

## New animal model may lead to treatments for common liver disease

July 3 2012

---

Scientists at Texas Biomed have developed the laboratory opossum as a new animal model to study the most common liver disease in the nation – afflicting up to 15 million Americans – and for which there is no cure.

The condition, nonalcoholic steatohepatitis (NASH), resembles alcoholic [liver disease](#), but occurs in people who drink little or no alcohol. The major feature of NASH is accumulation of fat in the [liver](#), along with inflammation and functional damage. Most people with NASH feel well and are not aware that they have a liver problem. Nevertheless, NASH can progress to cirrhosis, in which the liver is permanently damaged and no longer able to work properly. NASH-related cirrhosis is the fourth most common indication for liver transplantation in the U.S.

NASH affects 2 to 5 percent of Americans – roughly six million to 15 million people. An additional 15 to 30 percent of Americans have excess fat in their livers, but no inflammation or liver damage, a condition called "fatty liver" or the non-progressive form of nonalcoholic fatty liver disease (NAFLD).

The study, published in the July issue of the *American Journal of Physiology-Gastrointestinal and Liver Physiology*, was supported by the National Institutes of Health and the Robert J. Kleberg, Jr., and Helen C. Kleberg Foundation.

"This is the type of model in which to develop mechanism-based therapies," writes Geoffrey C Farrell, M.D., of the Australian National

University Medical School in Canberra, in a journal editorial.

Both NASH and NAFLD are becoming more common, possibly because of the greater number of Americans with obesity and its important health complications, type 2 diabetes, high blood cholesterol levels, high blood pressure and other risk factors for heart attack and stroke. In the past 10 years, the prevalence of obesity has doubled in adults and tripled in children. It was previously reported by other scientists that the prevalence of NAFLD and NASH in a cohort of middle-aged patients in San Antonio is 46 percent and 12 percent, respectively.

"It now seems likely that genetic factors, such as those important for diabetes and high cholesterol levels, are what determines why a small proportion of those with fatty liver develop NASH and its complications of cirrhosis and liver cancer," said Farrell.

In the new study, high responding opossums developed elevated cholesterol and fatty liver disease when fed a high cholesterol and high fat diet, whereas low responding opossums did not. High responders carry a mutated ABCB4 gene, which affects their ability to secrete excess cholesterol from the liver into bile which, in turn, transports the cholesterol to the intestines for excretion from the body. As a consequence, opossums with the mutated gene accumulate cholesterol in the liver and ultimately in the blood.

"We showed that the fatty livers of high responders contain a tremendous amount of cholesterol," said first author Jeannie Chan, Ph.D., of Texas Biomed. "The [opossum](#) is a new [animal model](#) for investigating the mechanism by which cholesterol mediates liver injury, which will lead to a better understanding of the role of dietary [cholesterol](#) in the development of NASH."

Provided by Texas Biomedical Research Institute

Citation: New animal model may lead to treatments for common liver disease (2012, July 3)  
retrieved 24 April 2024 from

<https://medicalxpress.com/news/2012-07-animal-treatments-common-liver-disease.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.