


---

## BIOGRAPHICAL SKETCH

---

NAME Chi-Hong Chao (趙啟宏)	
POSITION TITLE Assistant Professor, Department of Biological Science and Technology, National Chiao Tung University	

EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	MM/YY	FIELD OF STUDY
Department of Biological Sciences, National Sun Yat-Sen University, Kaohsiung, Taiwan.	B.S.	06/1999	Biological Sciences
Institute of Biochemistry and Molecular Biology, National Yang-Ming University, Taipei, Taiwan	Ph.D.	04/2006	Biochemistry, Molecular Biology, Cancer Biology

### A. Personal Statement

My current research is focused on revealing critical molecular mechanisms in which the tumor microenvironment regulates the epigenetic status and metabolic alternation of breast cancer stem cells. Our data show that aberrant stimuli from tumor microenvironments could lead to cancer progression and cancer stem cell expansion through modulating microRNA expression. Since these microRNAs play an important role in controlling metabolism and cancer stem cell properties, my research interests also include developing novel target therapy by using Adeno-associated virus (AAV)-mediated microRNA delivery. Future studies in this field are expected to open a new avenue by elucidating the link between epigenetics, metabolism and cancer stem cells. I believe that identifying the key regulatory mechanisms or components which promote cancer stem cells will unravel important therapeutic targets for eradicating the genesis of cancer and prevent cancer progression.

## **B. Positions and Honors**

### **Positions and Employment**

2007/11 - 2008/11	Postdoctoral fellow, Institute of Biochemistry and Molecular Biology, National Yang-Ming University
2009/01 – 2012/06	Postdoctoral fellow, Department of Molecular and Cellular Oncology, UT MD Anderson Cancer Center, Houston, Texas, USA
2012/07 – 2015/01	Postdoctoral fellow, Department of Basic Medical Sciences, College of Veterinary Medicine, Purdue University, West Lafayette, Indiana, USA
2015/07 – Present	Assistant Professor, Department of Biological Science and Technology, National Chiao Tung University

### **Awards and Other Professional Activities:**

1. The First Place Award-Basic Science by Post-Doc/ Medical Fellow/ Research Tech, 2014 Annual Cancer Research Day, Indiana University Simon Cancer Center (2014)
2. Scholarship to Study Abroad. National Science Council, Taiwan (2008)
3. The 16th Annual Wang Ming-Ning Award, Wang Ming-Ning Memorial Foundation, Taiwan (2006)
4. The 3th Annual Lin Jung-Yaw Thesis Award, Lin Jung-Yaw Academic Research Foundation, Taiwan (2006)
5. Outstanding Award, 2006 Annual Thesis Competition of the National Yang- Ming University, Taipei, Taiwan (2006)
6. Dr. Chien-Tien Hsu' Award. The Chinese Society of Cell and Molecular Biology, Taiwan (2006)
7. Excellence Award, the 3th Annual Thesis Competition of the Taiwan Society of Biochemistry and Molecular biology, Taiwan (2003)
8. Outstanding Award, 2002 Annual Thesis Competition of the National Yang-Ming University, Taipei, Taiwan (2002)
9. Honorary member of the Phi Dau Phi Scholastic Honor Society of the Republic of China (1999)

### **Professional Membership**

1. American Association of Cancer Research

## **C. Publications**

1. Zhang L., **Chao C.H.**, Jaeger L.A., Papp A.B., and Machaty Z. (2018). Calcium oscillations in fertilized pig oocytes are associated with repetitive interactions between STIM1 and ORAI1. *Biology of Reproduction*, 7(4), 510-519

