

Augmenting Cell Therapy to Improve Efficacy



THE UNIVERSITY OF
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Cell Therapy

Problem

CAR-T therapies represent a significant leap forward for the treatment of a wide range of cancers and regulatory bodies are increasingly approving these therapies for use. A major limitation to cellular therapies is the effective expansion of cells to provide a suitable therapeutic dose.

It has previously been challenging to determine factors that improve the expansion potential of CAR-T cell infusion products due to limitations of transcriptomic analyses.

This results in significant loss of efficacy for these therapies.

Solution

This invention will enable the selection and proliferation of the CAR T cells that are most effective therapies for patients.

This team have identified a number of transcription factors linked to CAR T phenotypes and proliferation. These transcription factors are easily identifiable through an epigenomic approach as traditional RNA sequencing struggles with the low expression of these genes.

Among the genes identified, KLF7 is the first validated by this team. KLF7 has been shown to be associated with increases in T cell proliferation and when transduced into active T cells, results in an up to 30-fold increase in genes. The use of KLF7 will negate current issues of CAR T exhaustion as it does not require chronic signaling of the CAR.

Intellectual Property Status

This invention is the subject of an Australian Provisional Patent Application.

Potential Commercial Applications

This invention can be used to improve the CAR T cell preparation and proliferation prior to treatment, for therapeutic use of a wide range of diseases.

Inventors

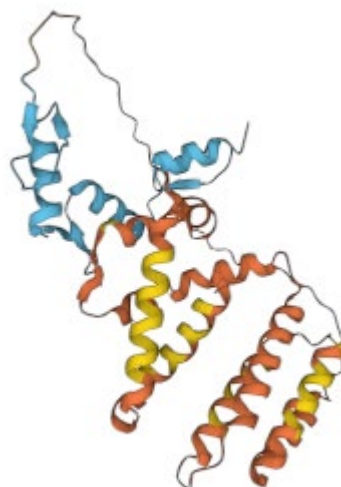
This method was developed by Professor Cameron Turtle and Dr Salvatore Fiorenza of the University of Sydney.

Scientific Data

Additional data and information is available at:
<https://doi.org/10.1038/s41467-024-52503-2>

Commercial Opportunity

The University of Sydney is seeking commercial partners for licensing and co-development of this invention.



Contact Commercialisation Office

Name: Emma-Louise Hunsley

Position: Commercialisation Manager, Sydney Biomedical Accelerator

Email: emma-louise.hunsley@sydney.edu.au
sydney.edu.au/innovation-and-enterprise