

New types of blood cells discovered

April 21 2017



Credit: public domain

Scientists have identified new classes of cells in the human immune system.

The cells are new classes of types of [white blood cells](#) called dendritic cells and monocytes. Researchers have identified two new dendritic cell subtypes and two monocyte subtypes. They have also discovered a new

dendritic cell progenitor.

Wellcome-funded researchers used a technique called single-cell genomics to analyse [gene expression patterns](#) in individual human blood cells. Previously, different types of [immune cells](#) were investigated and defined by the set of marker proteins that they express on their surface. This new technique is much more powerful and can reveal previously unrecognised and rare cell types that would be otherwise difficult to find.

Dendritic cells display molecules called antigens on their surfaces. These molecules are recognised by T cells which then mount an immune response. Monocytes are the largest type of white blood cell and can develop into macrophages that digest debris in our cells.

Divya Shah, from Wellcome's Infection and Immunobiology team, says: "Two important white blood cell types in our bodies help defend us from infection – [dendritic cells](#) and monocytes. In this study, scientists have used cutting-edge technologies to find that there are many more types of cell than we originally thought. The next step is to find out what each of these cell types do in our immune system, both when we're healthy and during disease."

This research is one of the first major findings to come out of the Human Cell Atlas initiative, announced last year. It offers a useful basis for conducting this kind of analysis on other [cell types](#) and tissues.

More information: Alexandra-Chloé Villani et al. Single-cell RNA-seq reveals new types of human blood dendritic cells, monocytes, and progenitors, *Science* (2017). [DOI: 10.1126/science.aah4573](https://doi.org/10.1126/science.aah4573)

Provided by Wellcome Trust

Citation: New types of blood cells discovered (2017, April 21) retrieved 4 April 2023 from <https://medicalxpress.com/news/2017-04-blood-cells.html>

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