**2024 Wallace H. Coulter Award for Healthcare Innovation Award Winner**

**Dr. Ke Cheng**

Alan L. Kaganov Professor of Biomedical Engineering

Columbia University

**Title**: Minimally invasive delivery of therapeutics to the heart with biomaterials and devices

**Abstract**: Delivering therapeutics to the injured heart poses significant challenges due to the need for invasive procedures and the low retention rates of those agents in cardiac tissue. While systemic approaches, such as intravenous infusion, are safe, they struggle to deliver sufficient therapeutic agents to the myocardium. Cardiac tissue engineering strategies, like cardiac patches, typically necessitate open-chest surgeries. In this talk, I will explore minimally invasive methods for delivering therapeutic agents to the heart, utilizing biomaterials and medical devices. Additionally, I will introduce the translational efforts in developing cardiac repair strategies and offer an outlook on the future of those drug-device combination products.

**Bio**: Dr. Cheng is the Alan L. Kaganov Professor of Biomedical Engineering at Columbia University. Prior to Columbia, he was the Randall B. Terry, Jr. Distinguished Professor of Regenerative Medicine at the UNC/NC State Joint Department of Biomedical Engineering. He also served as the Chair of the NIH Biomaterials and Biointerfaces (BMBI) study section (2022-2024) and co-directed the NIH Comparative Molecular Medicine T32 Training Program at NC State University. He is one of the “highly cited researchers” by Clarivate. Dr. Cheng is an elected fellow of the Biomedical Engineering Society (BMES), International Association of Medical and Biological Engineering (IAMBE), the American Institute of Medical and Biological Engineering (AIMBE), and the American Heart Association (AHA). He currently serves as the Editor-in-Chief for Extracellular Vesicle (Elsevier) and an Associate Editor for Bioactive Materials. Intellectual properties from the Cheng Lab have been licensed by five biotech companies, with several products/technologies approved for human clinical trials.