June 4, 2019

Atara Biotherapeutics Announces Collaborator Presentation Updating Positive Phase 1 Clinical Results for a Mesothelin-Targeted CAR T Immunotherapy in Patients with Advanced Mesothelioma

Memorial Sloan Kettering Cancer Center collaborators presented results demonstrating that a regionally delivered mesothelin-targeted, autologous CAR T was well tolerated and showed encouraging anti-tumor activity in combination with pembrolizumab, a PD-1 checkpoint inhibitor

In a subset of 16 malignant pleural mesothelioma patients with minimum follow-up time of 3 months who also received pembrolizumab and lymphodepleting chemotherapy, 12-month overall survival was 80% and best overall response rate was 63%, including 3 investigator-assessed complete responses

Clinical findings presented at the American Society of Clinical Oncology (ASCO) Annual Meeting 2019

SOUTH SAN FRANCISCO, Calif., June 04, 2019 (GLOBE NEWSWIRE) -- Atara Biotherapeutics, Inc. (Nasdaq: ATRA), a leading off-the-shelf, allogeneic T-cell immunotherapy company developing novel treatments for patients with cancer, autoimmune and viral diseases, today announced that the Company's collaborators at Memorial Sloan Kettering Cancer Center (MSK), Prasad S. Adusumilli, M.D. and Michel Sadelain, M.D., Ph.D., presented an update on encouraging results from an ongoing MSK investigator-sponsored Phase 1 clinical study (NCT02414269) of a mesothelin-targeted CAR T immunotherapy for patients with mesothelin-associated malignant pleural solid tumors, primarily mesothelioma, who progressed following platinum-containing chemotherapy. Mesothelin-targeted, autologous CAR T cells delivered regionally were well-tolerated and showed encouraging anti-tumor activity in combination with pembrolizumab, a PD-1 checkpoint inhibitor. The findings were presented today at the American Society of Clinical Oncology (ASCO) Annual Meeting 2019 in Chicago.

"The updates to this study presented by our MSK collaborators reaffirm mesothelin as a promising target for patients with advanced mesothelioma and establishes an important proof-of-concept advancement for CAR T immunotherapy in solid tumors," said Christopher Haqq, M.D., Ph.D., Executive Vice President and Chief Scientific Officer of Atara Biotherapeutics. "Based on these continued encouraging safety results and anti-tumor responses, Atara recently prioritized our mesothelin-targeted CAR T program and anticipate autologous ATA2271 will be Atara's first next-generation CAR T IND in advanced

mesothelioma."

The MSK Phase 1 clinical study has recruited 27 patients, 25 with malignant pleural mesothelioma (MPM), one with metastatic lung cancer and one with metastatic breast cancer, who had a median of 3 prior treatment regimens, to evaluate the safety and potential anti-tumor activity of a CD28-costimulated, mesothelin-targeted autologous CAR T immunotherapy. The study added two higher dose cohorts to the six-dose cohorts reported in March 2019 with administration directly to the tumor site. Twenty-two of the 27 patients were subsequently treated with pembrolizumab, a PD-1 checkpoint inhibitor.

Mesothelin-targeted, autologous CAR T administration was found to be generally well tolerated, with no CAR T-related toxicities higher than grade 2 observed based on monitoring multiple clinical, radiological, and laboratory parameters.

In a subset of 16 MPM patients who also received lymphodepleting chemotherapy and at least 3 doses of pembrolizumab with a minimum follow-up of 3 months following the final dose of PD-1, the 12-month overall survival (OS) was 80% and best overall response rate (ORR) was 63% (10 of 16), consisting of 3 durable investigator-assessed complete responses (CR) and seven partial responses (PR). Eleven of the 16 patients in this subset were programmed cell death ligand 1 (PD-L1) negative, defined as undetectable expression of PD-L1 in tumor cells by immunohistochemistry, with 6 of the 10 total responses observed in PD-L1 negative patients (1 CR and 5 PR). CAR T cells persisted in the pleural fluid and trafficked to the peripheral blood in these 16 patients for up to 42 weeks.

Following progression on standard platinum-containing chemotherapy, the expected 12-month OS, median OS and ORR for patients with MPM treated with a PD-1 containing regimen is 63%, 11-18 months and 5%-29%, respectively.[1-5]

MSK is also investigating mesothelin-targeted CAR T cells for patients with mesothelin-associated advanced breast cancer (NCT02792114). Additional results from these ongoing studies are expected to be presented at upcoming scientific congresses.

