

## Shih-Hwa Chiou



**Section Chair, Department of Ophthalmology & Section Chair, Basic Research, Department of Medical Research, Taipei Veterans General Hospital**

**Professor, The Institute of Pharmacology / The Institute of Clinical Medicine & Genomic Center, National Yang-Ming University, Taiwan**

**Adjunct Researcher, Genomics Research Center, Academia Sinica, Taiwan**

### EDUCATION

- M.Sc. School of Medicine, National Defense Medical College. (1987).
- D.Sc. Institute of Clinical Medicine, National Yang-Ming University. (1999).
- Post-Doc. City of Hope Hospital / National Beckman Research Institute, Stem Cell Lab/Bone Marrow Transplant Center, USA. (2002).
- Visiting Researcher Department of Molecular Biochemistry, The Scripps Research Institute, USA. (2007)

### PROFESSIONAL POSITIONS

- Resident/Fellow training, Ophthalmology, Taipei Veterans General Hospital, Taiwan (1994-1998)
- Attending physician, Department of Ophthalmology, TVGH (2000-2002)
- Chief, the section of Ophthalmology, Taoyuan Veterans Hospital (2003-2004)
- Attending physician, Department of Medical Research & Education, TVGH (2005)
- Associate professor, Institute of Clinical Medicine & Medical School, National Yang-Ming University (2006)
- Professor, Institute of Pharmacology/Medical School, National Yang-Ming University (2010-present)
- Section Chair, Basic Research, Department of Medical Research, Taipei Veterans General Hospital (2013-present)

### RESEARCH INTERESTS

- Induced pluripotent stem cells (iPSCs) are a recently developed technology that holds promise for stem cell biology and regenerative medicine. Nuclear reprogramming induced by transcription factors is the resetting of epigenetic landmarks; it leads to the global reversion of the somatic epigenomes to an ESC-like state. However, the mechanisms involved in the posttranslational interaction and modification in reprogramming nuclear remain undetermined. Although the importance of nuclear proteins in epigenetic events has been addressed, little information is available on the functional proteins and

mechanisms that regulate reprogramming and maintain pluripotency. Therefore, it is important to identify novel nuclear factors involved in the regulation of nuclear reprogramming using a proteomic approach, in order to elucidate the complexity of the molecular network in the nucleus during the cellular reprogramming process. We recently discovered that Parp1 and PARylation may act as the major regulator of reprogramming processes and maintenance of stem cell pluripotency, and these regulated networks were in part activated by endogenous c-Myc. Further studies on identifying the PARylation complex, Parp1-related posttranslational modifications, and its cellular functions during nuclear reprogramming, pluripotency, and tumorigenicity. (*J Exp Med.* 2013 Jan. 14;210(1):85-98)

- The involvement of stemness factors in cancer initiation and progression has drawn much attention recently, especially after the finding that introducing 4 stemness factors in somatic cells is able to reprogram the cells back to an embryonic stem cell-like state. Following accumulating data revealing abnormal elevated expression levels of key stemness factors, like Nanog, Oct4, and Sox2, in several types of cancer stem cells, the importance and therapeutic potential of targeting these stemness regulators in cancers has been turned into a research focus. Our current study demonstrated that miR142-3p directly targeted both IL-6 and HMGA2, inhibiting tumor-initiation property through suppressing the IL-6 paracrine loop and HMGA2/Sox2-stemness signaling. Our findings demonstrated that miR142-3p serves as a vital suppressor of IL-6-related GBM aggressiveness. Further studies linking inflammatory cytokines with the epigenetic modification would reveal potential tumorous-autocrine/paracrine circuits and benefit to therapeutic development in malignant cancers, including glioblastoma. (*Molecular Cell* 2013 Dec 12;52(5):693-706)

## HONORS & AWARDS

- Medical Innovation Award, Taipei Veterans General Hospital, Taiwan (*from 1999*).
- Scholarship for MD & PhD program, Academia Sinica, Taiwan (*from 2000-2002*).
- Best Presentation and Publication Award, The Association of Asian Ophthalmologists (*from 2001*).
- Best Paper Award, International Stem Cell Meeting, Taipei, Taiwan (*from 2003*).
- Young Investigator Award, The Annual Meeting of Society of Molecular Imaging, Cologne, Germany (*from 2005*).
- Best Clinical Service Award, Taipei Veterans General Hospital and Executive Yuan (*from 2006*).
- Reviewer, Neuroscience section, National Science Foundation (NSF), USA (*from 2007*).
- Invited speaker, Stem Cell Section, World Ophthalmology Congress (WOC) (*from 2008*).
- Invited speaker, Stem Cell Section, Asian-Pacific Assoc. Ophthalmologist Sydney, Australia (*from 2009*).
- Chairman & Keynote speaker, Cancer Stem Cell Section, 69<sup>th</sup> Annual Meeting, Japan Cancer Association (JCA), Osaka, Japan (*from 2010*).

- Research Achievement Award, Taiwan Pharmacology Research Association, Taiwan (*from 2012*).
- Best Medical Innovation Award – 1st, Taipei Veterans General Hospital, Taiwan (*from 2013*).
- 2<sup>nd</sup> Young Investigator Innovation Award, Taiwan Society for Biochemistry and Molecular Biology. (*from 2013*).
- 9<sup>nd</sup> Lee-Tien Der Young Investigator Award, Taiwan. (*from 2013*).
- Outstanding Research Award of National Science Council (NSC/MOST), Taiwan. (*from 2014*).
- Outstanding Cancer Research Award, Dong-Ta-Cheng Cancer Research Foundation, Taiwan (*from 2014*).
- Best Medical Research Award – 1st, Taipei Veterans General Hospital, Taiwan (*from 2014*).