New finding improves tumor response to immunotherapies

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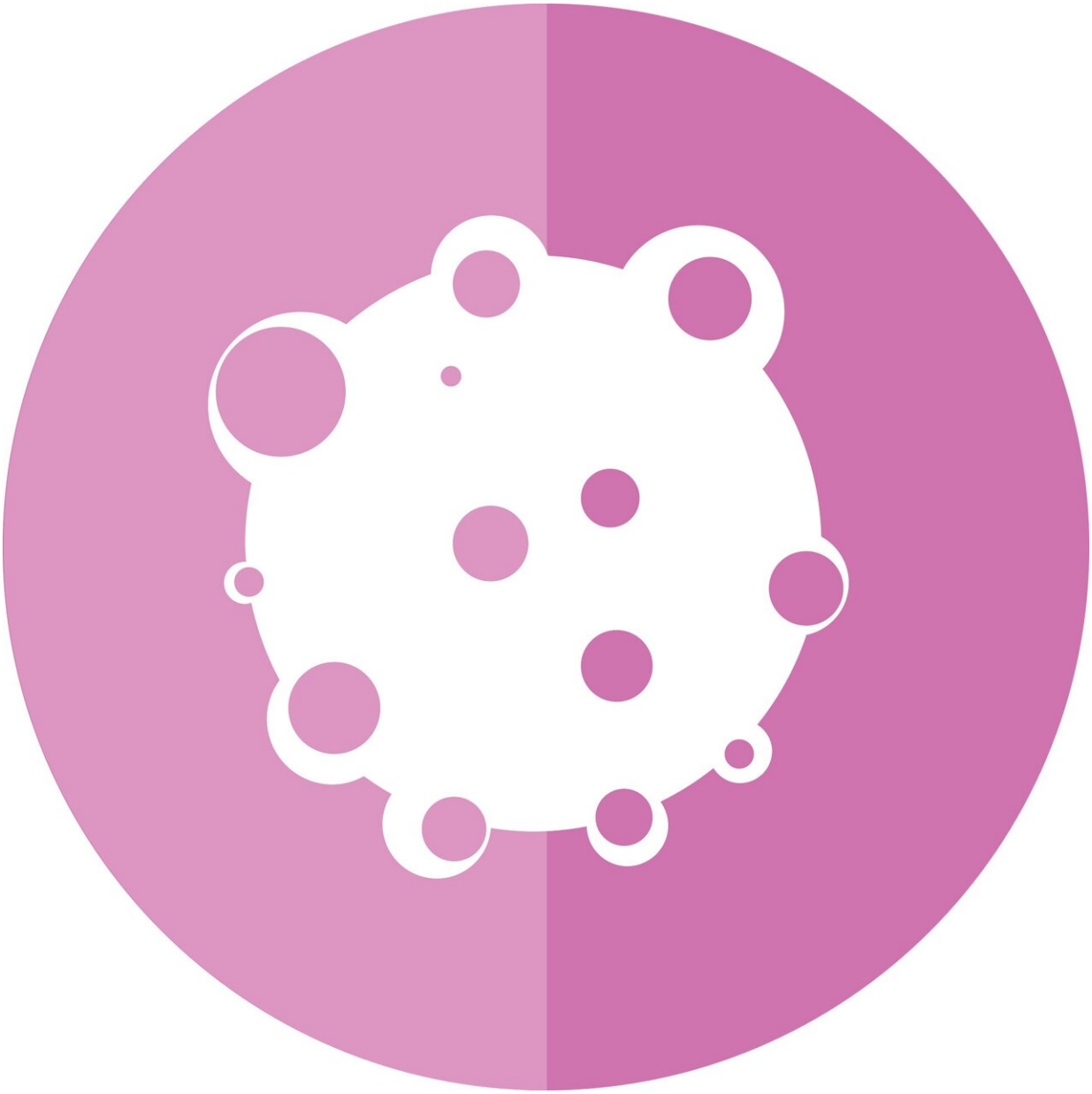

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Researchers from The University of Western Australia and Olivia Newton-John Cancer Research Institute have found a new way to improve treatment of tumors that previously did not respond to immunotherapies.

Immunotherapy is a treatment that uses certain parts of a person's immune system to fight diseases such as cancer. It can be done in a number of ways and involves stimulating, or boosting, the natural defenses of the immune system so that it works harder or smarter to find and attack cancer cells.

Associate Professor Fiona Pixley and Jay Steer, from UWA's School of Biomedical Sciences, were co-authors of "Therapeutic inhibition of the SRC-kinase HCK facilitates T cell tumor infiltration and improves response to immunotherapy," published in *Science Advances*.

They discovered that isolating a particular molecule found in certain immune cells that hadn't traditionally responded well to immunotherapy could turn things around, which may ultimately lead to better responses to immunotherapies for patients with a range of cancers.

"Cancer immunotherapy has revolutionized the treatment of several cancers, such as melanoma, in the past decade but some cancers do not respond to these new therapies," Associate Professor Pixley, Head of Pharmacology and Toxicology at UWA, said.

"Non-responding tumors are typically 'immunologically cold' as they contain few of the immune cells called T cells that are targeted by these immunotherapies."

The non-responding tumors contain different immune cells, known as macrophages and dendritic cells, which are immunosuppressive and stop immunotherapy from working.

Researchers found that inhibiting a molecule called Hck, only found in macrophages and dendritic cells, changed their behavior and enabled a powerful immune response to immunotherapies.

"By combining inhibition of Hck with immunotherapy, the growth of cancers poorly responsive to immunotherapy alone was significantly reduced," Associate Professor Pixley said.

The study found stimulating immune cell activation, while inhibiting the immunosuppressive micro-environment, enhanced T-cell infiltration, resulting in reduced tumor growth.

More information: Ashleigh R. Poh et al, Therapeutic inhibition of the SRC-kinase HCK facilitates T cell tumor infiltration and improves response to immunotherapy, *Science Advances* (2022). DOI: 10.1126/sciadv.abl7882

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