

Researchers decode origin of inflammation-driven pancreatic cancer

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Researchers at Mayo Clinic in Florida have revealed the process by which chronic inflammation of the pancreas, pancreatitis, morphs into pancreatic cancer. They say their findings point to ways to identify pancreatitis patients at risk of pancreatic cancer and to potential drug therapies that might reverse the process.

The study, published online today in *The Journal of Cell Biology*, maps how inflammation pushes [acinar cells](#) in the pancreas—those that produce [digestive enzymes](#)—to transform into duct-like cells. As these cells change, they can acquire mutations that can result in further progression to pancreatic cancer, says senior author Peter Storz, Ph.D., a biochemist and [molecular biologist](#) at Mayo Clinic.

"We don't know why these cells reprogram themselves, but it may be because producing enzymes in an organ that is injured due to inflammation may cause more damage," Dr. Storz says. "The good news, however, is that this process is reversible, and we identified a number of molecules involved in this pathway that might be targeted to help push these new duct-like cells back into acinar cells, thus eliminating the risk of cancer development."

The scientists are testing the ability of drugs already on the market to reverse this cellular transformation in the pancreas in mice models of human pancreatic cancer. Dr. Storz's research team traced the pathway leading from inflammation in the pancreas to development of cancer in the organ. They followed what happened once macrophages responded

to an [inflamed pancreas](#). Macrophages are a type of white blood cell that eats foreign material in the body.

"The belief in the field has been that macrophages were there to remove damaged cells in the organ," Dr. Storz says. "We found they weren't that benign. In fact, we discovered macrophages themselves drive the transformation and provide the setting for development of cancer."

The research team also discovered that if the pancreas is inflamed, fluid from the pancreas contains signaling molecules that induce acinar cells to transform into duct-like cells. Study co-author Massimo Raimondo, M.D., a gastroenterologist, is part of a Mayo team that has developed a method to collect this fluid from the pancreas during a routine upper endoscopy test.

"We want to also investigate whether these two enzymes can serve as an early warning system, a marker of pancreatic cancer risk, in patients with pancreatitis," Dr. Storz says.

"Our hope is that we can detect that risk before cancer happens, and use a treatment that reverses any possibility that pancreatic cancer will develop," he says.

Provided by Mayo Clinic

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