

# New research shows it is easier for women to gain weight

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For many people preventing weight gain can seem like an uphill struggle but scientists led by the University of Aberdeen have discovered why it may be even harder for women.

Research by the team, led by Professor Lora Heisler from the Rowett Institute of Nutrition and Health, could now pave the way for a difference in how [obesity](#) is tackled between the sexes.

The study was primarily funded by the Wellcome Trust and BBSRC and is published in the journal *Molecular Metabolism*.

Leading scientists at the University of Aberdeen, University of Cambridge and University of Michigan used a mouse model to uncover a

sex difference in [weight gain](#) driven by differences in [physical activity](#) and [energy expenditure](#). During the study researchers were able to transform obese male mice with increased appetite and reduced physical activity into lean, healthy mice. The same transformation did not occur in the female mice.

Professor Heisler explained: "The World Health Organisation (WHO) reports higher rates of obesity in women worldwide, reaching twice the prevalence of men in some parts of the world.

"Currently there is no difference in how obesity is treated in men and women. However, what we have discovered is that the part of the brain that has a significant influence on how we use the calories that we eat is wired differently in males and females.

"Cells in this brain region make important brain hormones called pro-opiomelanocortin (POMC) peptides that are responsible for regulating our appetite, physical activity, energy expenditure and body weight.

Lead scientist Dr Luke Burke explains: "These POMC neurons therefore make a great target for obesity treatment and are, in fact, an important target of an obesity medication used in the USA today."

Professor Heisler continued: "What we have discovered is that not every POMC neuron performs the same function. While the subset targeted by obesity medication lorcaserin influences appetite in both males and female mice, in males, this subset has the added benefit of also modulating physical activity and energy expenditure.

"In [female mice](#), this source of POMC peptides does not strongly modulate physical activity or energy expenditure. So, while medications targeting this source of POMC peptides may effectively reduce appetite in females, our evidence suggests that they will not tap into the signals in

our brain that modulate physical activity and energy expenditure.

The findings could have implications for the development of new sex-specific medications to more effectively tackle the obesity epidemic in the future.

Professor Heisler continued: "More than half of people in the UK are overweight and 1 in 4 are clinically obese. This is an enormous percentage of the population, and given the links established between obesity and serious medical illnesses including cancer, heart disease and diabetes, it is essential that we strive to find new methods to tackle this epidemic to improve our health.

Professor Heisler continued: "This study reveals that a sex difference in physical activity, energy expenditure and body weight is driven by a specific source of brain POMC peptides. This could have broad implications for medications used to combat obesity, which at present largely ignore the sex of the individual."

Provided by University of Aberdeen

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