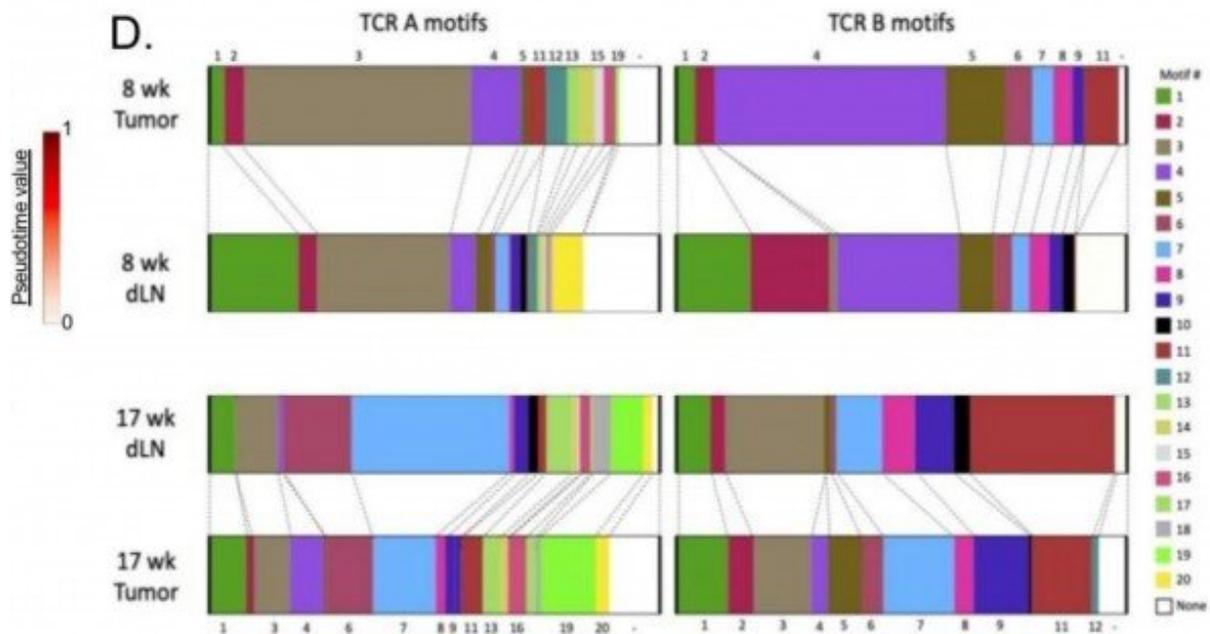


Study shows stem-like T cells could aid immunotherapy in cancer treatment

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Credit: Yale Cancer Center

In a new study by Yale Cancer Center, researchers show stem-like T cells within certain lymph nodes could be natural cancer fighters. Targeting these T cells—which are a type of white blood cells—with immunotherapy drugs could increase the number of cancer patients that

respond to treatment. The findings were reported online today in the journal *Science Immunology*.

"Therapies that use the [immune system](#) to destroy [cancer](#) have been a game changer for patients with lung and other cancers," said Nikhil Joshi, Ph.D., Assistant Professor of Immunobiology, a member of the Center of Immuno-Oncology at Yale Cancer Center, and senior author of the study. "But not all people respond to immunotherapy drugs, so it was important for us to discover the role of these special T cells in [tumor growth](#)."

In this study, researchers first developed a new animal model where they could look at the stem-like T cells in tumors over the course of several months of tumor growth, and determine how the stem-like T cells survive. They discovered the stem-like T cells do not persist in the tumor for very long, which meant they are resupplied from somewhere else in the body. Nearby lymph nodes, an immune organ containing many of these stem-like T cells, were replenishing the supply. Every so often, a few stem-like T cells leave the lymph node and travel to the tumor. This keeps the tumor supplied with fresh cancer fighting T cells. Researchers believe this is important for slowing the growth of cancer. An analysis of immune cells isolated from patients with lung cancer confirmed that stem-like T cells are in lymph nodes near the lung.

"T cells in tumors become exhausted, but our study results show the stem-like T cells within the nearby [lymph nodes](#) do not experience exhaustion during the course of disease," said Kelli A. Connolly, a post-doctoral fellow at Yale Cancer Center and lead author of the study. "This could be an important treatment advance as the potential to respond to immunotherapy is preserved."

"We are focused on developing therapies that will activate the stem-like T [cells](#) in the nearby lymph node and bring them into the fight against

cancer," adds Joshi. "We plan to continue this work and focus on how to improve these therapeutic responses to help patients."

More information: Kelli A. Connolly et al, A reservoir of stem-like CD8 + T cells in the tumor-draining lymph node preserves the ongoing anti-tumor immune response, *Science Immunology* (2021). [DOI: 10.1126/sciimmunol.abg7836](https://doi.org/10.1126/sciimmunol.abg7836)

Provided by Yale Cancer Center

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