



# THE 2022 OLIVER MAX GARDNER AWARD

**D**r. Yeoheung Yun is an esteemed professor at North Carolina Agricultural & Technical State University’s College of Engineering. He has spent the past decade making notable contributions to bioengineering education and Alzheimer’s research, improving human welfare locally and nationally.

His dedication to bioengineering education and his cutting-edge innovations have also advanced scientific understanding of the properties of toxic metals in the human body.

Dr. Yun became the first faculty member of N.C. A&T’s bioengineering program when it was established in 2010. N.C. A&T achieved accreditation for its degree program in bioengineering from the Accreditation Board for Engineering and Technology in 2016, becoming the first of America’s Historically Black Colleges and Universities to earn this distinction. Dr. Yun played a pivotal role in developing the curriculum for the degree program, providing a strong model for other HBCUs.

He helped establish two nationally renowned research centers on N.C. A&T’s campus. He is the graduate program director for the university’s bioengineering program and the director of the FIT BEST Laboratory (Fostering Innovation Through Biosystems for Enhanced Scientific Technologies). He previously served as a co-principal investigator for the university’s National Science Foundation Engineering Research Center for Revolutionizing Metallic Biomaterials.

In 2021, Dr. Yun was awarded \$1.43 million from the National Institutes of Health (NIH) to develop a functional mini-brain model by designing a “tissue construct platform” in the fight against Alzheimer’s disease (AD). According to the Alzheimer’s Association, AD affects more than six million Americans and is the most common cause of dementia. Dr. Yun is the principal investigator on the grant and his research team comprises clinician experts in brain disease, immunology, and induced pluripotent stem cells technology. Together, they will create a mini-brain model that replicates three key areas of entry for Alzheimer’s-combating drugs. Dr. Yun’s mini-brain technology, using patient-derived stem cells, will potentially replace animal use for many applications, and will advance personalized medicine.

Dr. Yun has made other significant contributions to the field of bioengineering science and technology, including a brain chip to screen for nerve agent toxicity, biodegradable metallic implantable devices, and an immunotherapy using artificial antigen-presenting cells. All these contributions are supporting research that positively impacts public health and welfare.

Dr. Yun is a pioneer in nanotechnology. Prior to his arrival at N.C. A&T, he established a new mechanism of carbon nanotube array synthesis, growing the longest CNT array in the world at the time. He has extended this work at N.C. A&T under an Office of Naval Research contract, publishing his research and filing two patents. Dr. Yun has published more than 100 research papers in archival journals and an equal number in conference proceedings and has been cited more than 5,000 times in other publications. He also has edited a book and garnered four U.S. patents. In addition to his prolific publication record, his research has successfully transferred to industrial applications, including four Small Business Innovation Research projects, one licensing agreement, and one contract.

Overall, Dr. Yun’s group has averaged \$1 million per year in funding from federal and industry sources for use toward research that impacts the welfare of society.

In addition to his research contributions, Dr. Yun is a committed professor, teaching more than 30 graduate students and training four postdoctoral candidates over the past decade. Dr. Yun’s students are now employed in the federal government, at hospitals such as Yale New Haven Hospital and The Ohio State University Wexner Center, and at biomedical companies such as Medtronic, Procter & Gamble, HUMACYTE, Inc., and Lockheed Martin.

Dr. Yun received his undergraduate and graduate degrees from Chonbuk National University in South Korea and completed his doctoral and postdoctoral work at the University of Cincinnati.

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