Docket #: S20-152

A Multiparallel, High-dimensional Analysis of T Cell Therapeutic Phenotypes, which Induce Cell Death and Release Molecules Which Transform Tumor to an Anti-proliferative Program

Stanford researchers have created a technology using CyTOF (Cytometry by Time Of Flight mass spectrometry) and CODEX (CO-Detection by indEXing) imaging to systematically analyze cell therapies produced ex vivo and their effects in vivo.

Immune cell-based therapies such as T cell therapies have recently shown dramatic efficacy against hematological malignancies. However, cell therapies present substantial challenges as therapeutics because of (i) heterogeneity and plasticity of cell phenotypes (ii) unintended side effects (iii) complicated pharmacokinetics. To address these challenges, Stanford researchers have developed a standardized, multi parallel, and high-dimensional system for investigating effects of ex vivo cell manipulation and their mechanistic and therapeutic impacts in vivo for solid tumors. In brief, the technology uses CyTOF to extensively profile immune cell phenotypes following ex vivo manipulations and leverages CODEX imaging to understand the dynamic, spatial, in vivo tumor and immune responses to these therapeutics.

Stae of Development
Research - in vivo

Applications

- Cell therapy
- Cancer therapy
- Therapeutic diagnostics,
- Anti-cancer drugs

Advantages

- Employes both single-cell and image-based multi-cell analyses
- Identification of spatial/temporal limitations and mechanisms of cell therapies
- Applicable across cell therapies and targets
- Reveals additional biomarkers

Innovators

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