

Spiders put the bite on irritable bowel syndrome pain

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Spiders have helped researchers from Australia and the US discover a new target for irritable bowel syndrome pain.

The international research team—involving researchers from The University of Queensland (UQ) and the University of Adelaide—used [spider venom](#) to identify a specific protein involved in transmitting mechanical [pain](#), which is the type of pain experienced by patients with [irritable bowel syndrome](#).

UQ Institute for Molecular Bioscience (IMB) Centre for Pain Research researcher Professor Glenn King said the discovery was a vital step forward in developing treatments.

"Spider venom is an effective tool for investigating pain signalling in the human body," he said.

"Spiders make toxins to kill prey and defend themselves against predators, and the most effective way to defend against a predator is to make them feel excruciating pain.

"Spider venom should therefore be full of molecules that stimulate the pain-sensing nerves in our body, allowing us to discover new pain pathways by examining which nerves are activated when exposed to spider toxins."

The team found that an ion channel (a protein in nerves and muscles)

called NaV1.1, previously implicated in epilepsy, was activated by the spider venom, suggesting it also played a significant role in sensing and transmitting pain.

Further investigation revealed that NaV1.1 was present in pain-sensing nerves in the gut and underlies pathological levels of [abdominal pain](#), such as that felt by irritable bowel syndrome patients.

Associate Professor Brierley, currently at the University of Adelaide and soon to be a Matthew Flinders Fellow at Flinders University, said one in five Australians suffered from irritable bowel syndrome, with symptoms including abdominal pain, diarrhoea and constipation.

"Irritable bowel syndrome places a large burden on individuals and on the health system, but there are currently no effective treatments," Associate Professor Brierley said.

"Instead, sufferers are advised to avoid triggers that will cause their symptoms to flare up.

"Identifying the crucial role NaV1.1 makes in signalling of [chronic pain](#) is the first step in developing novel treatments."

The team is now developing molecules that will block NaV1.1 and alleviate irritable bowel syndrome pain.

The research, published today in the journal *Nature*, was supported by the Australian National Health and Medical Research Council.

More information: Jeremiah D. Osteen et al, Selective spider toxins reveal a role for the Nav1.1 channel in mechanical pain, *Nature* (2016). [DOI: 10.1038/nature17976](https://doi.org/10.1038/nature17976)

Provided by University of Queensland

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