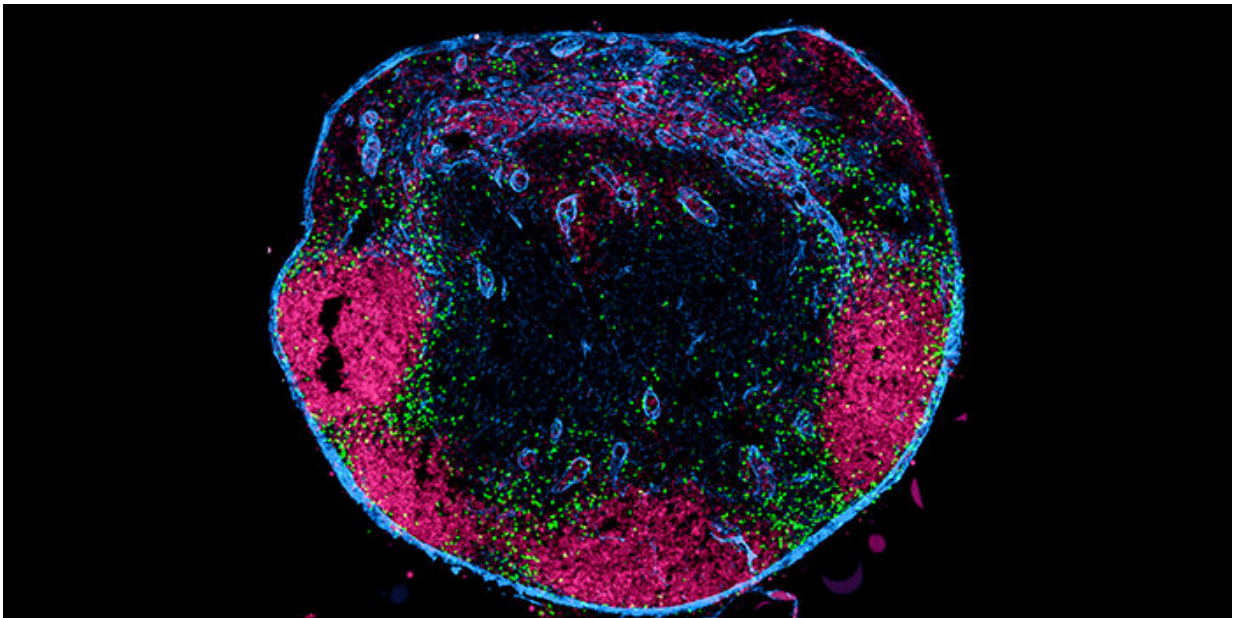


New players in the immune response identified

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Cross-section through a lymph node. The unconventional T cells (green), which have migrated from the tissue via the lymphatic channels, are located in the marginal sinus and in the interfollicular zone. Follicular B cells are shown in magenta, the lymph node capsule and lymphatic vessels in blue. Credit: Konrad Knöpper / Universität Würzburg

The human body contains 600 to 800 lymph nodes, which are specialized organs that trigger immune responses. To be informed about infections in the body, lymph nodes are connected to the individual organs via lymph vessels. From the organs, the lymph vessels transport fluids and

special immune cells to the lymph nodes. These immune cells are called dendritic cells; they carry information from the organs into the lymph nodes and pass it on to other immune cells there.

Now it is clear that the [dendritic cells](#) are not solely responsible for this important flow of information. A research team led by immunologist Professor Wolfgang Kastenmüller from Julius-Maximilians-Universität (JMU) Würzburg in Bavaria, Germany, has discovered that so-called unconventional T cells also continuously migrate from the tissue into the lymph nodes and influence the immune responses there.

This discovery has consequences—for [vaccination strategies](#) as well as for immunotherapies against cancer.

Different subtypes of unconventional T cells

"Each tissue in our body has different subtypes of unconventional T cells," explains Wolfgang Kastenmüller. "Since these cells each migrate to the nearest lymph node, the individual lymph nodes also differ in the composition of the T cells. And that has a direct effect on the immune responses of the individual lymph nodes."

For example, a lymph node that has been informed about an infection in the lungs triggers a different immune response than a lymph node that receives its information from the intestine or from the skin.

Taking advantage of the differences between lymph nodes

A vaccination administered into the skin or muscle, for example, always addresses lymph nodes that are connected to the skin. However, the vaccine may be much more effective if it is administered near other lymph nodes. This consideration also applies to immunotherapies against

cancer.

"That is why we want to investigate next whether we can use the difference in lymph nodes to make vaccinations more efficient or to improve immunotherapies against cancer," says the JMU professor. Another interesting question is whether the differences in the [lymph nodes](#) can be actively influenced. And it is to be clarified what significance the new findings have with regard to the development of autoimmune diseases and cancer.

The research was published in *Immunity*.

More information: Marco A. Ataide et al, Lymphatic migration of unconventional T cells promotes site-specific immunity in distinct lymph nodes, *Immunity* (2022). [DOI: 10.1016/j.immuni.2022.07.019](https://doi.org/10.1016/j.immuni.2022.07.019)

Provided by Julius-Maximilians-Universität Würzburg

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