DIAGNOSTIC, TOOL

Biomarkers Predicting Risk of Cytokine Release Syndrome and Neurotoxicity Following Adoptive T Cell Therapy

Brief Technology Description

Risk stratification using serum-derived biomarkers to predict adverse patient responses following adoptive T cell therapies.

BUSINESS OPPORTUNITY

Non-exclusive license
Sponsored research

TECHNOLOGY TYPE

Method/Assay
Biomarker

STAGE OF DEVELOPMENT

Preclinical Human

PATENT INFORMATION

PCT/US2018/017655 Patent pending (UW, EP, CA)

INVESTIGATOR OVERVIEW

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Technology Overview

Few assays are currently available that identify patients who are at risk of developing severe cytokine release syndrome (CRS) and neurotoxicity following adoptive T cell immunotherapy. CRS and neurotoxicity usually occur within the first 1-2 weeks after in vivo CAR-T cell activation and proliferation, complicating wide adoption of adoptive cell therapies given the specialized care. Although CRS and neurotoxicity can be reversed, severe cases can result in intensive care admission and in some cases, be fatal. Dr. Turtle and his colleagues have identified biomarker signatures in patient samples after adoptive T cell therapy associated with endothelial activation, initiation of intravascular coagulation and blood-brain barrier leak. The Turtle Lab has identified a biomarker panel to detect and identify these biomarkers in patient serum before lymphodepletion, chemotherapy, or adoptive cell therapy infusion. These biomarkers will help in risk assessment of patients receiving adoptive T cell therapy, and to inform dosing and other pre-emptive treatments in order to minimize and prevent severe and potentially life-threatening CRS and neurotoxicity.

Applications

- Method used for evaluating risk of developing severe CRS or neurotoxicity following adoptive T cell therapy
- Useful for early intervention, modification of therapeutic regimes or both to minimize patient risk
- Applicable before or after conditioning, cellular immunotherapy or both

Potential Advantages

- Allows for either pre-emptive intervention or exclusion from the therapy to minimize the risks of poor outcomes
- Measurement of biomarkers prior to CAR T cell infusion can determine dosing of the active agent to avoid CRS

Market Overview: The global CAR-T cell therapy market is predicted to be worth USD 8.92 billion by 2026, with an expanding compound annual growth rate (CAGR) of 34.5% from 2020 to 2026.