



DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government Owned Inventions Available for License: Compositions and Methods for Producing Dendritic Cell-based Vaccines with Enhanced Efficacy

AGENCY: National Institutes of Health, HHS.

ACTION: Notice.

SUMMARY: The National Cancer Institute (NCI) is seeking research co-development partners and/or licensees for NCI's compositions and methods to enhance the efficacy of dendritic cell (DC)-based cancer vaccines.

FOR FURTHER INFORMATION CONTACT: Inquiries related to this license opportunity should be directed to: Diptadip Dattaroy, Ph.D., Technology Transfer Manager, NCI, Technology Transfer Center, Email: diptadip.dattaroy@nih.gov or Phone: 240-276-7092.

SUPPLEMENTARY INFORMATION: Current dendritic cell (DC)-based cancer vaccines are limited by impaired DC function due to cancer-driven lipid imbalances and other immunosuppressive factors reducing vaccine effectiveness. To address this issue, NCI has generated dendritic cells in the presence of omega-3 fatty acids (docosahexaenoic acid [DHA] and eicosapentaenoic acid [EPA]) and their derivatives, or specialized pro-resolving lipid mediators, to restore and enhance the dendritic cells' antigen-presenting function and anti-tumor efficacy. This approach could significantly improve the potency of DC-based cancer vaccines, offering a promising strategy to overcome a major limitation in current cancer immunotherapies.

“This Notice is in accordance with 37 CFR § 404.4 Authority to grant licenses.”

NIH Reference Number: E-231-2023.

Related Technologies: N/A.

Product Type: Therapeutic.

Therapeutic Area(s): Oncology | Immunology.

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

Publications:

- Tiwary S. Endogenously high Omega-3 levels lead to a less suppressive tumor microenvironment.<https://doi.org/10.4049/jimmunol.210.Supp.172.18>.
- Tiwary, S., K. Hsu, K. C. Goldfarbmuren, Z. Xia, and J. A. Berzofsky. High levels of endogenous omega-3 fatty acids prolong the lifespan, promote antigen presentation, and improve DC-based cancer vaccine efficacy in mice. 2025. *Cancer Immunology Research*, in press.

Patents: PCT/US2024/049057, filed September 27, 2024.

Potential Commercial Applications:

- Cancer immunotherapy.
- Development of human DC vaccines.
- Formulations involving omega-3 fatty acids or pro-resolving lipids.

Competitive Advantages:

- Production of DCs with enhanced antigen-presenting function, anti-tumor efficacy and potency.
- Significant tumor reduction and improved survival compared in animals compared with wild-type DCs Potentially clinically safer than classic IMiDs by lower risk of fetal malformations.

Collaboration Opportunity: Researchers at the NCI seek licensing and/or co-development research collaborations for the development of NCI's compositions and methods to enhance the efficacy of dendritic cell (DC)-based cancer vaccines by using omega-3 fatty acids or pro-resolving lipid mediators.

Dated: June 23, 2026.

Richard U. Rodriguez,

Associate Director,

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National Cancer Institute.

[FR Doc. 2026-12842 Filed: 6/24/2026 8:45 am; Publication Date: 6/25/2026]