

Title –

Engineering Hope with Biomimetic Systems

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Abstract – Biomimetic implant research has progressed rapidly in the recent years fueled by the unique interdisciplinary efforts fusing engineering, medicine, and biology. This interdisciplinary field spans from understanding the highly complex biological systems, to treating/restoring/repairing the lost biological functions such as blindness, paralysis, deafness, and seizure, to building human-machine interface for performance enhancement. Biomimetic implants will offer viable solutions and thus provide *hope* to those with neural disorder diseases, which currently do not have curable solutions but potentially affect very large population of people worldwide. This talk will present the development of the retinal prosthesis, including the creation, technical challenge/barrier, competition, clinical trial, market, regulatory approval as well as its prospective. Importantly, the success reveals the necessity of the vision, creativity, determination, and perseverance as a team, resonating with any major scientific endeavor. The success of the retinal prosthesis suggests that the technology could be applied to other physiological problems. On-going biomimetic implants in my UCLA Lab will be presented.

Short Biography - Wentai Liu, PhD, is a Distinguished Professor of Bioengineering, Electrical and Computer Engineering, Brain Research Institute (BRI), and California NanoSystem Institute (CNSI), also directing the Chan Soon-Shiong Bionic Engineering Research Center at UCLA. His research is in neuroengineering, bioelectronics, brain-machine interface, personalized learning. Since 1988 he has led the retinal prosthesis research to a commercial implant (Argus-II), receiving both CE/Mark in 2011 and USA/FDA market approval in 2013 (http://www.nsf.gov/news/news_summ.jsp?cntn_id=126756). Recently he has been focusing on the recovery of motor function for SCI and motility of GI. He has demonstrated the ability of conducting interdisciplinary research from the conceiving of unmet medical devices to clinical trials and then obtaining the US FDA approval as a commercial device. As a world leader in neural prosthesis, he has received numerous recognitions and awards including NCTU Honorary Doctorate, IEEE Fellow, AIMBE Fellow, RD-100 Top Editor Choice Award, Alcoa Foundation Distinguished Research Award, etc.