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News

Scientists fight cancer protein

By [JOHN CALDWELL](#)
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In its mutated and hyperactive state, Ras, a common protein in human cells, is responsible for 30 percent of all cases of cancer.

Unlocking the properties of the protein may lead to novel methods of fighting many forms of the deadly disease, but much remains unknown about Ras and its related enzymes.

Research at the University led by biochemistry professor Walter Schmidt is focused on the protein and how it anchors to the protective membrane of a cell.

"By understanding how Ras attaches to a cell, maybe we can learn to detach the cancerous Ras," he said.

To better grasp the protein's properties in humans, Schmidt's lab uses a safer, cheaper and more ethical test subject — common yeast found at the grocery store.

In the human body, Ras commonly performs in signaling reactions that regulate such things as blood sugar levels. In yeast, an identical protein functions in pheromones — sex signals that help yeast procreate.

"We can regulate the mating process by regulating the enzymes that (anchor the protein)," Schmidt said.

The Schmidt lab has mapped the structure of that enzyme, called Rce1, which functions like "molecular scissors," chopping off one section of the Ras-like molecule and replacing it with another.

In the lab, Schmidt alters the makeup of the Rce1 and tests its effects. By observing which changes to Rce1 prevent the yeast from reproducing, Schmidt is gaining a better idea of what makes the enzyme function.

Ultimately, the focus will shift back to the human body, at which point the research will be applied to stifle cancerous tumors instead of harmless fungus.

"It's really a war to understand this cancer," Schmidt said. "But we're making gains."

The Schmidt lab currently is researching on two five-year grants from the National Institutes of Health — one for \$825,000 and another for \$50,000.

He has been researching Rce1 for only three years, and despite the fact that most new drugs have a 10- to 15-year history behind them before reaching the market, Schmidt said his lab has already made great progress.

As researchers like Schmidt focus increasing energy on Ras and other proteins found in the membranes of cells, more new approaches to currently incurable diseases will be found.

"We're now in the starting phases of developing the tools necessary for studying membrane proteins," he said. "It's a good time to be a scientist in this field."



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