

# Center for Cancer Prevention Research

The **Center for Cancer Prevention Research** traces its origins to 1987, when Allan H. Conney arrived at Rutgers' pharmacy school and began building a strong research department, the Department of Chemical Biology, to specialize in the causes and prevention of cancer. Over the next two decades, the original laboratory recruited an outstanding faculty and nurtured a network of multi-institutional, interdisciplinary research collaborators. Today, the center is among the few research institutions dedicated to the prevention of cancer.

- Chung S. Yang, PhD, *Director*
- Allan H. Conney, PhD, *Associate Director*
- Ah-Ng Tony Kong, PhD, *Associate Director*

The **Ernest Mario School of Pharmacy** is one of the country's leading pharmacy schools and the only pharmacy school in New Jersey. Its curricula include a six-year professional program leading to the PharmD and three graduate programs leading to the PhD. The 85-member faculty includes innovative clinicians and top researchers in the pharmaceutical sciences. The school is a research powerhouse, ranking sixth among the nation's 111 pharmacy schools in research funding from the National Institutes of Health. Learn more at [pharmacy.rutgers.edu](http://pharmacy.rutgers.edu).

- Christopher J. Molloy, PhD, RPh, *Dean and Professor of Pharmacology and Toxicology*

## A Worthy Endeavor

Direct medical costs for cancer treatment in the United States total over \$93 billion each year, yet the cure remains elusive and far too many lives are lost. Science is offering new hope, both in the great strides toward understanding the mechanisms of cancer and the great promise of preventing the genesis of cancer. This is the work of the Center for Cancer Prevention Research. Our goal, as scientists, is to exert worldwide impact through groundbreaking research. But our dream, as spouses, parents, and grandparents, is to secure a future without cancer.

To learn more about our current research and what role you might play in furthering our efforts, contact us at

Center for Cancer Prevention Research  
Ernest Mario School of Pharmacy  
Rutgers, The State University of New Jersey  
164 Frelinghuysen Road  
Piscataway, NJ 08854  
phone: 732-445-3400, ext. 244  
email: [csyang@rci.rutgers.edu](mailto:csyang@rci.rutgers.edu)  
web: [pharmacy.rutgers.edu/content/chemical\\_biology\\_ccpr](http://pharmacy.rutgers.edu/content/chemical_biology_ccpr)

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RU-0910-0082/1M



# It's better to prevent cancer than to treat it.

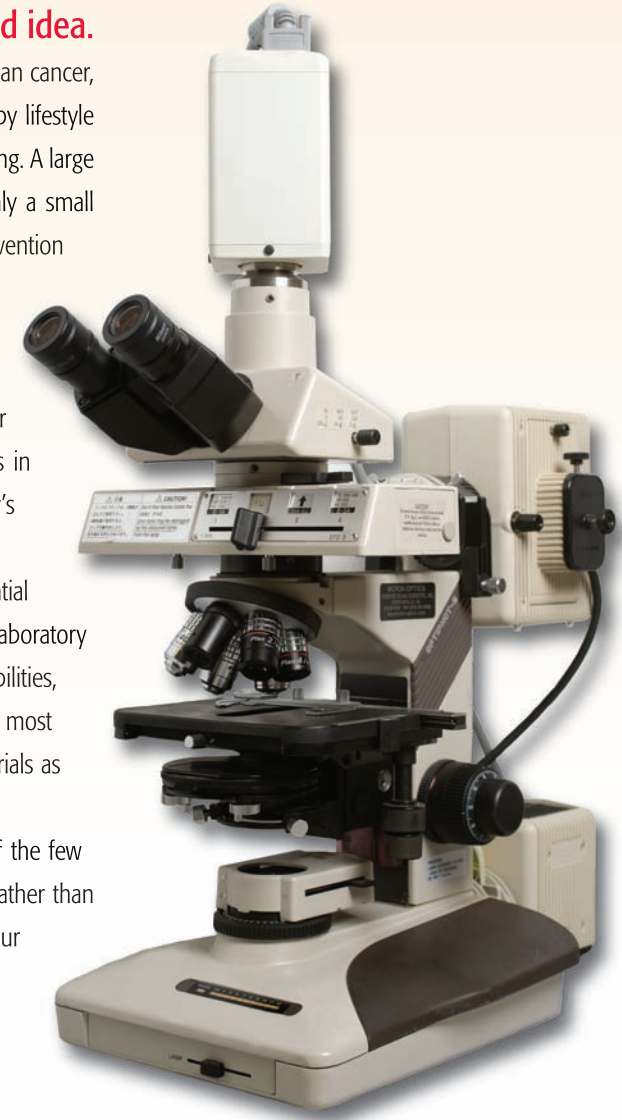
## It's a simple statement, but a bold idea.

