

Curriculum Vitae

Xuedong Liu

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EDUCATION:

September 1995-
August 2000 Postdoctoral Fellow
M.I.T. Whitehead Institute for Biomedical Research,
Advisor: Harvey F. Lodish

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:

2023	College Scholar Award, University of Colorado-Boulder
2019	Lab Venture Challenge Award
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)

OUTREACH EXPERIENCE:

2005-2008	Cofounder and SAB, Proteome Resources
2011-2021	Cofounder, BOD and CSO, OnKure Therapeutics
2017-2019	Chairman of BOD, Peak Precision Medicine
2021-present	Scientific Advisory Board, OnKure Therapeutics
2020-present	Founder, interim President and BOD, Vesicle Therapeutics, Inc
2023-present	Scientific Advisory Board, Vortex Biotechnology Corporation

PUBLICATIONS (99 total):

1. Xu, Q., Zhang, X., Sanchez, G. J., Ramirez, A. T. & Liu, X. Cell type-specific intercellular gene transfer in mammalian cells via transient cell entrapment. *Cell Discov* **8**, 20 (2022).
2. Roy, S., Curry, S. D., Bibbey, M. G., Chapnick, D. A., Liu, X., Goodwin, A. P. & Cha, J. N. Effect of covalent photoconjugation of affibodies to epidermal growth factor receptor (EGFR) on cellular quiescence. *Biotechnol Bioeng* **119**, 187–198 (2022).
3. Ramirez, A., Old, W., Selwood, D. L. & Liu, X. Cannabidiol activates PINK1-Parkin-dependent mitophagy and mitochondrial-derived vesicles. *Eur J Cell Biol* **101**, 151185 (2022).
4. Messenger, D. A., Wheeler, G. E., Liu, X. & Bortz, D. M. Learning anisotropic interaction rules from