2. Tsai T.Y., Wang W.T., Li H.K., Chen W.J., Tsai Y.H., **Chao CH**, and Lee Y.H. W. (2017). RNA helicase DDX3 maintains lipid homeostasis through upregulation of the microsomal triglyceride transfer protein by interacting with HNF4 and SHP. *Scientific Report* 7, 41452
3. Wang W.T., Tsai T.Y., **Chao C.H.**, Lai B.Y., and Lee, Y.H.W. (2015). Y-box binding protein 1 stabilizes hepatitis C virus NS5A via phosphorylation-mediated interaction with NS5A to regulate viral propagation. *Journal of Virology*, 89(22): 11584-602.
4. **Chao C.H.**, Chang C.H., Wu M.J., Ko H.W., Wang D., Hung M.C., Yang J.Y., Chang J.C. (2014). MicroRNA-205 signaling regulates mammary stem cell fate and tumorigenesis. *Journal of Clinical investigation*, 124(7): 3093-106
5. Li C.W., Xia W, Huo L, Lim S.O., Wu Y., Hsu J.L., **Chao C.H.**, Yamaguchi H., Yang N.K., Ding Q., Wang Y., Lai Y.J., Labaff A.M., Wu T.J., Lin B.R., Yang M.H., Hortobagyi G.N., Hung M.C. (2012) Epithelial-Mesenchymal Transition Induced by TNF- $\alpha$  Requires NF- $\kappa$ B-Mediated Transcriptional Upregulation of Twist1. *Cancer Research* 72(5): 1290-1300
6. Chang C.J., Yang J.Y, Xia W., Chen C.T., Xie X., **Chao C.H.**, Woodward W.A., Hortobagyi G. N., and Hung M.C. (2011) EZH2 promotes expansion of breast tumor initiating cells through activation of RAF1- $\beta$ -catenin signaling. *Cancer Cell* 19(1): 86-100
7. **Chao C.H.** \*, Chang C.J. \*, Xia W., Yang J.Y., Xiong Y., Li C.W., Yu W.H., Rehman S. K., Hsu J.L., Lee H.H., Liu M., Chen C.T., Yu D., and Hung M.C. (2011) p53 regulates epithelial-mesenchymal transition (EMT) and stem cell properties through modulation of miRNAs. *Nature Cell Biology* 13(3): 317-323 (\***Equal contribution. High-lighted by Faculty 1000**)
8. Chang C.J., Yang J.Y, Xia W., Chen C.T., Xie X., **Chao C.H.**, Woodward W.A., Hortobagyi G. N., and Hung M.C. (2011) EZH2 promotes expansion of breast tumor initiating cells through activation of RAF1-b-catenin signaling. *Cancer Cell* 19(1): 86-100
9. Hsu, K.W., Hsieh R.H., Lee, Y.H.W., **Chao, C.H.**, Wu, K.J., Tseng, M.J., and Yeh, T.S. (2008) The activated Notch1 receptor cooperates with  $\alpha$ -enolase and MBP-1 in modulating c-myc activity. *Molecular and Cellular Biology* 28:4829-4842
10. Shih, J.W., Tsai, T.Y., **Chao, C.H.**, and Lee, Y.H.W. (2008) Candidate tumor suppressor DDX3 RNA helicase specifically represses cap-dependent translation by acting as an eIF4E inhibitory protein. *Oncogene* 27: 700-714.
11. **Chao, C.H.**, Chen, C.M., Cheng, P.L., Shih, J.W., Tsou, A.P., and Lee, Y.H.W. (2006) DDX3, A DEAD box RNA helicase with tumor growth-suppressive property and transcriptional regulation activity of the p21waf1/cip1 promoter, is a candidate tumor suppressor. *Cancer Research* 66(13): 6579-6588.
12. Cheng, P.L., Chang, M.H., **Chao, C.H.**, Lee, Y.H.W. (2004) Hepatitis C viral proteins interact with Smad3 and differentially regulate the TGF-b/Smad3-mediated transcriptional activation. *Oncogene* 23: 7821-7838.

13. Chen, S.Y., Kao, C.F., Chen, C.M., Shih, C.M., Hsu, M.J., **Chao, C.H.**, Wang, S.H., You, L.R., and Lee, Y.H.W. (2003). Mechanisms for inhibition of hepatitis B virus gene expression and replication by hepatitis C virus core protein. *J. Biol. Chem.* 278, 591-607.

**E. Research Support (2013-2017)**

MOST 105-2320-B-009-004 (Taiwan) 2016/06/01-2017/07/31

MOST

Role of microRNA-200c deficiency-induced metabolic reprogramming in regulation of breast cancer stem cell properties

MOST 106-2320-B-009-002 (Taiwan) 2017/08/01-2018/07/31

MOST

Metabolic role of microRNA-200c in triple-negative breast cancer