

# Migratory dendritic cells found to activate TGF- $\beta$ prior to conditioning naïve CD8+ Ts

October 11 2019, by Bob Yirka

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A team of researchers affiliated with several institutions in the U.S. and one in the U.K. has found that migratory dendritic cells (DCs) activate TGF- $\beta$  prior to conditioning naïve CD8<sup>+</sup> T cells, allowing for transformation to T<sub>RM</sub> cells that take up residence in the skin. In their paper published in the journal *Science*, the group describes their study of such cells and how they are preconditioned before moving to the epidermis. Donna Farber with Columbia University Irving Medical Center has published a Perspective [piece](#) on the work done by the team in the same journal issue.

Prior research has found that there is a kind of memory T cell that remains in tissue rather than circulating in the body. Such tissue-resident T [cells](#) (T<sub>RM</sub>) are created when the body successfully defeats an invasive element, such as a virus—they are how the body remembers to fight the same virus the next time it is encountered. One such kind of T<sub>RM</sub> are CD8<sup>+</sup> epithelial TRM (eT<sub>RM</sub>) cells that exist in the skin. Prior research has also shown that after T cells are made in the bone marrow, they travel to lymph nodes, where they are trained to become the kinds of T cells that are needed by the [body](#) to support a normal immune response. These specialized T cells rely on a transforming growth factor- $\beta$  (TGF- $\beta$ ) to mature properly. But the process by which this occurs is still under investigation. In this new effort, the researchers looked at the role  $\alpha$ V integrin-expressing DCs, play in the transformation process.

The work involved removing  $\alpha$ <sub>v</sub> integrins from CD11c<sup>+</sup> DCs in mouse models to measure the maturation process of naïve CD8<sup>+</sup> T cells. This led to a dramatic reduction in CD8<sup>+</sup> T cells in the skin, but not in the lymph nodes. This indicates that migratory DCs play a role in activating TGF- $\beta$  as a means of preconditioning naïve CD8<sup>+</sup> T cells. Additionally,

this indicates that pre-immune T cells might be less uniform than has been thought.

**More information:** Migratory DCs activate TGF- $\beta$  to precondition naïve CD8+ T cells for tissue-resident memory fate, *Science* 11 Oct 2019: Vol. 366, Issue 6462, eaav5728, [DOI: 10.1126/science.aav5728](https://doi.org/10.1126/science.aav5728) , [science.sciencemag.org/content/366/6462/eaav5728](https://science.sciencemag.org/content/366/6462/eaav5728)

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