- individual trajectories in a heterogeneous cellular population. *J. R. Soc. Interface.* **19**, 20220412 (2022).
5. Liu, Z., Ramirez, A. & Liu, X. Live Cell Imaging of Spatiotemporal Ca²⁺ Fluctuation Responses to Anticancer Drugs. *Methods Mol Biol* **2488**, 227–236 (2022).
 6. Guard, S. E., Chapnick, D. A., Poss, Z. C., Ebmeier, C. C., Jacobsen, J., Nemkov, T., Ball, K. A., Webb, K. J., Simpson, H. L., Coleman, S., Bunker, E., Ramirez, A., Reisz, J. A., Sievers, R., Stowell, M. H. B., D’Alessandro, A., Liu, X. & Old, W. M. Multiomic Analysis Reveals Disruption of Cholesterol Homeostasis by Cannabidiol in Human Cell Lines. *Mol Cell Proteomics* **21**, 100262 (2022).
 7. Diamond, J. R., Pitts, T. M., Ungermannova, D., Nasveschuk, C. G., Zhang, G., Phillips, A. J., Bagby, S. M., Pafford, J., Yacob, B. W., Newton, T. P., Tentler, J. J., Gittleman, B., Hartman, S. J., DeMattei, J. A., Winkler, J. D., Wendt, M. K., Schiemann, W. P., Eckhardt, S. G., Liu, X. & Piscopio, A. D. Preclinical Development of the Class-I-Selective Histone Deacetylase Inhibitor OKI-179 for the Treatment of Solid Tumors. *Mol Cancer Ther* **21**, 397–406 (2022).
 8. Wheeler, G. E., Purkayastha, A., Bunker, E. N., Bortz, D. M. & Liu, X. Protocol for Analysis and Consolidation of TrackMate Outputs for Measuring Two-Dimensional Cell Motility using Nuclear Tracking. *J Vis Exp* (2021). doi:10.3791/62885
 9. Wang, L., Sheng, W., Tan, Z., Ren, Q., Wang, R., Stoika, R., Liu, X., Liu, K., Shang, X. & Jin, M. Treatment of Parkinson’s disease in Zebrafish model with a berberine derivative capable of crossing blood brain barrier, targeting mitochondria, and convenient for bioimaging experiments. *Comp Biochem Physiol C Toxicol Pharmacol* **249**, 109151 (2021).
 10. Klionsky, D. J., et al. Guidelines for the use and interpretation of assays for monitoring autophagy (4th edition)1. *Autophagy* **17**, 1–382 (2021).
 11. Bunker, E. N., Wheeler, G. E., Chapnick, D. A. & Liu, X. Suppression of α -catenin and adherens junctions enhances epithelial cell proliferation and motility via TACE-mediated TGF- α autocrine/paracrine signaling. *Mol Biol Cell* **32**, 348–361 (2021).
 12. Zhang, X., Xu, Q., Zi, Z., Liu, Z., Wan, C., Crisman, L., Shen, J. & Liu, X. Programmable Extracellular Vesicles for Macromolecule Delivery and Genome Modifications. *Dev Cell* **55**, 784–801.e9 (2020).
 13. Roy, S., Brasino, M., Beirne, J. M., Harguindey, A., Chapnick, D. A., Liu, X., Cha, J. N. & Goodwin, A. P. Enzymes Photo-Cross-Linked to Live Cell Receptors Retain Activity and EGFR Inhibition after Both Internalization and Recycling. *Bioconjug Chem* **31**, 104–112 (2020).
 14. Zhang, C., Wang, R., Liu, Z., Bunker, E., Lee, S., Giuntini, M., Chapnick, D. & Liu, X. The plant triterpenoid celastrol blocks PINK1-dependent mitophagy by disrupting PINK1’s association with the mitochondrial protein TOM20. *J Biol Chem* **294**, 7472–7487 (2019).
 15. Wang, X., Waschke, B. C., Woolaver, R. A., Chen, Z., Zhang, G., Piscopio, A. D., Liu, X. & Wang, J. H. Histone Deacetylase Inhibition Sensitizes PD1 Blockade-Resistant B-cell Lymphomas. *Cancer Immunol Res* **7**, 1318–1331 (2019).
 16. Chapnick, D. A., Bunker, E., Liu, X. & Old, W. M. Temporal Metabolite, Ion, and Enzyme Activity Profiling Using Fluorescence Microscopy and Genetically Encoded Biosensors. *Methods Mol. Biol.* **1978**, 343–353 (2019).
 17. Sanchez, G. J., Richmond, P. A., Bunker, E. N., Karman, S. S., Azofeifa, J., Garnett, A. T., Xu, Q., Wheeler, G. E., Toomey, C. M., Zhang, Q., Dowell, R. D. & Liu, X. Genome-wide dose-dependent inhibition of histone deacetylases studies reveal their roles in enhancer remodeling and suppression of oncogenic super-enhancers. *Nucleic Acids Res.* **46**, 1756–1776 (2018).
 18. Li, Y., Jin, K., Bunker, E., Zhang, X., Luo, X., Liu, X. & Hao, B. Structural basis of the phosphorylation-independent recognition of cyclin D1 by the SCF FBXO31 ubiquitin ligase. *Proc. Natl. Acad. Sci.* **115**, 319–324 (2018).
 19. Li, Y., Lee, M., Kim, N., Wu, G., Deng, D., Kim, J. M., Liu, X., Heo, W. D. & Zi, Z. Spatiotemporal Control of TGF- β Signaling with Light. *ACS Synth. Biol.* **7**, 443–451 (2018).
 20. Grim, J. C., Brown, T. E., Aguado, B. A., Chapnick, D. A., Viert, A. L., Liu, X. & Anseth, K. S. A Reversible and Repeatable Thiol-Ene Bioconjugation for Dynamic Patterning of Signaling Proteins in Hydrogels. *ACS Cent Sci* **4**, 909–916 (2018).
 21. Zhang, C., Liu, Z., Bunker, E., Ramirez, A., Lee, S., Peng, Y., Tan, A. C., Eckhardt, S. G., Chapnick,

