

# New discovery on role of vital protein that fights meningitis

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A University of Leicester researcher has discovered how a protein in the blood – linked to defence against meningitis - plays a more vital role than previously understood in the body's immune defence system.

The published research has helped to advance medical understanding of how the body defends against disease and heals itself.

The study also reveals that the same protein, Properdin –discovered only half a century ago- can also harm internal organs under certain circumstances.

Lack of the protein in the human body has previously been linked to susceptibility to meningitis.

But the new findings by Dr Cordula Stover, of the Department of Infection, Immunity and Inflammation at the University of Leicester assign hitherto unappreciated importance to this protein of the immune defence.

Her work, funded by the Medical Research Council (MRC), is published in the form of two papers in the *Journal of Immunology*. It is being published in print on May 15.

Dr Stover, a Lecturer in Immunology, said: "I have a broad interest in immune mechanisms of health and disease, though recently, I have focused on a particular component of the first line immune defence, a protein called Properdin.

"Properdin deficiency in families, though rare, predisposes people to develop meningococcal meningitis, usually with poor outcome of the infection.

"I hypothesised that the importance of Properdin extends beyond this particular infectious disease, and that indeed it is an important player in health

generally, and that its importance becomes apparent in conditions involving both acute and chronic states of inflammation.

"I was most delighted to obtain funding from the MRC to investigate this."

Now two of Dr Stover's papers, published in the *Journal of Immunology*, demonstrate that Properdin plays a significant role in the survival of conditions relating to surgical perforation of the gut and activation of the immune system by wall components of bacteria.

In conditions relating to multi-organ dysfunction, a complication which can occur in response to severe sepsis, Properdin however aggravates organ damage.

Dr Stover added: "So far, the system Properdin is a part of - the so-called complement system - is classified as a first line, innate, acutely effective immune activation mechanism.

"My work shows that the activity of Properdin extends beyond the acute phase and, importantly, that Properdin is stepping onto the stage as an important player in different inflammatory conditions.

"As the worldwide burden of chronic inflammatory disease increases, it is of practical relevance to understand the contribution of this immune protein."

The history of Properdin extends about 50 years with the first significant biochemical characterisations made in the USA, however, subsequently, the UK has contributed tremendously with the characterisation of the Properdin gene and structural modelling of the Properdin protein.

Source: University of Leicester

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