潘俊良

國立臺灣大學分子醫學研究所副教授

得獎著作：

- Chun-Liang Pan*,Chiu-Ying Pen,Chun-Hao Chen,Steven L McIntire*, 2011, “Genetic Analysis of Age-Dependent Defects of C. Elegans Touch Receptor Neurons”, *Proceedings of the National Academy of Sciences USA*, 108, 9274-9279.

- Chun-Hao Chen,Albert Lee,Chien-Po Liao,Ya-Wen Liu,Chun-Liang Pan*, 2014, “RHGF-1/PDZ-RhoGEF and Retrograde DLK-1 Signaling Drive Neuronal Remodeling on Microtubule Disassembly”, *Proceedings of the National Academy of Sciences USA*, 111, 16568-16573.

- Hao-Ching Jiang,Jiun-Min Hsu,Chien-Ping Yen,Chi-Chao Chao,Ruey-Hwa Che,Chun-Liang Pan*, 2015, “Neural Activity and CaMKII Protect Mitochondria from Fragmentation in Aging C. Elegans Neurons”, *Proceedings of the National Academy of Sciences USA*, 112, 8768-8773.

得獎簡評：

神經細胞在人體發育及老化的過程中有極大的可塑性，但其調控的分子機制與細胞生理反應至今仍不完全清楚。利用線蟲為研究模式，國立臺灣大學分子醫

學研究所潘俊良博士發現神經細胞的可塑性與其活性息息相關，增強活性可延緩神經細胞老化。他發現神經活性會調控 MEC-4，EGL-19，UNC-43 DRP-1 等分子進而減少細胞老化所造成的粒線體斷裂。另一方面，潘博士發現神經細胞會藉由 RHGF-1 調控細胞微管的分解，在發育過程中調整神經網路的連接。這一系列的研究發表了三篇重要論文在美國國家科學院院刊，對理解神經細胞在發育及老化過程中的可塑性有顯著的貢獻。

得獎人簡歷：

Chun-Liang Pan was born and grew up in Kaohsiung, Taiwan. He obtained his M.D. from National Taiwan University (1996). After residency training at National Taiwan University Hospital and board certified in clinical neurology (1998-2002), he studied his PhD at Helen Wills Neuroscience Institute, the University of California, Berkeley, with a graduate fellowship from the Ministry of Education, Taiwan (2003-2008). Pan then did his postdoctoral training at the University of California, San Francisco (2008-2010). He joined the Institute of Molecular Medicine, National Taiwan University, as an assistant professor in 2010 and was promoted to associated professor in 2015. His research focuses on developmental and aging mechanisms of structural plasticity of the nervous system. Pan had been awarded the Chen-Yuan Lee Memorial Medical Award (2015) and the Young Scientist Prize of Tien-Te Lee Biomedical Awards (2016).

得獎著作簡介：

The Pan lab uses the nematode *Caenorhabditis elegans* as a genetic model to study (1) aging of the nervous system and (2) developmental mechanisms that confer structural plasticity to the neurons. Pan's group was the first to document age-dependent changes in *C. elegans* neurons and identified neural activity as a critical factor that maintained axonal and mitochondrial integrity during aging (Pan et al., 2011; Jiang et al., 2015). They showed that neural activity inhibited DRP-1, a mitochondrial fission protein, in a CaMKII-dependent fashion (Jiang et al., 2015). As CaMKII and mitochondria are broadly implicated in brain aging and neurodegenerative diseases, respectively, their work thus provided a genetic framework to study neuronal aging mechanisms that could be conserved in higher organisms. In addition, they identified a novel microtubules-associated protein,

RHGF-1, that was activated upon microtubule damage, resulting in structural remodeling of the injured neuron that consisted of retraction of damaged synapses and growth of existing neurite (Chen at al., 2014). As central reorganization underlies the intractable neuropathic pain syndromes commonly found after peripheral nerve injuries, this study may shed light on the structural and molecular basis of neuropathic pain.

得獎感言：

This award is a tremendous honor that recognizes the collective efforts of our lab. I want to thank my lab members, my family, my mentors Dr. Sung-Tsang Hsieh of the National Taiwan University, Dr. Gian Garriga at Berkeley and Dr. Steve McIntire at UCSF (now at Stanford) for their support and love.