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**Education**

- 1982-1986 B.S., Zoology, National Taiwan University
- 1989-1994 Ph.D., Physiology, University of Florida

**Research and Professional Positions Held in Chronological Sequence**

- 1991-1994 Adjunct Scientist, Human Genetics Branch, NICHD, NIH
- 1994-1996 Adjunct Scientist, Human Genetics Branch, NICHD, NIH
- 1996-2003 Assistant Research Fellow, Institute of Biological Chemistry, Academia Sinica
- 1999-2003 Adjunct Assistant Professor, Graduate Institute of Biochemical Sciences, National Taiwan University
- 2003-2008 Associate Research Fellow, Institute of Biological Chemistry, Academia Sinica
- 2003-2004 Assistant Professor, Graduate Institute of Biochemical Sciences, National Taiwan University
- 2004-2010 Associate Professor, Graduate Institute of Biochemical Sciences, National Taiwan University
- 2008- Research Fellow, Institute of Biological Chemistry, Academia Sinica
- 2010- Professor, Graduate Institute of Biochemical Sciences, National Taiwan University

**Research Interests**

The research goal of my laboratory aims at unraveling the molecular mechanism underlying the stemness and differentiation of adult stem cells. Human placentas are composed of villous tissues, which harbor trophoblast stem (TS) cells capable of differentiating into multinucleate syncytiotrophoblasts (STBs) and migratory extravillous trophoblasts (EVTs). Indeed, placental cytotrophoblasts (CTBs) exhibit TS cell-like characteristics. GCM1 transcription factor is a master regulator for STB and EVT differentiation. GCM1 activity is positively and negatively regulated by cAMP and hypoxia signaling pathways, respectively. By manipulation of signaling pathways, we are able to establish trophoblast stem (TS) cells from CTBs. The placenta is the primary site of nutrient and gas exchange between mother and fetus. Placental dysfunction is associated with the pregnancy disorders preeclampsia (PE) and intrauterine growth retardation (IUGR). The undernourished fetuses due to dysfunctional placenta will have a higher risk of developing coronary heart disease, type 2 diabetes, stroke, and hypertension in their adulthood. We are currently working on (1) the upstream regulators of trophoblast stemness, (2) the induction of TS cells into multipotent stem cells for autologous cell therapy, and (3) the pathogenesis of PE and IUGR using TS cells as a model system.

### **Major Honors and Awards**

- 2006 Junior Research Investigators Award, Academia Sinica, Taiwan
- 2007 Outstanding Research Award, National Science Council, Taiwan