

Researchers Discover How Cancer 'Invisibility Cloak' Works

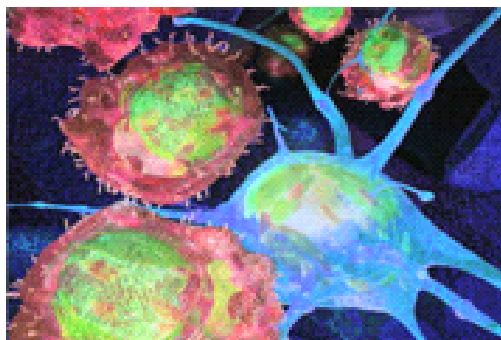
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DENVER —

Lipid secreted by tumors inhibits immune response against cancer

Researchers at National Jewish Health have discovered how a lipid secreted by cancer tumors prevents the immune system from mounting an immune response against it. When lysophosphatidic acid (LPA) binds to killer T cells, it acts almost like an “invisibility cloak,” preventing T cells from recognizing and attacking nascent tumors.

“In recent years, several therapeutic medicines have been developed that spur a person’s own immune system to fight cancer,” said [Raul Torres, PhD](#), professor of immunology at National Jewish Health, and senior author on the paper, published in the October issue of *Cancer Immunology Research*. “Our findings suggest new targets and strategies for enlisting the immune system’s help in fighting cancer.”



Scientists believe the human immune system recognizes and destroys many cancerous cells before they develop into dangerous tumors. However, tumors also employ strategies to evade detection by the immune system.

Scientists have known that LPA is secreted by many types of cancer cells, appears to promote the growth and spread of tumor cells, and that immune cells known as CD-8 “killer” T cells have several receptors for LPA. Killer T cells can destroy cancer cells when activated against them.

In the new paper, researchers led by Dr. Torres showed that LPA keeps T cells inactivated even after they have “seen” a target, or antigen, on a cancer cell that would normally trigger an immune response. They identified the LPA5 receptor as the specific receptor responsible for inhibiting the immune response. In cell cultures and in mice LPA prevented signaling within cells, the appearance of molecules associated with T-cell activation, and proliferation of the T cells. When they transferred T cells lacking the LPA5 receptor into mice with cancer, tumor growth essentially halted.

“Knowing specifically how LPA inhibits the immune response suggests several strategies for harnessing the immune system’s natural ability to fight cancer,” said Dr. Torres.

National Jewish Health is the leading respiratory hospital in the nation. Founded 114 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit www.njhealth.org.

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