May 15, 2020

Atara Biotherapeutics Announces Presentation of Late-Breaking Preclinical Data on ATA2271, a Next-Generation Autologous CAR T Immunotherapy Targeting Mesothelin, at the American Association for Cancer Research (AACR) Virtual Annual Meeting II 2020

First published data with novel 1XX CAR signaling and programmed death-1 (PD-1) dominant negative receptor (DNR) checkpoint inhibition technologies

Evidence of preclinical safety, improved functional characteristics and enhanced antitumor efficacy of ATA2271

Data support IND filing and future ATA2271 Phase I clinical trial enrollment in mesothelioma

SOUTH SAN FRANCISCO, Calif.--(BUSINESS WIRE)-- Atara Biotherapeutics, Inc. (Nasdaq: ATRA), a pioneer in T-cell immunotherapy leveraging its novel allogeneic EBV T-cell platform to develop treatments for patients with severe diseases including solid tumors, hematologic cancers and autoimmune disease, today announced that an abstract describing the preclinical safety, improved functional characteristics and antitumor efficacy of ATA2271, a next-generation autologous chimeric antigen receptor (CAR) T cell therapy targeting mesothelin, was selected for a late-breaking poster presentation at the second American Association for Cancer Research (AACR) Virtual Annual Meeting 2020 to be held on June 22-24, 2020.

Although CAR T cell therapies have been approved for certain hematologic malignancies, new approaches are needed in solid tumor settings. Mesothelin is a tumor-specific antigen that is commonly expressed at high levels on the cell surface in many aggressive solid tumors including mesothelioma. Atara has selected mesothelin as the target for both the ATA2271 autologous and the ATA 3271 allogeneic programs along with novel CAR T-cell technologies to further enhance activity.

Data being presented for the first time at AACR detail results from IND-enabling preclinical studies with ATA2271 technologies, designed to help overcome current CAR T challenges with targeting solid tumors, including the novel 1XX CAR signaling domain and a dominant-negative programmed death-1 receptor (PD1DNR). These studies, led by Prasad Adusumilli, MD and collaborators at Memorial Sloan Kettering Cancer Center (MSK) provide both *in vitro* and *in vivo* evidence of the preclinical safety, improved functional characteristics and enhanced anti-tumor efficacy of ATA2271.

“These data support the combined addition of novel design elements in this next-gen CAR T therapy, including both 1XX co-stimulatory signaling and PD1DNR, that were associated with less cell exhaustion, improvements in functional persistence, serial cell killing, and *in vivo* efficacy which was maintained through multiple tumor re-challenges,” said Blake T. Aftab, Ph.D., Vice President of Preclinical and Translational Science for Atara Biotherapeutics. “These results are consistent with the larger body of data supporting key CAR T characteristics that are preferred when targeting mesothelioma and potentially a range of solid tumors.”

Specifically, *in vitro*, ATA2271 exhibited antigen-specific cytotoxicity, accumulation and effector cytokine secretion, while *in vivo* results demonstrated that a single dose of ATA2271 led to tumor eradication and superior survival in mice compared to mesothelin-targeted M28z CAR T cells. Mice treated with a single dose of ATA2271 also showed sustained and persistent protection from tumor reestablishment upon 10 additional tumor re-challenges. Results from the study demonstrated the proposed advantages associated with functional persistence and cell-intrinsic PD-1 checkpoint blockade.

“We look forward to advancing our next-generation CAR T program which includes ATA2271 and off-the-shelf, allogeneic MSLN-directed CAR T immunotherapy, ATA3271, and expanding the investigation of our technology in other mesothelin-expressing solid tumors,” said AJ Joshi, MD, Senior Vice President and Chief Medical Officer of Atara Biotherapeutics.

These data will be used to support submission of an Investigational New Drug (IND) application with the U.S. Food and Drug Administration (FDA) in the second or third quarter of 2020 followed by the initiation of a Phase 1 clinical trial in patients with advanced mesothelioma.