- D. A. & Liu, X. 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.* **292**, 15105–15120 (2017).
22. McQuate, S. E., Young, A. M., Silva-Herzog, E., Bunker, E., Hernandez, M., de Chaumont, F., Liu, X., Detweiler, C. S. & Palmer, A. E. Long-term live-cell imaging reveals new roles for Salmonella effector proteins SseG and SteA. *Cell. Microbiol.* **19**, (2017).
 23. Zhang, X., Ling, Y., Guo, Y., Bai, Y., Shi, X., Gong, F., Tan, P., Zhang, Y., Wei, C., He, X., Ramirez, A., Liu, X., Cao, C., Zhong, H., Xu, Q. & Ma, R. Z. Mps1 kinase regulates tumor cell viability via its novel role in mitochondria. *Cell Death Dis.* **7**, e2292–e2292 (2016).
 24. Nardini, J. T., Chapnick, D. A., Liu, X. & Bortz, D. M. Modeling keratinocyte wound healing dynamics: Cell-cell adhesion promotes sustained collective migration. *J. Theor. Biol.* **400**, 103–117 (2016).
 25. Feng, Z., Zi, Z. & Liu, X. Measuring TGF- β Ligand Dynamics in Culture Medium. *Methods Mol Biol* **1344**, 379–389 (2016).
 26. Bennett, C. G., Riemondy, K., Chapnick, D. A., Bunker, E., Liu, X., Kuersten, S. & Yi, R. Genome-wide analysis of Musashi-2 targets reveals novel functions in governing epithelial cell migration. *Nucleic Acids Res.* **44**, 3788–3800 (2016).
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 31. Zhang, C., Lee, S., Peng, Y., Bunker, E., Giaime, E., Shen, J., Zhou, Z. & Liu, X. PINK1 triggers autocatalytic activation of parkin to specify cell fate decisions. *Curr. Biol.* **24**, 1854–1865 (2014).
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 34. Zhang, X., Ling, Y., Wang, W., Zhang, Y., Ma, Q., Tan, P., Song, T., Wei, C., Li, P., Liu, X., Zhong, H., Cao, C. & Xu, Q. UV-C irradiation delays mitotic progression by recruiting Mps1 to kinetochores. *Cell Cycle* **12**, 1292–1302 (2013).
 35. Ungermannova, D., Lee, J., Zhang, G., Dallmann, H. G., McHenry, C. S. & Liu, X. High-throughput screening alphascreen assay for identification of small-molecule inhibitors of ubiquitin E3 ligase SCFSkp2-Cks1. *J. Biomol. Screen.* **18**, 910–920 (2013).
 36. Lee, J., Sammond, D. W., Fiorini, Z., Saludes, J. P., Resch, M. G., Hao, B., Wang, W., Yin, H. & Liu, X. Computationally Designed Peptide Inhibitors of the Ubiquitin E3 Ligase SCFFbx4. *ChemBioChem* **14**, 445–451 (2013).
 37. Chapnick, D. A., Jacobsen, J. & Liu, X. The development of a novel high throughput computational tool for studying individual and collective cellular migration. *PLoS One* **8**, (2013).
 38. Zi, Z., Chapnick, D. A. & Liu, X. Dynamics of TGF- β /Smad signaling. *FEBS Lett* **586**, 1921–1928 (2012).
 39. Ungermannova, D., Parker, S. J., Nasveschuk, C. G., Chapnick, D. A., Phillips, A. J., Kuchta, R. D. & Liu, X. Identification and mechanistic studies of a novel ubiquitin E1 inhibitor. *J. Biomol. Screen.* **17**, 421–434 (2012).
 40. Ungermannova, D., Parker, S. J., Nasveschuk, C. G., Wang, W., Quade, B., Zhang, G., Kuchta, R. D., Phillips, A. J. & Liu, X. Largazole and its derivatives selectively inhibit ubiquitin activating

