Scientists discover crucial trigger for tumor protein

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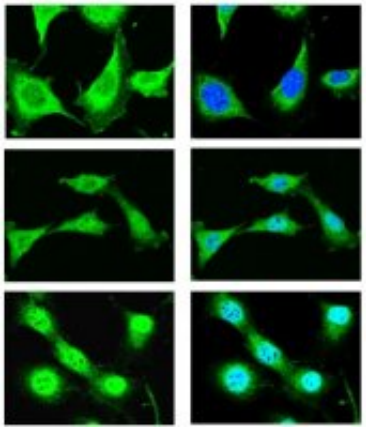

(PhysOrg.com) -- Australian scientists have contributed to an important international discovery, which could play a critical role in the future treatment of cancers and autoimmune diseases.

Researchers have characterised the role of 'Sharpin', a protein that controls inflammation induced by 'Tumour Necrosis Factor' (TNF) – an important part of the body's defences against cancer, according to research published in *Nature* today.

The study – led by Cancer Research UK funded scientists based at Imperial College London in collaboration with A/Professor John Silke (La Trobe) and Dr. Andrew Webb and A/Professor Tony Purcell (Bio21

Institute of Molecular Science and Biotechnology, University of Melbourne) – may also shed light on the causes of certain autoimmune diseases, such as rheumatoid arthritis and psoriasis.

TNF plays a pivotal role in protecting the body against infection by bacteria, viruses and other pathogens. It does this by directing the immune system to spot rogue pathogens and then destroy them. However, if unregulated, TNF is also known to cause harm, contributing to unwanted inflammation and autoimmune diseases. The researchers discovered how Sharpin prevents TNF from inducing inflammation, also providing new clues to how cancers may be able to 'hijack' the immune system.

A/Professor Silke said as part of a long running collaboration with Imperial College, the La Trobe lab discovered that the inflammatory skin disease in mice lacking Sharpin could be completely resolved by switching off TNF.

"This was a striking result, not least because TNF-controlled inflammation is central to a wide variety of different diseases from autoimmune diseases - like rheumatoid arthritis and psoriasis - to cancer," he said.

The University of Melbourne team led by Dr Andrew Webb and A/Professor Tony Purcell at the Bio 21 Institute developed a state-of-the-art technique, which enabled the international team to identify and characterise the new molecular changes involved in the discovery.

"We are excited by what our technique has shown, which has not been previously possible due to technological barriers." Dr Webb said.

Dr Webb said the next step would be to use this new technique to further examine TNF and related pathways, to further understand the how these

pathways function.

“A better understanding of these pathways will ultimately lead to better therapies for diseases that involve immune dysfunction,” he said.

More information: Journal reference: Gerlach B. et al, Linear ubiquitination prevents inflammation and regulates immune signalling (2011), *Nature*. www.nature.com/nature/journal/ … ull/nature09816.html

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