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): April 10, 2024

Carisma Therapeutics Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware	**001-36296**	**26-2025616**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
3675 Market Street, Suite 200 Philadelphia, PA		**19104**
(Address of Principal Executive Offices)		**(Zip Code)**

Registrant's telephone number, including area code: (267) 491-6422

(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 (*see* General Instruction A.2 below):

☐ 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 exchange on which registered**
Common Stock, $0.001 par value	**CARM**	**The Nasdaq Stock Market LLC**

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 8.01. Other Events.

On April 10, 2024, during presentations at the American Association for Cancer Research 2024 Annual Meeting and the Annual Needham Virtual Healthcare Conference, Carisma Therapeutics Inc. (the "Company") will provide preliminary data from the Company's Phase 1 clinical trial of its first product candidate, CT-0508, a human epidermal growth factor receptor 2 ("HER2") targeted chimeric antigen receptor macrophage for the treatment of HER2 overexpressing cancers, as well as preliminary data from the first three patients treated in the Company's sub-study utilizing CT-0508 in combination with pembrolizumab. An excerpt from the presentation is attached hereto as 99.1 and is incorporated herein by reference.

The Company is providing the following data:

Based on preliminary results assessed to date from the 14 patients enrolled in group 1 and group 2 of the Company's monotherapy treatment clinical trial, 40.7% of all target lesions had reduced in size on at least one scan across all anatomic sites.

The Company has enrolled six patients in its sub-study utilizing CT-0508 in combination with pembrolizumab. Based on preliminary results assessed to date from the first three patients treated in the sub-study, whose demographics are consistent with the 14 patients enrolled in group 1 and group 2 of the monotherapy clinical trial, the combination therapy has been generally well-tolerated after infusion with no dose-limiting toxicities. The first two of the initial three patients enrolled in the combination study were treated with corticosteroids after receiving a CT-0508 infusion and prior to pembrolizumab administration. The Company believes that systemic corticosteroids have the potential to reverse the activity of CT-0508. Based on *in vitro* studies, corticosteroids lead to CT-0508 cell death. The Company observed a best overall response of progressive disease in the first two patients and stable disease in the third patient per RECIST 1.1 criteria. In an individual case study presented, the third patient in the combination study, who achieved stable disease despite high baseline T-cell exhaustion, presented the greatest increase in peripheral blood T cell clonality seen to date across all seventeen patients treated to date with CT-0508 and had one out of two target lesions reduced by approximately 46%. The results from this early data are both preliminary and limited.

Item 9.01. Financial Statements and Exhibits.

Exhibit Number	Description
99.1	Excerpt from Company Presentation, dated April 2024.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document).

SIGNATURES

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

CARISMA THERAPEUTICS INC.

By: /s/ Steven Kelly
Steven Kelly
President and Chief Executive Officer

Date: April 10, 2024

CT-0508 Study 101 Monotherapy Patient Demographics (n=14)

Heavily pre-treated pts with HER2 2+/3+ solid tumors

Summary of Participant and Tumor Characteristics			
Characteristic	**N = 14**	**Characteristic**	**N = 14**
Median age (range), years	58 (45, 81)	Tumor Type, n (%) Breast Cancer Esophageal Cancer Salivary Carcinoma Cholangiocarcinoma Ovarian Cancer	 8 (57.1) 2 (14.3) 2 (14.3) 1 (7.1) 1 (7.1)
Gender, n (%) Male Female	 4 (28.6) 10 (71.4)		
Race, n (%) White	 14 (100)	Median Number of Prior Cancer Therapies, n (range)	5 (2, 12)
ECOG PS, n (%) 0 1	 9 (64.3) 4 (28.6)	Median Number of Prior Anti-HER2 Therapies, n (range) Subjects with Prior Anti-HER2 Therapy	2 (0, 9) 13 (92.9)
HER2 Overexpression, n (%) IHC 3+ IHC 2+/FISH+	 9 (64.3) 5 (35.7)	Prior Radiotherapy, n (%) Yes	 9 (64.3)
Microsatellite Instability (MSI)* MSS/MSI-Low MSI-High Unknown	 13 (92.9) 0 (0) 1 (7.1)	Tumor Mutational Burden (TMB)* Low (<10 mut/Mb) High (≥10 mut/Mb) Unknown	 11 (78.6) 2 (14.3)† 1 (7.1)

