

A new T-cell population for cancer immunotherapy

23 May 2017

Scientists at the University of Basel in Switzerland have, for the first time, described a new T cell population that can recognize and kill tumor cells. The open access journal *eLife* has published the results.

T lymphocytes (short T [cells](#)) are a special type of cells that recognize germs and protect our body from infections. Their second important job is to ride the body of harmed cells, such as [tumor cells](#). T cells are able to identify tumor cells because they look different than normal healthy cells. The way in which they do this is governed by surface expression of T-cell receptors (TCR). Each receptor interacts with a specific molecule on the surface of the target cell.

One of the molecules recognized by TCR is the MHC class I-related MR1 molecule, which so far had only been known to attract TCRs to [infected cells](#). To date, it was unknown that MR1 can also attract TCRs to [cancer cells](#).

The research group lead by Prof. Gennaro De Libero from the Department of Biomedicine at the University of Basel has now published a study that describes a novel T [cell population](#) that recognizes MR1-positive tumor cells. The researchers have named these new T cells MR1T. MR1T cells recognize and kill many human tumors derived from different tissues. Cancer cells carrying the surface molecule MR1 can thus be seen by MR1T cells.

Major implications for cancer treatment

The transfer of TCR genes into the T cells of patients confers the recognition of tumor cells, implicating transfer of TCR genes from MR1T cells as a novel approach to tumor immunotherapy. "This new type of tumor cell recognition and killing has widespread implications and could fundamentally change the future of cancer treatment," says De Libero, Professor for Tumor

Immunology at the University of Basel.

The researchers' next challenge will be the identification of the [tumor](#)-associated antigens that induce MR1T cells activation and killing of cancer cells. These studies will pave the way for new and broader strategies to combat human tumors.

More information: Marco Lepore et al. Functionally diverse human T cells recognize non-microbial antigens presented by MR1, *eLife* (2017). [DOI: 10.7554/eLife.24476](https://doi.org/10.7554/eLife.24476)

Provided by University of Basel

APA citation: A new T-cell population for cancer immunotherapy (2017, May 23) retrieved 26 September 2022 from <https://medicalxpress.com/news/2017-05-t-cell-population-cancer-immunotherapy.html>

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