A Model for Familial Combined Hyperlipidemia and Type II Diabetes Mellitus

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Technology description

People with familial combined hyperlipidemia (FCH) are hypertriglyceridemic and hypercholesterolemic, and often go on to develop type II diabetes mellitus in middle age. Current FCH mouse models resulting from crosses of genetically altered "knockout" mice, show hyperlipidemia, but do not exhibit other characteristics of the disorder. UW-Madison researchers have developed a population of California mice that is an excellent model for familial combined hyperlipidemia and related disorders in humans. They discovered a colony of California mice (Peromyscus californicus) that, like humans with FCH, becomes hyperlipidemic and eventually diabetic when fed a high fat diet. Some California mice also show elevated levels of triglycerides and cholesterol, and develop hyperinsulinemia and insulin resistance after 12 weeks on this diet. Susceptibility to these metabolic abnormalities varies considerably within the population and is passed on to offspring. The researchers plan to selectively breed California mice that show either high or low triglyceride and cholesterol responses to dietary fat.
The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in a mouse model for familial combined hyperlipidemia.

Application area

Testing lipid-lowering agents and their effects on subsequent development of diabetes
Identifying genes associated with development of hyperlipidemia and diabetes

Advantages

Mouse model closely replicates progressive nature of several human disorders, including familial combined hyperlipidemia (FCH) and type II diabetes mellitus
Mouse strain is very long lived, possibly allowing long term pharmaceutical studies, including studies on the effects of drugs on aging animals
California mouse can be selectively bred for either susceptibility or resistance to FCH

Institution

Wisconsin Alumni Research Foundation

Inventors

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