E 4167-05-P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government Owned Inventions Available for License: Enhanced Tumor Reactivity of T Cells Lacking SIT1, LAX1 or TRAT1

AGENCY: National Institutes of Health, HHS.

ACTION: Notice.

SUMMARY: The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) is actively seeking potential licensees interested in further developing these inhibitory transmembrane adapter proteins as targets for T-cell immunotherapy for the treatment of cancer, infectious diseases, and autoimmune diseases.

FOR FURTHER INFORMATION CONTACT: Inquiries related to this license opportunity should be directed to: Nikki Guyton, Ph.D., Unit Supervisor, NCI, Technology Transfer Center, Email: *darackn@mail.nih.gov* or Phone: 240-276-5493.

SUPPLEMENTARY INFORMATION: Cellular immunotherapy holds much promise for the treatment of cancer. However, certain cellular therapies have limited success because of immunosuppression in the tumor microenvironment. Thus, there is an unmet need for improved methods of cellular immunotherapy.

T cells constitutively express inhibitory molecules that limit the activation response to antigens by the T cell antigen receptor (TCR). Among these are the transmembrane adapter proteins SIT1, LAX 1 and TRA T1. These appear to tonically associate with the TCR and inhibit signal transduction. Researchers at the NICHD have identified SIT1, LAX 1 and TRA T1 as potential targets for T-cell immunotherapy. Mouse models have demonstrated that deletion of SIT1, LAX1 and TRA T1 – or expression of nonfunctional mutant versions of these proteins in mouse T cells – enhances TCR signaling and significantly increases T cell cytotoxicity against tumor

cells. Experiments confirming these results in human T cells are currently underway. This discovery provides a new therapeutic approach to greatly improve clinical outcomes of T-cell immunotherapy in treating cancers. It also holds potential to treat infectious diseases or autoimmune diseases.

This Notice is in accordance with 35 U.S.C. 209 and 37 CFR Part 404 and the intellectual property rights have been assigned to the Government of the United States of America.

NIH Reference Number: E-004-2024.

Product Type: Therapeutic.

Therapeutic Area(s): Oncology | Immunology.

Potential Commercial Applications:

- Treatment for cancer.
- Treatment for infectious diseases.
- Treatment for autoimmune diseases.

Competitive Advantages:

- Potentially superior therapeutic benefit in cancer by:
    - Enhancing tumoricidal activity of T-cell immunotherapy.
    - Overcoming immunosuppression in the tumor microenvironment.
- Potentially superior therapeutic benefit in infectious diseases by enhancing immune responses to pathogens.
- Potentially superior therapeutic benefit in autoimmune disease by enhancing the generation or function of antigen-specific regulator T cells (Tregs).

Patent Status: A PCT application was filed on January 24, 2025.

Development Stage: Pre-clinical (*in vivo* validation).

Collaboration Opportunity: Researchers at the NICHD seek licensing for further developing these inhibitory transmembrane adapter proteins as targets for T-cell immunotherapy for the treatment of cancer, infectious diseases, and autoimmune diseases.

Dated: May 6, 2026.

Richard U. Rodriguez,

Associate Director,

Technology Transfer Center,

National Cancer Institute.

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