

Immune cells can be altered to help fight inflammatory diseases, research finds

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(Medical Xpress)—A fundamental mechanism controlling cells of the human immune system could be key to helping fight inflammatory diseases such as rheumatoid arthritis and psoriasis, new research at the University of Dundee has found.

The research by Dr Kris Clark, in the Medical Research Council [Protein Phosphorylation](#) Unit (MRC-PPU) at Dundee, concentrated on the activity of macrophages, which are cells of the immune system that defend the body against infection by bacteria and viruses.

Dr Clark found that an enzyme called SIK is active in suppressing the production of anti-inflammatory molecules. By 'switching off' the function of SIK within the cell, he was able to greatly enhance the production of beneficial anti-inflammatory molecules.

The research suggests that drugs that switch off SIK may improve current therapies for treating inflammatory diseases, such as [rheumatoid arthritis](#) and psoriasis.

"These are very exciting times for our research," said Dr Clark. "This discovery represents the first link between SIK and inflammation. My immediate future goal is to characterize in more detail the roles that SIK plays in the immune system and how they are affected by compounds that switch off this enzyme."

The research has been published in the [Proceedings of the National](#)

[Academy of Sciences.](#)

Macrophages are cells of the immune system that defend the body against infection by bacteria and viruses. However, once these invading pathogens have been destroyed, the inflammatory responses triggered by macrophages have to be stopped, to avoid the development of [chronic inflammatory diseases](#).

Macrophages also play key roles in terminating the [inflammatory response](#) by switching on the production of so-called anti-inflammatory molecules.

Kris discovered that the production of anti-inflammatory molecules by [macrophages](#) is prevented by an enzyme called SIK and that, by turning off the function of SIK within the cell, he was able to greatly enhance the production of beneficial anti-inflammatory molecules while stopping the production of the molecules that cause inflammation.

Working with the Drug Discovery Unit at Dundee, Dr Clark has now started to develop molecules which could provide the basis for drugs to turn off SIK.

"My studies have greatly benefitted from working in the multi-disciplinary and collegial environment that has been built up in the MRC Unit, the Scottish Institute for Cell Signalling and the College of Life Sciences at Dundee," said Dr Clark. "My interactions with the scientists who work here and the advice they have given me has not only been invaluable for this project, but also most enjoyable."

Provided by University of Dundee

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