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Knight / Professor / Director / Ph.D.

Knights of Ordo Equestris Sancti Sepulcri Hierosolymitani, OESSH

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Prof. Jung-Chih Chen is a Professor and Director of the Institute of Intelligent Bioelectrical Engineering at National Yang Ming Chiao Tung University (NYCU). He also holds joint appointments with the Department of Medicine and the College of Nursing, Department of Electrical and Computer Engineering, Biological Science and Technology, the College of Artificial Intelligence at NYCU, and as well as the Department of Medical Laboratory Science and Biotechnology at National Cheng Kung University (NCKU). His academic appointments reflect his interdisciplinary expertise spanning biomedical engineering, medicine, medical laboratory science, nursing, and artificial intelligence.

Prof. Chen received his B.S. in Chemistry and M.S. in Biomedical Engineering from National Cheng Kung University, and his Ph.D. in Biomedical Engineering from National Taiwan University. His research focuses on biomedical sensing, biomaterials, electrochemical biosensors, and artificial intelligence, with an emphasis on translating emerging technologies into practical healthcare applications.

His recent research has focused particularly on rapid and minimally invasive screening technologies for Alzheimer's disease and early cognitive impairment. His team has developed highly sensitive, low-sample-volume biosensing platforms for detecting key Alzheimer's disease biomarkers, including the plasma $A\beta_{40}/A\beta_{42}$ ratio, p-tau₂₁₇, p-tau₁₈₁, GFAP, and NfL. His research has resulted in multiple international patents and peer-reviewed publications, including a patented approach for Alzheimer's disease screening based on the $A\beta_{40}/A\beta_{42}$ ratio. These technologies are designed to support rapid, portable, and user-oriented testing with potential applications in point-of-care and community healthcare settings.

Prior to his academic career, Prof. Chen served at the National Science Council (2001–2012) and subsequently as a Research Professor at the Medical Device Innovation Center, National Cheng Kung University Hospital (2012–2014). His research contributions have been recognized through publications featured on the covers of leading journals, including *Analytical Chemistry*.

With a strong interdisciplinary foundation and extensive experience connecting engineering with clinical and healthcare needs, Prof. Chen is committed to bridging biomedical engineering, medicine, laboratory diagnostics, and nursing through human-centered innovation. His long-term goal is to develop practical, accessible, and clinically meaningful technologies that can move from the laboratory toward real-world healthcare applications.

Area of Research

Dementia Screening and Therapeutic Technologies, Precision Medicine and Biomedical Sensing, Biomaterials and Bionanotechnology, Biomedical Artificial Intelligence and Smart Healthcare.