

Poseida Therapeutics Presents Preclinical Solid Tumor Data for P-PSMA-101, a CAR-T Therapy Predominantly Comprised of Stem Cell Memory T Cells, at the Prostate Cancer Foundation Annual Retreat

SAN DIEGO, Oct. 05, 2017 -- Poseida Therapeutics Inc. ("Poseida"), a San Diego-based clinical-stage company translating best-in-class gene therapy technologies into lifesaving cell therapies, today presented preclinical data on P-PSMA-101, the company's PSMA-specific chimeric antigen receptor T cell (CAR-T) stem cell memory drug candidate for the treatment of prostate cancer, showing potent anti-tumor activity, a persistent and durable response, and no T-cell exhaustion observed. This preclinical study demonstrated that Poseida's advanced CAR-T cell therapy could completely eliminate solid tumors in a previously incurable preclinical model of prostate cancer, and was selected for oral presentation today at the 24th Prostate Cancer Foundation Annual Retreat in Washington DC.

P-PSMA-101 was evaluated in an aggressive and previously incurable human prostate cancer cell line, called LNCaP, implanted as a solid tumor in an immune-deficient mouse model. The presentation was given by Eric Ostertag, M.D., Ph.D., chief executive officer at Poseida.

"We are impressed that P-PSMA-101 was able to eliminate tumors beyond the limit of detection using an aggressive cancer cell line that was previously incurable with other treatment modalities," said Eric Ostertag, M.D., Ph.D., founder and CEO at Poseida. "Consistent with findings from our CAR-T program in multiple myeloma models, it appears that a high concentration of stem cell memory T cells and improved stability of the binder are resulting in unprecedented durability of response, without re-administration of treatment."

The Poseida study also compared P-PSMA-101 with a version of another anti-PSMA CAR-T that is in the clinic, which uses a traditional single-chain variable fragment (scFv) binding molecule called J591. The J591 CAR-T showed marginal efficacy in vitro, but had no efficacy against the human tumor in the animal model.

Poseida's CAR-T modifications are engineered using its proprietary piggyBac™ non-viral gene delivery system and fully-human Centyrin™ binding domain, which enables a streamlined and scalable manufacturing process that does not employ viruses, cytokines or magnetic beads and consistently produces high concentrations of modified T cells necessary to treat patients. This process yields an exceptionally high percentage (>70%) of the highly desirable stem cell memory T cell subtype (Tscm) even when starting with patient materials where Tscm is very rare. In contrast, competitor products typically report 0-20% Tscm cells. Recent studies show that Tscm cells may result in a CAR-T product that is more efficacious in patients.^{1,2}

Key findings include:

- **Potent anti-tumor activity:** P-PSMA-101 treatment typically reduced tumor burden to the limit of detection within 21 days. Conversely, all untreated controls succumbed to disease.
- **Persistent and durable response:** P-PSMA-101 gives rise to all T cell subtypes and persists in treated mice, with all treated mice surviving to the end of the 90-day study. Once tumor was completely eliminated, the engrafted T cells contracted and again displayed a predominantly Tscm subtype.
- **No T-cell exhaustion observed:** P-PSMA-101 did not exhibit effects of CAR-mediated tonic signaling, a common cause of T-cell exhaustion that leads to poor durability. Tonic signaling

is caused by oligomerization of unstable binding domains commonly seen with traditional scFv CARs.

Similar unprecedented efficacy in preclinical models was seen with Poseida's lead therapeutic, P-BCMA-101, an autologous CAR-T therapy for multiple myeloma, which is also comprised of predominantly stem cell memory T cells.

Previous poster presentations are available on the publications page of Poseida's website at www.poseida.com/publications.

About P-PSMA-101

P-PSMA-101 is a CAR-T immunotherapy designed to supercharge a patient's own T cells to safely and effectively eliminate tumor cells carrying prostate-specific membrane antigen (PSMA), which is expressed on the majority of prostate cancer cells. P-PSMA-101 employs a PSMA-specific Centyrin™ binding domain and is engineered using a non-viral gene delivery system called the piggyBac™ DNA Modification System, which leverages the technology's capability to deliver 30 times more cargo than traditional virus-based CAR T-cell modification systems. P-PSMA-101 has demonstrated potent anti-tumor activity, persistent and durable response, significant T-cell memory, a high concentration of P-PSMA-101 modified T-cells and no T-cell exhaustion. A unique feature of P-PSMA-101 and other Poseida CAR-T products is their exceptionally high percentage of stem cell memory T cells, which has been shown in preclinical studies to lead to unprecedented durability of response without re-administration of treatment.

About Poseida Therapeutics, Inc.

Poseida Therapeutics is a clinical-stage company translating best-in-class gene therapy technologies into lifesaving cell therapies. The company is developing P-BCMA-101, a CAR-T therapy currently enrolling patients in a Phase 1 clinical study for the treatment of multiple myeloma. The company is also developing immunotherapies for prostate cancer and other cancer types, as well as gene therapies for orphan diseases. Poseida has assembled a suite of industry-leading gene editing technologies, including the piggyBac™ DNA Modification System, XTN™ TALEN and NextGEN™ CRISPR site-specific nucleases, and Footprint-Free™ Gene Editing (FFGE). For more information, visit www.poseida.com.

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References

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2. Basu S. et al. "Understanding and Overcoming the Tumor Microenvironment." 2017 CAR-TCR Summit, 05 Sep 2017.