

Curriculum Vitae

Xuedong Liu

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EDUCATION:

September 1995-
August 2000 Postdoctoral Fellow
M.I.T. Whitehead Institute for Biomedical Research,
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September 1988-
May 1994 University of Wisconsin-Madison, Madison, Wisconsin.
Ph.D. in Genetics, May 1994
Thesis Advisor: Janet E. Mertz

September 1986 -
June 1988 Institute of Microbiology, Chinese Academy
of Sciences, Beijing, P.R.C.
M.S. graduate student in Molecular Genetics

September, 1982 -
June 1986 Shandong University, Jinan, P.R.C.
B.S. Microbiology, June 1986

PROFESSIONAL ACTIVITIES:

July 2011-
Present Professor
Department of Chemistry and Biochemistry
University of Colorado-Boulder
Research topic: Cell and ubiquitin signaling in cancer and Parkinson's
Diseases

September 2006-
2011 Associate Professor
Department of Chemistry and Biochemistry
University of Colorado-Boulder
Research topic: TGF- β signaling, Ubiquitin system and Mps1 kinase

2010-
Visiting Associate Professor
Department of Chemical and Systems Biology
Stanford University
Research topic: Systems Biology

September 2000-
August 2006 Assistant Professor
Department of Chemistry and Biochemistry
University of Colorado-Boulder
Research topic: TGF- β signaling and Proteolysis

September 1995-
August 2000 Postdoctoral fellow with Dr. Harvey F. Lodish
Whitehead Institute for Biomedical Research and M.I.T.

Research topic: TGF- β signal transduction pathway

July 1990-
August 1995

Predocctoral student with Dr. Janet E. Mertz
McArdle Laboratory for Cancer Research,
University of Wisconsin-Madison
Research topic: Identification and characterization of *cis*-
acting and *trans*-acting factors involved in intron-dependent
and intron-independent gene expression.

January 1986-
June 1988

Masters student with Dr. Xue Yugu
Institute of Microbiology, Chinese Academy of Sciences,
Beijing, P.R.C.
Research topic: Molecular genetics of *Streptomyces*;
transcription and gene cloning.

HONORS AND AWARDS:

2013 Inventor of the Year Award, University of Colorado-Boulder
2010 Ruth L. Kirschstein National Research Service Awards (NRSA) for
Individual Senior Fellows
2002 American Cancer Society Young Research Scholar (declined due to
grant redundancy)
1999 Postdoctoral Investigator Award from International Cytokine Society
1999 U.S. patent No. 5914267
1998-2000 Postdoctoral fellowship award from U.S. D.O.D. Army Medical
Research -Breast Cancer Program
1997 U.S. Patent No. 5,686,120
1995-1998 NIH postdoctoral fellowship
1995 Schlimmigen award for best graduate research in Genetics
1988-1990 Wisconsin Alumni Research Foundation Fellowships
1986 Shandong University Outstanding Student Award (summa cum laude)

PUBLICATIONS (84 total):

- [1] C. Zhang, Z. Liu, E. Bunker, A. Ramirez, S. Lee, Y. Peng, A. C. Tan, S. G. Eckhardt, D. A. Chapnick, and **X. Liu**, "Sorafenib Targets the Mitochondrial Electron Transport Chain Complexes and ATP Synthase to Activate the PINK1-Parkin Pathway and Modulate Cellular Drug Response," *J. Biol. Chem.*, p. jbc.M117.783175, Jul. 2017.
- [2] Y. Li, K. Jin, E. Bunker, X. Zhang, X. Luo, **X. Liu**, and B. Hao, "Structural basis of the phosphorylation-independent recognition of cyclin D1 by the SCF^{FBXO31} ubiquitin ligase," *Proc. Natl. Acad. Sci. U. S. A.*, vol. 115, no. 2, 2017.
- [3] S. E. McQuate, A. M. Young, E. Silva-Herzog, E. Bunker, M. Hernandez, F. de Chaumont, **X. Liu**, C. S. Detweiler, and A. E. Palmer, "Long-term live-cell imaging reveals new roles for Salmonella effector proteins SseG and SteA," *Cell. Microbiol.*, vol. 19, no. 1, 2017.
- [4] G. J. Sanchez, P. A. Richmond, E. N. Bunker, S. S. Karman, J. Azofeifa, A. T. Garnett, Q. Xu, G. E. Wheeler, C. M. Toomey, Q. Zhang, R. D. Dowell, and **X. Liu**, "Genome-wide dose-dependent inhibition of histone deacetylases studies reveal their roles in enhancer remodeling and suppression of oncogenic super-enhancers," *Nucleic Acids Res.*, 2017. 10.1093/nar/gkx1225.
- [5] X. Zhang, Y. Ling, Y. Guo, Y. Bai, X. Shi, F. Gong, P. Tan, Y. Zhang, C. Wei, X. He, A. Ramirez, **X. Liu**, C. Cao, H. Zhong, Q. Xu, and R. Z. Ma, "Mps1 kinase regulates tumor cell viability via its novel role in mitochondria," *Cell Death Dis.*, vol. 7, no. 7, 2016.
- [6] C. G. Bennett, K. Riemondy, D. A. Chapnick, E. Bunker, **X. Liu**, S. Kuersten, and R. Yi, "Genome-wide analysis of Musashi-2 targets reveals novel functions in governing epithelial cell migration," *Nucleic Acids Res.*, vol. 44, no. 8, 2016.
- [7] Z. Feng, Z. Zi, and **X. Liu**, *Measuring TGF- β ligand dynamics in culture medium*, vol. 1344. 2016.

