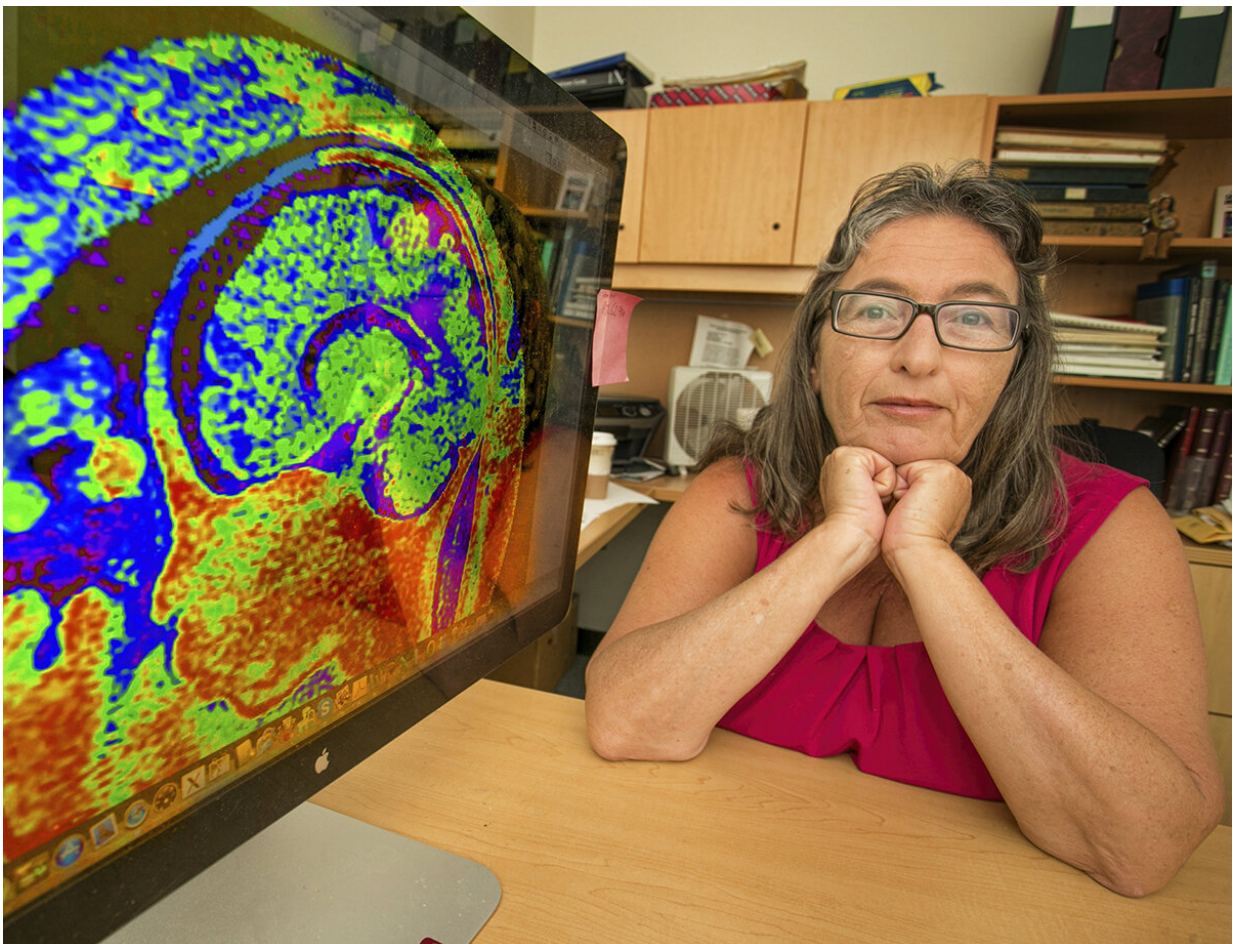


Imaging an estrogen related enzyme may help to predict obesity, self-control issues

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Anat Biegon, Ph.D. is lead researcher. Credit: Stony Brook University

Findings from a positron emission tomography (PET) brain imaging

study of the amygdala reveals that low levels of the enzyme aromatase, which catalyzes estrogen biosynthesis, are associated with a higher body mass index (BMI) and lower self-control, as measured by a standard personality test. Published in *PNAS*, the study is led by Anat Biegon, Ph.D., Professor of Radiology and Director of the Center on Gender, Hormones and Health at the Renaissance School of Medicine at Stony Brook University. The results suggest that brain aromatase imaging offers a novel method for characterizing the role of estrogen produced in the brain in obesity and other conditions involving impairments in self-regulation.

Obesity is a public health problem affecting a growing proportion of children and adults. Because estrogen influences body weight and behavioral responses to appetitive stimuli, the researchers used an aromatase-specific radiotracer with PET to measure aromatase in the brains of 43 men and women (average age: 40 years) of healthy to obese weight ranges.

"This is the first study to show a direct correlation between aromatase availability in the amygdala and BMI," said Dr. Biegon. "It is also the first to show an inverse correlation between amygdala aromatase and self-control in the same individuals."

She explained that this particular finding raises the potential for amygdala aromatase to be a sex neutral contributor to BMI and therefore a possible marker to measure for both men and women with obesity and [self-regulation](#) problems.

Dr. Biegon said a possible extension of this work is to examine other [brain regions](#) where estrogen was shown to regulate appetite and energy utilization. Such studies could determine the value of aromatase measures within the [brain](#) to discriminate between binge eating and healthy populations, as well as help predict weight maintenance versus

regain following bariatric surgery in adults.

More information: Anat Biegon et al., "Relationship of estrogen synthesis capacity in the brain with obesity and self-control in men and women," *PNAS* (2020).

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Provided by Stony Brook University

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