

Fat fish put obesity on the hook

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Everyone knows that eating lean fish helps slim waistlines, but researchers from the Center for the Study of Weight Regulation and Associated Disorders at Oregon Health and Science University in Portland, OR, have found a new way fish can help eliminate obesity. In a study to be published in the July 2007 print issue of *The FASEB Journal*, researchers describe the first genetic model of obesity in a fish. Having this model should greatly accelerate the development of new drugs to help people lose weight and keep it off.

According to corresponding author Roger Cone, “Being able to model human disorders like obesity in zebrafish allows scientists to understand the molecular basis of disease. This may ultimately increase the efficiency and power of the drug discovery process, thus bringing new medicines to the market faster and cheaper.”

In the study, researchers caused obesity in zebrafish by introducing the same type of genetic mutation that causes severe obesity in humans. The genetic change blocks the activity of a receptor, the melanocortin-4 receptor, which is at the heart of a “device” in our brains called the “adipostat.” The adipostat regulates body weight homeostatically, like the thermostat in a house, and works to keep long-term energy stores—a.k.a. body fat—constant. The adipostat is what makes it difficult for people to lose weight and keep it off.

“Americans—even children—are getting fat at an alarming rate,” said Gerald Weissmann, MD, Editor-in-Chief of *The FASEB Journal*, “and with this model, we are a step closer to temporarily turning off or

diminishing the fat-storing mechanisms that were once crucial to the survival of our species. The zebrafish has become a model animal for the study of many diseases because it has a backbone and because its genetics have been well described. This is one more example of how basic experimental biology – zoology physiology and genetics in this case – can be brought to bear on human problems.”

According the U.S. Centers for Disease Control and Prevention, the prevalence of overweight and obesity have risen steadily over the past 30 years. Among adults aged 20–74 years the prevalence of obesity increased from 15.0% (1976–1980) to 32.9% (2003–2004). For children aged 2–5 years, the prevalence of overweight increased from 5.0% to 13.9%; for those aged 6–11 years, prevalence increased from 6.5% to 18.8%; and for those aged 12–19 years, prevalence increased from 5.0% to 17.4%. Being overweight or obese increases the risk of many diseases and health conditions, including, but not limited to: hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, and some types of cancer.

Source: Federation of American Societies for Experimental Biology

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