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Study uncovers inhibitory role of 'Ter cells' in cancer therapies

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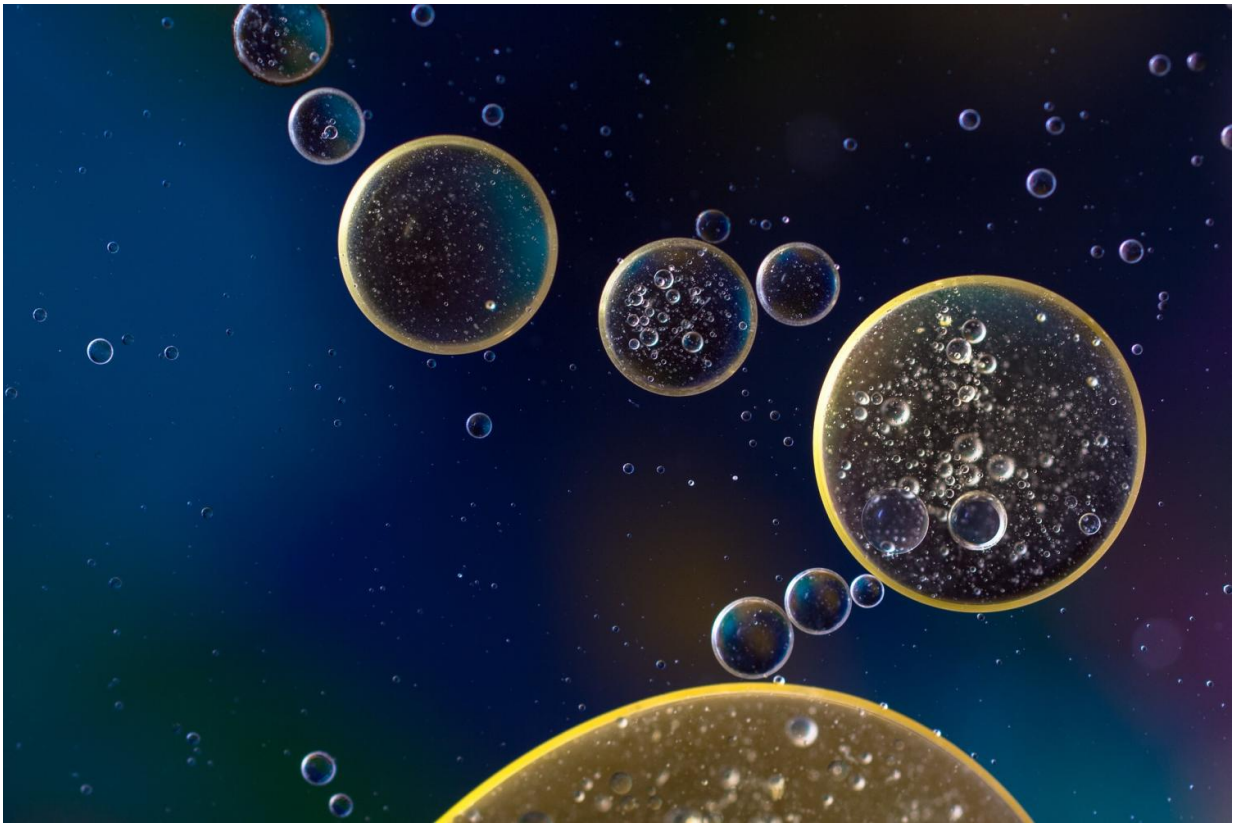

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Targeted radiation is often used to study and treat diverse cancer types. A multidisciplinary research team based at the University of Chicago Medicine has recently focused on a type of cell that releases a protein

that enhances resistance to cancer therapies and promotes tumor progression.

The study focused on Ter cells, which are extra medullary erythroid precursers that secrete the neuropeptide artemin. In the study, published February 24, 2020, in *Science Translational Medicine*, the researchers showed that local tumor radiotherapy, systemic immunotherapy or the combination of both treatments were able to deplete Ter cells in the spleen, reduce artemin production and limit tumor progression both in the locally irradiated tumors as well as outside the radiation fields.

The results identified several targets that could "potentially improve outcomes after radio- and immunotherapy," said Ralph Weichselbaum, MD, Daniel K. Ludwig Distinguished Service Professor and chair of radiation and cellular oncology at the University of Chicago. "The promise of these approaches is exciting."

This study used animal models and samples from three different groups of patients who had received some combination of radiotherapy and chemotherapy, immunotherapy and radio-immunotherapy respectively for various forms of cancer, including lung cancer and melanoma.

Combinations of Ter cell depletion, blockade of artemin signaling, and immunotherapy, according to the authors, led to enhanced control of tumor burden in mice. Ter cell depletion, the authors noted, was dependent on an intact adaptive immune response, mediated by interferon-y.

Targeting the Ter artemin axis "enhanced the efficacy of immunotherapy in model systems," Weichselbaum said. Reduced numbers of Ter cells and reduced expression of artemin and artemin signaling partners were all associated with improved outcomes in patients receiving radiotherapy, radioimmunotherapy and

immunotherapy.

"Together, our study demonstrates the mutually apposing regulatory effects between radiotherapy or immunotherapy and tumor-induced splenic Ter cells," the authors suggest.

These immunotherapies and combined treatments with radiotherapy, according to the authors, "warrant further research to understand the interactions between them and tumor-promoting pathways."

More information: Y. Hou at Xi'an Jiaotong University in Xi'an, China el al., "Radiotherapy and immunotherapy converge on elimination of tumor-promoting erythroid progenitor cells through adaptive immunity," *Science Translational Medicine* (2021). stm.sciencemag.org/lookup/doi/ … scitranslmed.abb0130

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