

Researchers identify potential new avenue to attack cancer

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Researcher Art Alberts, left, with doctoral candidate Aaron DeWard at the Van Andel Research Institute in Grand Rapids. Credit: Van Andel Institute photo by Dykehouse Photography

New insight into how human cells reproduce, published by cancer researchers at Michigan State University and the Van Andel Research Institute in Grand Rapids, could help scientists move closer to finding an "off switch" for cancer.

Cancer cells divide uncontrollably and can move from one part of the body to another. They undergo dramatic shifts in shape when they do so, said Aaron DeWard, an MSU cell and molecular biology doctoral candidate who published his research recently in the [Journal of Biological Chemistry](#). He's trying to figure out how certain proteins trigger cell movement and division and how [cancer](#) hijacks the system to create genomic instability.

DeWard and his academic adviser, VARI senior scientific investigator Art Alberts, investigated proteins called formins that help determine the shape of a cell during division and movement. They identified a new mechanism for regulation of formins during cell division.

"One of the cool things about these proteins is that they're tightly regulated - they will only do their jobs when they're told to do so," DeWard said, describing formins as the workers that put together the pieces that shape a cell.

"A lot of work has been done on how to get these proteins to work, but not when to stop working," he said. "We identified the way in which these proteins get flagged for destruction. This mechanism is pretty common for a lot of proteins, but had never been shown for this family of proteins before, and no one really knew how to shut them off completely."

The family of proteins DeWard and Alberts are studying could lend themselves well to pharmaceutical treatment, he added.

"Aaron's observation gives us a handle on the molecular machinery controlling cell division," Alberts said. "Our goal now is to exploit this information in the development of strategies to specifically stop the process of uncontrolled cell division that characterizes cancer."

"I don't think shutting them off will stop cancer, but by better understanding the mechanism of this we might find ways to manipulate the system," DeWard said.

The MSU-VARI connection constitutes a vibrant, research-oriented dimension to the university's growing presence in the western Michigan health care complex. Michigan State opens its new College of Human Medicine building, the Secchia Center, in downtown Grand Rapids near

VARI parent Van Andel Institute, Spectrum Health and other health care organizations in 2010. It signed a research collaboration agreement with the VAI in 2006.

"Collaboration is essential to developing West Michigan as a center for life sciences," said Steve Heacock, VAI chief administrative officer and general counsel. "A solid connection and interaction between students, scientists, medical professionals and the entire life science community is vital. We have a strong collaboration. MSU students work in VAI laboratories, MSU and VAI researchers collaborate on studies and there will be a two-way connection between VAI and the new MSU College of Human Medicine."

A joint graduate school program allows graduate students in several medicine-related programs to take one of their laboratory "rotations" at VARI, and afterward to complete their thesis project there. Four VARI fellowships also are awarded to MSU first-year graduate students interested in cancer research or cell biology.

Source: Michigan State University ([news](#) : [web](#))

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