Although genetics play an important role in human cancer, most cancers—two-thirds or more—are caused by lifestyle choices like poor diet, lack of exercise, and smoking. A large portion of the cancer toll is preventable, yet only a small portion of cancer research dollars goes to prevention research; the rest supports treatment research.

At Rutgers' **Center for Cancer Prevention Research**, our approach is different.

We are looking for novel ways to stop cancer before it strikes. Naturally occurring compounds in the foods we eat, agents that activate the body's chemical defenses, and genes that provide targets for early intervention all hold great potential against cancer. Our scientists conduct the basic laboratory research to identify and understand new possibilities, then work with partner institutions to move the most promising ones into human cancer prevention trials as quickly as possible.

We were one of the first and remain one of the few research centers dedicated to the prevention—rather than the treatment—of cancer. Discoveries made in our labs have already played a part in reducing the burden of cancer, with greater contributions yet to come.



*More than 12 million people worldwide learn they have serious cancers each year.  
About two-thirds of these cancers could be prevented.*

**RUTGERS**  
Ernest Mario School  
of Pharmacy

## Starting from a Pharmaceutical Perspective

As a research center at the Ernest Mario School of Pharmacy of Rutgers, The State University of New Jersey, the core of our work is in the pharmaceutical and biological sciences. At the same time, from our location on Rutgers' high-tech science campus, we collaborate with colleagues across the university—in genetics, chemistry, molecular biology, food science, psychology, and more—to bring a multidisciplinary energy to our research. Our collaborations also stretch beyond Rutgers, to industry labs, health care centers, and other academic research groups across the United States and around the world.

Our expertise in the pharmaceutical and biological sciences makes the center uniquely positioned to understand how various chemical compounds might work within the human body to fend off cancer. We have pioneered the study of dietary constituents that have cancer-preventive properties, including calcium, green tea, caffeine, curcumin, vitamins D and E, and omega-3 fatty acids. We have also shown that exercise has profound anticancer effects and the effects are even greater when combined with certain dietary constituents or drugs. We have discovered that drugs commonly used to relieve arthritis and lower cholesterol can also block cancer. We have identified genetic and molecular mechanisms that provide promising targets for both cancer prevention and treatment.

## A Renowned Staff of Scholar-Teachers

The center's two dozen-plus research associates are recognized nationally and internationally for their innovative work. Their insights have direct implications for cancers of the skin, colon, esophagus, head and neck, lung, breast, prostate, and pancreas, among others. Between 2004 and 2009, they attracted more than \$30 million in federal and state research funding.

As scientists *and* teachers, the center's associates are educating the next generation of cancer researchers as well as the future pharmacists who will guide the public in lowering their cancer risk through diet, exercise, and healthy lifestyles.



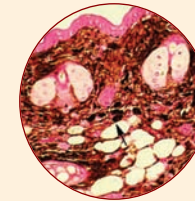
## From Bench to Bedside

Our mission is to move basic science from the laboratory to the medical setting, where it can be put to work saving lives. While our primary focus is on cancer prevention, the possibilities we explore frequently hold equal promise for treatment breakthroughs. Thus, our translational approach—research that “translates” from basic science to practical application—leads to findings that may prevent, slow, or treat existing cancers. Cancer-fighting interventions based on the center's research are being tested today, in clinical trials with real patients. Read on for a few examples.

