

Optimizing CD8 T Cell Movement for Improved Cancer Response

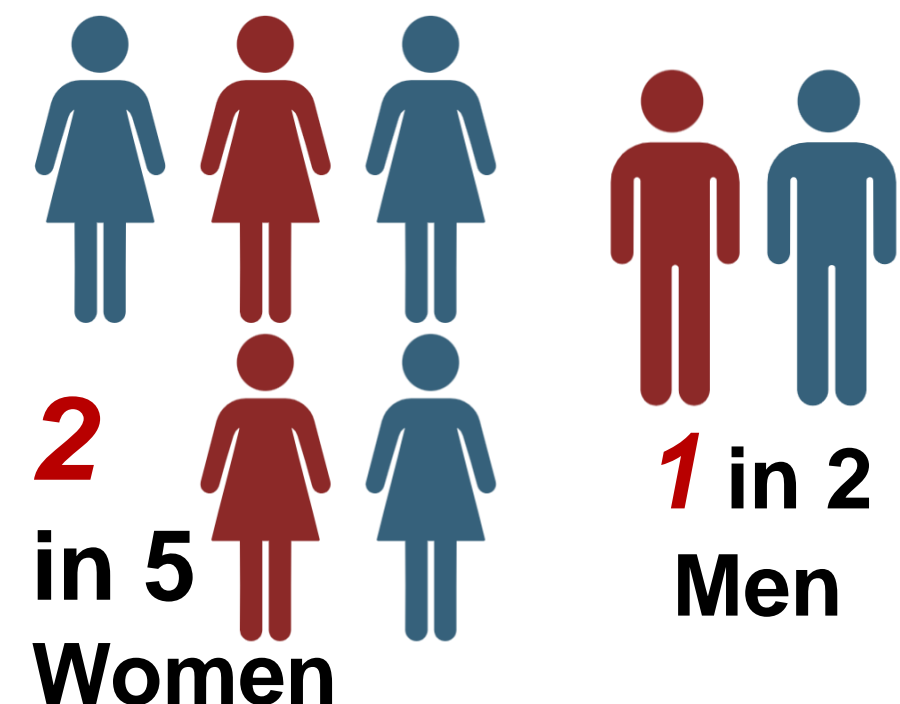
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Current Cancer Treatments Don't Cure Most Patients



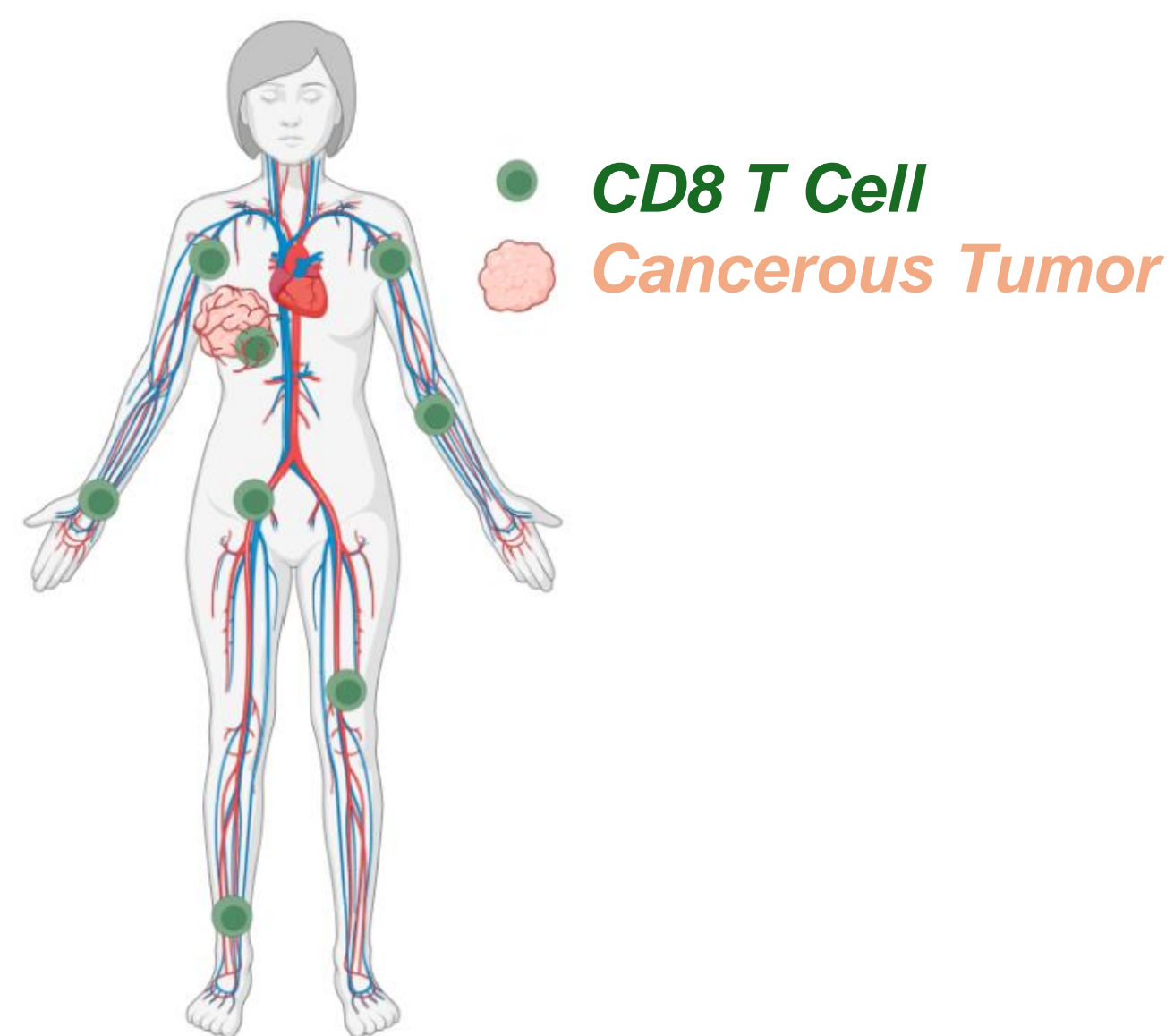
in CO will be diagnosed with cancer in their lifetime.

