CAR-T therapy modifications provide new promise for cancer immunotherapies

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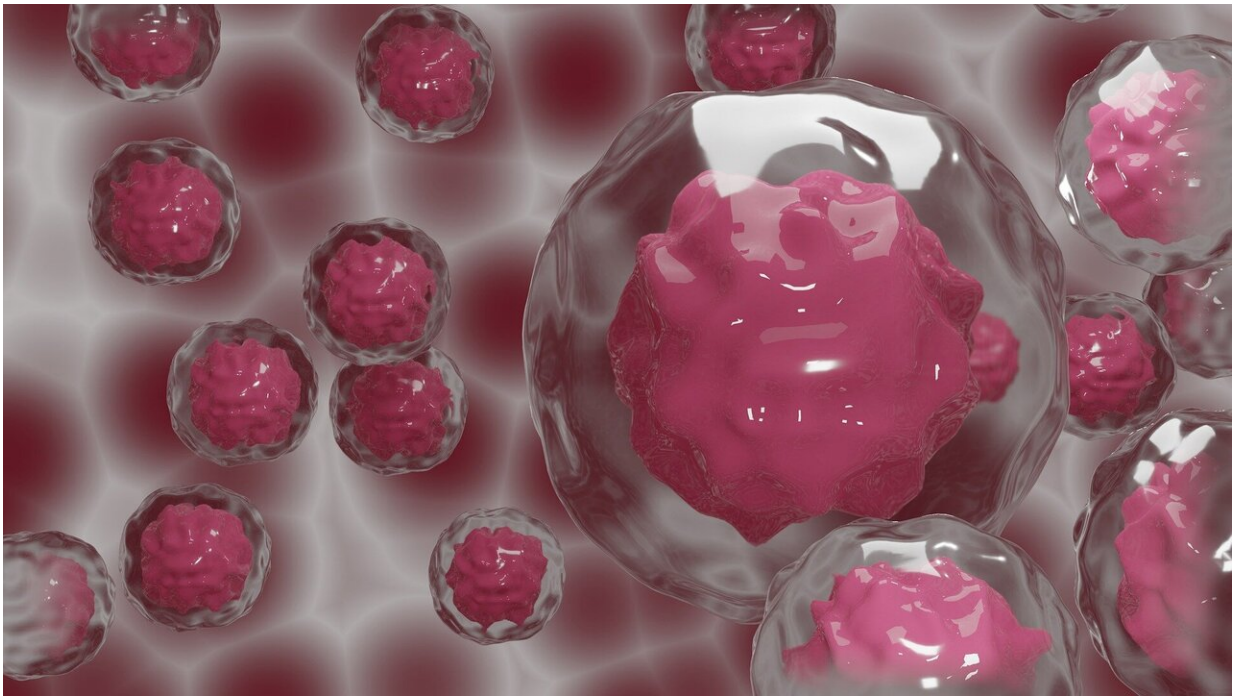

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New research led by Dr. John Maher, from the School of Cancer & Pharmaceutical Sciences, working for Leucid Bio and with biotech company LUMICKS, has been published in the February 2022 issue of *Frontiers in Immunology*.

The paper describes a new Chimeric Antigen Receptor (CAR) T-cell

therapy that adds a second receptor, enhancing the ability of the CAR T-cell to target and destroy specific cancer cells in pre-clinical models. The genetic edits provide new promise in improving its effectiveness as an immunotherapy for cancer.

Dr. Maher and his colleagues were able to utilize the z-Movi Cell Avidity Analyzer as part of their collaboration with LUMICKS. This new analyzer measures avidity—the strength of binding between the antibody and the antigen on its target.

The authors used the technology to measure the strength of binding between the CAR T-cell and the target cancer cells, allowing researchers to identify the best candidates for immunotherapies.

"Using the LUMICKS z-Movi instrument, we could easily find the 'goldilocks' CARs that do not bind too strongly or too weakly to the target cells and show superior killing in pre-clinical models," says Dr. John Maher, School of Cancer & Pharmaceutical Sciences.

CAR T-cells refers to immunotherapies that modifies T cells—a type of cell in the immune system—to target and destroy cancer cells. This is achieved by genetically reprogramming T cells to make the CAR protein, which allows T cells to specifically bind to, and attack, cancer cells.

CAR T-cells are currently offered as treatments for blood cancers on the NHS, and Dr. Maher's group are currently designing CAR T-cell therapy for solid tumors.

Andrea Candelli, Chief Scientific Officer of LUMICKS, added: "We are gratified by the additional evidence shown by this paper of the critical role that measuring cell avidity plays in uncovering and optimizing CAR T cells in making immunotherapy more effective."

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