
BIOGRAPHICAL SKETCHNAME: **Jia-Ren Lin**

Updated: 2016/10/06

eRA COMMONS USER NAME (credential, e.g., agency login): LIN.JIAREN

POSITION TITLE: **Postdoctoral fellow, Harvard Medical School**EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
National Taiwan University, Taiwan.	B.S.	2000/07	Zoology
National Taiwan University, Taiwan	M.S.	2002/07	Molecular Medicine
Stanford University, U.S.A.	Ph.D.	2012/06	Chemical and Systems Biology

A. Personal Statement

I received my Bachelor's degree from the National Taiwan University (Taipei, Taiwan) in 2000. Later I went on to receive my PhD in 2012 from Stanford University (Stanford, California, USA). During my Ph.D. research, I has received the DOD breast cancer research program traineeship award in 2009. From my PhD study, I have published several high-impact papers about DNA damage response and cell cycle regulation on Molecular Cell, a prestigious journal in the cell & molecular biology field. After graduation, I worked as a Postdoc in Dr. Cimprich's lab at Stanford University. In 2013, I moved to Harvard Medical School and joined the Laboratory of Systems Pharmacology as a postdoc.

I am currently in the Laboratory of Systems Pharmacology for his postdoctoral research. My work is to cultivate contemporary computational and experimental approaches for understanding drug-gene interactions in cancers, with specific focus on developing new imaging methods either for high-content/live-cell imaging in researching settings or multiplexed methods for clinical samples. My goal is to elucidate how genetic changes lead to heterogeneous responses of singling network, and to use this information for developing more effective therapeutic approaches.

B. Positions and Honors**Position and Employment**

2013 - present	Postdoctoral Fellow. Laboratory of Systems Pharmacology, Harvard Medical School
2012 - 2013	Postdoctoral Fellow. Chemical and Systems biology, Stanford University
2004 – 2005	Research Assistant. National Taiwan University, Institute of Molecular Medicine, Taiwan .
2002 – 2004	Research Assistant. Institute of Molecular Biology, Academia Sinica, Taiwan.

Honors

2009-2011	DOD Breast Cancer Research Program Predoctoral Traineeship Award, sponsored by Department of Defense
2006-2008	Quantitative Chemical Biology Training Program, sponsored by Molecular Pharmacology, Stanford University
2006,	Outstanding Student Poster Presentation. Department of Chemical and

2007,2008 Systems Biology Retreat, Stanford.
1999 – 2000 **Undergraduate Research Fellowship** sponsored by National Science
 Council, Taiwan

Scientific presentations

1. Oral presentations

2008 **the Cold Spring Harbor Cell Cycle meeting**; title: “Functional roles of two human Rad5 homologs in preventing damage-induced mutagenesis during DNA replication”
2015 **2nd SBI2 Annual Meeting**, Boston; title: “Highly multiplexed imaging of single cells using a high-throughput cyclic immunofluorescence method”
2016 **the SBI2 high-Content Meeting**, Boston; title: “A highly multiplexed, high-content imaging platform for probing immuno-oncology in liquid and tissue samples”
2016 **the Life Science Seminar by Leica**, Boston; title: “Probing tumor heterogeneity and immune infiltration with Cyclic Immunofluorescence (CyclIF), a robust, multiplexed imaging method”

2. Poster presentations

2009 **3rd ASM Conference on DNA Repair and Mutagenesis**
2015 **the International Conference on Systems Biology of Human Disease, Boston**
2016 **the International Conference on Systems Biology of Human Disease, Boston**

C. Contribution to Science

1. I developed a method to achieve high multiplexed single-cell imaging with cyclic immunofluorescence (CyclIF), a simple and versatile procedure in which four-color staining alternates with chemical inactivation of fluorophores to progressively build a multi-channel image. I also demonstrate that live and fixed-cell imaging can be combined to exploit the advantages of both. In addition, CyclIF data can be analyzed using conventional imaging software or the algorithms recently developed for high-dimensional data analysis & visualization. Altogether, this method will lead to many new venues for different research fields.

