CDMOs for vector and cell processing with commercial support capabilities	• Leasing and build out Cabaletta-owned manufacturing facility

1. Penn-sponsored CD19 CAR IND CMC data has been cross-referenced in DSG3-CAART IND to provide additional data reflecting alignment.

Parallel steps in manufacturing process[1] for CAR T vs CAAR T

Vector production and cell processing are key risks mitigated by strategy, partnership, process and people

Utilizing a clinically validated CART19 cell manufacturing process mitigates risks

- Cross referenced Penn CART19 IND including CMC process[1]
- Penn process, not Novartis process, avoiding Kymriah release challenges[2]
- Engineering runs have demonstrated efficient manufacture of DSG3-CAART cells from PV patients[3]

Multiple runs contractually secured each month at Penn

- Subject to future COVID-19 impact

DSG3 vector supply validated and secured

1. Penn-sponsored CD19 CAR IND CMC data has been cross-referenced in DSG3-CAART IND to provide additional data.
2. Manufacturing challenges were due to release specifications: https://www.biopharmadive.com/news/novartis-hits-car-t-manufacturing-snag-as-kymriah-sales-disappoint/528202/.
3. T cells isolated from patients with a range of treatment regimens of low to high intensity were tested; the highest intensity regimen and patients with ALC<1000 cells/uL expanded less well and will be excluded from the trial design.

Cabaletta Bio®

Leadership team

LEADERSHIP TEAM

Steven Nichtberger, M.D.
President, CEO & Chairman

MERCK tengion Penn

Gwendolyn Binder, Ph.D.
EVP Science & Technology

Adaptimmune Penn

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

AstraZeneca Penn

Anup Marda
Chief Financial Officer

Bristol-Myers Squibb

Arun Das, M.D.
Executive Director BD

Goldman Sachs Children's Hospital of Philadelphia

Michael Gerard
General Counsel

Spark SANDOZ A Novartis Division

Martha O'Connor
Chief HR Officer

Bristol-Myers Squibb accentureconsulting

SCIENTIFIC ADVISORY BOARD

Aimee Payne, M.D., Ph.D.
Co-Founder and Co-Chair

Penn

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Co-Founder and Co-Chair

Penn

Brian Daniels, M.D.

5AM Ventures Bristol-Myers Squibb

Carl June, M.D.

Penn

Jay Siegel, M.D.

janssen FDA

Iain McInnes, PhD, FRCP, FRSE, FMedSci

University of Glasgow

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Cabaletta today

Leveraging a clinically validated CAR T platform as a novel approach to treating autoimmune diseases aiming to provide:

- **Deep and durable responses**, potentially cures, for autoimmune patients and
- **An exceptional safety profile,** based on
- **Highly specific, targeted therapy** designed to eliminate only pathogenic B cells

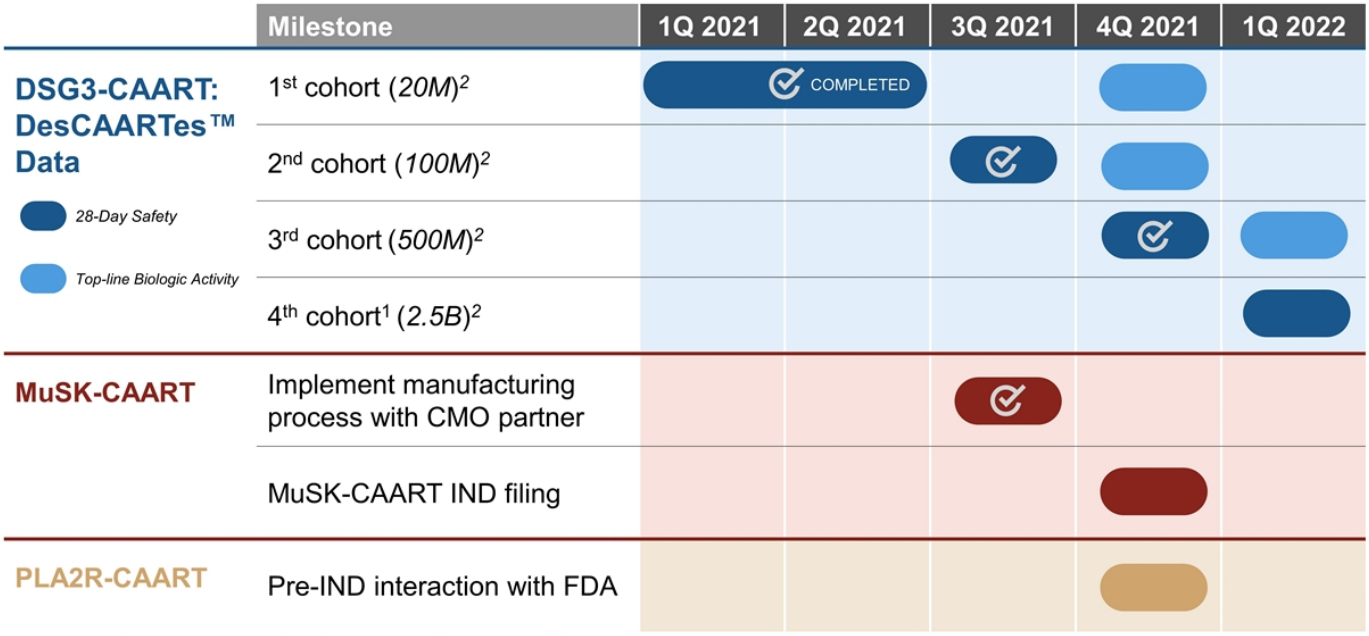
Multiple potential near-term clinical data catalysts with potential pipeline read-through

