

PURDUE UNIVERSITY CENTER FOR CANCER RESEARCH



ABOUT US

As a National Cancer Institute-designated Cancer Center, the Purdue University Center for Cancer Research is comprised of over 100 faculty scientist members from a wide-range of academic fields within Purdue University. Our goal is to foster collaborations and discoveries which may lead to the advancement of new and better cancer treatments.



RESEARCH PROGRAMS

- Cell Identity and Signaling
- Chemical and Structural Biology
- Drug Delivery and Molecular Sensing
- Medicinal Chemistry

DISCOVERY GROUPS

- Bladder Cancer
- Brain Cancer
- Breast Cancer
- Obesity and Cancer
- Prostate Cancer

DRUG DEVELOPMENT



Phil Low is developing multiple methods for sneaking molecules directly into diseased cells while avoiding healthy tissue — a process that will save lives and improve the quality of life for patients undergoing treatment. Five folate-targeted drugs from his work are currently undergoing human clinical trials for cancer, and one folate-targeted fluorescent dye is being tested in humans for fluorescence-guided surgery.

Nearly 40 years ago in his Purdue laboratory, **Mark Cushman** created an organic compound with anti-leukemic activity. Since then, more than 500 structural analogues of that byproduct have been synthesized, and two of them are now in clinical trials at the National Cancer Institute. They have the potential to become mass-produced, life-saving treatments for people with cancer.



MISSION

The Purdue University Center for Cancer Research brings together the best minds from within Purdue University and beyond to study cancers where they start — inside the cell.

Using the combined expertise of scientists from disciplines as varied as engineering and veterinary medicine, biology, and chemistry, the Center for Cancer Research promotes discovery into how cancers develop, progress and respond to treatment.

Our work leads to the advancement of new medicines, early detection and diagnostic methods, more effective treatments, and highly efficient drug delivery systems.

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IMAGING



R. Graham Cooks has developed a tool to help brain surgeons test and more precisely remove cancerous tissue. In a matter of seconds, the Purdue-designed mass spectrometer reveals the location, nature and concentration of residual tumor cells that otherwise could be left behind in the patient.

Ji-Xin Cheng has created a vibrational spectroscopic imaging technology that in two seconds can take images of living cells. It could represent an advanced medical diagnostic tool for the early detection of cancer and other diseases.



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elite scientists
collaborating
with experts
worldwide on cancer
discovery

GENERAL RESEARCH



Collaborating with Purdue engineer **Arvind Raman**, **Robert Geahlen** has developed a high-speed form of atomic force microscopy to image the physical properties of live breast cancer cells, for the first time revealing details about how deactivation of a key protein may lead to metastasis.

Using genetic tools to mimic pancreatic cancer, **Steve Konieczny** is seeking to define the molecular switches that become altered during its earliest stages. His work is leading to new methods for identifying and treating pre-cancerous cells before they mature and multiply.



Three years ago, **Andrea Kasinski** determined that restoration of a particular microRNA has a therapeutic effect on lung cancer in mice. Now she's collaborating with clinicians and Mirna Therapeutics to study the miRNA in a handful of patients around the world. It's the very first clinical trial for a miRNA.

38

years of cancer
research

19

departments on
campus,
driving research
further than one
could do alone

IMMUNOLOGY



Tim Ratliff and his collaborators focus on understanding the impact of inflammation on adult stem cells and how inflammation affects tumor development and progression. In addition, they work to understand how tumors escape from immune destruction.

Chang Kim and his collaborators study mucosal immunology, inflammation and cancer. They probe mechanisms of migration of innate and adaptive immune cells and regulatory pathways controlling mucosal inflammation.



14

active clinical trials
based on Purdue's
basic cancer research

5

discovery groups with
an expansive focus on
various types of cancer