

UAMS News Bureau

Office of Communications & Marketing
4301 West Markham # 890
Little Rock, AR 72205-7199

uamshealth.com/news



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Media Contacts:

Leslie W. Taylor, 501-686-8998
Wireless phone: 501-951-7260
leslie@uams.edu

Liz Caldwell, 501-686-8995
Wireless phone: 501-350-4364
liz@uams.edu

**UAMS Radiation Oncologist Awarded \$1.86 Million
National Cancer Institute Grant**

LITTLE ROCK — A five-year grant of more than \$1.86 million from the National Cancer Institute (NCI) to the University of Arkansas for Medical Sciences (UAMS) will fund research aimed at reducing long-term neurological damage caused by a common cancer treatment regimen.

Fen Xia, M.D., Ph.D., professor and chair of the Department of Radiation Oncology at the University of Arkansas for Medical Sciences (UAMS), received the grant for her project titled “The Novel Role of Sirtuin 2 in Regulation of Transcription-Associated DNA Damage Repair.”

“Platinum-based chemotherapy is commonly used alongside radiation therapy to treat several types of cancer. However, this treatment combination can cause permanent neurological damage, which presents a daunting challenge when treating cancer patients,” said Xia, who specializes in tumors of the central nervous system.

Platinum-based drugs have the chemical element platinum as part of their molecular structure. Irradiation and/or platinum-based chemotherapy is commonly used to treat head and neck cancers, ovarian cancer, cervical cancer, and colon and rectal cancer, among others. Head and neck cancers can include tumors in the mouth, nose, throat, sinuses and other areas in the head and neck.

Nerve damage caused by radiation and/or chemotherapy can include irreversible weakness, numbness and pain in the hands and feet, known as peripheral neuropathy.

Xia’s research examines possible ways to alleviate or prevent this damage from occurring, while maintaining the therapy’s effectiveness and improving the patients’ quality of life.

“We don’t fully understand the reason why some patients experience neurological damage due to this combination of cancer therapies, and, unfortunately, we lack drugs that selectively protect neuron survival without compromising their cancer-fighting

ability,” said Xia, who also serves as director of the UAMS Radiation Oncology Residency Program.

Her preliminary study discovered a connection between the function of the protein Sirtuin 2 (SIRT2) with repair of DNA damage caused by radiation and/or platinum-based chemotherapy.

SIRT2 is involved in diverse cellular processes including metabolism, response to oxidative stress and tumor suppression.

“Our research goal is to better understand the biological role of SIRT2 and the molecular mechanisms that regulate the repair of damaged DNA caused by radiation and/or chemotherapy. If we can determine the different connection between DNA repair in cancer cells’ growth and normal neuronal cells’ survival, we may be able to find new ways to treat cancer and to spare patients from treatment caused toxicity,” Xia said.

She expects the study to lay the foundation for future research investigating novel strategies to alleviate and/or prevent neurotoxicity in cancer patients who need radiation and chemotherapy.

UAMS is the state’s only health sciences university, with colleges of Medicine, Nursing, Pharmacy, Health Professions and Public Health; a graduate school; hospital; a main campus in Little Rock; a Northwest Arkansas regional campus in Fayetteville; a statewide network of regional campuses; and seven institutes: the Winthrop P. Rockefeller Cancer Institute, Jackson T. Stephens Spine & Neurosciences Institute, Harvey & Bernice Jones Eye Institute, Psychiatric Research Institute, Donald W. Reynolds Institute on Aging, Translational Research Institute and Institute for Digital Health & Innovation. UAMS includes UAMS Health, a statewide health system that encompasses all of UAMS’ clinical enterprise including its hospital, regional clinics and clinics it operates or staffs in cooperation with other providers. UAMS is the only adult Level 1 trauma center in the state. *U.S. News & World Report* named UAMS Medical Center the state’s Best Hospital; ranked its ear, nose and throat program among the top 50 nationwide; and named six areas as high performing — cancer, colon cancer surgery, heart failure, hip replacement, knee replacement and lung cancer surgery. UAMS has 2,727 students, 870 medical residents and five dental residents. It is the state’s largest public employer with more than 10,000 employees, including 1,200 physicians who provide care to patients at UAMS, its regional campuses, Arkansas Children’s Hospital, the VA Medical Center and Baptist Health. Visit www.uams.edu or www.uamshealth.com. Find us on [Facebook](#), [Twitter](#), [YouTube](#) or [Instagram](#).

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