

Study furthers understanding of IBD

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Researchers part-funded by the Medical Research Council (MRC) and the Wellcome Trust have identified how particular parts of the intestinal immune system and the bacteria in the gut can interact to alter an individual's risk of developing Inflammatory Bowel Diseases (IBD). Results are published online today in *Immunity*.

Using mice, the team led by Professor Graham Lord at King's College London, has shown that a protein called T-bet plays a leading role in maintaining the delicate balance between a healthy immune system and healthy [gut bacteria](#). If researchers can find out how this protein affects inflammation in the intestine, the discovery could eventually pave the way for new ways of treating [intestinal diseases](#) such as Crohn's disease and ulcerative colitis.

Patients with inflammatory bowel diseases can experience debilitating symptoms and serious complications such as cancer. Patients may

require [hospitalisation](#) and surgery, and many need to take medication throughout their life to keep their condition under control. Although the causes of IBD remain unknown, most research has pointed to a problem within the intestinal immune system. Normally, the immune system in the gut provides protection from infection; however, in patients with IBD this usually protective function turns against the trillions of [harmless bacteria](#) that live in the [intestine](#), leading to chronic [gut inflammation](#).

The team has shown that T-bet has a strong influence over the role of inflammation in the intestinal immune system, causing IBD. It had previously been shown that mice with T-bet removed from their immune system spontaneously developed symptoms which mimicked those of IBD in humans. However, this is the first time that scientists have been able to pin down the exact [immune cells](#) responsible for this process, and to target these cells to reverse the symptoms of IBD in mice. The team had previously shown that T-bet plays a crucial role in deciding how thousands of genes in the body's immune response are controlled.

Professor Graham Lord, Director of the NIHR Biomedical Research Centre at Guy's and St Thomas' NHS Foundation Trust and King's College London, says: 'Inflammatory Bowel Diseases in various forms can be painful and debilitating. By improving our understanding of the role that T-bet plays in causing inflammation within the bowel, we will be much better placed to prevent inflammation and establish new lines of attack on these illnesses in the future.'

Professor David Lomas, Chair of the MRC Population and Systems Medicine Board that funded the research, says: 'This research is a clear example of how studying what goes wrong at the molecular level can give crucial insights into how immune diseases such as IBD come about. It's only then that we can begin to intervene and target parts of the immune system before they cause painful and debilitating symptoms.'

The MRC is committed to funding basic discoveries like this in the laboratory, which can then form part of the vital chain which leads to treatments for patients.'

The article is published in *Immunity*.

Provided by King's College London

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