- [8] J. T. Nardini, D. A. Chapnick, **X. Liu**, and D. M. Bortz, "Modeling keratinocyte wound healing dynamics: Cell-cell adhesion promotes sustained collective migration," *J. Theor. Biol.*, vol. 400, 2016.
- [9] S. Lee, C. Zhang, and **X. Liu**, "Role of glucose metabolism and ATP in maintaining PINK1 levels during Parkin-mediated mitochondrial damage responses," *J. Biol. Chem.*, vol. 290, no. 2, pp. 904–917, 2015.
- [10] D. A. Chapnick, E. Bunker, and **X. Liu**, "A biosensor for the activity of the 'shedase' TACE (ADAM17) reveals novel and cell type-specific mechanisms of TACE activation," *Sci. Signal.*, vol. 8, no. 365, 2015.
- [11] C. Zhang, S. Lee, Y. Peng, E. Bunker, C. Shen, E. Giaime, J. Shen, J. Shen, Z. Zhou, and **X. Liu**, "A chemical genetic approach to probe the function of PINK1 in regulating mitochondrial dynamics," *Cell Res.*, vol. 25, no. 3, 2015.
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APPROVED PATENTS:

Mertz, J. E. and Liu, X Pre-mRNA processing enhancer and method for intron-independent gene expression. U.S. Patent Nos. 5,686120 (1997) and 5914267 (1999).

Liu, X., A. Phillips D. Ungermannova, C. Nasveschuk and G. Zhang. Macrocyclic Compounds Useful as Inhibitors of Histone Deacetylases. US2011/038246/ US 8754050 B2

Liu, X., G. Zhang, D. F. Chan and A. Piscopio. Heterocyclic hydroxamic acids as protein deacetylase inhibitors and dual protein deacetylase-protein kinase inhibitors and methods of use thereof. US20170081343A1.

INTERNATIONAL AND NATIONAL PATENTS:

Liu, X., A. Phillips D. Ungermannova, C. Nasveschuk and G. Zhang. Macrocyclic Compounds Useful as Inhibitors of Histone Deacetylases. PCT/US2011/038246. National filing countries includes US, Canada, European Union, China, Japan, South Korea, Mexico, Australia and Brazil. CN102946732A, EP2575467A1, US8754050, US20130203681, WO2011150283A1

Liu, X, Gan Zhang, Daniel Chan and Anthony Piscopio. Heterocyclic Hydroxamic acids as protein deacetylase inhibitors and dual protein deacetylase-protein kinase inhibitors and methods of use thereof. PCT/WO2015/175813 A1. Published: Nov 19, 2015. National filing countries includes US, Canada, European Union, China, Japan, South Korea, Mexico, Australia and Brazil.

CURRENT SUPPORT:

1. Title: **SPARTA: Subcellular Pan-Omics for Advanced Rapid Threat Assessment**
PI: William Old; Co-PI: Xuedong Liu W911NF-14-2-0019 Period: 1/1/14-12/31/18
Sponsor: DARPA, Total: \$15,000,000.
2. Title: **High Throughput Screening to Discover Chemical Probes and Pharmacological Agents for Modulating Parkin Activity**
PI: Xuedong Liu Period: 9/1/15-8/31/19 1R01GM113141-01A1
Sponsor: NIH/NIGMS. Amount: \$197,000/year (direct cost)
3. Title: **Development of Analog Sensitive PINK1 Animal Model and iPS Cells**
PI: Xuedong Liu Period: 9/1/15-8/31/18 1R03NS093607-01

Sponsor: NIH/NINDS Amount: \$50,000/year (direct cost)

