Poseida Therapeutics Reports Positive Interim Phase 1 Results for Allogeneic CAR-T Therapy P-BCMA-ALLO1 with High Overall Response Rates in Heavily Pretreated Relapsed/Refractory Multiple Myeloma Patients

Data showed a 91% ORR with P-BCMA-ALLO1 in an optimized lymphodepletion arm, including a 100% ORR in BCMA-naïve patients, and an 86% ORR in those who had received at least one prior BCMA- and/or GPRC5D-targeting treatment modality

Differentiated P-BCMA-ALLO1 safety results with no dose-limiting toxicities, low rates of CRS and ICANS all Grade 2 or less and no graft vs. host disease or Parkinsonism

P-BCMA-ALLO1 was recently granted Regenerative Medicine Advanced Therapy (RMAT) designation from the FDA and is being evaluated in a Phase 1/1b clinical trial in patients with relapsed/refractory multiple myeloma who have previously received three or more prior lines of therapy

Company to host webcast and conference call tomorrow at 1 p.m. ET / 10 a.m. PT with multiple myeloma experts to review the Phase 1 IMS oral presentation data and provide business updates

SAN DIEGO, Sept. 27, 2024 /PRNewswire/ -- Poseida Therapeutics, Inc. (Nasdaq: PSTX), a clinical-stage allogeneic cell therapy and genetic medicines company advancing differentiated non-viral treatments for patients with cancer and rare diseases, today announced new interim clinical data from its ongoing Phase 1 trial of P-BCMA-ALLO1 in patients with relapsed/refractory multiple myeloma (RRMM). Data[1] demonstrated a 91% overall response rate (ORR) and compelling safety results in the 23 heavily pretreated patients in Arm C, an optimized lymphodepletion arm. The new clinical data were presented today in an oral session at the 21st International Myeloma Society (IMS) Annual Meeting in Rio de Janeiro.

P-BCMA-ALLO1 is an investigational non-viral, stem cell memory T cell (T_{SCM})-rich allogeneic CAR-T cell therapy in Phase 1/1b clinical development for the treatment of patients with RRMM. The Company is developing this investigational off-the-shelf allogeneic CAR-T cell therapy with Roche as part of a broader collaboration focused on addressing blood cancers with Poseida's T_{SCM}-rich CAR-T platform.

"The compelling and differentiated results from the optimized lymphodepletion arms of the ongoing Phase 1 trial of P-BCMA-ALLO1 showed deep responses and a high response rate in patients with heavily pre-treated relapsed or refractory multiple myeloma, regardless of prior exposure to B-cell maturation antigen (BCMA)-targeting therapy. The high overall response rate of 91% is remarkable because most study participants in my center had rapidly proliferative refractory disease, in contrast with those treated in the pivotal clinical trials of FDA-approved autologous CAR-T therapies. Such patients treated in the current trial of P-BCMA ALLO1 would not have qualified for standard of care autologous CAR T therapy," said Bhagirathbhai R. Dholaria, M.D., Associate Professor of Medicine, Malignant Hematology & Stem Cell Transplantation at Vanderbilt University Medical Center in Nashville, Tenn., and trial investigator. "All patients in the Phase 1 trial have been treated quickly once enrolled, with no waiting for manufacturing, with no need for apheresis or bridging therapy, demonstrating key advantages of allogeneic CAR-T cell therapy."

"P-BCMA-ALLO1 is one of the most advanced allogeneic CAR-T in clinical development for multiple myeloma, manufactured using non-viral technology to produce a T_{SCM}-rich therapy that has shown a compelling emerging product profile," said Kristin Yarema, Ph.D., president and chief executive officer of Poseida Therapeutics. "We are encouraged to see such a high overall response rate in an arm of the Phase 1 trial with optimized lymphodepletion, along with standout safety results across all arms, given that the study population was heavily pretreated, high-risk, and in general had many features that historically have led to a poor prognosis. We are excited to build on these data as we advance P-BCMA-ALLO1 in the Phase 1b part of the trial, which is currently enrolling patients."

New Interim Clinical Data from Phase 1 P-BCMA-ALLO1 Trial

The ongoing open-label, multicenter Phase 1/1b dose-escalation and expansion trial in patients with RRMM is assessing the safety and maximum tolerated dose of P-BCMA-ALLO1 (primary objective) and its anti-myeloma activity (secondary objective). As of September 6, 2024, 72 unique patients were enrolled as an intent-to-treat (ITT) population and were treated across four study arms (S, A, B and C) that included different P-BCMA-ALLO1 doses and lymphodepletion regimen combinations. Study participants were required to have received three or more prior lines of therapy, including a prior proteasome inhibitor, immunomodulatory drug and anti-CD38 monoclonal antibody. The trial enrolled a heavily pretreated patient population with 43% of patients having received prior BCMA-and/or GPRC5D targeting therapy. Most prior BCMA therapies included autologous CAR-T and/or T-cell engagers (TCE). Additionally, 33% of study participants were racial minorities, demonstrating Poseida's commitment to underserved patient populations.

