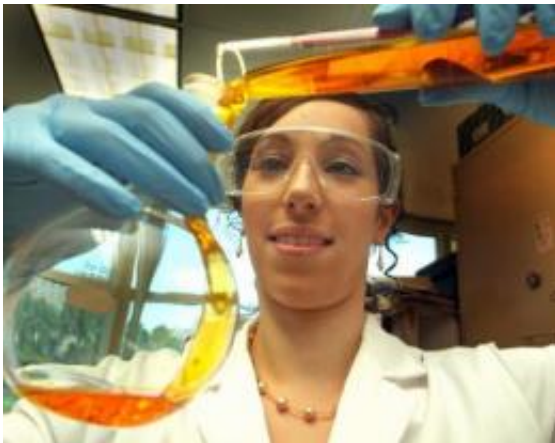


# Estrogen can reduce stroke damage by inactivating protein

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Limor Raz, a fourth-year Ph.D. student at the Medical College of Georgia, will present her research on how estrogen can reduce stroke damage by inactivating a tumor-suppressing protein at the American Physiological Society conference. Credit: Medical College of Georgia

Estrogen can halt stroke damage by inactivating a tumor-suppressing protein known to prevent many cancers, Medical College of Georgia researchers say.

"Our research suggests that estrogen suppresses p53 after stroke, which stops the damage," says Limor Raz, a fourth-year Ph.D. student in the MCG School of Graduate Studies.

P53, the protein in the [mitochondria](#), or powerhouse, of the cell, is

known as "the guardian of the genome" because it regulates the cell cycle and prevents genome mutation. It also can prevent cancer by suppressing tumor growth.

It is known that stressful conditions such as a stroke activate p53, triggering unfavorable changes in the cell. One change is the activation of another protein called PUMA, which signals a cascading effect that destroys the mitochondria and causes cell death, or apoptosis.

Ms. Raz found that estrogen can chemically alter p53 and attenuate the cascade, thus leading to reduced stroke damage.

She has been working with Dr. Darrell Brann, chief of developmental neurobiology and associate director of the MCG Institute of Molecular Medicine and Genetics, and will present her findings today in Colorado at the American Physiological Society conference focusing on the cardiovascular effects of sex steroids and gender.

Global cerebral ischemia, the most common type of [ischemic stroke](#), in which blood flow to the brain is disrupted, was induced, damaging primarily the hippocampal CA1 region of the brain. In this study, a group of female rats were treated with estrogen versus placebo for seven days and estrogen's effect on p53 signaling was examined.

"This part of the brain is extremely important because it is where our memory and learning occur," Ms. Raz says. "During a [stroke](#), you have all these things happening in your [brain](#), and we've found that [estrogen](#) treatment is effective in reducing some of the damage."

The next step, she says, is to determine why. "We know that it does, and now we need to find out how."

Source: Medical College of Georgia

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