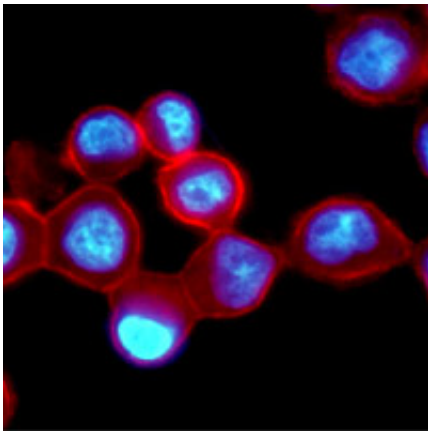


Tech/Emory Get \$19 M for Nanotech Cancer Center

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The National Cancer Institute of the National Institutes of Health has selected Emory University and the Georgia Institute of Technology as one of seven National Centers of Cancer Nanotechnology Excellence.

Image: Human breast cancer cells tagged with quantum dots.

The new center will be named the “Emory-Georgia Tech Nanotechnology Center for Personalized and Predictive Oncology.” It will be housed both in the Emory Winship Cancer Institute (WCI) and on the Georgia Tech campus, and will function as a “discovery accelerator” to integrate nanotechnology into personalized cancer treatments and early detection. The awarded amount is \$3.66 million for

the first year, and is expected to reach \$19-20 million over a five-year period.

With the CCNE designation, Emory and Georgia Tech now possess one of the largest federally funded programs in the U.S. for biomedical nanotechnology, biomolecular and cellular engineering, cancer bioinformatics and biocomputing, translational cancer research, education and training, intellectual property creation, and nanomedicine commercialization and economic development.

“This grant demonstrates the high level of confidence the National Cancer Institute has in Emory University, Georgia Tech and in the State of Georgia,” said Governor Sonny Perdue. “The progress we have made would not have been possible without collaboration among these universities and agencies such as the Georgia Cancer Coalition and the Georgia Research Alliance. The State of Georgia is truly at the cutting edge of biomedical research.”

Nanotechnology is research and technology at the atomic, molecular or macromolecular levels, where particles are measured with a nanometer equivalent to one-billionth of a meter, or 100,000 times smaller than a strand of human hair. Coupled with the new genomic understanding of human cancers, nanotechnology offers promise for much earlier cancer detection, personalized diagnostics for targeted treatment and the creation of new nanoscale drugs for metastatic cancers.

Scientists involved in this grant will accelerate the development of “bioconjugated nanoparticles” for cancer molecular imaging, molecular profiling and personalized therapy. Emory and Georgia Tech scientists already have productive research collaborations using major grants from the NIH to develop several kinds of nanoparticle probes, including “quantum dot” nanoparticles — tiny semiconductor particles that have unique electronic and optical properties due to their size and their highly

compact structure. Quantum dot based probes can act as markers for specific proteins and cells and can be used to study protein-protein interactions in live cells or to detect diseased cells.

“Nanotechnology will eventually apply to all cancers; however, this grant is focusing on breast and prostate cancers because they represent a number of compelling challenges and opportunities in cancer research,” said Bill Todd, President and CEO of the Georgia Cancer Coalition and an important supporter of the grant. “These cancers are among the most common cancers and have high mortality rates, yet there is evidence that with targeted therapies for these types of cancer we can improve survival in Georgia and in the nation.”

The CCNE’s Director and Principal Investigator is Shuming Nie, PhD, the Wallace H. Coulter Distinguished Chair and Professor in the Wallace H. Coulter Department of Biomedical Engineering (BME) at Georgia Tech and Emory. He is also Associate Director for Nanotechnology Bioengineering at Emory’s Winship Cancer Institute, and a Georgia Cancer Coalition Scholar. Co-Principal Investigator is Jonathan Simons, MD, Director of the Winship Cancer Institute and Professor of Materials Science and Engineering at Georgia Tech.

“Nanotechnology enables us to bring together scientists in many disciplines, including basic biomedical and clinical sciences, engineering and computer science,” says Dr. Nie. “The joint Department of Biomedical Engineering at Georgia Tech and Emory University provides a truly collaborative environment for multidisciplinary research in ‘Bio+Nano+Info’, and for translating bioengineering technologies and basic discoveries into clinical medicine. This Center will benefit cancer patients not only in the WCI clinics but also in Georgia and the world by providing new technologies for early detection, more accurate molecular-level diagnosis, and targeted nanoparticle drugs for individualized cancer therapy.”

The Emory/Georgia Tech CCNE will comprise 75 researchers and administrators working at six different institutions across the country. At Emory, the cross-disciplinary teams will include basic researchers in biomedical engineering, pathology, radiology, urology, pharmacology, biochemistry, molecular biology and medical and surgical oncology. Leading Georgia Tech scientists will come from departments of biomedical engineering, electrical and computer engineering, materials science and engineering, chemistry and biochemistry.

"This grant is yet another recognition of the strength created through the innovative partnership between Emory University and Georgia Tech," said Georgia Tech President Wayne Clough. "By combining our talent, resources and creativity, a team is created that can tackle some of the most difficult and resistant problems facing mankind."

