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Research interest:

Our research goal is using RNA as a diagnostic and therapeutic target/tool in cancer. Tumor metastasis is a key step in facilitating cancer progression, which is theoretically an irreversible and lethal process. We mainly focus on investigating the mechanism of how cancer cells acquire the capacity to metastasize along with the possible therapeutic and diagnostic strategies. Cellular functions rely on fine-tuned regulation from DNA to RNA to protein (central dogma). As a carrier for genetic information, RNA has long been widely-recognized as a messenger for protein coding. For recent decades, a large number of accumulating research has identified new functions of noncoding RNAs (miRNA, lincRNA, circRNA, etc.), such as gene silencing, epigenetic, and protein modification. We devote ourselves to understanding the regulation of RNA processing and the resulting impact in cancer. Since most noncoding RNAs act as RNA-protein complexes (RNPs), we focus on studying the pathophysiological roles of RNA and RNA-binding protein in human cancer.

Primary Appointment

Assistant Professor, 2012/08 - present, Department of Medical Laboratory Science and Biotechnology, National Cheng-Kung University

Dual Appointment

Assistant Professor, 2012/08 - present, Institute of Basic Medical Sciences, National Cheng-Kung University

Research Field

1. Non-coding RNA and RNA-binding protein
2. Cancer biomarker
3. Precision oncology

Selected Publications - Serving as a Principal Investigator:

Refereed Paper (*corresponding author):

1. Hui-Huang Lai, Jie-Ning Li, Ming-Yang Wang, Hsin-Yi Huang, Carlo M. Croce, Hui-Lung Sun, Yu-Jhen Lyu, Jui-Wen Kang, Ching-Feng Chiu, Mien-Chie Hung, Hiroshi I. Suzuki, **Pai-Sheng Chen***. HIF-1 α promotes autophagic proteolysis of Dicer and enhances tumor metastasis. *J Clin Invest*. 2018;128(2):625–643. doi:10.1172/JCI89212.
2. Hui-Huang Lai, **Pai-Sheng Chen***. Dual mechanism of Dicer downregulation facilitates cancer metastasis. *Molecular & Cellular Oncology*. 2018 Aug 24;5(5):e1472056. doi: 10.1080/23723556.2018.1472056. eCollection 2018.
3. Hui-Huang Lai, Li-Jyuan Lin, Liang-Yi Hung and **Pai-Sheng Chen***. Role of Dicer in regulating oxaliplatin resistance of colon cancer cells. *Biochem Biophys Res Commun*. 2018. 506:87-93. pii: S0006-291X(18)32227-7. doi: 10.1016/j.bbrc.2018.10.071. [Epub ahead of print].
4. Hui-Huang Lai, Chih-Wei Li, Chih-Chen Hong, Hung-Yu Sun, Ching-Feng Chiu, Da-Liang Ou*, **Pai-Sheng Chen***. TARBP2-mediated destabilization of Nanog overcomes sorafenib resistance in hepatocellular carcinoma. *Molecular Oncology*. 2019 Jan 18. doi: 10.1002/1878-0261.12449. [Epub ahead of print]
5. Ming-Yang Wang*, Hsin-Yi Huang, Yao-Lung Kuo, Chiao Lo, Hung-Yu Sun, Yu-Jhen Lyu, Bo-Rong Chen, Jie-Ning Li, **Pai-Sheng Chen***. TARBP2-Enhanced Resistance During Tamoxifen Treatment in Breast Cancer. *Cancers*. 2019, 11(2), 210; doi.org/10.3390/cancers11020210.

