

Safer CAR-T cells: Platform technology to make CAR-T cell therapy less toxic while improving efficacy

The Problem

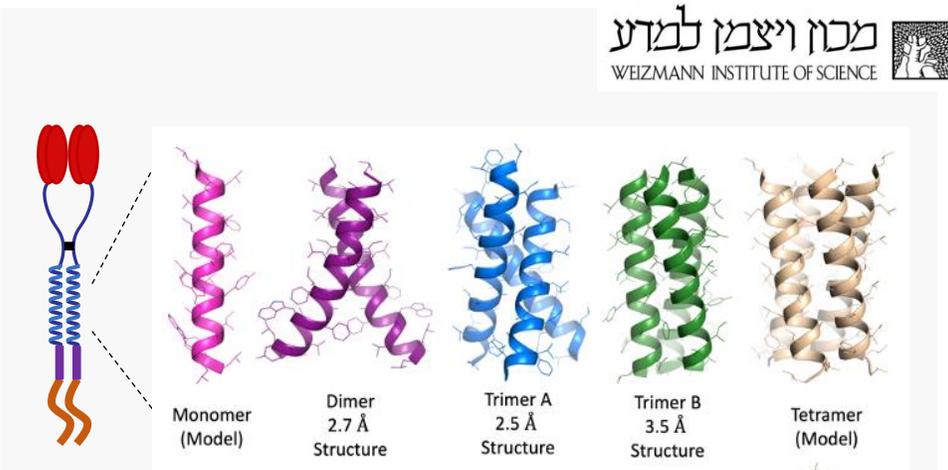
- Toxicities from strong CAR-T cell activation via high cytokine levels and cytokine release syndrome (**CRS**)
- CRS causes nausea, vomiting, high fever and is potentially fatal

The Solution

- CAR-T cells with fully synthetic transmembrane domain (**TMD**) designs that reduce inflammatory cytokines, while tumour growth control is improved
- These custom-designed “**proCARs**” form specific oligomeric structures
- Independent tuning of killing and cytokine production to make CAR-T cells safer without losing efficacy

Our Program

- proCARs kill tumour cells *in vitro* and *in vivo* better or equivalent to benchmark CARs with lower production of cytokines *in vitro* in a mouse model system across different targets
- Currently, these experiments are being transferred to human cell-based model systems



Elazar et al., eLife, 2022

proCARs:

- De novo designed receptor TMDs form defined oligomeric structures
- Control of signal strength through oligomeric state
- Proprietary technology PCT WO2021/229581

Our Team

Prof. Matthew Call, WEHI, engineered immune receptors
Assoc. Prof. Melissa Call, WEHI, engineered immune receptors
Prof. Sarel Fleishman, WIS, protein design

Dr. Ewa Michalak, Senior Business Development Associate
Dr. David Segal, Business Development Lead
segal@wehi.edu.au