

Kim Irwin (kirwin@mednet.ucla.edu)
(310) 206-2805

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UCLA GRANT TO DEVELOP MEDICAL COUNTERMEASURES AGAINST RADIOLOGICAL AND NUCLEAR ATTACKS RENEWED

Radiation Oncologists Seeking to Discover Compounds that will Help Mitigate Damage to Immune System

Researchers in the Radiation Oncology Department at UCLA's Jonsson Comprehensive Cancer Center have received a \$14 million grant to develop countermeasures that will help treat damage caused by radiological or nuclear threats such as a dirty bomb attack.

The grant, awarded by the National Institute of Allergy and Infectious Diseases, is a renewal of a five-year \$14 million grant first awarded to UCLA in 2005. The grant is part of a major research effort to develop medical products to diagnose, prevent and treat the short- and long-term consequences of radiation exposure after a radiological or nuclear terrorist attack.

UCLA is one of seven institutions nationwide, and the only one on the West Coast, that are part of the countermeasures initiative. Scientist William McBride, a professor of radiation oncology and a Jonsson Cancer Center researcher, serves as UCLA's principal investigator.

Thus far, more than \$105 million have been awarded to the Centers for Countermeasures Against Radiation program. The program supports research in radiation biology, as well as projects to develop diagnostic tools to measure radiation exposure and therapeutics to treat resulting tissue damage. At UCLA, researchers are focusing on identifying compounds that would mitigate the damage that radiation exposure does to the immune system, McBride said.

"The blood and bone marrow are most likely to be the most damaged in a nuclear accident or terrorist situation," said McBride, who has long studied the effects of radiation on the body's immune system and other normal tissues. "After Chernobyl, many people died of bone marrow failure so it is vital to find ways to protect the public from harm and discover ways to diminish the damage."

The research, McBride said, also might result in new strategies to reduce the organ and tissue damage that occurs due to radiation exposure during cancer therapy.

McBride and his team, which includes Jonsson Cancer Center researchers Genhong Cheng and Robert Schiestl, have already identified several compounds that may be effective in combatting radiation damage, include the antibiotic tetracycline. They will continue to search for other compounds, using high through-put screening, that may also be useful.

After identifying a potential compound, McBride and his team study it in the lab, first in cells in Petri dishes and then later, in animal models.

“We’re looking more at agents that will help mitigate damage to the blood and bone marrow because there is a dearth of such agents now,” McBride said. “We need agents with minimal toxicities that we can stockpile in the event that we need to treat tens or hundreds of thousands of people.”

One treatment option would be a bone marrow transplant, but that is “impossible to do on such as large scale,” McBride said.

In all, the grant has supported or partially supported the work of about 50 UCLA scientists.

Dr. Michael Steinberg, chairman of the Department of Radiation Oncology at UCLA, said McBride and his team are academic leaders in understanding the biological effects of radiation on normal tissues and that the renewal of this grant will further expand that knowledge into other areas.

“Their work in this area not only adds to the body of knowledge regarding protection from radiation effects from a terrorist attack, but it also has applications in the care of patients with cancer,” Steinberg said.

The other grants were awarded to Albert Einstein College of Medicine, the University of Rochester Medical Center and Columbia University in New York, Dartmouth College in New Hampshire, Duke University in North Carolina, the University of Pittsburgh Medical Center and

UCLA's Jonsson Comprehensive Cancer Center has more than 240 researchers and clinicians engaged in disease research, prevention, detection, control, treatment and education. One of the nation's largest comprehensive cancer centers, the Jonsson center is dedicated to promoting research and translating basic science into leading-edge clinical studies. In July 2010, the Jonsson Cancer Center was named among the top 10 cancer centers nationwide by U.S. News & World Report, a ranking it has held for 10 of the last 11 years. For more information on the Jonsson Cancer Center, visit our website at <http://www.cancer.ucla.edu>.