

A New Guard of Sylvester Cancer Researchers Brings Impressive Credentials

When University of Miami Miller School of Medicine departments bring in new faculty, they consider a wide range of factors: What is their research track record? Are they good with students and trainees? Do they bring expertise the department lacks?

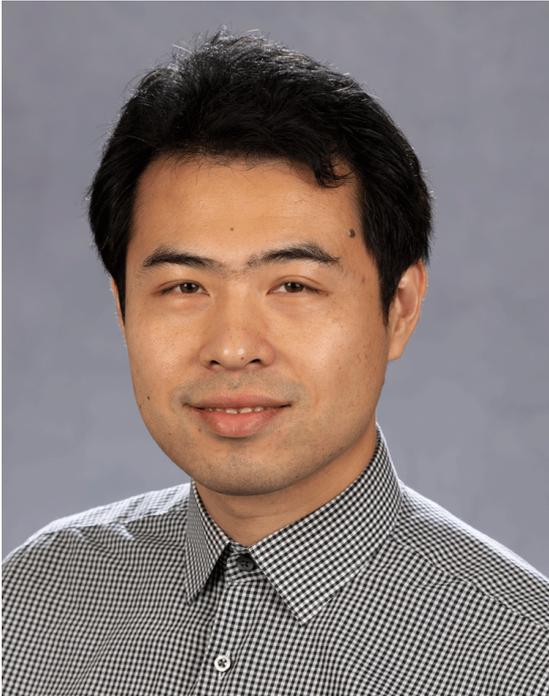
“Our department is extraordinarily broad,” said Kerry Burnstein, Ph.D., professor of molecular and cellular pharmacology at the Miller School. “We have neuroscientists, cancer researchers and computational people who work in an array of biological systems, from humans to yeast. With two recent search efforts, our department also wanted to expand on research strengths at Sylvester Comprehensive Cancer Center.”

Searches like these are hypercompetitive. Dr. Burnstein notes the department usually gets at least 200 applications, which they whittle down to about a dozen finalists. In 2020, the department recruited two outstanding cancer researchers: Assistant Professors Zhipeng Meng, Ph.D., and Viraj Sanghvi, Ph.D.

“They represent a new guard of cancer researchers,” said Dr. Burnstein, associate director of education and training at Sylvester. “They started with high throughput screens to identify molecules that could perturb, and thus give us new insights into, the biology they study. Along with these

screening techniques, they've embraced big data and they work on protein pathways that are druggable.”

Zhipeng Meng, Ph.D.



Dr. Zhipeng Meng

Dr. Meng studies molecular mechanisms that govern tissue homeostasis and regeneration and how these signals go awry in fibrotic diseases and cancer. He is particularly interested in the Hippo protein pathway, which regulates cell proliferation and programmed cell death. Hippo protein mutations have been linked to cancer. His work is providing new insights into cancer cell behavior and precision medicine.

“The long-term goal of my research is to elucidate the molecular mechanisms by which tissue regeneration, fibrosis and carcinogenesis are controlled in response to biochemical and biomechanical cues in normal and disease

microenvironments,” said Dr. Meng.

Since joining the Miller School, Dr. Meng has identified a number of novel mechanotransduction enzymes, which convert mechanical forces into electrical or chemical signals. He is currently studying the roles these proteins play in liver and breast cancers.

Viraj Sanghvi, Ph.D.

Dr. Sanghvi studies cancer biology, metabolism and therapeutics. He is particularly focused on a cancer protein, called Nrf2, associated with liver and lung cancers.



Dr. Viraj Sanghvi

“How are these tumors different from other tumors, and what can we use to target them?” said Dr. Sanghvi. “They are very aggressive and resistant to standard-of-care chemotherapies and targeted therapies. So they're a big clinical problem.”

Dr. Sanghvi believes Nrf2's Achilles heel may be glucose. Proteins can adorn themselves with sugar molecules, a process called glycation. With Nrf2, these sugars actually help regulate the protein's function. To counteract this oncoprotein, Dr. Sanghvi is investigating molecules that can reverse Nrf2 glycation.

Glucose is a food source for both normal and cancer cells, but these sugars are a double-edged sword – they feed cells but, if not handled properly, they can also damage them. Dr. Sanghvi is working to understand how tumor cell metabolisms differ from normal cells, how they avert glycation stress, and how to exploit that for treatment.

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