- **Safety, top-line biologic activity data, clinical responses**

Expanding network of academic & industry partners to enhance platform

WuXi AppTec · B-MoGen Biotechnologies Inc. · ARTISANBIO · Penn · Children's Hospital of Philadelphia · Yale · UCDAVIS University of California

Anticipated near-term milestones



1. Assumes no dose-limiting toxicities are observed during cohort and uninterrupted enrollment occurs in the trial.
2. Number of transduced cells.

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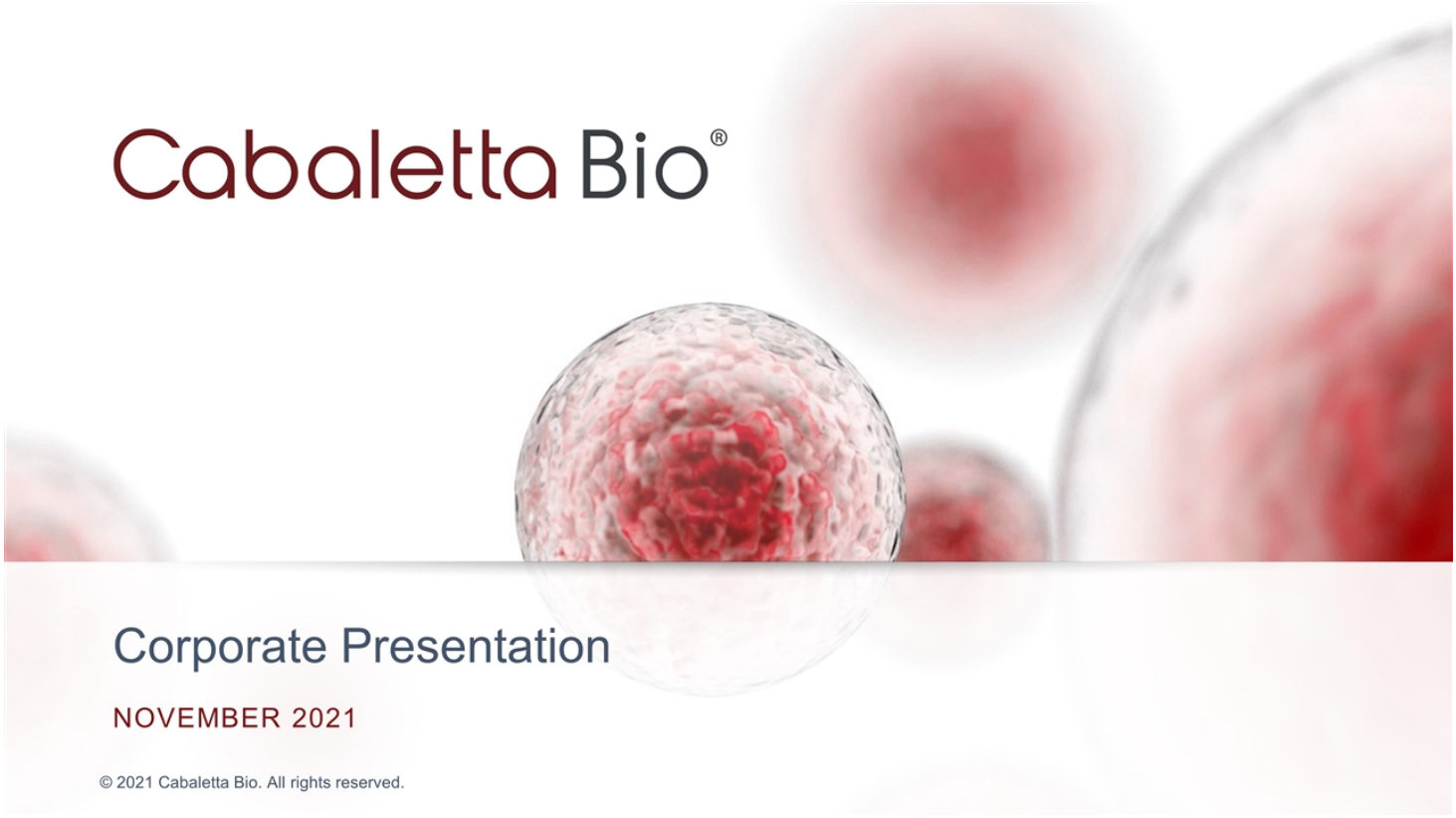

