

Human cells used to create fully functioning lipid system in mouse model

June 17 2015

Taking research from the lab to the clinic can be a long and arduous process, but necessary to ensure new therapeutic methods are safe. This typically involves models created in the lab to closely resemble the cellular mechanism of the human body.

Researchers at Baylor College of Medicine say they have now created a new disease model that more than just resembles the human mechanisms; it acts as a fully functioning human lipid system within a mouse to specifically study hypercholesterolemia, a form of high cholesterol caused by a genetic defect.

The findings, appearing in *Nature Communications*, also show that this metabolic disease can be effectively cured by an experimental therapy.

'Diseases of [lipid metabolism](#), such as hypercholesterolemia, can be deadly if not managed or treated, but there are no animal models that can closely recapitulate this type of human disease,' said Karl-Dimitter Bissig, assistant professor in the Stem Cells and Regenerative Medicine Center and lead author on the study. 'Within the model we created we were able to show the presence of certain proteins that are only found in humans, meaning the whole lipid machinery is present and can be used to study the disease within the model rather than just a cell structure created to resemble the machinery.'

Bissig and his colleagues used diseased human cells from a liver removed during a transplant surgery and were able to isolate the cells

affected by the genetic disorder. They then transplanted those cells into a [mouse model](#). The particular mouse model that is able to accept human liver cells was first created by Bissig while at the Salk Institute. Bissig said the resulting chimeric liver can reach up to 95 percent humanization.

'By doing this we are now able to test a number of treatments and have a more accurate result of how certain treatments might actually affect [human cells](#),' said Bissig.

He and his colleagues used gene therapy on the model, essentially curing the disorder.

'A lot of studies take place in mice models because there are a lot of similarities in the makeup of these two organism, but there are obviously quite a few differences. While this model does not mimic everything within the human lipid system, it is more similar than other models, which may speed up the process of bringing lab work to the bedside,' he said.

This model currently is only used for this particular type of cells, but this opens the door to a whole new way of disease modeling.

Provided by Baylor College of Medicine

Citation: Human cells used to create fully functioning lipid system in mouse model (2015, June 17) retrieved 27 April 2024 from <https://medicalxpress.com/news/2015-06-human-cells-fully-functioning-lipid.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.