

UANews

Published on UANews (<http://uanews.org>)

By Daniel Stolte, University Communications | April 22, 2013

From treating cancer to preventing cancer - this is the vision of Tucson-based company Cancer Prevention Pharmaceuticals, co-founded by former UA professor Eugene Gerner.



Cancer Prevention Pharmaceuticals, Inc., or CPP, has helped launch a phase-III clinical trial to test the efficacy of a combination drug that has shown promise of preventing colon cancer. CPP was founded in 2008 to apply decades' worth of systematic, basic research led by University of Arizona professor emeritus Eugene Gerner and former UA researcher Frank Meyskens to improve clinical practice.

During the trial, which is funded by the **National Cancer Institute**, 1,340 colon cancer survivors will receive daily treatment for three years to prevent the occurrence of colorectal cancer or high-risk polyps and compare the effects to a placebo group.

"Our long-term vision is to change the status quo from treating and managing cancer to intervening before cancer manifests and prevent it altogether," said Jeffrey Jacob, founding CEO of Cancer Prevention Pharmaceuticals. "The idea is just like in the approach to heart disease: Instead of waiting for heart attack or stroke to happen, we give patients cholesterol-lowering or blood pressure-lowering medicine to prevent those events from happening in the first place."

In addition to colorectal cancer, the same treatment approach has shown promise in preventing prostate, skin and possibly other cancers as well. Colorectal cancer affects about 1 million people in the U.S., Jacob said.

"Our two-drug-combination targets different pathways that are important in cancer development," explained CPP co-founder Eugene Gerner, who retired from the department of cellular and molecular medicine in the UA **College of Medicine** last year. "Over years of research using cell cultures and mouse models in the lab, we have been able to systematically elucidate the molecular pathways underlying cancer formation and how to target them with those drugs."

This work then was successfully translated to the clinic with the help of the NCI and various research partners.

One, Sulindac, belongs to of the class of non-steroidal anti-inflammatory drugs, with aspirin being a notable member. Sulindac targets the inflammatory pathway. The other, called Eflornithine, homes in on the polyamine pathway. Driven by growth factors, this pathway is essential in stimulating growth and development in most living organisms.

In his research, which has been continuously funded by the NCI since 1975, Gerner collaborated closely with Meyskens, who was a professor of medicine at the UA College of Medicine before he moved to University of California, Irvine. Both were members of the **Arizona Cancer Center**. Even as professor emeritus, Gerner still does research in his lab at the UA and is an active member of the UA's **BIO5 Institute**.

Gerner said his group focused on colon cancer in the 1980s because it was the one frequent type of human cancer for which a substantial amount of genetic information became available, especially with the Human Genome Project.

"Our approach strictly focuses on the biological mechanisms and the genetics," Gerner said. "I came to the UA in 1974 and initially worked in cancer therapeutics. By the mid 1980s, I was discouraged by the lack of progress that was being made at the time. So we set out to understand the underlying processes that lead to cancer, such as the roles of various

growth factors and cancer-promoting genes.

According to Jacob, the company's current focus is on intervening with patients facing elevated risk, including cancer survivors or individuals with a genetic predisposition, with the ultimate goal of expand the same approach to other forms of cancer and the general at-risk population.

Gerner said that many experts estimate at least 70 percent of colorectal cancer are associated with risk factors such as weight gain and a diet high in fat and beef but low in fiber.

"However, there are a substantial number of individuals who eat perfect diets and exercise, but still face a risk from mutations that arise spontaneously or they inherited," he said.

"Our drugs are targeting growth and inflammatory pathways leading to the synthesis of polyamines, but diets contain polyamines also. Our company is looking at ways to manage overall risk, including diet, genetic factors and exercise."

In other clinical trials, CPP is also testing the therapy on people with known genetic predispositions to colorectal cancer such as patients with Familial Adenomatous Polyposis, a genetic disease that comes with a nearly 100 percent risk of developing colon cancer before age 40.

"The only option for most people with FAP is to remove the entire colon in their late teens or early twenties," Gerner said, "and they still face a lifetime of surgeries to control the condition."

Neuroblastoma, a pediatric cancer and the second leading killer of children with cancer, according to Jacob, is another avenue the company is pursuing in a clinical trial.

In addition to drug therapies, CPP is considering partnerships with food companies to develop certain types of "functional foods" or "medical foods" that would exploit the same science to reduce cancer risk in certain demographics. The company is also developing new diagnostic approaches to identify people who are at higher risk for cancer who could ultimately benefit from specific therapies or medical foods.

"Part of our ability to reduce risk is having means to assess that risk and evaluate the effectiveness of drugs we are using," Gerner added. "For example, some drugs work better in some people than in others. The goal is to develop diagnostics that tell us about an individual's susceptibility."

David Alberts, director of the UA's Arizona Cancer Center, said: "Gene Gerner and Frank Meyskens, both absolutely brilliant scientists, have transformed exciting laboratory research findings into medications that have the great potential of saving hundreds of thousands of lives. We are very proud that the University of Arizona Cancer Center served as the incubator for this powerful, new chemoprevention technology for colorectal cancer and treatment for recurrent neuroblastoma."

Extra Info:

Colon and rectal cancer patients interested in enrolling in the clinical trial, **Preventing Adenomas of the Colon with Eflonithine and Sulindac (PACES)**, can ask their physicians about enrolling in the study, which is available at 145 locations nationwide.

Tech Launch Arizona, a technology commercialization center at the UA, celebrated its grand opening and new strategic plan during an event on April 1. A presidential cabinet-level unit with oversight of the University's **Office of Technology Transfer, Office of Corporate and Business Relations** and the **Office of University Research Parks**, Tech Launch Arizona was created to help consolidate and amplify the University's efforts to move knowledge and inventions developed by UA researchers to market.

Source URL: <http://uanews.org/story/ua-spin-off-to-test-cancer-preventing-drug-combination>

Links:

[1] <http://uanews.org/story/ua-spin-off-to-test-cancer-preventing-drug-combination>