In the ITT population, 100% of patients enrolled as of the data cutoff were infused with P-BCMA-ALLO1. No patients required anti-myeloma bridging therapy or prophylaxis with steroids or tocilizumab, and there was no invasive apheresis or manufacturing wait time. The median time from enrollment to the start of study treatment was one day.

The ORR across all four study arms was 54%; 11% of patients achieved a complete response (CR) or a stringent complete response (sCR), and 33% achieved a very good partial response or higher (VGPR+). The median duration of response (DoR) was 232 days for study Arms A and B – the cohorts with six or more months of follow-up at the time of data cut-off. Expansion and persistence of the CAR-T cells in patients after infusion has been dependent upon the conditioning dose of cyclophosphamide. P-BCMA-ALLO1 levels measured in the peripheral blood and were much higher in patients in Arm C (cyclophosphamide 750 mg/m^2/day) and Arm B (cyclophosphamide 1000 mg/m^2/day) than in patients in Arm S (cyclophosphamide 300 mg/m^2/day), and Arm A (cyclophosphamide 500 mg/m^2/day). Arm C was identified as the optimized lymphodepletion arm based on cellular kinetics, safety and efficacy.

Data from Arm C of the Phase 1 P-BCMA-ALLO1 Trial

Results from 23 study participants in Arm C were highlighted in the oral session at IMS. Patients received cyclophosphamide 750 mg/m^2/day and fludarabine 30 mg/m^2/day and approximately 2x10^6 cells/kg P-BCMA-ALLO1. Some patients were treated in an outpatient setting. Arm C patient

details include:

- Nearly half (48%) were age 65 or older
- All were heavily pretreated, with a median of six prior lines of anti-myeloma therapy and a maximum of 14
- 62% of patients had received prior BCMA-targeting therapy
- 29% had failed both a BCMA CAR-T and a bispecific TCE, and 29% had failed both a BCMA-targeting therapy and the GPRC5D-targeting TCE, talquetamab
- Approximately two-thirds of patients (62%) had high-risk disease by cytogenetics and 38% had extramedullary disease

Efficacy results, which are still evolving, for the 23 patients in Arm C showed:

- An ORR of 91%, with a 100% ORR in BCMA-naïve patients, an 86% ORR in those who had received at least one prior BCMA-targeting treatment (all had received prior CAR-T and/or TCE), and an 86% ORR in those who had received at least one prior BCMA-targeting treatment and/or talquetamab
- 22% achieved a CR or an sCR
- 48% achieved VGPR+
- Median DoR could not be estimated at the time of data cut-off because the current median follow-up is less than 3.5 months (for pooled arms A and B, the median DoR was more than seven months (estimated range of five-10 months), with a median time to response of only 16 days)

P-BCMA-ALLO1 was well-tolerated with key safety results from Arm C, including:

- No dose-limiting toxicities, Grade 3 or higher cytokine release syndrome (CRS) or immune effector cell neurotoxicity syndrome (ICANS). The incidence of Grade 1 or 2 CRS was 39% and the incidence of Grade 1 or 2 ICANS was 13%
- The incidence of infections was 48%, including 30% that were Grade 1 or 2 and 17% that were Grade 3
- Rapid cytopenia recovery in the vast majority of cases
- No graft-vs-host disease (GvHD), hemophagocytic lymphohistiocytosis (HLH), Parkinsonism or cranial neuropathies observed
- The safety results of P-BCMA-ALLO1 in arm C have been consistent with those observed in the other three arms of the Phase 1 trial, with a total safety database, including 72 unique patients

The ongoing P-BCMA-ALLO1 Phase 1/1b trial is enrolling patients using the Arm C lymphodepletion regimen described above, across two dosing cohorts, with dose optimization ongoing in Arm C.

Company-Hosted IMS Live Webcast and Conference Call Information
Poseida will host a live webcast and conference call tomorrow, Saturday, September 28, 2024, at 1 p.m. ET / 10 a.m. PT. The webcast will feature an expert panel of clinicians who will discuss the new clinical data and multiple myeloma treatment landscape. The panel will be moderated by Dr. Rizvi and include Dr. Dholaria and Thomas G. Martin, M.D., Clinical Professor of Medicine, Adult Leukemia and Bone Marrow Transplantation Program and Associate Director of the Myeloma Program at the University of California, San Francisco (UCSF), and Co-Leader of the Cancer Immunology & Immunotherapy Program at the UCSF Helen Diller Family Comprehensive Cancer Center.