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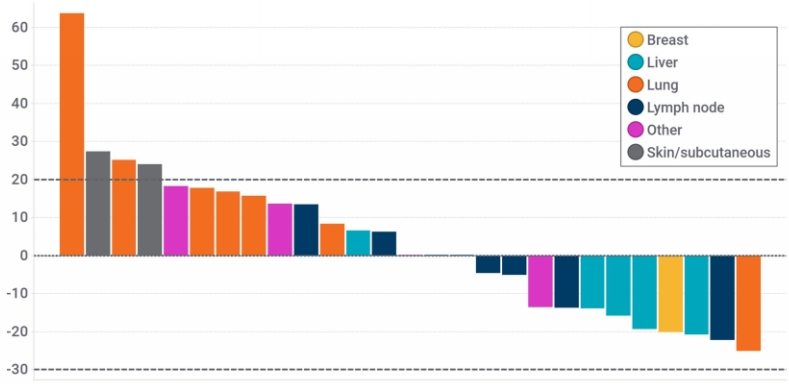
* MSI-high and TMB high are known biomarkers associated with improved response to immune checkpoint

† 1 patient had received 11 lines of prior therapy and 1 patient has demonstrated HLA-A and HLA-C loss of Heterozygosity

40.7% of all target lesions had reduced in size on at least 1 scan

Best changes in individual target lesions by anatomic site:



Each column represents a single target tumor lesion, not a patient.

Target lesion reduction by anatomic site:

Anatomic Location	Frequency of tumor lesions that reduced on treatment on at least 1 scan
Breast	1/1 (100%)
Liver	4/5 (80%)
Lung	1/7 (14.3%)
Lymph Node	4/8 (50%)
Other	1/4 (25%)
Skin/Subcutaneous	0/2 (0%)
All Lesions	11/27 (40.7%)

CT-0508/Pembro Sub-study: Regimen Level 1 Demographics

Patient Demographics were consistent with Group 1 and Group 2

Summary of Participant and Tumor Characteristics			
Characteristic	**N = 3**	**Characteristic**	**N = 3**
Median age (range), years	62 (50, 73)	Tumor Type, n (%) Breast Cancer Esophageal Cancer Ovarian Cancer	 1 (33.3) 1 (33.3) 1 (33.3)
Gender, n (%) Male Female	 1 (33.3) 2 (66.7)		
Race, n (%) White	 3 (100.0)	Median Number of Prior Cancer Therapies, n (range)	6 (5, 7)
ECOG PS, n (%) 0 1	 0 (0.0) 3 (100.0)	Median Number of Prior Anti-HER2 Therapies, n (range) Subjects with Prior Anti-HER2 Therapy	4 (0, 5) 2 (66.7)
HER2 Overexpression, n (%) IHC 3+ IHC 2+/FISH+	 2 (66.7) 1 (33.3)	Prior Radiotherapy, n (%) Yes	 2 (66.7)
Microsatellite Instability (MSI)* MSS/MSI-Low MSI-High	 3 (100.0) 0 (0)	Tumor Mutational Burden (TMB)* Low (<10 mut/Mb) High (≥10 mut/Mb)	 2 (66.7) 1 (33.3)†

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* MSI-high and TMB high are known biomarkers associated with improved response to immune checkpoint

† patient has demonstrated HLA-A, HLA-B and HLA-C loss of Heterozygosity

CT-0508/Pembro Sub-study: Well Tolerated, No Dose Limiting Toxicities, Similar Safety Profile to CT-0508 Monotherapy

