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Targeting pancreatic cancer through signalling

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Researchers have identified a new way to tailor treatments for patients with pancreatic cancer, one of the most deadly forms of cancer. Currently only five per cent of people with pancreatic cancer survive longer than five years after their diagnosis. The most common type of pancreatic cancer is pancreatic ductal adenocarcinoma, making up 85 per cent of cases.

Now, a Monash-led research team have used a new approach to identify three distinct subtypes of pancreatic ductal adenocarcinoma, a study published recently in the journal of *Molecular and Cellular Proteomics* revealed. Their findings pave the way for the development of drugs that target each of these subtypes, as well as highlighting biomarkers that can help identify the best treatment for patients with different forms of the disease.

Lead author of the study, Professor Roger Daly, Cancer Program leader at the Monash Biomedicine Discovery Institute and Head of the Department of Biochemistry and Molecular Biology, said pancreatic cancer was traditionally difficult to detect before it advanced to a late stage, and to target for treatment. "We've identified a way to potentially tailor treatments to each patient diagnosed with pancreatic cancer. In a world first, our research has identified three distinctive subtypes of the disease that can be distinguished based on the chemical signals transmitted inside the cancer cells," Professor Daly said.

Many other types of cancer have already been classified into different

subtypes, allowing doctors to personalise treatment strategies and target cancers more effectively. As the subtypes of pancreatic cancer have been unknown until now, treating the disease has been largely limited to chemotherapy, which carries its own health risks.

The team's research identified the three sub-types of the deadly cancer by studying signalling pathways that instruct the cancer cells to survive, grow and spread throughout the body.

"While recent studies indicate that pancreatic cancer can be subclassified based on gene expression, this is the first time subclassification has been achieved using signalling pathways. Our success in this regard is based on exploiting mass spectrometry technology," Professor Daly said.

"We now plan to extend this approach to other poor prognosis cancers, including triple negative breast cancer."

More information: Emily S. Humphrey et al. Resolution of novel pancreatic ductal adenocarcinoma subtypes by global phosphotyrosine profiling, *Molecular & Cellular Proteomics* (2016). DOI: 10.1074/mcp.M116.058313

Provided by Monash University

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