

# Leading discovery will help treat skin disease

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(Medical Xpress)—A world first discovery about the way skin cells deal with inflammation may prove useful in treating skin diseases.

Scientists from the University of Auckland have found that [skin cells](#) have an appetite for fat during [inflammation](#). Small organelles, known as mitochondria, are the powerhouse of cells and take in nutrients to break them down and create energy.

The research shows that these essential organelles also control the [immune response](#) in the skin cells.

This ground breaking work was carried out by senior research fellow, Dr Chris Hall in a research group directed by Professors Philip and Kathy Crosier from the University's Department of Molecular Medicine and Pathology.

Dr Hall's work has uncovered a mechanism where [fatty acids](#) are broken down in the mitochondria of skin cells to produce [reactive oxygen species](#) that then help to guide immune cell migration into inflamed skin.

The research was published online today in the high profile online journal *Nature Communications*.

"The discovery highlights how mitochondria in the skin can use fatty acids to help drive inflammation associated with infection and wound healing," says Dr Hall. "Excessive inflammation within the skin can be detrimental and contributes to inflammatory skin diseases such as

dermatitis"

"It is hoped that we will be able to develop drugs to block this new metabolic-immunologic connection with the skin cells and treat these diseases," he says.

The discoveries were made in zebrafish, a tropical fish that is used widely in biomedical research.

"The transparent nature of Zebrafish embryos enabled live imaging of metabolic and immunological processes during inflammation of the skin," says Dr Hall.

"The mechanisms we have found can be both good and bad: good because attracting [immune cells](#) to the skin during inflammation can help fight infection, but bad because some immune cells can also destroy host tissues," he says.

"The idea of using anti-inflammatories on skin diseases is to suppress the immune response, and this is a new way that we have found that the [skin](#) generates that immune response," says Professor Phil Crosier. "It's a new target that we can potentially use to interfere with that immune response"

"The next step is to use this system that Chris has discovered as a strong basis for undertaking a drug discovery programme with new treatments for [skin diseases](#)," he says.

The research in this group is funded by the Ministry of Business Innovation and Employment. The investigators are affiliated with the Maurice Wilkins Centre for Molecular Biodiscovery based at the University of Auckland which has recently had ongoing funding confirmed as a national Centre of Research Excellence.

Provided by University of Auckland

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