4. Title: **Quantitative Analysis of Mechanochemical Signaling in Wound Response**
PI: Xuedong Liu Period: 4/1/15-3/31/20 1R01AR068254-01
Sponsor: NIH/NIAMS Amount: \$198,000/year (direct cost)

5. Title: **Epithelial Cell Migration: Model Selection For Mechanistic Model Development**
Co-PI: David Bortz, Co-PI: Xuedong Liu Period: 07/10/2017-5/31/2021 R01GM126559A
Sponsor: NIH Amount: \$385,000/year (direct cost)

TEACHING EXPERIENCE:

Spring 2018	CHEM 5801: Advanced Signal Transduction and Cell Cycle Regulation Taught 5 hours (20 students)
Spring 2016	CHEM 4740: Biochemistry: Central Dogma Taught 40 hours (27 students)
Fall 2014	CHEM 6711: Foundation Course of Quantitative Biology
Fall 2013	CHEM 6711: Foundation Course of Quantitative Biology Taught 20 hours (20 students)
Spring 2013	CHEM 4711: Advanced General Biochemistry I Taught 40 hours (35 students)
Spring 2012	CHEM 5781: Advanced General Biochemistry II Taught 40 hours (17 students)
Spring 2011	MCDB 4426: Cell Signaling and Developmental Regulation Taught 2 hrs (9 students)
Fall 2010	CHEM 5771: Advanced General Biochemistry I Taught 40 hours (11 students)
Spring 2009	CHEM 5781: Advanced General Biochemistry II Taught 40 hours (13 students)
Spring 2009	MCDB 4426: Cell Signaling and Developmental Regulation Taught 2 hrs (15 students)
Spring 2008	CHEM 5801: Advanced Signal Transduction and Cell Cycle Regulation Taught 10 hours (16 students)
Spring 2007	CHEM 5781: Advanced General Biochemistry II Taught 40 hours (17 students)
Spring 2006	CHEM 5801: Advanced Signal Transduction and Cell Cycle Regulation Taught 2 hours (24 students)
Fall 2005	CHEM 4731: Undergraduate General Biochemistry II

Taught 45 hours (67 students)

Fall 2004 **CHEM 4731: Undergraduate General Biochemistry II**
Taught 45 hours (89 students)

Fall 2004 **CHEN 5830: Introduction to Modern Biotechnology**
Taught 1.5 hours (7 students)

Spring 2004 **CHEM 5821: Signaling Journal Club**
Supervised a 1 credit journal club (12 students)

Fall 2003 **CHEM 4731: Undergraduate General Biochemistry II**
Taught 45 hours (56 students)

Fall 2003 **CHEM 5801: Advanced Signal Transduction and
Cell Cycle Regulation**
Taught 3 hours (24 students)

Spring 2003 **CHEM 5821: Signaling Journal Club**
Supervised a 1 credit journal club

Fall 2002 **CHEM 4731: Undergraduate General Biochemistry II**
Taught 45 hours (51 students)

Spring 2002 **CHEM 5781: Advanced General Biochemistry II**
Taught 45 hours (13 students)

Fall 2001 **CHEM 5801: Advanced Signal Transduction and
Cell Cycle Regulation**
Taught 3 hours (20 students)

Fall 2001 **MCDB 3120: Cell Biology**
Taught 2 hrs (97 students)

Fall 2001 **MCDB 4426: Cell Signaling and Developmental Regulation**
Taught 2 hrs (23 students)

Spring 2001 **CHEM 5781: Advanced General Biochemistry II**
Taught 45 hours (14 students)

Fall 2000 **MCDB 4426: Cell Signaling and Developmental Regulation**
Taught 2 hrs (19 students)

Other Teaching Experience:

Fall 1999 Instructor, M.I.T course 7.344 **Origin and Detection of Human
Cancer: Towards the Design of Cancer Alarms** under the supervision
of Dr. Bob Horvitz

1999-1996 Mentor and supervisor of three MIT undergraduate students (UROP)
conducting research in Dr. Harvey Lodish's Laboratory

Spring 1998 Teaching assistant for graduate and undergraduate level
course, **Molecular and Engineering Aspects of
Biotechnology 7.37J/10.441J**, with Dr. Harvey
Lodish and Dr. Daniel Wang at MIT

Summer 1992 Teaching assistant for graduate and undergraduate level

course, **General Genetics**, with Dr. S. Dick at the University of Wisconsin-Madison

Fall 1991

Teaching assistant for undergraduate course, **Heredity**, with Dr. R. Temin at the University of Wisconsin-Madison

