Stanford



Tzu-Yen Huang

Visiting Scholar, Cardiothoracic Surgery - Adult Cardiac Surgery

Bio

BIO

Tzu-Yen Huang, MD, PhD, is a cardiovascular surgeon and clinician-scientist whose work bridges cardiovascular surgery, biomedical engineering, and translational research. He is currently a Visiting Scholar in Cardiothoracic Surgery at Stanford University and an attending physician in Thoracic and Cardiovascular Surgery at Chang Gung Memorial Hospital in Taiwan.

Dr. Huang received his MD from Chung Shan Medical University and completed his PhD training in Biomedical Engineering at National Taiwan University. His clinical practice encompasses coronary and valvular surgery, aortic and endovascular surgery, and mechanical circulatory support, including ECMO and ECPR. His research focuses on translating engineering and biomaterials approaches into solutions for cardiovascular surgery, with particular interests in vascular biomaterials, intimal hyperplasia, extracorporeal heart perfusion, myocardial preservation, and heart transplantation.

His translational biomaterials research has developed drug-functionalized vascular sutures and local drug-delivery platforms designed to modulate thrombosis, vascular smooth muscle cell responses, and neointimal hyperplasia. This work has resulted in peer-reviewed publications and patents, including technologies involving mitomycin C–functionalized polypropylene sutures and bivalirudin-loaded hydrogel systems. His research has been published in journals including the International Journal of Biological Macromolecules, International Journal of Molecular Sciences, World Journal of Emergency Surgery, and BMC Cardiovascular Disorders.

Dr. Huang's work has received recognition from cardiovascular and biomaterials research communities, including the Young Investigator Award of the Taiwan Society of Cardiology, the Asian Pacific Grants for Innovative Research Plans of the Japanese Circulation Society, a Young Investigator Competition Award finalist distinction at ISOMRM, and two Gold Awards at the International Innovation and Invention Competition.

At Stanford, his current research extends this translational engineering approach to cardiac transplantation and ex vivo heart perfusion, with an emphasis on developing physiologically informed perfusion and preservation strategies. His long-term goal is to integrate cardiovascular surgery, engineering, and translational science to develop technologies that improve vascular reconstruction, organ preservation, and outcomes in advanced cardiovascular disease.