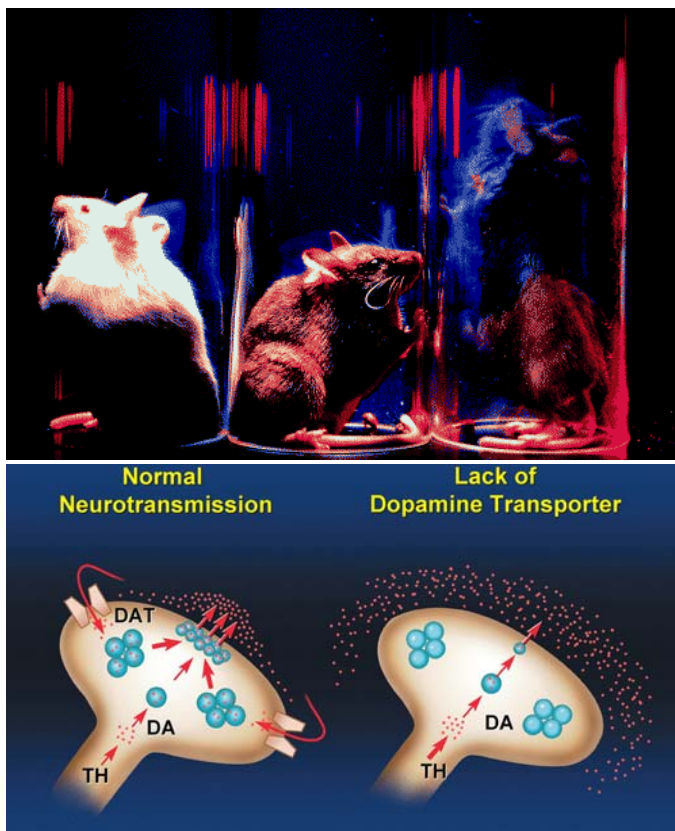




Duke University Office of Licensing & Ventures Technology Opportunity Report #1211

DOPAMINE TRANSPORTER KNOCKOUT MICE

The Opportunity: We have developed knockout mice lacking the dopamine transporter. These mice are hyperactive, and display cognitive abnormalities consistent with enhanced dopaminergic neurotransmission. They have a heightened dopaminergic state (increase dopamine activity), mimicking certain behaviors associated with schizophrenia and other psychiatric disorders. These mutant mice respond to several classes of drugs used in the treatment of these disorders and can be effectively used to screen for novel therapeutic agents. These mice also show a 30% reduction in body weight when compared to normal mice. In combination with a tyrosine hydroxylase (Th) inhibitor, these mice do not synthesize dopamine and can be used to screen for potential anti-parkinsonian drugs. Knockout mice lacking the dopamine transporter are described in US patents 5,866,756 and 6,218,595 and are available for non-exclusive licensing.



Time-lap photographs of wild type (left) and mice lacking one allele (middle) of the dopamine transporter (DAT) or both alleles (right) highlighting the hyperactivity of DATKO mice.

Schematic representation of how the absence of a functional DAT gene results in elevated extracellular dopamine levels and markedly reduced stored neurotransmitter.

**Duke University Office of Licensing & Ventures
Technology Opportunity Report #1211**

DOPAMINE TRANSPORTER KNOCKOUT MICE

Features of the Technology:

- Mice can be used a research tool to model various disorders and as a method to screen compounds useful in treating disease, including:
 - Attention deficit hyperactivity disorder (ADHD)
 - Schizophrenia and other psychiatric disorders
 - Parkinsons Disease (when combined with a Th inhibitor)
 - Mania (Bipolar disorder)
 - Appetite disorders
 - Drug addition

- Mice exhibit phenotypes in both the heterozygous and homozygous state and can be maintained as a colony of heterozygotes.
- Mice may also be useful in basic research studies of G-protein coupled signal transduction through the dopamine receptors

Lead Inventor:

Dr. Marc Caron: Dr. Caron is a James B. Duke Professor of Cell Biology at Duke University. His long-standing research interests have been on the mechanisms and regulation of G protein-coupled receptors, especially those for biogenic amines, and on the mechanisms of neurotransmission as controlled by neurotransmitter transporters. His research has centered on using genetic approaches to develop animal models of abnormal neurobiological function including disorders associated with aberrant monoaminergic and reward mechanisms. He has authored more than 500 scientific publications. He recently received the Julius Axelrod Medal for Catecholamine Research and has been recognized with the 2005 Perkin-Elmer Achievement Award from the Society of Biomolecular Screening.

For Licensing Information, Please Contact:

Duke University Office of Licensing & Ventures
Karthik Gopalakrishnan, Ph.D.; (919) 668-9401;
karthik.gopalakrishnan@duke.edu