

NEWS | 06 November 2024

# How understudied endometriosis causes pain for hundreds of millions of women

**But drugs used to treat migraines in people reduced painful lesions in mice.**

By [Heidi Ledford](#)



Many women live with endometriosis but scientists say research into the condition is underfunded. Credit: GARO/PHANIE/Science Photo Library

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Pain-sensing nerves and immune cells work together to wreak havoc in [endometriosis](#), a painful condition that affects an estimated 190 million women and girls of reproductive age. But a study in mice suggests a way to harness that interaction to treat the disorder<sup>1</sup>.

The research, which was published on 6 November in *Science Translational Medicine*, reveals a key molecular pathway that not only promotes the [sensation of pain](#) caused by endometriosis, but also exacerbates the disease. Drugs that inhibit this pathway are already used for the treatment of migraines – the study’s findings suggest that these therapies might be useful to treat endometriosis as well.

“This is a new way of looking at how we could change pain pathways in endometriosis,” says Louise Hull, a researcher who studies endometriosis and treats people with the condition at the University of Adelaide in Australia.

## Limited treatments

Endometriosis occurs when cells similar to the lining of the uterus grow outside of the organ, sometimes causing pain, infertility and heavy menstrual bleeding. Current treatment options are limited. Hormonal medications can reduce symptoms in some people but not everyone can tolerate the side effects, and they are not useful for those who want to become pregnant. Non-steroidal anti-inflammatory drugs are used to relieve pain, but long-term use can damage the liver and kidneys. And the benefits of surgical treatments to remove endometrial deposits are often transient.

The condition is also [famously understudied](#), says Michael Rogers, a cancer researcher at the Boston Children’s Hospital in Massachusetts and an author on the study. “Compared to other diseases that are similarly widespread and have a similar economic impact, endometriosis research is at least two – and probably

three – orders of magnitude underfunded,” he says.

Rogers was recruited to the field by a member of his church whose family has been severely affected by endometriosis. Every month or two, she petitioned him: “She would say, ‘Mike, you really need to start working on this disease.’”

Eventually, she won him over. Rogers started following research in the field and, about nine years ago, began to develop the animal models he needed to investigate the condition.

By then, researchers had already discovered that immune cells called macrophages probably contribute to endometriosis and that pain-sensing nerves are also involved<sup>2</sup>. Rogers and his colleagues found that disabling these nerves in mice with a condition similar to endometriosis not only dampened pain, as assessed by the animals’ behaviour, but also reduced the size of lesions containing endometrial cells. “This strongly suggested that the pain-sensing nerves weren’t just sensing pain, they were doing something to help the lesions grow,” says study co-author Victor Fattori, a pharmacologist at Boston Children’s Hospital.

## Crosstalk

The team decided to test whether a protein called CGRP, which aids communication between the nervous system and macrophages, might also have a role in endometriosis. Several drugs that block CGRP have already been approved by the US Food and Drug Administration for other conditions, and the researchers administered four of these to mice with an endometriosis-like condition.

Again, they saw a decrease in pain. Two of the drugs significantly reduced lesion size, and it’s possible that higher doses of the other two medicines would have done so as well, says Rogers.

Clinical trials are needed to determine whether the same approach could be

effective in people. Rogers is optimistic that such trials could begin soon: the drugs are already on the market and are considered relatively safe.

Even so, it will be particularly important to demonstrate that they are safe for women who might want to become pregnant while taking the drug, says Hull.

If shown to be safe and effective, CGRP-inhibiting drugs could fill a gap in care for people with endometriosis, says Erin Greaves, who studies the condition at the University of Warwick, UK, and who collaborates with Rogers. “New non-hormonal treatments for endometriosis are desperately needed.”

*doi: <https://doi.org/10.1038/d41586-024-03628-3>*

## References

1. Fattori, V. *et al. Sci. Transl. Med.* **16**, eadk8230 (2024).

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2. Garcia Garcia, J. M. *et al. Reprod. Sci.* **30**, 1453–1461 (2023).

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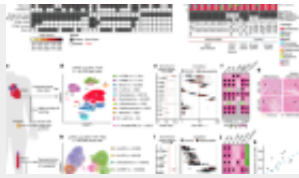
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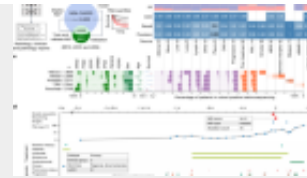
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