

Scientists explain age-related obesity: Brown fat fails

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As most people resolve themselves to lose weight this New Year, here's why it seems to get easier and easier to pack on unwanted pounds: New research published in the January 2014 issue of [The FASEB Journal](#), shows that as we age, the thermogenic activity of brown fat is reduced. Brown fat is a "good" fat located in the backs of our necks that helps burn "bad" white fat around our bellies. Additionally, the researchers also discovered a possible metabolic on/off switch that could reactivate brown fat.

"Future studies on how PAF/PAFR signaling controls UCP1 levels through beta3-AR production in the BAT of animals and humans may reveal new therapeutic targets to treat metabolic disorders associated with obesity," said Junko Sugatani, Ph.D., a researcher involved in the work from the Department of Pharmaco-Biochemistry at the School of Pharmaceutical Sciences at the University of Shizuoka in Shizuoka, Japan.

To make this discovery, scientists analyzed two groups of mice. The first group had the platelet-activating factor receptors (PAFR) gene knocked out. The second group was normal. PAFR-deficient mice developed a more severe obese state characterized by higher body and epididymal fat mass with age than that of wild-type littermates. Findings from the PAFR-KO genetic model reveal that PAFR-deficiency causes [brown adipose tissue](#) (BAT) dysfunction, which converges to induce the development of obesity, due to impaired thermogenic activity of BAT. This study could elucidate the molecular mechanism underlying the

PAF/PAF receptor-mediated anti-obesity, leading to the development of new targets for the treatment of [obesity](#) and related disorders, such as diabetes, [high blood pressure](#), heart disease, cancer, infertility and ulcers.

"A common complaint is that older people have to work twice as hard with their diets and exercise to get half of the results of younger people," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*.

"Now we have a much better idea why this is the case: Our [brown fat](#) stops working as we age. Unfortunately, until a way to turn it back on is developed, we'll have to be prepared to eat more salads and lean proteins, while logging more miles on the treadmill than our younger counterparts."

More information: *FASEB J* January 2014 28:440-452; [DOI: 10.1096/fj.13-233262](#)

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