

How tumor cells move

April 8 2009

If cancer cells lack a certain protein, it could be much easier for them to penetrate healthy body tissue, the first step towards forming metastases. Scientists at the Pharmacology Institute of the University of Heidelberg have discovered the previously unknown cell signal factor SCAI (suppressor of cancer cell invasion), which inhibits the movement and spread of tumor cells in laboratory tests. When the factor's functioning was disrupted, the cancer cells moved much more effectively in what are known as three-dimensional matrix systems, which imitate some of the tissue properties of the human body.

"The protein is apparently suppressed in many types of tumors, e.g. breast, lung, or thyroid," explains Dr. Robert Grosse, head of the Emmy Noether Junior Research Group funded by the German Research Association (DFG) at the Pharmacology Institute. The new factor could be an interesting starting point for research into new mechanisms for fighting [cancer](#). The research team's results have now been published online in the prestigious international journal [Nature Cell Biology](#).

Focus on particularly aggressive cancers

[Tumor cells](#) are extremely mobile and "adept" at penetrating healthy tissue to form metastases. They adapt to the consistency of the respective tissue by changing their shapes constantly and attach flexibly to surrounding tissues during movement with the help of special surface structures (receptors).

One of these receptors is what is known as b1-integrin, which is

frequently formed in many tumors such as metastasizing breast cancer. "The cell signal factor SCAI controls the formation and function of b1-integrin," says Dr. Robert Grosse. "If there is too little SCAI in tumor cells, then b1-integrin is overactive, so to speak. The cell can change more rapidly to a more aggressive form and penetrate surrounding tissue, a crucial step toward increased spreading of the tumor and the possible formation of metastases."

In their recently published study, the Heidelberg researchers examined cells from skin cancer (melanoma) and breast cancer. In other projects, Dr. Robert Grosse's team would like to study the function of the signal factor SCAI more closely in an animal model. "If the function of SCAI is confirmed to be decisive in the formation of especially aggressive tumor cells, this could be a promising starting point for developing new diagnostic methods or medication," says the pharmacologist. It could also be possible to develop an agent that prevents the genetic suppression of the signal factor in [cancer cells](#). But first the researchers need to better understand how the signal factor itself is regulated in the cell.

More information: Dominique T. Brandt, Christian Baarlink, Thomas M. Kitzing, Elisabeth Kremmer, Johanna Ivaska, Peter Nollau and Robert Grosse: SCAI acts as a suppressor of cancer cell invasion through the transcriptional control of β 1-integrin. *Nature Cell Biology*. 6. April 2009. DOI:10.1038/ncb1862

Source: University Hospital Heidelberg ([news](#) : [web](#))

Citation: How tumor cells move (2009, April 8) retrieved 27 April 2024 from <https://phys.org/news/2009-04-tumor-cells.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.