

# **Bowel disease study points to new therapies for lifelong conditions**

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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

Treatments for incurable bowel conditions may be a step closer following the discovery of a key molecule associated with disease flare-ups.

Researchers say the finding helps to explain the underlying cause of disorders such as Crohn's disease and [ulcerative colitis](#).

The discovery could also lead to new tests to help doctors monitor patients' condition and help them to tailor treatments accordingly.

Inflammatory Bowel Disease—or IBD—includes Crohn's Disease and Ulcerative Colitis and affects around 300,000 [people](#) in the UK. The causes of these disorders are unknown and there is currently no cure.

Scientists at the University of Edinburgh looked for factors that might be associated with disease flare-ups by testing [blood](#) samples from almost 100 people with IBD.

They discovered tiny fragments of DNA in the patients' [blood samples](#), which were barely present at all in samples from people who did not have the diseases.

These [molecules](#)—called mtDNA—are usually found packaged within energy factories found inside all human cells, called mitochondria.

Mitochondria are tiny cellular structures that descended from an ancient

type of bacteria. Because of this, they have DNA similar to modern day bacteria.

In healthy people, when mitochondria become damaged, the mtDNA is recycled and disposed of safely by the body.

These processes do not work properly in people with IBD, however, which enables mtDNA to leak from the affected gut into the blood stream.

The researchers say this tricks the immune system into thinking there is an infection and an inflammatory response ensues. The inflammation causes damage to otherwise healthy tissues and is the cause of the symptoms of IBD.

People with the most severe illness had the highest levels of mtDNA in their blood, the study found. This suggests the molecule could serve as a useful marker to monitor disease progression and help doctors to prescribe appropriate therapies.

The research, published in the journal *Inflammatory Bowel Diseases*, was funded by Crohn's & Colitis UK and Medical Research Council.

Dr. Gwo-Tzer Ho, who led the study at the University of Edinburgh's MRC Centre for Inflammation Research, said: "We are now investigating how to block these molecules from triggering inflammation, in the hope of developing new therapies to prevent [disease](#) flare-ups and to accelerate patient recovery after an attack."

**More information:** Ray K Boyapati et al, Mitochondrial DNA Is a Pro-Inflammatory Damage-Associated Molecular Pattern Released During Active IBD, *Inflammatory Bowel Diseases* (2018). [DOI: 10.1093/ibd/izy095](https://doi.org/10.1093/ibd/izy095)

Provided by University of Edinburgh

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