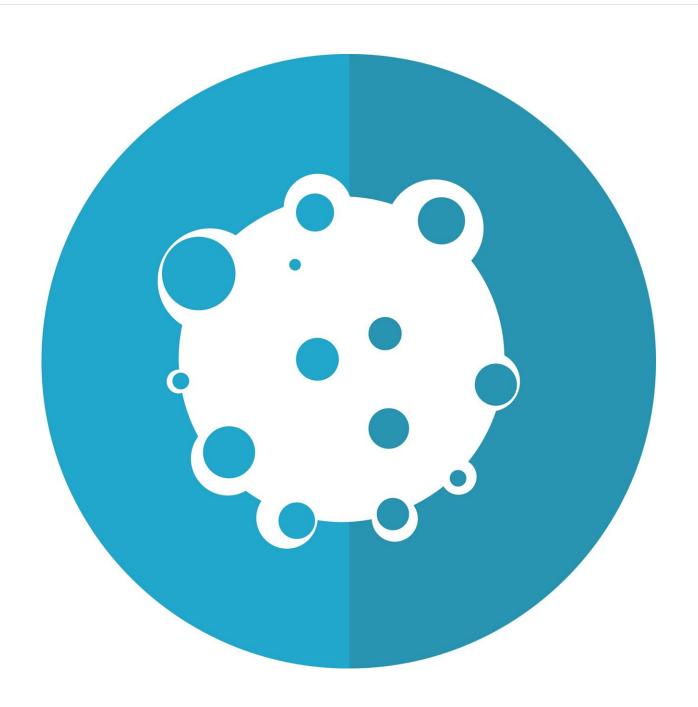# Biomarkers show promise for identifying early risk of pancreatic cancer

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A research team at Duke Health has identified a set of biomarkers that could help distinguish whether cysts on the pancreas are likely to develop into cancer or remain benign.

Appearing online March 17 in the journal *Science Advances,* the finding marks an important first step toward a [clinical approach](#) for classifying lesions on the pancreas that are at highest risk of becoming cancerous, potentially enabling their removal before they begin to spread.

If successful, the biomarker-based approach could address the biggest impediment to decreasing the chance of developing [pancreatic cancer](#), which is on the rise and is notorious for silently growing before being discovered, often incidentally, during abdominal scans.

"Even when pancreas [cancer](#) is detected at its earliest stage, it almost always has shed cells throughout the body, and the cancer returns," said senior author Peter Allen, M.D., chief of the Division of Surgical Oncology at in the Department of Surgery at Duke University School of Medicine.

"That's why we shifted our focus to these precancerous cysts, known as intraductal papillary mucinous neoplasms, or IPMNs," Allen said. "Most IPMNs will never progress to [pancreas cancer](#), but by distinguishing which ones will progress, we are creating an opportunity to prevent an incurable disease from developing."

Allen and colleagues used a sophisticated molecular biology tool called digital spatial RNA profiling to home in on specific areas of the cyst with high- and low-grade areas of abnormal cell growth.

Previous methods to characterize IPMNs have been less precise and have not been able to identify particularly accurate markers of cancer risk. Digital spatial profiling, however, allows researchers to choose individual groups of cells for analysis. This enabled the Duke researchers to identify a host of genetic mutations that both fuel and potentially suppress pancreatic cancer development.

The team also identified markers for discriminating between the two leading variants of IPMN and found distinct markers for defining a third common variant that generally results in less aggressive disease.

"We found very distinct markers for high-grade cell abnormalities, as well as for slow-growing subtypes," Allen said. "Our work now is focusing on finding it in the cyst fluid. If we can identify these unique markers in cyst fluid, it could provide the basis for a protein biopsy that would guide whether we should remove the cyst before cancer develops and spreads."

Allen said current diagnostic strategies—including clinical, radiographic, laboratory, endoscopic, and cytologic analysis—have an overall accuracy of approximately 60%.

"Pancreatic cancer is on the rise and, if the current trajectory continues, it will become the second-leading cause of cancer death in the United States in the next few years," Allen said, noting it's unknown what is driving the cancer's increased prevalence.

He said some studies suggest inflammation plays a role. A clinical trial at Duke, led by Allen, is testing whether an anti-inflammatory therapy could reduce the development of cancer in patients with IPMN.

In addition to Allen, study authors include Matthew K. Iyer, Chanjuan Shi, Austin M. Eckhoff, Ashley Fletcher, and Daniel P. Nussbaum.

Provided by Duke University Medical Center