

# Meet...

## Thomas Kodadek

BIOCHEMIST, *Jupiter, Florida*



### BORN IN

Chicago, Illinois

### JOB SITE

Scripps Research Institute

### HOBBIES

Tennis, canoeing, kayaking, reading about history

### ALTERNATE CAREER

Historian or a novelist

### MOST RECENT VACATION

Trip to the coast of Maine, followed by a stop in New York City.

## What He's Doing

As an undergraduate at the University of Miami, Thomas Kodadek thought biology was “way more interesting” than chemistry, but he stuck with the physical sciences because he sensed that biology would be easier to learn later on. “Because of my choice, I was much better prepared to go into biology and tackle interesting problems at a molecular level,” he says. “I had no idea what a good decision that was, and I thank my lucky stars.”

Kodadek is putting his training to good use by developing a new generation of anti-cancer drugs. He concentrates on the 26S proteasome—a huge complex of proteins that degrades protein junk inside of cells. Drugs that inhibit the proteasome are used to treat some forms of cancer because the drugs cause programmed cell death in rapidly dividing cells, such as cancer cells. But the cells can develop resistance against cancer drugs, so it's important to develop new pharmaceuticals that will inhibit different parts of the proteasome.

“I realized several years ago how desperate the need for new technology in medicine really is, and that it's important for people like me to do things that will have an impact sooner than 20 or 25 years in the future.”

## His Findings

A promising target that Kodadek focuses on is 19S regulatory particles—a set of proteins that form caps at the ends of the proteasome. Folded proteins are too big to fit into the openings of the barrel-like proteasome, and the 19S regulatory particles contain enzymes that unwind incoming proteins into chains that can slide into the barrel holes. Kodadek's mission is to develop drugs that inhibit these enzymes. He has already tested a few candidate drugs in cell cultures and plans to begin animal studies soon. The ultimate goal, he says, is to test their safety in humans and get them into the clinic.

Drugs that target the proteasome could also treat neurological disorders, such as Huntington's disease and Parkinson's disease, which cause proteins to misfold and aggregate in cells. Stimulating proteasome activity will help clean up the diseased cells, Kodadek says. “There are no known stimulators of proteasomes, and right now our major goal is to find them.”

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