Exploring high cholesterol's link with psoriasis

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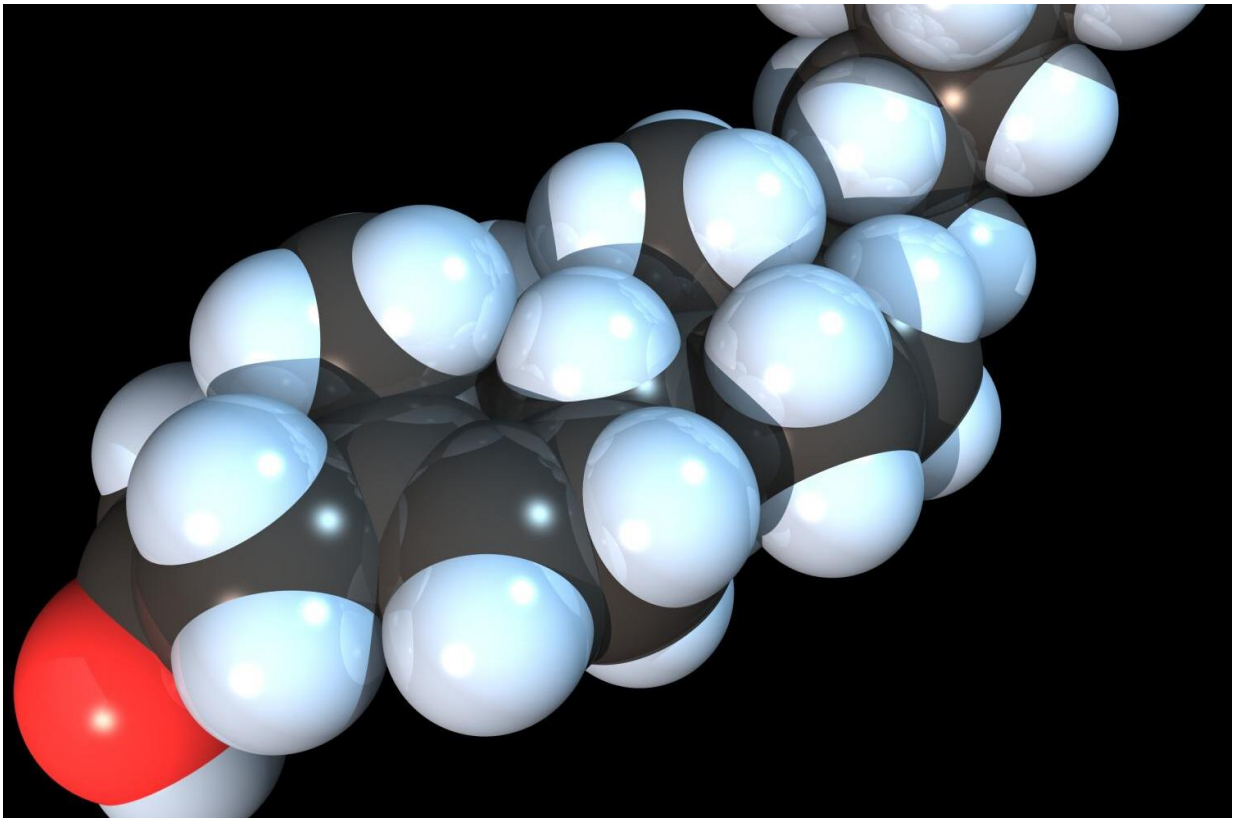

Space-filling model of the Cholesterol molecule. Credit: RedAndr/Wikipedia

A new Northwestern Medicine study published in the *Journal of Clinical Investigation* has demonstrated how a specific class of immune cells represent a previously unknown link between high cholesterol and the

development of symptoms characteristic of psoriasis.

Scientists have long known that patients with psoriasis—an inflammatory disease that causes itchy, dry and red skin—often have high cholesterol levels, also known as hyperlipidemia. Up until now, however, the cause of this association has been poorly understood.

In the current study, Chyung-Ru Wang, PhD, professor of Microbiology-Immunology, and her colleagues created a strain of mice that contain a category of immune cells called self-lipid reactive T-cells, and also have higher-than-normal amounts of cholesterol in the blood.

"To our surprise, these mice spontaneously developed skin lesions, which were caused by the activation of self-lipid reactive T-cells only under conditions of hyperlipidemia. The skin disease closely matched the symptoms and progression of psoriasis in humans," Wang said.

The findings, according to the authors, may represent an important link between the presence of high cholesterol and the development of psoriasis, a connection that has not previously been explained.

In a separate experiment, Wang and her team examined blood samples from human patients with a psoriasis diagnosis, and found that the levels of those same self-lipid reactive T-cells were elevated in those patients, compared to those without psoriasis.

Taken together, the scientists say the findings of the study are important because they may point to why hyperlipidemia might be linked to the onset of some autoimmune diseases, like psoriasis. Identifying and targeting the antigens that provoke the T-cells in question may represent a future avenue for developing treatments for psoriasis and other hyperlipidemia-associated inflammatory diseases.

More information: Sreya Bagchi et al. CD1b-autoreactive T cells contribute to hyperlipidemia-induced skin inflammation in mice, *Journal of Clinical Investigation* (2017). DOI: 10.1172/JCI92217