UT Arlington engineering researchers Kyai Nguyen, Jian Yang and JC Chiao were recently presented with grants from the North Texas Cancer Research Foundation to pursue new ways to detect and treat cancer.

Dr. Alfred DiStefano of the Arlington Cancer Center and Jackie Finch, past president of the North Texas Cancer Research Foundation, made the presentations.

"The future of the fight against cancer is in cross-disciplinary research and medicine, and the generous support of the North Texas Cancer Research Foundation is significant. The grants they have awarded will assist researchers like Kyai, Jian, Samir and JC in creating new methods and tools to fight this disease," said College of Engineering Dean J.P. Bardel.

Kyai Nguyen and Jian Yang are associate professors in the Bioengineering Department. Their research is to develop a novel cancer cell-selective nanoparticle system that can both target for imaging and drug delivery to detect and cure prostate cancer. They invented nanoparticles that have a core-shell structure with a magnetic core and covered by a fluorescent biodegradable polymer shell. The magnetic core is for magnetic targeting, MRI imaging, and to produce induced heat for hyperthermia. The biodegradable photoluminescent polymers will serve both as a drug carrier and an optical contrast reagent. The nanoparticles are unique and can address the current challenges in prostate cancer management. The research can also be applied for other cancers such as breast, skin and thyroid cancers.
Samir Iqbal, an assistant professor in the Electrical Engineering Department, uses silicon chips like those used in cell phones and computers to look for cancer cells in blood samples. There are cancer cells in the blood stream of patients long before cancer becomes deadly. At this time, there is no way to fish for these very very few tumor cells. This is a new domain of early cancer detection where we can give a few milliliters of blood in our annual physicals and systems like Samir's can be used to look for cancer. Such early detection could drastically change treatment and may save millions of lives.

JC Chiao is a professor in the Electrical Engineering Department. His project is to develop a microfluidic device to predict cancer metastasis risk. Cancer metastasis is a major reason for fatality of cancers. Using prostate cancer patients' own blood, the device can find out the risk of cancer becoming metastatic. This can help doctors to adjust patients' therapy strategy to make sure the patients receive the most appropriate chemotherapy without having to suffer from the unnecessary side effects. This is a step toward personalized medicine to fight cancer metastasis.