Enhancing the efficacy of chimeric antigen receptor T cells in pancreatic cancer

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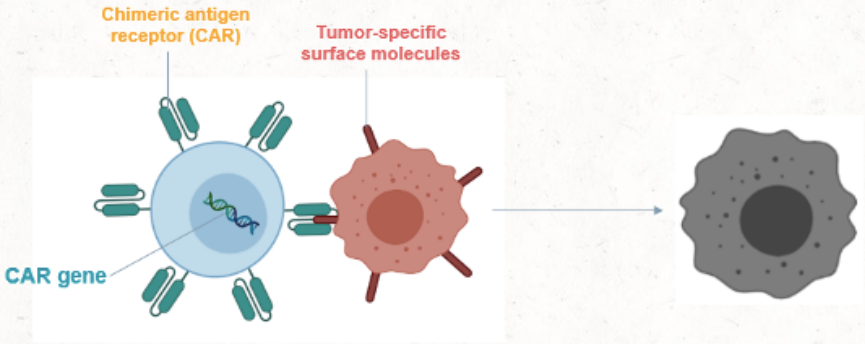
Background

- CD8 T cells recognize tumor cells through the binding of T cell receptor and the neoantigen displayed on the MHC-I of the tumor cells.
- Some tumor cells have the ability to evade the immune cells, for example, by downregulating MHC-I.
- Chimeric Antigen Receptor (CAR) helps CD8 T cell recognize tumor cell by their tumor-specific surface molecule instead of the neoantigen and the MHC-I of the tumor cells.



Objective

- The objective of my project is to set up an in vitro assay to test the killing efficacy of CAR T cells.
  - We used B7-H3 CAR-T cell and KPC B7-H3 tumor cell because specific killing is observed and supported by many previous research.
- By accomplishing that, we can utilize that foundation for testing other novel CAR-T cell strategies and manipulating CAR-T cell activity in preclinical mouse models.

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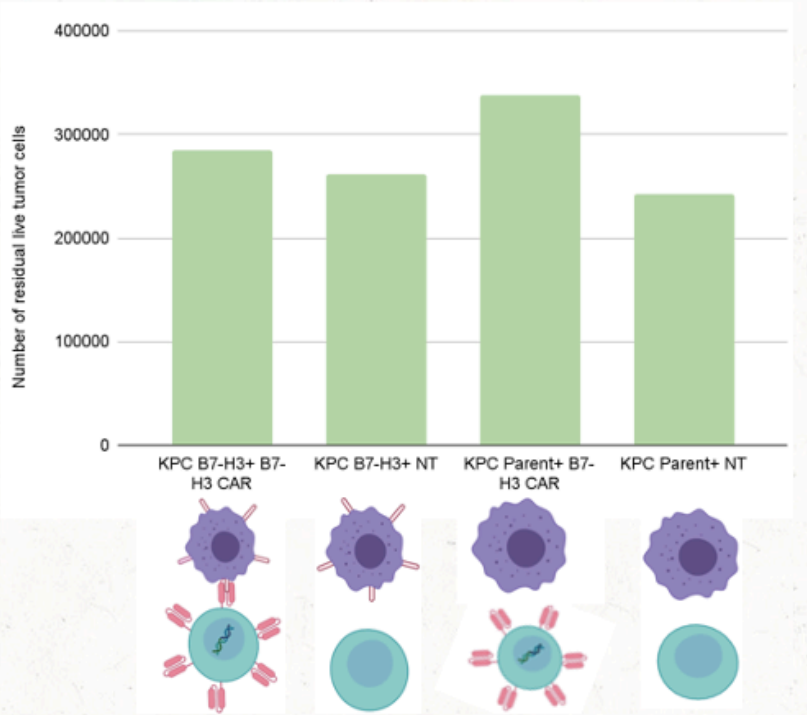
Result



- Due to poor T cells viability, specific killing of B7- H3 CAR T cells against KPC B7-H3 tumor cells is not observed.
- Experiment will be repeated with troubleshooting measures in maintaining an optimal environment for T cells.
    - Adding fresh T cell media more often
    - Maintaining optimal confluency of cells

Future studies

- Analyzing cells at different time points to understand the kinetics of CAR T cells.
- Investigating the efficacy of new CAR-T systems and begin targeting critical regulators of T cell function to boost CAR-T cell efficacy.