Medical Xpress

Do these genes make me look fat? Researchers study whether survival of the fattest is genetic

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(PhysOrg.com) -- Fat may not be where it's at, but controversial new research from University of Alberta researchers say you don't have to be thin to win, either.

David Pierce, a U of A behavioural analysis researcher, and his colleagues have discovered an obese-prone gene that could help animals survive unpredictable changes to their food supply, which could help them live longer than their leaner counterparts. Pierce says the findings could have implications for humans, leading doctors and others in a direction different from current treatments for obesity.

"It's controversial as to whether or not genes play a role in obesity," he said. "But, if they do, which is suggested by our research, and if genes not only play a role but [provide] a selective advantage, then it means that we can't treat all people the same when talking about obesity."

Winning the rat race: search for food

Pierce found that when exposed to abundant food sources, obese rats would gorge themselves, subsequently developing diabetes and heart disease, maladies found in their human counterparts. Lean rats, on the other hand, paced their eating and showed no underlying health issues.

However, when the researchers reversed the rats' environment to mimic

an environment of food deprivation or starvation, the obese-prone rat adapted to its new feeding schedule and spent longer on an exercise wheel than did the lean rat, an action the researchers say mimics travelling longer to find new food sources. Not only did the result of these dietary and exercise changes mean that the obese rat did not develop the previously outlined health issues, it also simply out lived its leaner counterpart by twice as long.

"[The findings] suggests that an obese-prone rat can keep going, but it's not burning [as much] energy that the lean rat does," said Pierce. "If you're obese-prone, even when you're putting out quite a bit of energy expenditure, your body becomes more efficient at the utilization of energy," he concluded.

Implications of research

These findings, published recently online in the *International Journal of Obesity*, have some important lessons for people, especially with the growing global problem of obesity. Pierce says the fast-food environment, which is no longer confined to North America, is the culprit in removing what was once likely a biologically selective advantage when food was scarce.

Pierce notes that the current strategy of combating obesity by encouraging overweight people to exercise more and eat less is not effective because it follows the belief, brought into question now by his research, that exercise will have the same effect for both lean and obese-prone people. "We have some kind of a prejudice, that [an obese person] can stop eating, start exercising [and lose weight]," he said. "It may not be the case that the obese-prone person can get the benefits [from fewer calories and more exercise] that we think they can."

Changing society's bad food habits

The solution, he says, may lie instead in using the environment to change the problem. Rather than treating all people the same, Pierce notes, there has to be a shift in thinking so that we realize lean and obese people do not respond the same when undertaking similar programs of diet and exercise.

Instead, he says, scientists, doctors and parents should look at using targeted early-stage interventions to help the most vulnerable group: children. First, he says, scientists need to be able to pinpoint the characteristics of obesity to determine which children are at risk.

Once identified, he says, these children would need to follow regular, intensive exercise programs and portion-controlled meals in order to gain better health. However, he says that if not addressed society's drive for more food and bigger portions will make such a healthy regime difficult.

"It's hard to convince people not to ask for the 'extra-size' or 'super-size.' As long as the general population requires that, we're going to get super-sizing of meals," he said. "It's not just fast food places; the family meal should become smaller.

"If it becomes a practice to have smaller portions, rather than the biggest portions, that becomes our standard way of eating." Such a shift in thinking and behaviour, he says, will go a long way in helping people resist any genetic predisposition to gaining excess weight or being unable to lose that weight.

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