

# New study may lead to fewer hysterectomies in women with uterine fibroid tumors

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Credit: Michigan State University

Uterine fibroid tumors are the leading cause of hysterectomies in the U.S., yet little is known about what causes them. A new study, however, has taken researchers one step closer to understanding how these tumors develop and grow.

Researchers at Michigan State University College of Human Medicine, Van Andel Institute and Spectrum Health have uncovered new information about the genes associated with the tumors—a breakthrough that may lead to better treatments that could help many women avoid surgery.

"This study could not have been done without that collaboration," said Jose Teixeira, who proposed the research and a professor in the Department of Obstetrics, Gynecology and Reproductive Biology.

The study, funded by the National Institutes of Health and published in the journal *Cell Reports* found that one of the genes they discovered, HOXA13, which is associated with uterine fibroids, appeared to correlate with a transformation of cells in the muscle of the uterus into cells more typically found in the cervix when activated—a process called "homeotic transformation."

"It's a cell type in a position where it doesn't belong," Teixeira said. "This was a surprise."

That finding is significant because further research could lead to new therapies to interrupt the molecular chain of events that cause the growth of fibroid tumors.

Teixeira, who has spent many years researching uterine fibroid tumors, said that a surgeon once asked him, "Why are you working on that? We have a cure. It's called hysterectomy."

But hysterectomy often is undesirable for women of reproductive age and carries risks for women of any age. An estimated 75% of reproductive-age women have [uterine fibroids](#) and about 25% of them suffer from symptoms including pelvic pain, heavy menstrual bleeding, pregnancy loss and infertility. The occurrence and severity of symptoms

are even higher among African American women.

A team led by Dave Chesla, director of research operations for Spectrum Health, collected fibroid tissue samples for the study while protecting the anonymity of the patients.

The Van Andel Institute researchers specialized in bioinformatics, a field that combines biology, computer science and statistics. Led by Hui Shen, an associate professor at the institute, the team analyzed the tissue samples for their genetic characteristics.

"Collaboration is the key," said Shen. "These kinds of studies require multiple teams. The collaboration was facilitated because we are all within a mile of each other—the Medical Mile."

"The discovery that fibroid tumors have characteristics of cervical cells could be a key to better treatments," Teixeira said. "For example, among pregnant [women](#), the cervix typically softens just before delivery. Figuring out what causes the cervix to soften could suggest new therapies that soften the fibroid tumors and prevent or inhibit their growth."

The disease "kind of flies under the radar, attracting a paucity of research," said Chesla.

He describes the latest study as "a true collaboration," not only among the researchers but by the patients who were willing to donate tissue samples. "Without the patients, none of this happens," he said. "We hope this will lead to further research."

And it already has. The researchers are conducting a follow-up study also funded by the National Institutes of Health.

"Is there a place where we can intervene?" Teixeira said. "That's the

follow-up. If we can find out what's causing the cervical softening, then we might be able to investigate treatment."

And that could prevent the fibroid tumors from growing.

Provided by Michigan State University

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