

Courant to model pancreatic cancer

October 13, 2009
by [Anna Sanders](#)

Pancreatic cancer is currently one of the leading causes of death in the U.S.

A team of researchers at NYU's Courant Institute of Mathematical Sciences is currently working to better understand the disease's development in order to help detect it in earlier stages. Using a National Science Foundation grant of \$1.8 million over five years, the team will create computer-based models charting the growth of pancreatic cancer.

"We've begun making models of biology, but on very simple systems," said Bud Mishra, an NYU professor of computer science and mathematics and the team's principal investigator.

Mishra said he has long been interested in building these types of models from experimental data and using model checking — computer-formatted mathematical ideas — to apply them to cancer biology.

"In the past, we have used model checking in various fields in engineering, but not biology," Mishra said.

According to the researchers, the main reason scientists are interested in building computer models is because animal models are limited in determining the development of pancreatic cancer.

William Carroll, director of the Cancer Institute at NYU Langone Medical Center, is confident the project will be successful.

"I think the systems analysis of cancer cells will allow us to pinpoint those pathways that are critical for the growth and development of pancreatic cancer," he said.

According to Carroll, the two primary issues cancer patients face are the impersonal nature of therapy and the toxicity of most cancer remedies.

"The key is to understand what is unique about the cancer," Carroll said, adding that the systems biology approach in modeling cancer may illuminate differences in tumor development in various cases.

"A computer form model, if it works, is a huge payoff," Mishra said. "Maybe these kinds of models will help us to speed up diagnostics."