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Pancreatic cancer has four distinct types

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Researchers have found that pancreatic cancer can be split into four unique types, a discovery that could be used to improve treatments for the disease, according to a study published in *Nature*.

The international team of scientists, including researchers from The University of Glasgow, found that these four types were created when large chunks of DNA are shuffled around. The team also identified the genes that could be damaged in this way.

These four disease types are based on the extent of the cancer's genetic shuffling, with the tumours classified depending on the frequency, location and types of DNA rearrangements.

This shuffling of chunks of DNA causes genetic chaos with genes deleted, wrongly switched on and off or entirely new versions being created. Among the genetic faults found are some that could potentially be targeted with existing drugs.

Study co-lead, Professor Andrew Biankin, Director of the Wolfson-Wohl Cancer Research Centre at the University of Glasgow, said: "Despite many decades of research into pancreatic cancer we have faced numerous obstacles in finding new and effective treatments. But our crucial study sheds light on how the chaotic chromosomal rearrangements cause a huge range of genetic faults that are behind the disease and provide opportunities for more personalised pancreatic cancer treatment."

The study also suggests which pancreatic cancer patients may benefit from platinum-based drugs – these are commonly used chemotherapy treatments, typically used for testicular or ovarian cancer.

So far these drugs have had limited impact in pancreatic cancer but the researchers found that a handful of patients who had 'unstable' chromosome rearrangements and defects in the DNA repair pathways could potentially benefit, sometimes showing exceptional improvement.

Much of the work was carried out in Australia and the project was Australia's contribution to the International Cancer Genome Consortium (ICGC), with the country's National Health and Medical Research Council providing A$25.5m.

Co-lead and principal investigator on the Australian ICGC program Professor Sean Grimmond, who led all the genomic analysis and is now at the University of Glasgow, added: "Being able to identify which patients would benefit from platinum-based treatments would be a game-changing moment for treating pancreatic cancer, potentially improving survival for a group of patients."

More information: Waddell, N. et al, 'Whole Genomes Redefine the Mutational Landscape of Pancreatic Cancer'. *Nature*, 2015. DOI: 10.1038/nature14169

Provided by University of Glasgow