Endometriosis relief: Breakthrough treatment for severe cases on the horizon using epigenetics

[Scientists from Michigan State University] pharmacologically inhibited P300, a protein implicated in the dysregulation of endometrial epithelial cells, which normally line the uterus.
In severe endometriosis, P300 enjoys relatively free access to super-enhancers, genetic elements that determine cell function. When exposed to P300, the super-enhancers—particularly those associated with SERPINE1 (PAI-1)—become hyperactivated, stimulating endometrial epithelial cells to proliferate, spread, and form deep implants outside the uterus, resulting in severe pelvic pain.

The study’s lead authors, Mike Wilson, PhD, and Jake Reske, noted that inhibiting P300 could lead to better treatments for women suffering from the severe form of endometriosis associated with mutant ARID1A. (Wilson is a postdoctoral fellow in the MSU College of Human Medicine, and Reske is a graduate student in the MSU Genetics and Genome Sciences Program.) “There haven’t been many successful nonhormonal therapies for this form of endometriosis,” Reske added.

In laboratory experiments, Wilson and Reske demonstrated that P300 inhibition in ARID1A mutant cells suppresses invasion and induces anoikis, a form of programmed cell death. P300 is a kind of epigenetic drug; that is, it controls how genes are expressed. P300, the MSU team suggests, could be far more effective than current treatments, including surgery, hormone therapy, and pain management.

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