

Genetic flaw in males triggers onset of liver cancer, diabetes

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Credit: Michigan State University photo

Michigan State University researchers have uncovered a genetic deficiency in males that can trigger the development of one of the most common types of liver cancer and forms of diabetes.

The research, published in the online issue of *Cancer Cell*, found that when the *NCOA5* gene, present in both men and women, was altered in male mice to a deficient level, a spontaneous reaction occurred producing cells that can lead to hepatocellular carcinoma, a type of liver

cancer found to be two-to-four times more prevalent in men than women.

Findings also showed that prior to cancer development there were occurrences of glucose intolerance, a prediabetic condition that is believed to increase the risk of type 2 diabetes in humans. Conversely, the study showed [female mice](#) did not develop these diseases.

"Essentially, what this provides is evidence for a genetic susceptibility in males to this particular type of liver cancer and diabetes," said Hua Xiao, lead researcher of the project and associate professor of physiology in MSU's College of Human Medicine. "Ninety-four percent of the male mice we looked at developed the liver cancer, while 100 percent of these mice developed [glucose intolerance](#)."

Xiao notes the reason for the distinct outcomes between males and females also may have to do with the different levels of hormones between genders.

"Because estrogen may function through the NCOA5 gene and previously has been found to play somewhat of a protective role against both diseases, the result is a decreased risk in females," he said. "Since males produce lower amounts of estrogen, this can contribute to their susceptibility."

Type 2 diabetes has been widely associated with [liver cancer](#) as a common risk factor. Yet due to the increasing prevalence of [diabetes](#) worldwide and the limited treatments for [hepatocellular carcinoma](#), this research could open the door to new therapeutic options.

"At this point, it's not known if the [genetic deficiency](#) can be reversed and needs to be investigated further," Xiao said. "But if it can somehow be changed through treatments such as drug therapies, this could

substantially increase the chances of men in particular warding off these diseases."

Provided by Michigan State University

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