Abstract 2511: Regional delivery of mesothelin-targeted CAR T cells for pleural cancers: Safety and preliminary efficacy in combination with anti-PD-1 agent
Oral Presentation Date and Time: Tuesday, June 4, 2019, 8:36 a.m. - 8:48 a.m. CDT
Session Title: The Who, What, and Where of CAR T
Location: S406, McCormick Place, South Building, Chicago, IL
Authors: Prasad S. Adusumilli, Marjorie G Zauderer, Valerie W Rusch, Roisin E O'Cearbhaill, Amy Zhu, Daniel Ngai, Erin McGee, Navin Chintala, John Messinger, Waseem Cheema, Elizabeth F Halton, Claudia R Diamonte, John Pineda, Alain Vincent, Shanu Modi, Steve Solomon, David R Jones, Renier J Brentjens, Isabelle C Riviere, Michel W Sadelain
Affiliations: Memorial Sloan Kettering Cancer Center

About Atara Biotherapeutics, Inc.
Atara Biotherapeutics, Inc. (@Atarabio) is a leading off-the-shelf, allogeneic T-cell immunotherapy company developing novel treatments for patients with cancer, autoimmune and viral diseases. Atara's technology platform leverages research collaborations with leading academic institutions with the Company's scientific, clinical, regulatory and manufacturing expertise. Atara's pipeline includes tab-cel® (tabelecleucel), which is in Phase 3 development for patients with Epstein-Barr virus-associated post-transplant

lymphoproliferative disorder (EBV+ PTLD) as well as in earlier stage development for other EBV-associated hematologic malignancies and solid tumors, including nasopharyngeal carcinoma (NPC); T-cell immunotherapies targeting EBV antigens believed to be important for the potential treatment of multiple sclerosis; and next-generation chimeric antigen receptor T-cell (CAR T) immunotherapies. The company was founded in 2012 and is co-located in South San Francisco and Southern California. Our Southern California hub is anchored by the state-of-the-art Atara T-cell Operations and Manufacturing (ATOM) facility in Thousand Oaks, California. For additional information about the company, please visit atarabio.com.

References

[1]Vogelzang NJ, *et al.* Phase III study of pemetrexed in combination with cisplatin versus cisplatin alone in patients with malignant pleural mesothelioma. *J Clin Oncol.* 2003 Jul 15;21(14):2636-44.

[2]Maio M, *et al.* Tremelimumab as second-line or third-line treatment in relapsed malignant mesothelioma (DETERMINE): a multicentre, international, randomised, double-blind, placebo-controlled phase 2b trial. *Lancet Oncol.* 2017 Sep;18(9):1261-1273.

[3]Scherpereel A, *et al.* Nivolumab or nivolumab plus ipilimumab in patients with relapsed malignant pleural mesothelioma (IFCT-1501 MAPS2): a multicentre, open-label, randomised, non-comparative, phase 2 trial. *Lancet Oncol.* 2019 Feb;20(2):239-253.

[4]Alley EW, *et al.* Clinical safety and activity of pembrolizumab in patients with malignant pleural mesothelioma (KEYNOTE-028): preliminary results from a non-randomised, open-label, phase 1b trial. *Lancet Oncol.* 2017 May;18(5):623-630.

[5]Hassan R, *et al.* Avelumab in patients with previously treated mesothelioma: Updated phase 1b results from the JAVELIN Solid Tumor trial. Abstract 166, ASCO 2018.

Forward-Looking Statements

This press release contains or may imply "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. For example, forward-looking statements include statements regarding: mesothelin as a target for patients with advanced mesothelioma; the use of CAR T immunotherapy for solid tumors; and Atara's priorities for its CAR T program and the related next-generation CAR T INDs. These forward-looking statements are subject to risks and uncertainties, including those discussed in Atara Biotherapeutics' filings with the Securities and Exchange Commission (SEC), including in the "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of the Company's most recently filed periodic reports on Form 10-K and Form 10-Q and subsequent filings and in the documents incorporated by reference therein. Except as otherwise required by law, Atara Biotherapeutics disclaims any intention or obligation to update or revise any forward-looking statements, which speak only as of the date hereof, whether as a result of new information, future events or circumstances or otherwise.

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