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New study of psoriatic cells could fire up the study of inflammation

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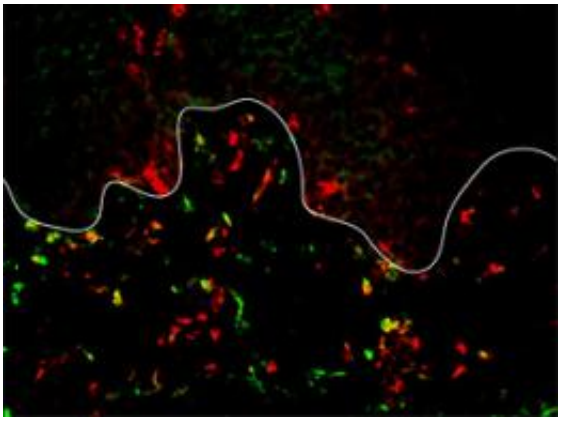

Inflammatory images. New research homes in on molecules that define the most troublesome of two types of dendritic cells in psoriatic lesions. TRAIL (red) and CD11c (green) are thought to be key molecular contributors to the inflammatory activity of immature dendritic cells, which make up 80 percent to 90 percent of dendritic cells associated with psoriasis.

(PhysOrg.com) -- Psoriasis is one of humanity's oldest know diseases and one of the more widespread, affecting 2 percent of the U.S. population. But it remains largely a mystery. New work identifies markers that define two types of dendritic cells found in psoriatic lesions, findings that will help scientists isolate and study the most troublesome inflammatory variety.

New research promises to pry some long held secrets from one of

humanity's oldest known diseases. Scientists at Rockefeller University have discovered how to parse the most troublesome cells behind the debilitating skin lesions in psoriasis and have identified several distinctive markers that suggest how they might be contributing to the disease — a painful inflammation of the skin that afflicts up to 2 percent of the U.S. population.

The work, published online May 14 in the *Journal of* Allergy *and Clinical Immunology*, focused on special immune cells called dendritic cells, which are believed to be fundamental contributors to the disease. Two main types of dendritic cells are found in the lesions — immature dendritic cells, which make up 80 percent to 90 percent of the population, and tissue-resident dendritic cells. Using cell sorting to separate the two types and then gene array analysis to identify the different molecules produced by each kind, researchers found that the immature dendritic cells expressed a host of genes that differentiated them from the resident dendritic cells.

Among them were molecules known as TNF-related apoptosis inducing ligand (TRAIL), Toll-Like Receptor (TLR) 1 and 2, and others that could fuel inflammatory pathways, says Michelle Lowes, assistant professor of clinical investigation in the Laboratory of Investigative Dermatology at Rockefeller's Center for Clinical and Translational Science. Knowing what molecules are active in psoriasis is key to understanding the disease, providing researchers a starting point for looking at genes that might contribute to it, and treatments that might prevent it.

"Different types of dendritic cells are really difficult to tease out," says Lowes, who worked with biomedical fellow Lisa Zaba and others on the project. "We wanted to publish this list of markers so that other people can look for any of their genes of interest."

Psoriasis is one of the most common inflammatory diseases and relatively easy to study because samples can be obtained from the skin. Despite its long-known and widespread prevalence, it is not well understood. A deeper knowledge of the inflammatory molecules at work in psoriasis could help develop treatments not only for the skin disorder but also for diseases ranging from allergies to arthritis and cancer.

More information: Identification of TNF-related apoptosis-inducing ligand and other molecules that distinguish inflammatory from resident dendritic cells in patients with psoriasis , The Journal of Allergy and Clinical Immunology online: May 14, 2010. www.jacionline.org/article/S0091-6749%2810%2900542-7/abstract

Provided by Rockefeller University