

Researchers discover new information on the spread of cancer

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A new study from the University of Turku, Finland, shows that intracellular receptor signalling sustains cancer cells that have detached from the surrounding tissue. When the signalling is prevented, the cells cannot spread to other parts of the body. This significant research result influences how cancer research is directed in the future.

The research group from the University of Turku, led by Academy Professor Johanna Ivaska, has discovered completely new information on how cells internally transmit signals and copy vital [messages](#) they receive from their surroundings. The research shows that wandering [cancer cells](#) that have detached from the surrounding tissue sustain themselves with intracellular receptor signalling.

For decades, researchers have known that each cell has a particular place in the human body and that it has to be connected to tissue in order to survive. This involves cell [adhesion receptors](#) called integrins, which signal particular messages that are necessary for the cell's survival. However, cancer cells spreading from one organ to another have developed ways that enable them to remain alive even when they are not attached to tissue.

Researchers have known for a long time about the ability of integrins to operate inside cells, and changes in the function of receptors leads to malignant changes within the cell – even to the spread of cancer.

"These new research results show for the first time that the messages

transmitted by the integrins about the cell's surroundings, information which is necessary for its survival, are dependent on the intracellular receptor signalling," says Ivaska.

Doctoral Candidate Jonna Alanko's microscope images revealed that integrins transmit messages about particular intracellular structures called endosomes. This enables signalling for longer periods of time and even copying messages. Therefore, preventing intracellular receptor signalling will reduce the cancer cells' ability to survive when detached from tissue and hence curtail the spread of cancer.

"These research results open an entirely new perspective into the [integrin receptors](#)' activity and reveal a new mechanism that enables the cancer cells to wander, for example in the circulation, forming metastases in other parts of the body," notes Ivaska.

More information: "Integrin endosomal signalling suppresses anoikis." *Nature Cell Biology* (2015) [DOI: 10.1038/ncb3250](https://doi.org/10.1038/ncb3250)

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