Corporate Presentation

NOVEMBER 2021

Cabaletta Bio®

Cabaletta Bio Reports Clinical Data from the Third Dose Cohort in DesCAARTes™ Trial in Patients with mPV

- Dose dependent increase in DSG3-CAART persistence observed in the third dose cohort relative to the first two low dose cohorts throughout the 28 days following infusion

- No dose-limiting toxicities (DLTs) or clinically relevant adverse events observed as of October 31, 2021, in the first three dose cohorts, dosing up to 500 million DSG3-CAART cells

- Dosing initiated in fourth patient cohort at a dose of 2.5 billion DSG3-CAART cells with28-day safety data anticipated in 1Q22

- Top-line biologic activity data for the first two low dose cohorts anticipated to be announced in 4Q21

PHILADELPHIA, Nov. 1, 2021 — Cabaletta Bio, Inc. (Nasdaq: CABA), a clinical-stage biotechnology company focused on the discovery and development of engineered T cell therapies for patients with B cell-mediated autoimmune diseases, today announced 28-day clinical data from the third dose cohort using 500 million DSG3-CAART cells in the DesCAARTes™ Phase 1 clinical trial for the treatment of patients with mucosal-dominant pemphigus vulgaris (mPV).

As of October 31, 2021, three patient cohorts in the DesCAARTes™ Phase 1 trial have completed DSG3-CAART dosing. The Company observed a dose dependent increase in DSG3-CAART persistence in the third cohort relative to the first two low dose cohorts throughout the 28 days following infusion. In addition, no clinically relevant adverse events or DLTs were observed during the 28-day monitoring period post-infusion. These safety data were observed without preconditioning, and in the presence of circulating anti-DSG3 antibodies.

“We are highly encouraged by the observation of dose dependent increases in persistence as well as the continued absence of any DLTs or clinically relevant adverse events for DSG3-CAART across the first three cohorts, particularly in the presence of circulating anti-DSG3 antibodies and without lymphodepletion,” said David J. Chang, M.D., Chief Medical Officer of Cabaletta. “The rapid pace of the clinical trial has been possible due to the enthusiasm and engagement of patients, investigators and patient advocacy groups. With a 100% manufacturing success rate to date, we look forward to continuing to advance the trial until we identify a maximum tolerated dose and dosing regimen that has the potential to achieve a durable response while maintaining a favorable tolerability profile for patients suffering with mPV.”

As of October 31, 2021, three additional clinical sites have opened for recruitment, doubling the total number of activated DesCAARTes™ trial sites to six. Dosing of patients in the fourth cohort at a treatment dose of 2.5 billion DSG3-CAART cells has been initiated. The Company anticipates announcing 28-day safety data for the fourth dose cohort in the first quarter of 2022.

Top-line biologic activity data for the first two low dose cohorts are anticipated to be announced in the fourth quarter of 2021.

About the DesCAARTes™ Clinical Trial

Cabaletta's DesCAARTes™ Phase 1 trial is an open-label, multi-center study of DSG3-CAART in adults with mucosal-dominant pemphigus vulgaris (mPV). The trial is designed to evaluate the safety and tolerability of DSG3-CAART as well as to identify evidence of target engagement and early signs of efficacy. The study consists of three parts: 1) dose escalation to determine the maximum tolerated dose, 2) dose consolidation, and 3) expansion at the final selected dose and schedule. The trial is expected to enroll approximately 30 patients across multiple clinical sites throughout the United States. Visit our website (DesCAARTes™ Phase 1 Trial) for more information.

