Research is how we discover better treatments for disease. And the University of Rochester Medical Center is at the forefront of urologic research.

As part of a leading academic institution, the Department encompasses everything “from the bench to the bedside.” It starts at the laboratory bench where research is conducted, and moves to the patient’s bedside, where that research finds its practical application.

MEET OUR RESEARCHERS

Chawnshang Chang, PhD

Dr. Chang is a cancer researcher. He and his research team focus mainly on the role of androgen receptors in various androgen related diseases, especially prostate cancer.

Androgen is the male hormone responsible for male sexual traits (such as the beard). A receptor is a substance or structure in a cell that acts as a “relay” for instructions or messages sent by other cells. It receives these messages, then transmits them to other cells, causing some sort of reaction within the body. Dr. Chang was the first scientist to clone human androgen receptors.

He is currently leading several projects investigating the role of androgen and androgen receptors in the functioning of, and diseases of, the prostate, testes, breast and bladder. Some of these studies use unique, genetically engineered mice developed in Dr. Chang’s lab. The ultimate goal is to develop better anti-androgens (that cancer cells cannot “adapt to,” so they do not become androgen independent) and more effective anti-cancer drug therapies.

Dragan Golijanin, MD

Dr. Golijanin is a cancer researcher. His interests include researching prostate, testicular, bladder and kidney cancer and working on treatments for adrenal tumors, penile cancer, urethral cancer, hematuria (blood in urine), elevated PSA and prostate nodules. Dr. Golijanin is actively researching the use of robotic and laparoscopic surgery and minimally invasive therapy to treat these conditions.

Dr. Golijanin has been working on intraoperative imaging which uses near infrared fluorescence of ICG for lymph node mapping in bladder and prostate cancer to accurately assess renal cortical tumors. Other projects include translational research in bladder and kidney cancer and the use of chemoprevention in bladder and prostate cancer.
Yi-Fen Lee, PhD

Dr. Lee is a cancer researcher. She is using prostate cancer as a model to examine the anti-cancer effects of Vitamin D. We get Vitamin D naturally from milk, some vegetables and organ meats, and by exposure to the sun. In technical terms, Dr. Lee is studying the chemopreventive, anti-proliferative, anti-invasive, and anti-angiogenesis (blood vessel formation) effects of Vitamin D. In non-technical terms, she is trying to answer three specific questions: Can Vitamin D inhibit or stop the growth of cancer tumors? Can it inhibit the spread of cancer from one tissue or organ to another? Can it stop new blood vessels from forming in a tumor?

Dr. Lee is also working on a very exciting research project using genetically engineered mice to study the aging and aging-related human diseases such as cancer. She has identified a gene in mice that seems to be connected to aging. When a mouse is born without that gene, it ages prematurely and its lifespan is greatly reduced.

Guan Wu, MD, PhD

Dr. Wu is a specialist in urologic oncology. The long-term goal of his research is to refine our knowledge of the biology of kidney cancer. Currently, Dr. Wu’s laboratory is studying genetic defects in kidney cancer cells and how these defects cause the disease.

Dr. Wu’s laboratory has been working on the proteins produced by cancer critical genes. He and his associates are learning how the cellular and biochemical functions of these proteins cause kidney cancer to develop and progress. Dr. Wu’s laboratory has identified several such complexes by purifying them from kidney cancer cell lines and by using yeast as a human protein carrier. This research is not only extending our understanding of kidney cancer, it also has broader implications for normal cell physiology.

Dr. Wu’s laboratory is also analyzing the genetics of human kidney cancer specimens to look into DNA mutations. This research will be combined with the studies done with kidney cancer cell lines. Together, they will help us discover and validate new “tumor markers” (substances produced by the body that can indicate the presence of a specific cancer). This, in turn, will help us develop new ways to diagnose and treat kidney cancer.

Shu-Yuan Yeh, PhD

Dr. Yeh is a cancer researcher. Her research focuses on understanding the mechanisms and finding alternative therapeutic strategies for preventing and treating prostate cancer. One of her studies is investigating modified forms of alpha-Vitamin E. There is already evidence that Vitamin E, found naturally in vegetable oil and nuts, among other foods, may reduce the risk of prostate cancer.

Another area she is studying involves understanding the transition of prostate cancer from androgen sensitive to androgen unresponsive stages in patients receiving androgen deprivation therapy. Dr. Yeh is trying to discover and understand the mechanisms in the body that allow cancer cells to escape the effect of removing the androgen.

A new area of Dr. Yeh’s research is studying the roles of estrogen and estrogen receptor (the female hormone and receptor found in men as well) in promoting malignant transformation and BPH (benign prostatic hyperplasia, the medical term for an enlarged but non-cancerous prostate). Evidence currently suggests that early and/or increased exposure to estrogen during normal prostate development might lead to prostate malignancy or BPH.

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