About ATA2271

In collaboration with MSK, Atara is developing ATA2271, a next-generation autologous mesothelin-targeted CAR T using novel 1XX CAR signaling and programmed death-1 (PD-1) dominant negative receptor (PD1DNR) checkpoint inhibition technologies (M28z1XX PD1DNR CAR T cells). This technology is supported by the safety and anti-tumor efficacy that was exhibited in prior studies evaluating a mesothelin-directed CAR utilizing a CD28 co-stimulatory signally domain. This regionally delivered autologous mesothelin-targeted construct (using M28z CAR T cells) combined with PD-1 antibody is being studied in two ongoing MSK Phase 1 trials in patients with malignant pleural disease and mesothelioma, non-small cell lung cancer, and breast cancer (NCT02414269 and NCT02792114).

Details of the poster presentation and abstract are as follows:
Abstract #: LB-378
Title: “Regional delivery of clinical-grade mesothelin-targeted CAR T cells with cell-intrinsic PD-1 checkpoint blockade: Translation to a phase I trial”
Presentation Date and Time: Available starting on June 22nd
Session Title: Late-Breaking Research: Immunology 2
Category and Subclass: Immunology
Authors: Stefan Kiesgen, Camille Linot, Hue T. Quach, Jasmeen Saini, Rebecca Bellis, Srijita Banerjee, Zhaohua Hou, Navin K. Chintala, Michel Sadelain, Prasad S. Adusumilli
Affiliations: Memorial Sloan Kettering, New York, NY

Dr. O'Reilly, Dr. Sadelain, and Dr. Adusumilli have intellectual property interests in technologies licensed by Memorial Sloan Kettering (MSK) to Atara. Related to ATA2271 and ATA3271, Dr. Sadelain and Dr. Adusumilli have intellectual property interests in technology licensed by Memorial Sloan Kettering (MSK) to Atara. Dr. O'Reilly and Dr. Adusumilli also have compensated consulting relationships with Atara. MSK has institutional financial interests related to Atara in the form of intellectual property rights and associated interests by virtue of licensing agreements between MSK and Atara.

About Atara Biotherapeutics, Inc.

Atara Biotherapeutics, Inc. (@Atarabio) is a pioneer in T-cell immunotherapy leveraging its novel allogeneic EBV T-cell platform to develop transformative therapies for patients with severe diseases including solid tumors, hematologic cancers and autoimmune disease. With our lead program in Phase 3 clinical development, Atara is the most advanced allogeneic T-cell immunotherapy company and intends to rapidly deliver off-the-shelf treatments to patients with high unmet medical need. Our platform leverages the unique biology of EBV T cells and has the capability to treat a wide range of EBV-associated diseases, or other severe diseases through incorporation of engineered CARs (chimeric antigen receptors) or TCRs (T-cell receptors). Atara is applying this one platform to create a robust pipeline including: tab-cel® (tabelecleucel) in Phase 3 development for Epstein-Barr virus-driven post-transplant lymphoproliferative disease (EBV+ PTLD); ATA188, a T-cell immunotherapy targeting EBV antigens as a potential treatment for multiple sclerosis; and multiple next-generation chimeric antigen receptor T-cell (CAR T) immunotherapies for both solid tumors and hematologic malignancies. Improving patients' lives is our mission and we will never stop working to bring transformative therapies to those in need. Atara is headquartered in South San Francisco and our leading-edge research, development and manufacturing facility is based in Thousand Oaks, California. For additional information about the company, please visit atarabio.com and follow us on Twitter and LinkedIn.

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: the potential safety, functional characteristics and efficacy of ATA2271; and Atara's ability to successfully advance, and the potential timelines for, the development of ATA2271 and ATA3271. Because such statements deal with future events and are based on Atara Biotherapeutics' current expectations, they are subject to various risks and uncertainties and actual results, performance or achievements of Atara Biotherapeutics could differ materially from those described in or implied by the statements in this press release. 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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