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FOR IMMEDIATE RELEASE

La Jolla Institute receives \$ 4.5 mill Cancer Moonshot award

The grant will help improve existing immunotherapeutic options; accelerate the development of novel cancer vaccines and personalized therapies for the treatment of head and neck cancer

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LA JOLLA, CA—Researchers at La Jolla Institute for Immunology (LJI) and UC San Diego have been awarded \$ 4.5 million as part of the National Cancer Institute’s Cancer Moonshot initiative. The funding will support research to develop new and improved immunotherapeutic treatment options for patients with head and neck cancer.

Led by LJI Professor Stephen Schoenberger, Ph.D., a widely recognized authority on personalized cancer vaccines, the collaborative research effort is part of the Immuno-Oncology Translational Network (IOTN), which was established as part of the Cancer Moonshot with the express goal of accelerating translation of basic discoveries into clinical applications to improve immunotherapy outcomes.

The LJI effort brings together the wide-ranging expertise of researchers and clinicians at La Jolla Institute and the UC San Diego Moores Cancer Center to advance current immunotherapeutic options and develop novel precision approaches such as personalized cancer vaccines and cellular therapies for the treatment of head and neck cancer and related malignancies.

“Neoantigens offer an unprecedented opportunity for attacking tumors in a specific and effective manner based on the altered genes they express,” says Schoenberger, “and this funding will accelerate the development of new therapies based on this premise.”

Cancer immunotherapies build on the fact that the immune system can recognize and eliminate tumor cells by targeting molecules only found on the surface of tumor cells. Just like homing beacons, these so called “neo-antigens” guide T cells to their targets where they then unleash their destructive powers.

Tumor associated neo-antigens are the result of tumor-specific genetic alterations or, as is often the case in head and neck cancer, the random integration of human papillomavirus into the genome. Identifying clinically relevant neo-antigens in cancers with moderate levels of

mutations, such as head and neck squamous cell carcinoma (HNSCC), has proven challenging since only a tiny fraction of predicted neo-antigens actually generate a T cell response.

“Tumor neo-antigens are highly variable and no two tumors are alike, which represents a challenge but also the opportunity to create highly personalized treatments,” explains LJI Professor Bjoern Peters, Ph.D., a bioinformatician, who has developed a number of tools to predict and analyze which parts of a pathogen, allergen or cancer cell is recognized and targeted by the immune system. “As we learn more about which features trigger a strong immune response, we can fine-tune our predictions.”

Building on their expertise in predicting and verifying neo-antigen T cell responses, Schoenberger’s team will specifically focus on identifying tumor neo-antigens that can fire up tumor-specific immune responses.

The validated neo-antigens will be further analyzed in HNSCC tumor models in collaboration with Professor J. Silvio Gutkind, Ph.D., Associate Director, Basic Science at Moores Cancer Center, who is particularly interested in the molecular basis of oral and head and neck cancers.

As part of the collaboration, LJI Professor Anjana Rao, Ph.D., will explore the role of T cell exhaustion in mouse and human HNSCC. So-called T cell exhaustion is the result of prolonged overactivity of immune cells summoned to a tumor or infection site and effectively shuts down their ability to dispatch tumor cells.

“This effort is so critical because we need to develop better therapies for patients with head and neck cancer. This is a devastatingly deadly disease and all the science points to improving outcomes by activating the immune system through boosting neoantigen specific T cells. This grant will allow us to lay the essential translational foundation to move better treatments to patients,” says Professor Ezra Cohen, M.D., Associate Director, Translational Science, at Moores Cancer Center. “I am very excited to be working with exceptional researchers at LJI and the opportunity to learn how to devise effective immunotherapies that counter exhaustion and re-motivate T cells to eradicate a patient’s tumor.”

Grant: “Stimulating Neo-Antigen Specific T Cell Responses in Head and Neck Cancers” (NIH UO1 DE028277)

About La Jolla Institute for Allergy and Immunology

The La Jolla Institute for Allergy and Immunology is dedicated to understanding the intricacies and power of the immune system so that we may apply that knowledge to promote human health and prevent a wide range of diseases. Since its founding in 1988 as an independent, nonprofit research organization, the Institute has made numerous advances leading toward its goal: *life without disease*.

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