- **Jia-Ren Lin**, Mohammad Fallahi-Sichani, and Peter K Sorger. Highly multiplexed high-throughput imaging of single-cell using CyclIF cyclic immunofluorescence, *Nat. Comm.* **2015**, vol 6 8390
- **Jia-Ren Lin**, Mohammad Fallahi-Sichani, Jia-Yun Chen and Peter K Sorger. Cyclic Immunofluorescence (CyclIF), A highly Multiplexed Method for Single-Cell Imaging, *Current Protocols in Chemical Biology* **2016** in press

2. During my PhD and postdoc at Stanford, I study of the regulations of mutagenesis during damaged DNA replication, specifically focusing on the functions of post-replication repair (PRR) pathway. My research reveals a novel mechanism that cells differentially utilize HLTf and SHPRH for different forms of DNA damage through coordinating the two main branches of PRR to choose the proper bypass mechanism for minimizing mutagenesis. Furthermore, I also identified a new role for monoubiquitination in controlling Rad18 function and suggest that damage-specific deubiquitination promotes a switch from Rad18•Ub-Rad18 complexes to the Rad18-SHPRH complexes necessary for error-free lesion bypass in cells.

- **Jia-Ren Lin**, Zeman MK, Freire R, Cimprich KA. DNA Damage Alters the Ubiquitination State of Rad18 to Regulate Its Function and Its Assembly into DNA Damage Tolerance Complexes, *J Cell Biol.* **2014** 206(2): 183-197.
- **Jia-Ren Lin**, Zeman MK, Chen JY, Yee MC, Cimprich KA. SHPRH and HLTf act in a damage-specific manner to coordinate different forms of postreplication repair and prevent mutagenesis. *Mol. Cell.* **2011** 42(2):237-49.

3. The other part of my PhD project was to study the process of oncogene-induced senescence with a focus on how cell-to-cell variability in oncogenic activity is linked to different cellular fates via time-lapse imaging and single-cell quantification. I helped to discover the roles of two disease-related genes, DyrK1a and Nek8 in regulating cell cycle length and DNA damage response during S-phase.

- Chen JY, **Jia-Ren Lin**, Tsai FC, and Meyer T. Dosage of Dyrk1a controls a decision for cell cycle exit by co-regulation of cyclin D1 and p21 levels. *Mol. Cell.* **2013** 52(1):87-100.
- Choi HJ, **Jia-Ren Lin**, Vannier J, Saats GG, Kile AC, Paulsen RD, Manning DK, Beier DR, Giles RH, Boulton SJ, Cimprich KA. The ciliopathy-associated protein Nek8/NPHP9 acts with ATR to regulate the replication stress response. *Mol. Cell.* **2013** 51(4):423-439.
- Chen JY, **Jia-Ren Lin**, Cimprich KA, Meyer T. A two dimensional ERK-AKT signaling code for an NGF-triggered cell fate decision. *Mol. Cell.* **2012** 45(2):196-209.

4. My works in National Taiwan University was to investigations of the cellular function of two cytoskeleton associated genes, DAP kinase and a novel gene eIF3k. I identified that myosin regulatory light chain II as the in vitro and in vivo kinase substrate for DAP kinase. I also helped to reveals the function of eIF3k to relieve the caspase-sequestration effect of K8/K18, thereby increasing the availability of caspases to their non-keratin-residing substrates.

- Lin YM, Chen YR, **Jia-Ren Lin**, Wang WJ, Inoko A, Inagaki M, Wu YC, Chen RH. eIF3k regulates apoptosis in epithelial cells by releasing caspase 3 from keratin-containing inclusions. *J Cell Sci.* **2008** 121(14):2382-93.
- Chen CH, Wang WJ, Kuo JC, Tsai HC, **Jia-Ren Lin**, and Chen RH. Bi-directional signals transduced by DAPK-ERK interaction promote the apoptotic effect of DAPK. *EMBO J.* **2005** 24, 294-304.
- Kuo JC, **Jia-Ren Lin**, Staddon JM, Hosoya H, Chen RH. Uncoordinated regulation of stress fibers and focal adhesions by DAP kinase. *J. Cell Sci.* 2003 116, 4777-90

Complete List of Published Work

<http://www.ncbi.nlm.nih.gov/myncbi/collections/bibliography/48235938/?reload=publicURL>
<https://scholar.google.com.tw/citations?user=5lqUMGMAAAAJ&hl=zh-TW>

D. Research Support

U54 HL127365-01 (PI: Peter K. Sorger)

Award Dates: 09/10/2014-06/30/2020

Sponsor: National Institutes of Health

Title: Pharmacologic Response Signatures and Disease Mechanism

Summary: This project uses imaging, multiplex biochemical assays and measures of cell state to develop multi-factorial signatures of cellular responses to established and investigational anti-cancer drugs.

Role: Postdoctoral Scholar