- Cancer is the #1 cause of death in Colorado
- Cancer kills more than 7,000 Coloradans each year
- Most common cancer subtypes in Colorado are lung, breast, prostate, colorectal, and melanoma.

One new promising area of cancer research investigates how to improve the ability of a patient's immune cells, specifically CD8 T cells, to kill their cancer cells

CD8 T Cells Move Throughout the Body in Search of Cancer Cells

- CD8 T cells move throughout the body in search of “non-self”
- Once CD8 T cells find an infected or cancerous cell, they specifically target and kill this cell
- Efficacy of cancer therapies depends on CD8 T cell tumor infiltration and the ability of CD8 T cells to move within the tumor

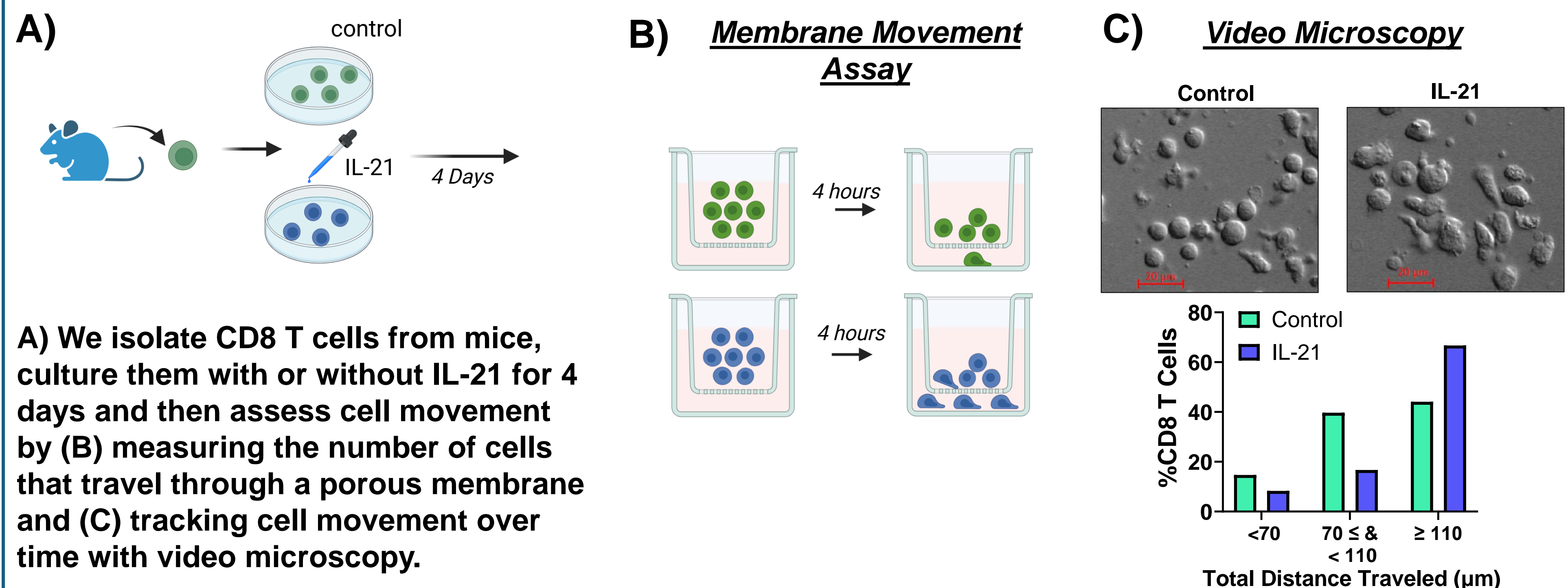


Research Goal

Increase the ability of CD8 T cells to move within tissues, allowing them to reach and kill a greater number of cancer cells

Can we improve the ability of CD8 T cells to move and kill cancer?