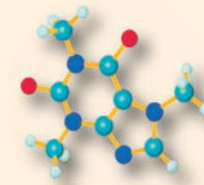
*We study how cancer starts and how it can be stopped, with the constant goal of moving from basic research to clinical trials as quickly as possible.*

## Our scientists have discovered ...

**A gene that contributes to the development of melanoma.** Now a drug that acts against that gene is under study for the treatment of patients with melanoma.



**Two common drugs delay tumor progression.** Now patients who have undergone treatment for prostate cancer and have relapsed are receiving the two-drug combo—celecoxib (Celebrex®), an anti-inflammatory agent, and atorvastatin (Lipitor®), a cholesterol fighter—as an approach for slowing or preventing tumor growth.



**Caffeine kills sun-damaged skin cells.** Now caffeine is being tested as a novel approach for the prevention of skin cancer in humans.

**Green tea inhibits tumor development.**

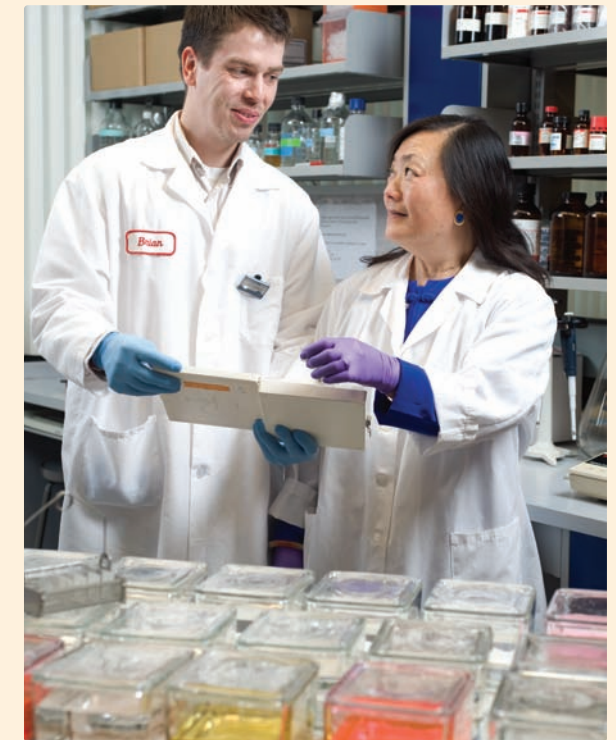
Now patients with colon cancer and with head and neck cancer are being treated with green tea polyphenols in two clinical trials.



**A specific form of vitamin E inhibits tumor formation.** Now clinical trials are examining the effects of a  $\gamma$ -tocopherol-rich vitamin E preparation in patients with colon cancer and with prostate cancer.



**Caffeine and exercise may inhibit sunlight-induced skin cancer.** Now this combination is being tested as an approach to prevent sunlight-induced skin cancer, the most prevalent cancer in the United States—with more than one million cases per year.



## Partners in Prevention

The Center for Cancer Prevention Research collaborates with many respected institutions, conducting basic research and helping to implement, monitor, and analyze clinical trials of potential cancer prevention and treatment strategies. Our many partners include representatives of the academic, health care, and pharmaceutical communities, such as:

- Cancer Institute of New Jersey
- Robert Wood Johnson University Hospital
- Mayo Clinic
- University of Medicine and Dentistry of New Jersey—Robert Wood Johnson Medical School and School of Public Health
- University of Minnesota
- Northwestern University
- Emory University
- North Carolina Central University
- University of Washington
- University of Oklahoma
- Tufts University
- M.D. Anderson Cancer Center

*Compounds that prevent cancer tomorrow  
may also treat cancer today.*