The Georgia Tech-Emory partnership is embodied in the joint Georgia Tech/Emory Department of Biomedical Engineering, a unique academic unit that was established in 1997 with Dr. Don Giddens, Dean of the Georgia Tech College of Engineering as its founding chairman, and has rapidly risen to its current US News & World Report ranking as third among 2005 Graduate Programs. In addition to the CCNE grant, this public-private partnership has led to several large-scale NIH awards totaling \$21 million to Emory University and Georgia Tech, including a grant to develop nanoparticle probes for molecular and cellular imaging, a Bioengineering Research Partnerships (BRP) award to correlate biomarkers with prostate cancer behavior, and a U01 center award to develop nanotechnology for molecular analysis and detection of cardiovascular plaques. In addition, Emory's Winship Cancer Institute has been awarded an NCI P20 planning grant, which is the first step in attaining the Georgia's first-ever NCI Comprehensive Cancer Center designation.

"The momentum for this new nanotechnology center comes from the

common vision shared by our cancer investigators in basic science, translational research, engineering, and clinical care at Emory and Georgia Tech,” said Michael M.E. Johns, MD, CEO and director of Emory’s Woodruff Health Sciences Center. “That vision is to reduce the time separating basic discovery in nanotechnology and earlier cancer detection and therapies that will target biomarkers for personalized and predictive therapy.”

“The College of Engineering at Georgia Tech has long been committed to working with the Winship Cancer Institute and the Georgia Cancer Coalition to employ technology to advance research in the battle against cancer,” said Don Giddens, Dean of the Georgia Tech College of Engineering. “This highly competitive CCNE award gives national recognition to the tremendous strengths in nanomedicine that Tech and Emory have, and it is symbolic of the great potential inherent in the Emory-Georgia Tech partnership.”

Dr. Larry McIntire, Chairman of the joint Georgia Tech/Emory Department of Biomedical Engineering, also applauds the synergistic collaborations between Emory and Georgia Tech. “This CCNE grant demonstrates that by combining technology and medicine, Georgia Tech and Emory can move the promise of nanotechnology into the realm of nanomedicine to diagnose and treat specific cancers. The nanomedicine platforms being developed are extremely powerful and have the potential to be applied in many areas of human disease.”

The CCNE application received broad support not only from Emory and Georgia Tech but also from the State of Georgia. Georgia has devoted a significant portion of its tobacco settlement dollars to statewide cancer initiatives through the Georgia Cancer Coalition. Through its program called “Extraordinary Opportunities in Cancer Research,” the GCC committed \$1.1 million in matching funds for the CCNE grant. These funds will be in the form of two additional faculty positions for the

project and seed grants available to Emory and Georgia Tech faculty working on the CCNE. In addition, two of the Georgia Tech project/core leaders (Drs Shumning Nie and May Dongmei Wang) and five of the Emory leading investigators (Drs Robin Bostick, Leland Chung, Milton Datta, Ruth O'Regan, and Dong Shin) are GCC Distinguished Cancer Scholars.

The Georgia Research Alliance committed \$2.5 million in support of the CCNE application for nanotechnology equipment, commercialization and economic development and two GRA Eminent Scholars in cancer nanotechnology.

"This grant is an important step forward in collaborative cancer research," said Dr. Simons. "At the Winship Cancer Institute and Georgia Tech, we are working together to create bioengineering technologies that will lift the entire field of cancer research and cancer care. This collaboration is strengthened by the vision and involvement of the National Cancer Institute and the State of Georgia through the GCC and the GRA, who have worked tirelessly to foster a thriving collaborative research environment."

The center is also supported by strategic alliances with two NCI Specialized Programs of Research Excellence (SPORES), one in breast cancer at Vanderbilt University (Nashville, TN) and the other in human prostate cancer at the University of Washington (Seattle, WA). It will also be supported by collaboration with two NCI Comprehensive Cancer Centers, the Fred Hutchinson Cancer Research Center (Seattle, WA) and the Johns Hopkins Oncology Center (Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, Baltimore, MD). The CCNE is further strengthened by partnerships with non-profit /government organizations (e.g., the American Cancer Society and the Centers for Disease Control and Prevention), with bio/nanotechnology companies (e.g., Beckman-Coulter, Applied Biosystems, Crystalplex Corp, Nanoplex Technologies,

and CRI), and with biocomputing industry leaders (e.g., Hewlett Packard Corp and Microsoft Research).

Emory University President James Wagner will provide institutional support of \$1 million to develop a cancer nanotechnology fellowship program. Georgia Tech President Wayne Clough also will provide \$1 million for purchase of nanotechnology equipment and facilities. Significant in-kind support will also be provided by the Centers for Disease Control and Prevention and the American Cancer Society.

“This CCNE designation will truly make Emory and Georgia Tech destination universities for technology research that can reduce the burden of human cancer and potentially other diseases,” said Dr. Wagner.

Source: Georgia Institute of Technology

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