

New research could stop tumor cells from spreading

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Researchers from the Department of Chemistry and Molecular Biology at the University of Gothenburg have managed for the first time to obtain detailed information about the role of the protein metastasin in the spread of tumour cells. Published recently in the renowned *Proceedings of the National Academy of Sciences (PNAS)*, the study paves the way for the development of new drugs.

Metastasin is a protein with a key role in the spread of [tumour cells](#).

Previous research has shown that it is activated through the binding of [calcium ions](#) and then binds to and modulates other proteins.

Increases the spread of tumour cells

One of metastasin's binding partners is a motor protein called non-muscle myosin. [Motor proteins](#) are the driving force behind cell mobility. By binding to this protein, metastasin can increase the spread of tumour cells, acting as a kind of gas pedal for the cancer engine.

"Using a method called X-ray crystallography, we have managed for the first time to obtain detailed information on how metastasin binds to a motor protein, a process that facilitates the spread of tumour cells," explains researcher Gergely Katona.

Detailed picture

It has been possible to image metastasin and calcium-ion-bound metastasin using X-ray crystallography before, but the researchers at the University of Gothenburg are the first to have imaged the structure of calcium-ion-activated metastasin with an attached non-muscle myosin fragment.

"This has given us information about regions of both metastasin and the motor protein that are crucial for metastasin's ability to bind to the motor protein. This is important to know for drugs to be developed that block these specific regions and so prevent this binding."

The image of the two molecules gives us a better understanding of how metastasin binds to the motor protein, so increasing cell mobility and the spread of tumour cells. This understanding in turn paves the way for the development of [new drugs](#) to prevent this harmful interaction between molecules and so stop tumour cells from spreading.

"The metastasin and the motor protein can be imaged as a snapshot, but the next stage is to create a kind of video to see how the molecules move when binding to one another," explains Katona.

Provided by University of Gothenburg

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