A NEW MOUSE MODEL FOR THE STUDY OF OBESITY

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BRIEF DESCRIPTON

Obesity, an epidemic problem in the US population, has been linked to several major medical problems, including diabetes, stroke, heart disease, high blood pressure and even cancer. Determinants of obesity are complex and genetics account for approximately 25-40% of cases. Although there is great emphasis on discovering the underlying genetic basis for predisposition to obesity, much remains unknown. As a result, there does not yet exist a safe, effective and proven therapy for treatment of obesity.UCSF investigators have developed a new mouse model of obesity. They have generated a transgenic mouse with a hypomorphic allele of the receptor tyrosine kinase TrkB. TrkB is expressed throughout the brain, including the hypothalamus, the center known to control eating behavior. These transgenic mice express TrkB protein at 24% of normal levels in the hypothalamus, and display a maturity onset obesity syndrome. By 12 weeks of age the mutant mice exhibit significant weight gain compared to their wildtype littermates and display hyperphagia as well as significantly increased levels of insulin and leptin in the bloodstream. A similar phenotype has been observed in mice with only one functional allele of BDNF, a ligand of the TrkB receptor (Kernie et al., EMBO J., 2000, 19:1290-1300). These phenotypes parallel those observed in human obesity, indicating that the BDNF/TrkB interaction is a potential target for the development of treatments for obesity and that the TrkB transgenic mice represent a valuable model for studying the development of obesity.

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OTHER INFORMATION

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CATEGORIZED AS

- Medical
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