

# PhysioGenix Disease Mouse Models

## Delivering Solutions

The rapid worldwide growth in the incidents of cardiovascular, metabolic and renal disease has lead to an accelerated effort to find cures for these diseases. PhysioGenix supports these research efforts with our best in class research models.

### **db/db Mouse:** Obese, type II diabetes nephropathy model.

The db/db mouse is a model for type II diabetes. Mice are homozygous for a point mutation in the leptin receptor gene, which leads to an uncontrolled rise in blood pressure and depletion of insulin-producing pancreatic beta-cells. Mice are polyphagic, polydipsic and polyuric.

Reference: Sharma K, McCue P, Dunn SR. Diabetic kidney disease in the db/db mouse. *Am J Physiol Renal Physiol.* 2003 June; 284(6):F1138-F1144.

Zhao HJ, et al. Endothelial nitric oxide synthase deficiency produces accelerated nephropathy in diabetic mice. *J Am Soc Nephrol.* 2006; 17(10):2664-2669.

### **ob/ob Mouse:** Obese, type II diabetes model.

The ob/ob mouse becomes profoundly obese due to a spontaneous mutation on the leptin gene. The model exhibits obesity, hyperphagia, hyperglycemia, glucose intolerance and elevated plasma insulin. The ob/ob is also characterized by poor wound healing.

References: Ingalls AM, Dickie MM, Snell GD. Obese, a new mutation in the house mouse. *J Hered.* 1950 December; 41(12):317-318.

Lindström P. The physiology of obese-hyperglycemic mice [ob/ob mice]. *Scientific World Journal.* 2007; 7:666-685.

### **Diet-Induced Obese (DIO) Mouse:** Obese and type II diabetes model.

In this model, C57BL males are fed a high fat diet, typically for 8 to 12 weeks. Mice become obese, mildly to moderately hyperglycemic, and develop impaired glucose tolerance.

Reference: Nicholson A. et al. Diet-induced obesity in two C57BL/6 substrains with intact or mutant nicotinamide nucleotide transhydrogenase (Nnt) gene. *Obesity.* 2010 January 7.

Parekh PL, et al. Reversal of diet-induced obesity and diabetes in C57BL/6J mice. *Metabolism.* 1998 September; 47(9):1089-1096.

### **Non-Obese Diabetic (NOD) Mouse:** Type I diabetes model.

NOD mice are developed via a leukocytic infiltrate of the pancreatic islets. Diabetes onset is associated with a moderate glycosuria and a non-fasting hyperglycaemia.

References: Makino S, et al. Breeding of a non-obese, diabetic strain of mice. *Jikken Dobutsu.* 1980; 29 (1):1-13.

Hanna J. et al. Metastable pluripotent states in NOD-mouse-derived ESCs. *Cell Stem Cell.* 2009 June 5; 4(6):513-524.

### **Streptozotocin (STZ) Mouse:** Pancreatic necrosis type I diabetic model.

Mouse has chemically induced pancreatic necrosis of the insulin producing beta cells to produce an animal model that has type I diabetes. Strain and STZ dose can be customized to correspond with clients needs.

Our highly skilled team is capable of delivering a wide-range of studies utilizing research models, surgical procedures and diets not listed. Call PhysioGenix at 1-888-PGNX-CRO to work with our Senior Study Director to build a study based on your specific needs.