	CT-0508 Monotherapy Group 1: Fractionated Dosing	CT-0508 Monotherapy Group 2: Bolus Dosing	CT-0508 + Pembrolizumab Regimen 1
Patients Treated	**N=9 (%)**	**N=5 (%)**	**N=3 (%)**[1]
Any treatment-emergent AEs (TEAE)	**9** (100)	**5** (100)	**3** (100)
Grade 1-2	**4** (44)	**2** (40)	**1** (33)
Grade 3-4	**5** (56)	**3** (60)	**2** (66)
Any TEAEs related to CT-0508	**8** (89)	**4** (80%)	**3** (100)
Any TEAEs related to pembrolizumab	N/A	N/A	**1** (33%)
Any treatment-emergent SAEs (TESAE)	**4** (44)	**3** (60)	**3** (100)
Any TESAEs related to CT-0508[2]	**2** (22)	**2** (40)	**3** (100)
Any TESAEs related to pembrolizumab	N/A	N/A	**0** (0)
Cytokine release syndrome (CRS)	**6** (67)	**3** (60)	**2** (67)
Grade 1-2	**6** (67)	**3** (60)	**2** (67)
Grade 3-4	**0** (0)	**0** (0)	**0** (0)
Immune effector cell-associated neurotoxicity syndrome (ICANS)	**0** (0)	**0** (0)	**0** (0)

Similar safety profile between CT-0508 as monotherapy & in combination with pembrolizumab

No severe CRS or ICANS

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1. 2 of the 3 patients in the combination study were treated with corticosteroids post CT-0508, prior to pembrolizumab
2. All TESAEs related to CT-0508 were due to hospitalization for monitoring of either Grade 2 CRS or Grade 2 infusion reaction.

CT-0508/Pembro Sub-study: Regimen Level 1 (n=3) Summary

First two patients received corticosteroids prior to pembrolizumab

Patient	Steroids Given Prior to Pembro	Best Overall Response	Disease	HER2 Status	Additional Treatment Details
Patient 1	Yes	PD	Stage IV Breast Cancer	HER2 2+	• Treated with dexamethasone due to G2 CRS post CT-0508 infusion, prior to pembrolizumab administration
Patient 2	Yes	PD	Stage IV Ovarian Cancer	HER2 3+	• Treated with methylpredinosolone due to G3 Infusion reaction post CT-0508 infusion, prior to pembrolizumab administration • Triple HLA Class I loss of heterozygosity (HLA-A, B and C deletion in tumor genome).
Patient 3	No	SD (One out of two target lesions reduced by ~46%)	Stage IV Esophageal Cancer	HER2 3+	• Missed an early cycle (2nd infusion) of pembrolizumab due to medical issues unrelated to therapy • Patient had brain metastasis and progressed per RECIST 1.1 week 14 due to new brain met

Additional Information on Corticosteroids and CT-0508

- Systemic corticosteroids have the potential to reverse the activity of CT-0508.
- Based on *in vitro* studies, corticosteroids lead to CT-0508 cell death.
- Steroids were given post CT-0508, pre-pembrolizumab.

CT-0508/Pembro Sub-study: Patient Case Study

Patient #3: HER2+ Esophageal Adenocarcinoma w/ 6 prior lines of therapy and refractory to Enhertu

Cancer type: Stage IV Esophageal adenocarcinoma (EAC), HER2 3+

Prior history: 6 Prior lines of therapy; Most recent prior line: achieved BOR* of PD and DC'd Enhertu in 2 months

Pembrolizumab clinical studies in EAC:

- EAC is resistant to pembrolizumab monotherapy (KEYNOTE 180)
  - ORR 5%
  - PFS 1.5 months
- Pembrolizumab did not show a survival benefit over SOC chemotherapy in PDL1+ EAC (KEYNOTE 181)

Patient 3 - Prior Line	Prior Therapy	Start Time	End Time	Best Overall Response
1	Neoadjuvant carboplatin/paclitaxel	Feb 2019	April 2019	CR
2	Adjuvant Capacitabine, oxaliplatin, trastuzumab	Nov 2020	Nov 2020	Unknown
3	Fluorouracil, folinic acid, oxaliplatin, trastuzumab	Dec 2020	April 2021	PR
4	Fluorouracil, trastuzumab	May 2021	March 2022	SD
5	Paclitaxel, ramucirumab, trastuzumab, tucatinib	May 2022	Jan 2023	SD
6	Enhertu	Feb 2023	April 2023	PD

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* BOR: Best Overall Response
CR: Complete Response; PR: Partial Response; SD: Stable Disease; PD: Progressive disease

