# Researchers map important enzyme in the fight against cancer

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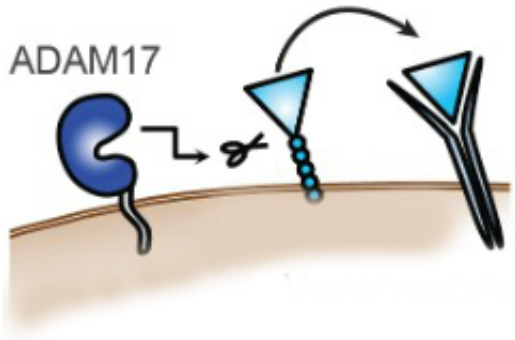


ADAM17 helps growth but unfortunately also cancer growth. That is why it is crucial to control ADAM17

Researchers from the University of Copenhagen have discovered what regulates an enzyme that is central to the growth of cancer tumours. This could be of great value to future cancer treatment.

Danish researchers from the University of Copenhagen have discovered what controls the enzyme that aids the growth of cancer tumours. These findings could be of great value to cancer treatments and has just been published in the renowned journal, *Nature Communications*.

The enzyme is called ADAM17 and it aids growth in cells.

"ADAM17 is very important to the growth of cancer tumours. It

functions as a molecular pair of scissors, separating molecules from the cell's surface which then increases cell growth. The problem being that in cancer cells this growth is over-activated and so the cancer tumour grows rapidly and uncontrollably," Postdoc Sarah Dombernowsky explains. She is part of Associate Professor Marie Kveiborg's research group at the Department of Biomedicine & BRICK, at Copenhagen Biocenter.

Researchers from all over the world have long been interested in finding ways to restrict ADAM17 and thus inhibit the growth of cancer tumours. Among other things, they have tried to impede the process with different drugs. However, these drugs also obstructed other important scissors, which led to patients suffering severer side effects.

This is why it is of such great importance that Sarah Dombernowsky and her colleagues have now located a mechanism that controls ADAM17.

## The cancer tumour cannot grow

"We have discovered that the protein PACS-2 plays a big part in the transportation of ADAM17 in cells. ADAM17 moves in and out of the cell, but it has to remain on the surface to be able to cut off molecules and thus further growth. We have showed that without the PACS-2, ADAM17 returns less regularly to the surface; it's broken down instead," Sarah Dombernowsky elaborates.

Thus ADAM17 is rendered incapable of helping the cancer tumour grow and it provides us with fundamental knowledge, which may be used to improve future cancer treatments.

"There have been attempts at developing a pill to inhibit ADAM17, only the patients became ill due to side effects, because other, similar enzymes were also affected. But if you inhibit PACS-2, you can, in

principle, obstruct only ADAM17, which would enable us to inhibit the growth of the cancer tumour," Sarah Dombernowsky states.

Marie Kveiborg's group is currently conducting animal experiments to learn more about the effect of ADAM17-inhibition.

"We're currently experimenting on mice to see if the cancer growth slows down, and it is our distinct expectation that it will. In the long-term, we would like to develop something that through PACS-2 allows us to fine-tune ADAM17, which could then eventually become part of a more targeted cancer treatment," Sarah Dombernowsky concludes.

**More information:** ADAM17 helps growth but unfortunately also cancer growth. That is why it is crucial to control ADAM17, *Nature Communications* 6, Article number: 7518 DOI: 10.1038/ncomms8518

Provided by University of Copenhagen

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