Seminar Invitation:

6. **Pai-Sheng Chen***. A noncanonical HIF-1 α pathway for metastasis control. 第 13 屆海峽兩岸細胞生物學學術研討會 2018/07/18-22
(Invited speaker)

Book Chapter:

7. **Pai-Sheng Chen***. Regulation of Selective Proteolysis in Cancer. *The Ubiquitin/Proteasome System*. In production. Matthew Summers,

editor, IntechOpen, London, UNITED KINGDOM. ISBN 978-953-51-7766-

1 (Invited book chapter)

Conference Paper:

8. Chih-Wei Li, Hui-Huang Lai, Da-Liang Ou, **Pai-Sheng Chen***. Role of TARBP2 in regulating sorafenib resistance of hepatocellular carcinoma cells. 2017 The 32rd Joint Annual Conference of Biomedical Science
9. Jie-Ning Li, Yao-Lung Kuo, Wen-Hui Ku, Yu-Jhan Lu, Ming-Yang Wang, **Pai-Sheng Chen***. Membrane-anchored E-cadherin/Ago2 complex promote non-canonical miRNA biogenesis of miR-451a. American society of biochemistry and molecular biology, Experimental Biology meeting. 2018/04/24
10. Yao-Lung Kuo, Jie-Ning Li, Yi-Ting Chen, Ming-Yang Wang, **Pai-Sheng Chen***. Prognostic value of snoRNA U50A and its regulatory function in breast cancer. Taiwan Surgical Association 2018 Annual meeting. 2018/03/18
11. Yao-Lung Kuo, Jie-Ning Li, Yi-Ting Chen, Ming-Yang Wang, **Pai-Sheng Chen***. Small nucleolar RNAs as novel biomarkers for breast cancer. European Breast Cancer Conference. 2018/3/21-23
12. Wen-Hui Ku, Jie-Ning Li, **Pai-Sheng Chen***. Role of RRP6 in breast cancer. 2018 The 33rd Joint Annual Conference of Biomedical Science
13. Hei Chen, Yu-Jhen Lyu, Yao-Lung Kuo, Tzu-Fun Fu, **Pai-Sheng Chen***. The TRBP-targeting drug screening identified Chinese herbs that sensitize breast cancer cells to tamoxifen treatment. 2018 The 33rd Joint Annual Conference of Biomedical Science

Patent:

14. Using TRBP as a biomarker for hormone therapy resistance. **Pai-Sheng Chen**, Jie-Ning Li, Ming-Yang Wang, Yao-Lung Kuo. US provisional patent, Application number 62/641,387.
15. Detecting snoRNAs expression for breast cancer diagnosis and prediction of prognosis. **Pai-Sheng Chen**, Jie-Ning Li, Yao-Lung Kuo US provisional patent, Application number 62/641,385.

Experience/Service

Advisor and Advisory Committees:

Advisor, Hui-Huang Lai, Ph.D., 09/2013 – 04/2018
Advisor, Jie-Ning Li, Ph.D., 09/2014 – present
Advisor, Chih-Wei Li, M.S., 09/2015 – 03/2018
Advisor, Wen-Hui Ku, M.S., 09/2016 – 07/2018
Advisor, Hei Chen, M.S., 09/2016 – present
Advisor, Yu-Chih Chen, M.S., 09/2017 – present
Member, Shu-Ching Tang, M.S., 06/2016
Member, Yi-Chieh Chang, M.S., 07/2016
Member, Wei-En Weng, M.S., 07/2017
Member, Shu-Wei Kao, M.S., 07/2017
Member, Yung-Chieh Chang, Ph.D., 03/2017 – present
Member, I-Chen Hsieh, M.S., 07/2018
Member, Ting-Yu Lu, M.S., 07/2018
Member, Hsuan-Yu Shen, M.S., 07/2018
Member, Sheng-Han Lin, M.S., 07/2018
Member, Shu-Ching Lin, M.S., 07/2018
Member, Wan-Chen Hsieh, M.S., 07/2018
Member, Yu-Hsuan Tsai, M.S., 07/2018

Extramural Committee Activities:

International Journal Reviewer

Oncogene
Journal of Experimental and Clinical Cancer Research
European Journal of Pharmacology
Brain Research
Experimental and Molecular Pathology
Biomarkers and Genomic Medicine
Pathology - Research and Practice
Oncotarget

International Journal Editor

Lead Guest Editor, Journal of Oncology