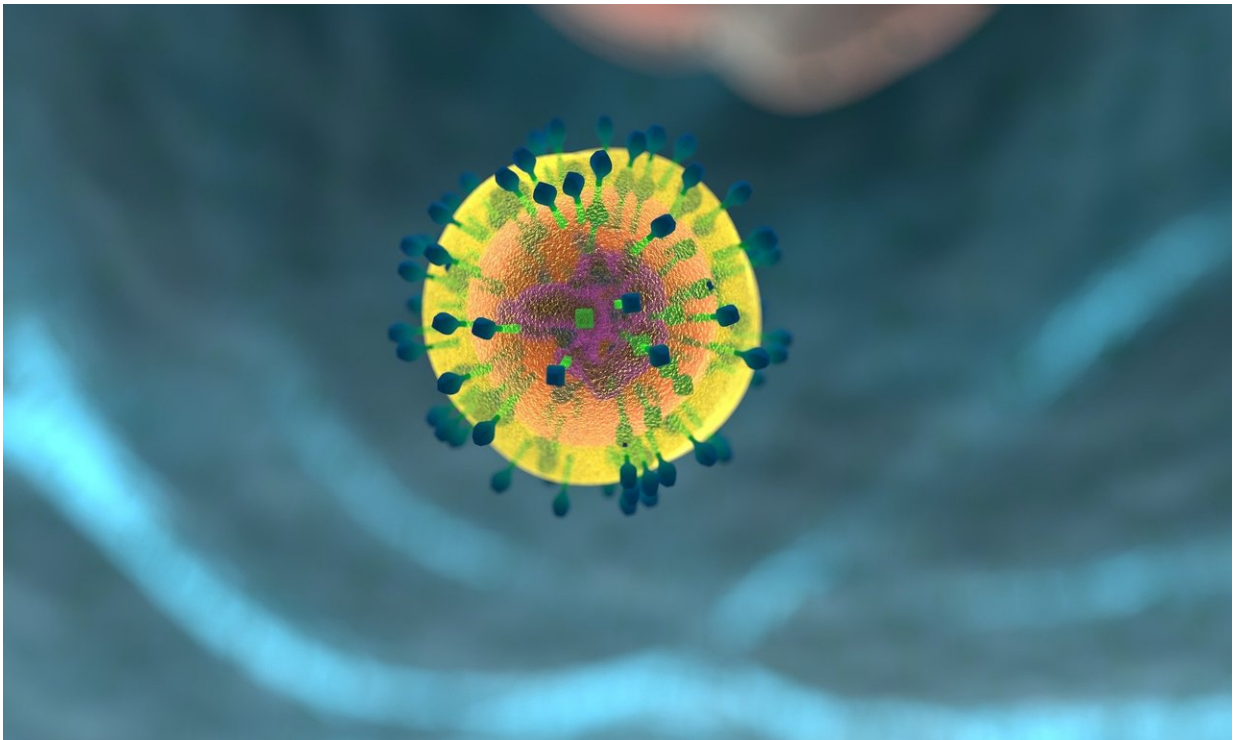


Masterswitch discovered in body's immune system

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Scientists have discovered a critical part of the body's immune system with potentially major implications for the treatment of some of the most devastating diseases affecting humans.

Professor Graham Lord, from The University of Manchester, led the

study, which could translate into treatments for [autoimmune diseases](#) including Cancer, Diabetes, Multiple Sclerosis and Crohn's Disease within a few years.

It is published in the *Journal of Clinical Investigation* today.

The discovery of the molecular pathway regulated by a tiny molecule—known as microRNA-142—is a major advance in our understanding of the [immune system](#).

The 10-year-study found that microRNA-142 controls Regulatory T cells, which modulate the immune system and prevent autoimmune disease. It is, they found, the most highly expressed regulator in the immune system.

Professor Lord, led the research while at Kings College London in collaboration with Professor Richard Jenner at UCL.

And according to Professor Lord, the discovery could be translated into a viable drug treatment within a few years.

He said: "Autoimmune diseases often target people in the prime of their life creating a significant socio-economic burden on them. Sometimes, the effect can be devastating, causing terrible hardship and suffering.

"But these findings represent a significant step forward in the understanding of the immune system and we believe many people worldwide may benefit."

If the activity of Regulatory T cells is too low, this can cause other immune cells to attack our own body tissues. If these Regulatory T [cells](#) are too active, this leads to suppression of immune responses and can allow cancers to evade the immune system.

So being able to control them is a major step forward in our ability to control- and harness—the therapeutic power of the immune system.

Professor Richard Jenner from UCL, who led the computational side of the project, said that: "We were able to trace the molecular fingerprints of this molecule across other genes to determine how it acted as such a critical regulator."

Professor Lord, now Vice President and Dean of the Faculty of Biology, Medicine and Health at The University of Manchester, added: "Scientists over the past decade or so have developed therapies which are able to modulate different pathways of the immune system. We hope that this new discovery will lead to the development of new ways to treat autoimmunity, [infectious diseases](#) and cancer and we are incredibly excited about where this may lead."

More information: MicroRNA-142-mediated repression of phosphodiesterase 3B critically regulates peripheral immune tolerance, *Journal of Clinical Investigation* (2019).

Provided by University of Manchester

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