SERVICE ACTIVITIES

Departmental and University Service

2017	Undergraduate honor thesis committee
2013-2016	Graduate admissions committee
2012-2013	Department Awards Committee
2011-2013	Department Executive Committee
2011-present	Co-director, Chemical Biology Core Facility at CU.
2010-2011	Department Awards Committee
2010-2011	Department Safety Committee
2010-2011	Institutional Biosafety Committee
2003-2011	Graduate admissions committee
2000-present	Director, Flowcytometry Core Facility, University of Colorado-Boulder
2004-2012	Director of Fluorescence Microscopy Core Facility
2007-2008	Chemistry Department Program Review Committee
2006-2009	Institutional Biosafety Committee
2004-2005	Co-supervising the remodeling project for Fluorescence Microscopy and Single Molecule Fluorescence Laboratory
2001 – present	Co-supervisor for Theresa Nahreini, Cell Culture Core facility, Department of Chemistry and Biochemistry, University of Colorado at Boulder
2001-2002	Junior faculty search committee
2002	Advisor for PreMed students
2000-2002	Undergraduate honors and awards committee

National and International Service

Meeting and Conference Organization

2005	Co-chair, CU-Array Chemistry and Biology Symposium on Protein Kinases
2006	Session Chair, Gordon Conference on Signal Transduction
2009	Section Chair, World Cancer Congress 2009. Beijing China

Editorial Board Member

2001-present	Journal of Cellular and Molecular Medicine
2017-2022	Journal of Biological Chemistry

Reviewer for Journals and Granting Agencies

2017	Ad hoc member of NIH ZCA1 SRB-C (J3) study section
2017	Ad hoc member of NIH ZCA1 SRB-5 (O1) study section
2017	Ad hoc member of NCI Special emphasis panel
2017	Ad hoc member of NIH MABS study section
2017	DOD BRCP review panel
2016	Ad hoc member of NIH ZRG1 ZRG1 CB-T(30) study section
2016	Ad hoc member of NIH ZRG1 BST-T (03) study section
2011-2015	Standing Review Panel member of NIH MABS study section
2014	External Reviewing committee for Beckman Young Scholar Awardees
2014	NIGMS special emphasis panel for P50 ZGM1 BBCB-9 (SB)

2012 Reviewer for National Natural Science Foundation of China (NSFC)
 2012 External Reviewer for NASA Space Radiation Program
 2012 Panel Reviewer for NASA NSCOR Program
 2012 Israel Science Foundation (ISF)
 2011 P01 Review Panel member of NCI's" P01 Special Emphasis Panel
 2010 Ad hoc member of NIH ZRG1 CB-J study section
 2010 Ad hoc member of NIH MABS study section
 2010 External Reviewer for NASA Space Radiation Program
 2010 Ad hoc member of NIH Special Emphasis Panel
 2009 Ad hoc member of NIH ZRG1 CB-J study section
 2009 External Reviewer for NASA Space Radiation Program
 2009 NSF Panel on Drug Discovery and Assay Development
 2008 Ad hoc member of NIH MONC study section
 2007 Reviewer for Cancer Research UK, United Kingdom
 2007 NSF Panel on Drug Discovery and Bioinformatics
 2006 Reviewer for Netherlands Genomics Initiative
 2006 Reviewer for "Lehninger Principle of Biochemistry" 4th Edition by Nelson and Cox
 2006 Israel Science Foundation (ISF)
 2005 Scientific Advisory Board, Cancer League of Colorado
 2005 Reviewer for TV3 Marato Call on Cancer Research, Spain
 2005 Ad hoc member of NIH SKDB study section
 2005 Reviewer for "Biochemistry" 6th Edition by Berg, Tymoczko and Stryer
 2005 Reviewer for Fonds zur Forderung der Wissenschaftlichen Forschung (FWF), Austria
 2004 Ad hoc member of NIH CDF-3 study section
 2004 Reviewer for Cancer Research UK, United Kingdom
 2003 Reviewer for Chinese National Science Foundation
 2003 –present Referee for *Science Signaling*, *Molecular Cell*, *PLoS Biology*, *PNAS*, *Molecular Cellular Biology*, *Molecular Biology of Cell*, *Journal of Biological Chemistry*, *Bioinformatics*, *Cell Cycle*, *Cancer Research*, *Oncogene*, *Cytokine*, *Leukemia Research*, *JCMM*, *Proteomics*, *Analytical Chemistry*, *Bioassays*, *Biotechniques*, *IET Systems Biology*, *BMC Bioinformatics*, *BMC genomics*, *BMC systems biology*, *PLoS ONE*.

BOOK

Xuedong Liu and Meredith Betterton. **Computational Modeling of Signaling Networks**
 Method in Molecular Biology, Springer, Humana Press 2012.