- enzyme (E1). *PLoS One* **7**, (2012).
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 43. Zi, Z., Feng, Z., Chapnick, D. A., Dahl, M., Deng, D., Klipp, E., Moustakas, A. & Liu, X. Quantitative analysis of transient and sustained transforming growth factor- β signaling dynamics. *Mol. Syst. Biol.* **7**, (2011).
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 45. He, J., Ye, J., Cai, Y., Riquelme, C., Liu, J. O., Liu, X., Han, A. & Chen, L. Structure of p300 bound to MEF2 on DNA reveals a mechanism of enhanceosome assembly. *Nucleic Acids Res.* **39**, 4464–4474 (2011).
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 51. Chapnick, D. A. & Liu, X. Analysis of ligand-dependent nuclear accumulation of smads in TGF- β signaling. *Methods Mol. Biol.* **647**, 95–111 (2010).
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 55. Erickson, R. A. & Liu, X. Association of v-erbA with smad4 disrupts TGF- β signaling. *Mol. Biol. Cell* **20**, 1509–1519 (2009).
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 60. Clarke, D. C. & Liu, X. Decoding the quantitative nature of TGF- β /Smad signaling. *Trends Cell Biol.* **18**, 430–442 (2008).
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74. Wang, W., Ungermannova, D., Chen, L. & Liu, X. Molecular and biochemical characterization of the Skp2-Cks1 binding interface. *J. Biol. Chem.* **279**, 51362–51369 (2004).
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- expression through interaction with the PDZ domain protein, GIPC. *J. Biol. Chem.* **276**, 39608–39617 (2001).
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 94. Constantinescu, S. N., Wu, H., Liu, X., Beyer, W., Fallon, A. & Lodish, H. F. The anemic friend virus gp55 envelope protein induces erythroid differentiation in fetal liver colony-forming units-erythroid. *Blood* **91**, 1163–1172 (1998).
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 96. Johnston, S. D., Liu, X., Zuo, F., Eisenbraun, T. L., Wiley, S. R., Kraus, R. J. & Mertz, J. E. Estrogen-related receptor $\alpha 1$ functionally binds as a monomer to extended half-site sequences including ones contained within estrogen-response elements. *Mol. Endocrinol.* **11**, 342–352 (1997).
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 98. Liu, X. & Mertz, J. E. HnRNP L binds a cis-acting RNA sequence element that enables intron-independent gene expression. *Genes Dev.* **9**, 1766–1780 (1995).
 99. Liu, X. & Mertz, J. E. Polyadenylation site selection cannot occur in vivo after excision of the 3'-terminal intron. *Nucleic Acids Res.* **21**, 5256–5263 (1993).

PATENTS:

Issued US Patents

Janet E. Mertz and Xuedong Liu. Pre-mRNA processing enhancer and method for intron-independent gene expression. US5686120, filed May 22, 1995, and issued November 11, 1997.
<https://patents.google.com/patent/US5686120A>.

- Janet E. Mertz and Xuedong Liu. Pre-mRNA processing enhancer and method for intron-independent gene expression. US5914267, filed July 2, 1997, and issued June 22, 1999.
<https://patents.google.com/patent/US5914267A/>.
- Xuedong Liu, Andrew J. Phillips, Dana Ungermannova, Christopher G. Naveschuk, and Gan Zhang. Macrocytic compounds useful as inhibitors of histone deacetylases. US 8754050B2, filed May 26, 2011, and issued June 17, 2014. <https://patents.google.com/patent/US8754050B2/>.
- Xuedong Liu, Andrew J. Phillips, Dana Ungermannova, Christopher G. Naveschuk, and Gan Zhang. Macrocytic compounds useful as inhibitors of histone deacetylases. US9422340B2, filed May 29, 2014, and issued August 23, 2016. <https://patents.google.com/patent/US9422340B2/>.
- Xuedong Liu, Gan Zhang, Daniel Chuen-Fong Chan, and Anthony D Piscopio. Heterocyclic hydroxamic acids as protein deacetylase inhibitors and dual protein deacetylase-protein kinase inhibitors and methods of use thereof. US9840520B2, filed May 14, 2015, and issued December 12, 2017.
<https://patents.google.com/patent/US9840520B2/>.
- Xuedong Liu, Gan Zhang, Daniel Chuen-Fong Chan, and Anthony D Piscopio. Heterocyclic hydroxamic acids as protein deacetylase inhibitors and dual protein deacetylase-protein kinase inhibitors and methods of use thereof. US RE47690, filed May 1, 2018, and issued November 5, 2019.
<https://patents.google.com/patent/USRE47690E1/>.
- Xuedong Liu, Gan Zhang, Daniel Chuen-Fong Chan, and Anthony D Piscopio. Heterocyclic hydroxamic acids as protein deacetylase inhibitors and dual protein deacetylase-protein kinase inhibitors and methods of use thereof. US10508122B2, filed July 19, 2017, and issued December 17, 2019.
<https://patents.google.com/patent/US10508122B2/>.

