Improving T cell memory

The Problem

- Vaccines are limited by waning protection over time.
- A long-lasting vaccine benefit is needed in contexts of immunotherapy and aging where T-cell memory is short lived.

The Solution

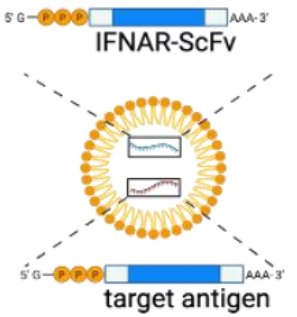
- Our approach is to use blocking IFNAR receptor during vaccination to drive the formation of stem-like memory T cells (T_{SL}).
- These T_{SL} cells:
  - Have a long-life span and ability to self-renew.
  - Rapid differentiation into effector T cells.
  - Proliferative capacity and antitumor activity (ideal for cancer immunotherapies).

Our Program

Progress:

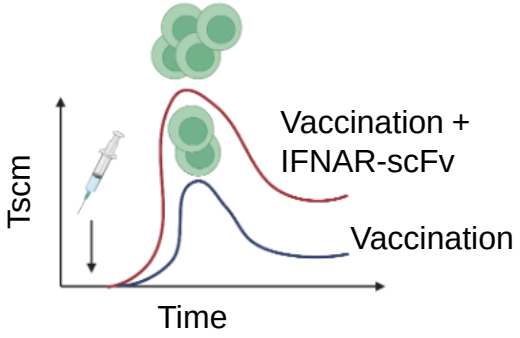
- Identified how and where T_{SCM} differentiate within the draining lymph node (PMID: 33649580 Nat Immunol 2021)
- Blocking IFNAR receptor during mRNA vaccination can drive the formation of T_{SCM} (PMID: 40062995 JEM 2025)
- PoC data of mRNA-LNP with scFv-IFNAR1 (mouse) and OVA antigen in colorectal cancer model

Seeking ***partnerships*** to develop a mRNA vaccine strategy using pre-clinical infection and cancer models



mRNA-LNP vaccine

Vaccination



- Durable T cells response
- Long-term memory
- Potent anti-tumor immunity

Our Team

A/Prof. Joanna Groom, T-cell Biology, High resolution imaging

Onisha Patel, PhD, Business Development,
patel.o@wehi.edu.au