

Molecule found that inhibits estrogen, key risk factor for endometrial and breast cancers

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Researchers at Albert Einstein College of Medicine of Yeshiva University have discovered a molecule that inhibits the action of estrogen. This female hormone plays a key role in the growth, maintenance and repair of reproductive tissues and fuels the development of endometrial and breast cancers. The molecule, discovered in animal studies, could lead to new therapies for preventing and treating estrogen-related diseases in humans. The findings were published online April 26 in the *PNAS* Plus.

The hormones estradiol (the most important form of estrogen) and progesterone prepare the uterus for pregnancy. They trigger a series of [cell proliferation](#) and [cell differentiation](#) events that prepare the uterine lining ([endometrium](#)) for implantation of a fertilized egg. Although this process is tightly controlled, uterine cells sometimes proliferate abnormally, leading to menstrual irregularities, endometrial polyps, endometriosis, or endometrial cancer — the most common female genital tract malignancy, causing six percent of cancer deaths among women in the U.S. and a higher proportion worldwide.

"The molecular mechanisms that underlie these pathologies are still obscure — and so are the mechanisms involved in normal hormonal regulation of cell proliferation in the endometrium, which is essential for successful pregnancy," said lead author Jeffrey Pollard, Ph.D., professor of developmental and molecular biology and of obstetrics & gynecology

and women's health at Einstein. He also holds the Louis Goldstein Swan Chair in Women's Cancer Research and is the deputy director of the Albert Einstein Cancer Center.

In studies involving rodents, Dr. Pollard discovered that a molecule called KLF15 (Kruppel-like transcription factor-15) controls the actions of estradiol and progesterone in the endometrium by inhibiting the production MCM2, a protein involved in DNA synthesis.

"Our findings raise the possibility that it may be possible to prevent or treat endometrial and [breast cancer](#) and other diseases related to estrogen by promoting the action of KLF15," said Dr. Pollard.

More information: The paper, titled "KLF15 negatively regulates estrogen-induced epithelial cell proliferation by inhibition of DNA replication licensing," is coauthored by Sanhita Ray, Ph.D., a postdoctoral fellow at Einstein.

Provided by Albert Einstein College of Medicine

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