Arnie Charbonneau Cancer Institute
The Riddell Centre for Cancer Immunotherapy

University of Calgary | Alberta Health Services

Exploring how gut bacteria impact the effectiveness of CAR T-cell cancer therapy

TARGETED CANCERS

Blood cancers

RESEARCH PRIORITIES

Discovery & Innovation

PROJECT TEAM


Dr. Kathy McCoy (PI)


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PARTNERS

Terry Fox Research Institute

Marathon of Hope Cancer Centres Network

International Microbiome Centre

RESEARCH ENABLERS

Genomics

Biobanking

Preclinical modeling

PROJECT SUMMARY

Researchers at the University of Calgary are investigating how the gut microbiome—a diverse community of trillions of microorganisms essential for digestion, nutrient production, and immune function—may also impact the effectiveness of CAR T-cell therapy, a cutting-edge immunotherapy for blood cancers. While the microbiome's influence on immune system responses to some cancer treatments is known, its role in CAR T-cell therapy remains largely unexplored.

To address this, the team developed a novel pre-clinical germ-free model to study CAR T-cell function in the absence of microorganisms. This approach has yielded valuable insights into how the microbiome impacts CAR T-cell efficacy. Building on these findings, the researchers are now analyzing samples from patients undergoing CAR T-cell therapy. By transferring patient-derived bacteria into germ-free models, they aim to identify specific bacterial species and biological processes that influence treatment outcomes.

OVERALL IMPACT

Researchers are exploring the connection between the microbiome and the effectiveness of CAR T cells in treating blood cancers, with the ultimate goal of launching a clinical trial that combines CAR T cell therapy with microbial therapy to enhance treatment responses.