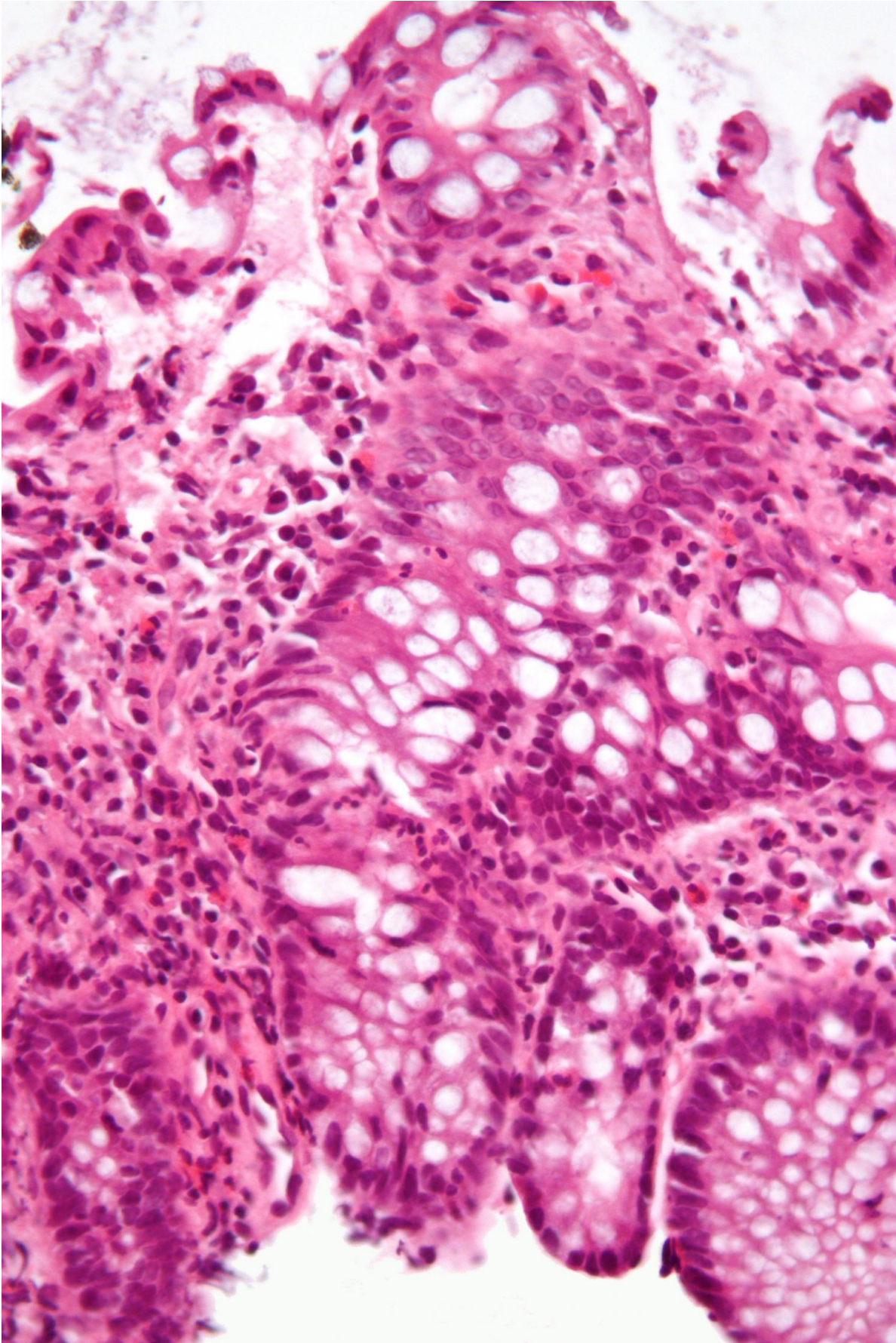


Study identifies a new disease-inducing mechanism for inflammatory bowel disease

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Micrograph showing inflammation of the large bowel in a case of inflammatory bowel disease. Colonic biopsy. Credit: Wikipedia/CC BY-SA 3.0

Interleukin-10 (IL-10) is an anti-inflammatory protein that crucially controls intestinal immunity. Children with genetic defects in IL-10, or its receptors, suffer from a severe form of inflammatory bowel disease (IBD) that typically presents within the first few months of life. Symptoms are acute and include bloody diarrhea and severe abdominal pain.

[The research](#), published in the *New England Journal of Medicine*, is a collaboration between Newcastle University, Great North Children's Hospital, Cambridge University Hospital, the universities of Cambridge and Oxford, and identified self-directed antibodies that attacked IL-10 in two patients with early onset severe IBD.

Increased inflammatory response

Scientists discovered that these antibodies prevented IL-10 from binding to its receptor and so caused an increased inflammatory response.

As a consequence of this discovery, one patient received treatment to suppress antibody production, leading to the eventual disappearance of the anti-IL-10 autoantibodies, and resolution of IBD.

Sophie Hambleton, Professor of Pediatrics and Immunology at Newcastle University, and honorary consultant pediatrician at Newcastle upon Tyne Hospitals NHS Foundation Trust, said, "Here, we drew upon knowledge of genetic forms of IBD to uncover a new and unexpected

molecular mechanism for disease.

"This understanding informed our choice of therapy, an example of precision medicine in action."

Neutralizing autoantibodies against IL-10 in IBD was a development made by several research teams across the country.

Rainer Döffinger, Consultant Clinical Scientist of the Department of Clinical Biochemistry and Immunology at Cambridge University Hospitals, said, "This discovery adds to a growing body of evidence showing the severe consequences when the body's immune defense is attacking itself.

"The study is the result of cutting-edge NHS diagnostics and a great and efficient collaboration between the centers to deliver results with real world implications for new therapies that will ease the burden of suffering in patients with IBD."

'Wider implications' for patients

Holm Uhlig, Professor of Pediatric Gastroenterology at the University of Oxford, said, "While there is abundant evidence that genetic and [environmental factors](#) are a cause of IBD, the results of our joint study draw attention to autoimmunity towards the immunoregulatory cytokine IL-10.

"This research may have wider implications for patients beyond infancy and I am grateful for the incredible collaborative effort that made it possible."

More information: Helen Griffin et al, Neutralizing Autoantibodies against Interleukin-10 in Inflammatory Bowel Disease, *New England*

Journal of Medicine (2024). [DOI: 10.1056/NEJMoa2312302](https://doi.org/10.1056/NEJMoa2312302)

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