

New mechanism of pancreatic cancer discovered

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(PhysOrg.com) -- A new study from Karolinska Institutet, Sweden, shows how two types of cell change interact in the development of cancer. The results can improve the chances of early discovery of cancer - including pancreatic cancer, one of the deadliest forms of the disease.

Cancer of the [pancreas](#) is a form of cancer that has few treatment options and a poor prognosis. It is linked to two particularly common cellular changes: mutations in a family of cancer genes called RAS and increased activity in the 'Hedgehog' signalling pathway, a molecular signal transmission mechanism that is normally only activated during embryonic growth.

The new study, which is published in the journal *Nature Structural & Molecular Biology*, shows how RAS and the [Hedgehog](#) pathway interact in the development of [pancreatic cancer](#) in mice. Activation of cancer genes in the RAS family causes the tumour cells to secrete the factor (SHH) that activates Hedgehog signalling, and shuts off the tumour cell's own ability to respond to this type of stimulation.

The blocking of the Hedgehog response helps, in this phase, to secure the survival of the tumour cells while the surrounding [cells](#) are stimulated to grow. In a later phase, when the tumour has become more aggressive, the block is lifted so that tumour cell growth is also precipitated through Hedgehog signalling. The scientists have also identified the proteins that govern the tumour cells' sensitivity to SHH.

One of the reasons for the poor prognosis associated with pancreatic cancer is that the disease is hard to detect at an early stage. The researchers believe that their results can be of significance to the development of better diagnostic methods and treatment strategies.

More information: DYRK1B-dependent shift of Hedgehog signaling from an autocrine towards a paracrine mode by mutant RAS, *Nature Structural & Molecular Biology*, AOP 30 April 2010, [doi:10.1038/nsmb.1833](https://doi.org/10.1038/nsmb.1833)

Provided by Karolinska Institutet

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