Team Progress Updates

SU2C Natural Killer Cells Convergence Research Team:

"Integrating Experimental and Computational Pipelines to Develop Biomarkers of Tumor Cell Resistance to NK Cells"

Natural killer (NK) cells, white blood cells that play a role in viral response, have potent antitumor properties. Moreover, NK cells are not inhibited by many of the strategies cancer cells use to evade the immune system. This SU2C Natural Killer Cells Convergence Research Team hypothesizes that the genetic makeup of a tumor may serve as a basis for targeting its destruction by NK cells.

To identify biomarkers that indicate tumor cell sensitivity or resistance to NK cells, the team is using computational approaches. Team members are also exploring novel ways in which NK cells affect tumor cells by using tools such as CRISPR screens. They are also validating these biomarkers on different experimental platforms, such as patient-derived organoids and high-throughput systems to quantify tumor cell responses to immune effector cells.

Results from this research could impact models used to develop therapies for a wide range of cancers.

The team reported the following progress:

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- The team plans to perform extensive CRISPR screens to validate their results of genes that alter the responsiveness of tumor cells to NK cells. The researchers are also undertaking phenotypic screens to quantify NK responsiveness versus resistance.

- The team plans to expand these studies in order to identify resistance genes for hematologic malignancies. It also intends to analyze this through phenotypic screens.