About Pemphigus Vulgaris

mPV is a rare autoimmune blistering disease that is characterized by the loss of adhesion between cells of the skin or mucous membranes. mPV is caused by the production of autoantibodies that disrupt structural proteins within the skin and/or mucosa that connect with other proteins to enable the skin and/or mucosal cells to connect with each other. The autoantibodies can target DSG3 and/or desmoglein 1 (DSG1), which are primarily expressed in the mucosal membranes and skin, respectively. mPV is characterized by autoantibodies against DSG3 only whereas mucocutaneous PV (mcPV) is characterized by autoantibodies against DSG3 and DSG1.

About CAAR T Cell Therapy

Chimeric AutoAntibody Receptor (CAAR) T cells are designed to selectively bind and eliminate only disease-causing B cells, while sparing the normal B cells that are essential for human health. CAAR T cells are based on the chimeric antigen receptor (CAR) T cell technology. While CAR T cells typically contain a CD19-targeting molecule, CAAR T cells express an autoantibody-targeted antigen on their surface. The co-stimulatory domain and the signaling domain of both a CAR T cell and a CAAR T cell carry out the same activation and cytotoxic functions. Thus, Cabaletta's CAARs are designed to direct the patient's T cells to kill only the pathogenic cells that express disease-causing autoantibodies on their surface, potentially leading to complete and durable remission of disease while sparing all other B cell populations that provide beneficial immunity from infection.

About Cabaletta Bio

Cabaletta Bio is a clinical-stage biotechnology company focused on the discovery and development of engineered T cell therapies, and exploring their potential to provide a deep and durable, perhaps curative, treatment, for patients with B cell-mediated autoimmune diseases. The Cabaletta Approach to selective B cell Ablation (CABA™) platform, in combination with Cabaletta's proprietary technology, utilizes CAAR T cells that are designed to selectively bind and eliminate only specific autoantibody-producing B cells while sparing normal antibody-producing B cells, which are essential for human health. The Company's lead product candidate, DSG3-CAART, is being evaluated in the DesCAARTes™ phase 1 clinical trial as a potential treatment for patients with mucosal pemphigus vulgaris, a prototypical B cell-mediated autoimmune disease. The FDA granted Fast Track Designation for DSG3-CAART in May 2020. For more information about the DesCAARTes™ Phase 1 clinical trial, please visit our website (DesCAARTes™ Phase 1 Trial). The Company's lead preclinical product candidate, MuSK-CAART, is in IND-enabling studies and is designed as a potential treatment for patients with MuSK-associated myasthenia gravis. For more information, visit www.cabalettabio.com.

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 expectations regarding the progress and results of its DesCAARTes™ Phase 1 trial, including: Cabaletta's ability to enroll the requisite number of patients and dose each dosing cohort in the intended manner and time; the expected timing and significance around the announcement of 28-day safety for the fourth dose cohort in the first quarter of 2022 andtop-line data on biologic activity for the first two low dose cohorts in the fourth quarter of 2021; the expectation that Cabaletta may improve outcomes for patients suffering from mPV; the effectiveness and timing of product candidates that Cabaletta may develop, including in collaboration with academic partners; the safety, efficacy and tolerability of DSG3-CAART for the treatment of mPV; the significance of data Cabaletta may announce regarding certain efficacy outcomes assessed in the DesCAARTes™ trial; the impact of preclinical data on the future development of CAAR T therapies in our pipeline portfolio; the impact of COVID-19 on the timing, progress, interpretability of data, and results of ongoing or planned clinical trials, including the DesCAARTes™ Phase 1 trial; and statements regarding regulatory filings regarding its development programs.

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: the risk that signs of biologic activity may not inform long-term results; Cabaletta's ability to demonstrate sufficient evidence of safety, efficacy and tolerability in its preclinical and clinical trials of DSG3-CAART; 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 the impact of public health epidemics, such as the COVID-19 pandemic, affecting countries or regions in which we have operations or do business; Cabaletta's ability to retain and recognize the intended incentives conferred by Orphan Drug Designation and Fast Track Designation for DSG3-CAART for the treatment of pemphigus vulgaris or for improving healing of mucosal blisters in patients with mucosal pemphigus vulgaris, respectively; risks related to Cabaletta's ability to protect and maintain its intellectual property position; uncertainties related to the initiation and conduct of studies and other development requirements for its product candidates; 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.

Contacts:

Anup Marda
Chief Financial Officer
investors@cabalettabio.com

Sarah McCabe
Stern Investor Relations, Inc.
sarah.mccabe@sternir.com