The conference call can be accessed by dialing 800-225-9448 or 203-518-9708 (International) with the conference ID PSTX0928. The live webcast can be accessed using the link here, or by visiting the Events and Presentations section of the Poseida website at investors.poseida.com. After the live webcast, the event will remain archived on the Poseida website for approximately 90 days.

About P-BCMA-ALLO1
P-BCMA-ALLO1 is an allogeneic CAR-T product candidate licensed to Roche targeting B-cell maturation antigen (BCMA) for the treatment of relapsed/refractory multiple myeloma. This allogeneic program includes a VH-based binder that targets BCMA, and interim clinical data presented at IMS in September 2024 support the Company's belief that T stem cell (T_{SCM})-rich allogeneic CAR-Ts have the potential to offer effective, safe and reliable treatment addressing unmet needs in multiple myeloma. The U.S. Food and Drug Administration (FDA) has granted P-BCMA-ALLO1 Orphan Drug designation for multiple myeloma and Regenerative Medicine Advanced Therapy (RMAT) designation for adult patients with relapsed/refractory multiple myeloma after three or more prior lines of therapies including a proteasome inhibitor, an immunomodulatory agent and an anti-CD38 antibody.

P-BCMA-ALLO1 is currently being evaluated in a Phase 1/1b trial in patients with multiple myeloma. Additional information about the Phase 1/1b trial is available at www.clinicaltrials.gov using identifier: NCT04960579.

About Poseida Therapeutics, Inc.
Poseida Therapeutics is a clinical-stage biopharmaceutical company advancing differentiated allogeneic cell therapies and genetic medicines with the capacity to cure certain cancers and rare diseases. The Company's pipeline includes investigational allogeneic CAR-T cell therapies for both solid tumors and hematologic cancers as well as investigational in vivo genetic medicines that address patient populations with high unmet medical need. The Company's approach is based on its proprietary genetic editing platforms, including its non-viral piggyBac® DNA Delivery System, Cas-CLOVER™ Site-Specific Gene Editing System, Booster Molecule and nanoparticle gene delivery technologies, as well as in-house GMP cell therapy manufacturing. The Company has formed strategic collaborations with Roche and Astellas to unlock the promise of cell therapies for cancer patients. Learn more at www.poseida.com and connect with Poseida on X and LinkedIn.

Forward-Looking Statements
Statements contained in this press release regarding matters that are not historical facts are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements include statements regarding, among other things, expected plans with respect to clinical trials; the potential capabilities and benefits of the Company's technology platforms and product candidates; the quotes from Drs. Dholaria and Yarema; and the Company's plans and strategy with respect to developing its technologies and product candidates. Because such statements are subject to risks and uncertainties, actual results may differ materially from those expressed or implied by such forward-looking statements. These forward-looking statements are based upon the Company's current expectations and involve assumptions that may never materialize or may prove to be incorrect. Actual results could differ materially from those anticipated in such forward-looking statements as a result of various risks and uncertainties, which include, without limitation, the fact that interim data from the Company's clinical trials may change as more patient data become available and remain subject to audit and verification procedures that could result in material differences from the final data; the

Company's reliance on third parties for various aspects of its business; risks and uncertainties associated with development and regulatory approval of novel product candidates in the biopharmaceutical industry; the Company's ability to retain key scientific or management personnel; the Company's ongoing and planned clinical trials; whether any of the Company's product candidates will be shown to be effective, safe and reliable; and the other risks and uncertainties described in the Risk Factors section of Poseida's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission (SEC) on August 5, 2024, and in other filings Poseida makes with the SEC from time to time. All forward-looking statements contained in this press release speak only as of the date on which they were made. The Company undertakes no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they were made, except as required by law.

[1] Based on an efficacy cutoff date of September 6, 2024 and a safety cutoff date of July 31, 2024

View original content to download multimedia:https://www.prnewswire.com/news-releases/poseida-therapeutics-reports-positive-interim-phase-1-results-for-allogeneic-car-t-therapy-p-bcma-allo1-with-high-overall-response-rates-in-heavily-pretreated-relapsedrefractory-multiple-myeloma-patients-302261471.html

SOURCE Poseida Therapeutics, Inc.

Poseida Investor and Media Relations: Alex Chapman, Senior Vice President, IR & Corporate Communications, IR@poseida.com; Sarah Thailing, Senior Director, IR & Corporate Communications, PR@poseida.com