

Paradoxical protein might prevent cancer

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(PhysOrg.com) -- One difficulty with fighting cancer cells is that they are similar in many respects to the body's stem cells. By focusing on the differences, researchers at Karolinska Institutet have found a new way of tackling colon cancer. The study is presented in the prestigious journal *Cell*.

Molecular signal pathways that stimulate the division of [stem cells](#) are generally the same as those active in tumour growth. This limits the possibility of treating cancer as the drugs that kill [cancer cells](#) also often adversely affect the body's healthy cells, particularly stem cells. A new study from Karolinska Institutet, conducted in collaboration with an international team of scientists led by Professor Jonas Frisén, is now focusing on an exception that can make it possible to treat a form of [colon cancer](#).

The results concern a group of signal proteins called EphB receptors. These proteins stimulate the division of stem cells in the intestine and can contribute to the formation of adenoma (polyps), which are known to carry a risk of cancer. Paradoxically, these same proteins also prevent the adenoma from growing unchecked and becoming cancerous.

The new results show that EphB controls two separate signal pathways, one of which stimulates cell division and the other that curbs the cells' ability to become cancerous. Using this knowledge, the scientists have identified a drug substance called imatinib, which can inhibit the first signal pathway without affecting the other, protective, pathway.

"Imatinib or a similar substance could possibly be used for preventing the development of cancer in people who are in the risk zone for colon cancer instead of intestinal resection," says Maria Genander, one of the researchers involved in the study.

Imatinib has so far proved to inhibit cell division in intestinal tumour cells in vitro and in mice. The substance is a component of the drug Glivec, which is used, amongst other things, in the treatment of certain forms of leukaemia. Whether it can also be used against adenoma and colon cancer in humans remains to be seen. The company that manufactures the drug did not fund the study.

More information: Dissociation of EphB2 Signaling Pathways Mediating Progenitor Cell Proliferation and Tumor Suppression, *Cell*, print issue, 13 Nov 2009

Source: Karolinska Institutet ([news](#) : [web](#))

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