CT-0508/Pembro Sub-study: Patient Case Study

Patient #3: 46% reduction in 1 of 2 target lesions

Dosing

- Patient received 3.10E+09 cells
- Patient missed the 2nd cycle of pembrolizumab

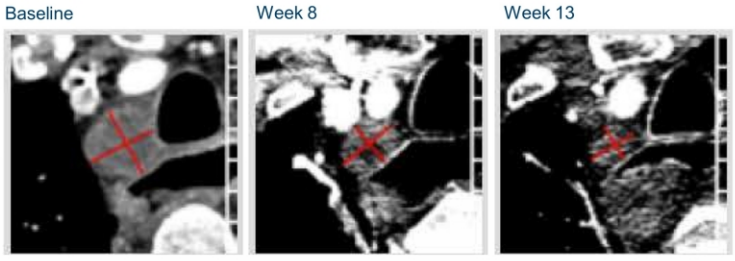
Tumor assessments

- Paratracheal target lesion reduction of 46% by week 13; 21.9mm to 11.8mm
- Mediastinal mass target lesion grew 31% by week 13; 26.9 to 35.3mm

Clinical assessments

- Achieved a BOR of SD per RECIST 1.1
- PD per RECIST at week 13 due to new CNS metastasis
- PFS of 3.25 months (13.3 weeks)

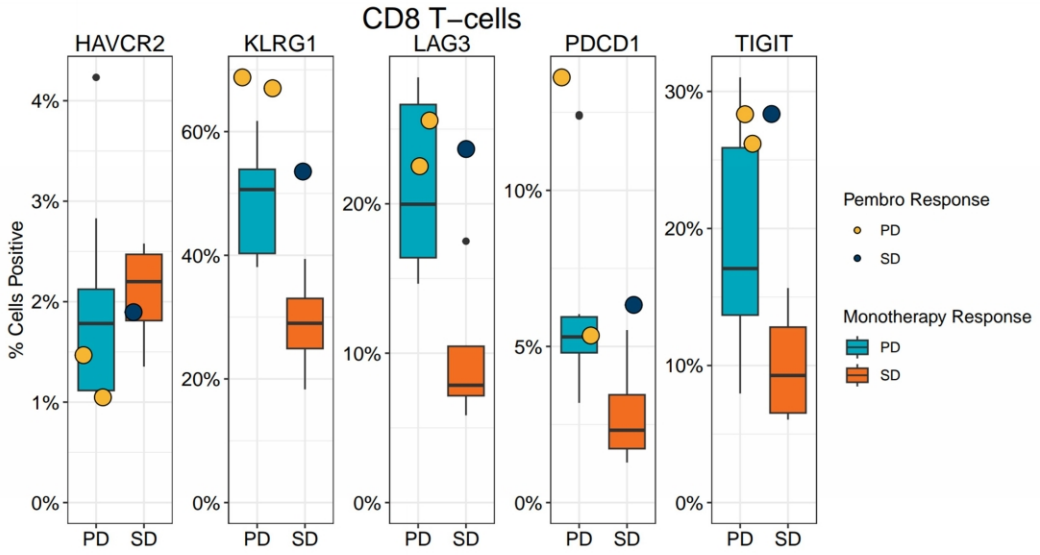
Paratracheal LN Target Lesion: 46% reduction by week 13



Outcome Comparators	PFS
Patient 3 – Regimen 1 CT-0508 / Pembro	3.25 months
Patient 3 – 6th Line of Therapy on Enhertu	2.0 months
Pembrolizumab monotherapy in KEYNOTE 180*	1.5 months

*KEYNOTE 180: Efficacy and Safety of Pembrolizumab for Heavily Pretreated Patients With Advanced, Metastatic Adenocarcinoma or Squamous Cell Carcinoma of the Esophagus. JAMA Oncology. 2019.

CT-0508/Pembro Sub-study: Pt 3 had high baseline peripheral CD8 T cell exhaustion



CT-0508/Pembro Sub-study: Individual Case Study

Patient 3: Greatest increase in peripheral blood T cell clonality seen to-date across all 17 patients treated with CT-0508