

WEI CHEN, UNIVERSITY OF CENTRAL OKLAHOMA

Scientist finds new approach in cancer fight

When an email from the National Institutes of Health (NIH) landed in his inbox on the eve of spring break last March, Wei R. Chen, Ph.D., refused to open it.

He read the subject line, which told him that the score of his NIH R01 grant application was ready for viewing. He put it aside.

Not today, Chen told himself. He didn't want to deal with the anticipated rejection before the academic break because his funding applications had been rejected many times before.

"I didn't want to ruin my spring break," he said.

Chen is professor of biomedical engineering and dean of the College of Mathematics and Science at the University of Central Oklahoma.

Over the past two decades, he and his collaborators have worked to develop a novel treatment for late-stage, metastatic cancers that combines laser irradiation and immunotherapy.

"Metastasis causes 90 percent of cancer-related deaths," Chen said. "We are still searching for an effective method for treating metastatic cancers."

Chen and his collaborators developed a treatment method known as laser immunotherapy (LIT). LIT uses the combination of local laser irradiation and the local administration of an immunological stimulant to treat tumors. This induces system-wide, anti-tumor responses within the immune system.

The R01 grant application was submitted to support continued work into the mechanics of laser immunotherapy.

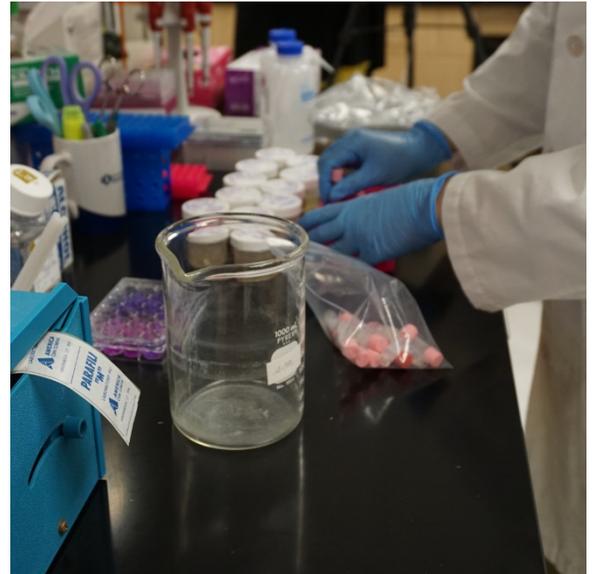
Chen waited a week to open the NIH email because he knew the chances were slim that his application would receive a qualifying score.

"Less than 10 percent of grants get funded, and that is even for the research institutions," Chen said. "It is harder still for institutions like the University of Central Oklahoma, the non-research institutions."

So, it came as a jolt of good news when Chen logged on the NIH website the next weekend and discovered that his application has received such a high score that he was assured of being funded.

The NIH, through its National Cancer Institute, awarded Chen a five-year R01 grant, totaling \$1.34 million, to support the continuation of his work on his cancer treatment method. He is the first scientist at an Oklahoma non-research university to receive an R01 grant, which is considered to be the gold standard of research grants.

Dr. Chen's laser immunotherapy treatment has been used successfully to treat breast cancers in clinical trials in Peru, as well as in a well-documented case involving an Oklahoma man with late-stage metastatic cancer.



“He was diagnosed four years ago with late-stage melanoma,” Dr. Chen said of the patient. “He was given three to six months to live. Then by chance he learned that I’m working on a new method for treating melanoma. He called me and I arranged for my collaborator to treat him with our methodology.

“After several sessions, we not only removed the melanoma on his head, but also destroyed the metastasis in his lungs,” Dr. Chen said. “Now after four years, he is healthy and tumor free.”

Chen’s technology has been licensed by St. Louis-based Immunophotonics Inc., which is working to take the laser immunotherapy into U.S. clinical trials. He also includes UCO students – both graduates and undergraduates – in his research.

Raised in China and trained as a theoretical high-energy particle physicist, Chen received his Ph.D. at the University of Oregon and eventually became an instructor at the Oklahoma School of Science and Mathematics. After a decade at OSSM, he moved to UCO to continue his research into laser immunotherapy.

Support from the Oklahoma Center for the Advancement of Science and Technology (OCAST) has been critical to Dr. Chen’s research.

“OCAST funded me with an Oklahoma Applied Research Grant in 2000, which supported my research and allowed me to perform critical experiments to test the concept of LIT and lay the foundation for further study,” he said.

The NIH grant, awarded in mid-2017, was an extremely rare show of confidence in his research. He is the first Oklahoma scientist at a non-research university to receive a prestigious R01 grant.

“It is very difficult to get funding for biomedical research, particularly at the R01 level,” Chen said. “I’m really fortunate to receive this grant.”

“This R01 grant demonstrates the recognition by biomedical research peers of the importance of laser immunotherapy, of my research network in Oklahoma, as well as of the research capacity at UCO,” Chen said.

[Read the article in the 11-29-17 Oklahoman](#)

[Watch the video](#)