

Migratory dendritic cells found to activate TGF-β prior to conditioning naïve CD8+ Ts

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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- β prior to conditioning naïve CD8+ T cells, allowing for transformation to T_{RM} 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 <u>piece</u> 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_{RM}) 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_{RM} are CD8⁺ epithelial TRM (eT_{RM}) 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– β (TGF- β) to mature properly. But the process by which this occurs is still under investigation. In this new effort, the researchers looked at the role αV integrin–expressing DCs, play in the transformation process.

The work involved removing α_V integrins from CD11c⁺ DCs in mouse models to measure the maturation process of naïve CD8+ T cells. This led to a dramatic reduction in CD8⁺ T cells in the skin, but not in the lymph nodes. Thhis indicates that migratory DCs play a role in activating TGF- β as a means of preconditioning naïve CD8+ T cells. Additionally,



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

More information: Migratory DCs activate TGF-β to precondition naïve CD8+ T cells for tissue-resident memory fate, *Science* 11 Oct 2019: Vol. 366, Issue 6462, eaav5728, <u>DOI: 10.1126/science.aav5728</u>, <u>science.sciencemag.org/content/366/6462/eaav5728</u>

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