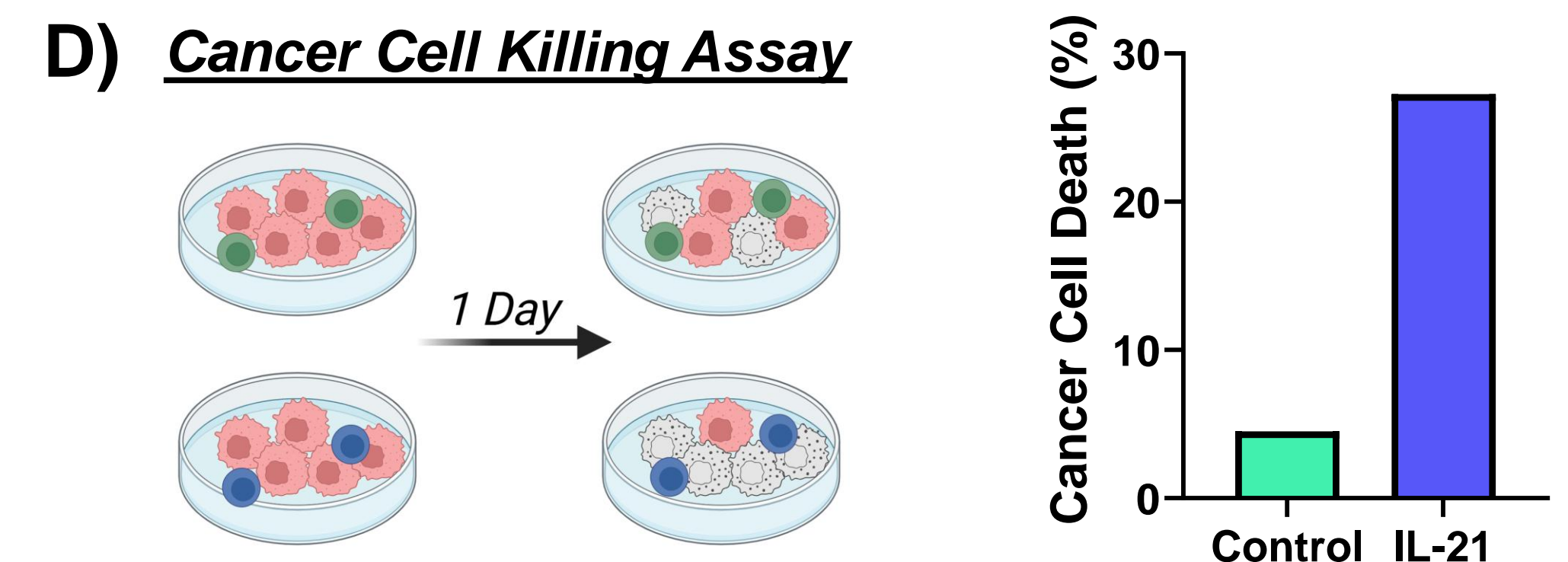
Previous studies have shown that IL-21, a protein secreted by CD4 T cells, influences CD8 T cell metabolism and behavior. Does IL-21 improve CD8 T cell movement?



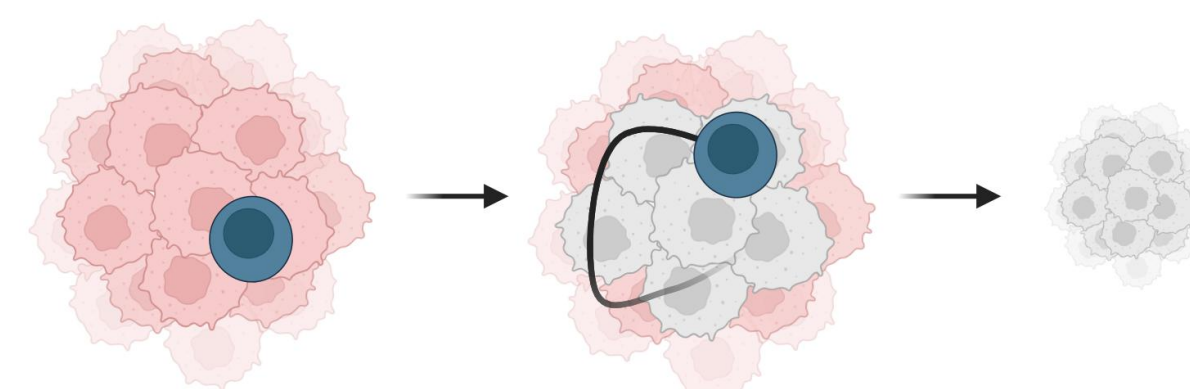
A) We isolate CD8 T cells from mice, culture them with or without IL-21 for 4 days and then assess cell movement by (B) measuring the number of cells that travel through a porous membrane and (C) tracking cell movement over time with video microscopy.

Does IL-21 improve cancer cell killing by CD8 T cells?

We isolate and culture CD8 T cells as in (A), then assess cancer cell killing capacity by D) culturing CD8 T cells with cancer cells and measuring cancer cell death.



Broader Research Goals / Impact to Colorado and Beyond



- Improve cancer treatment efficacy by reducing tumor burden
- Decrease cancer mortality

Acknowledgements

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