

Docket #: S19-460

Methods for Examining Network Effects of Immune Modulation

Stanford researchers have built a map of the immune interactome in the first effort to formalize the relationships between immune components. The map depicts entities such as immune cells, cytokines, immune effector molecules, and antibody isotypes as 253 nodes with 1112 unique edges describing the interaction between nodes. ImmunoGlobe thus provides a first-of-its-kind ground truth immune interaction network upon which immune network analysis tools can be built. These tools will allow us to predict the outcome of complex immune interactions, providing mechanistic insight that allows us to precisely modulate immune responses in health and disease. Potential uses of the ImmunoGlobe network include Therapeutic selection in the clinical setting, the identification of effective drug targets, stratification of patients, and the prediction of the outcome of immune system perturbations.

Stage of Research

- Prototype

Applications

- **Platform for network analysis tools: predictive diagnostics, disease monitoring, patient stratification, and targeted therapeutics**
- Drug development
- Research tool

Advantages

- **Mechanistic insight into inter-immune cell interactions**
- Consolidated resource for identifying immune reactions

- Applicable for both experimental and computational research communities
- Graphical display to visualize all interactions with a given node

Publications

- Atallah et al. BMC Bioinformatics (2020) ["ImmunoGlobe: enabling systems immunology with a manually curated intercellular immune interaction network"](#)

Patents

- Published Application: [20210202029](#)

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