Issued International Patents

Thirty four granted International Patents in various countries.

Pending/Published US Patent Applications

- Xuedong Liu, Douglas A. Chapnick, William Old, Tristan D. McClure-Begley, and Eric Bunker. Synthetic Fluorescent Protein Biosensors and Use Thereof in Drug Screening Methods. US20210181181A1.
<https://patents.google.com/patent/US20210181181A1/>.
- Xuedong Liu, Douglas Chapnick, and William Old. Novel Systems And Methods For The Therapeutic Use of Cannabinoids or Cannabinoid Analogs to Increase The Lipid Order of Cholesterol Containing Cell Membranes. US20210244686A1. <https://patents.google.com/patent/US20210244686A1/>.
- Xuedong Liu, Gail Eckhardt, Gan Zhang, Conggang Zhang, Zeyu Liu, and Eric Bunker. Methods for predicting cancer patient's clinical response to anti-cancer compounds. US20180306800A1.
<https://patents.google.com/patent/US20180306800A1/>.
- Xuedong Liu, Xiaojuan Zhang, Zeyu Liu, and Quanbin Xu. Programmable Designer Therapeutic Fusogenic Secreted Gectosome Vesicles For Macromolecule Delivery And Genome Modification. US2021/0309702A1. <https://patents.google.com/patent/US20210309702A1/>.

PCT Patent Applications

- Xuedong Liu, Quanbin Xu, and Xiaojuan Zhang. Compositions and methods for the development of tumor metastasis and horizontal gene transfer. WO2023091964A2,
<https://patents.google.com/patent/WO2023091964A2/>.
- Xuedong Liu, Xiaojuan Zhang, Quanbin Xu, Zeyu Liu, and Brandon Black. Tissue and Cell-Type Specific Delivery of Therapeutic Molecules Incorporating Viral and Human Fusogenic Proteins.
 Pending

Provisional Patent Applications

- Xuedong Liu, Marvin Caruthers, Gan Zhang, Kavitha Sudheendran, Xiaojuan Zhang, Yuefeng Gao, Gilson Sanchez, Cedric Stahel, OndYej Kostov, and Balazs Schafer. Novel antisense oligonucleotide

containing hybrid morpholino and DNA/RNA(modified) with phosphorothioate (pS) linker for the treatment of cancer and immune disorders, CU6060B-PPA1.

Xuedong Liu, Rongchun Wang, Gan Zhang, and Elliot Minor. Methods for Synthesizing Novel Triazolopyridine Compounds and Their Use in Treating Diabetes, Disorders of Lipid Metabolism, and Disorders in Mitochondrial Autophagy, CU5207B-PPA2.

Xuedong Liu, Zeyu Liu, Gilson Sanchez, and Gan Zhang. Novel Biomarkers for Antitumor Therapies with Histone Deacetylase Inhibitors (HDACI) and PRDX6 as a Therapeutic Cancer Target, CU6158B-PPA1

CURRENT SUPPORT:

1. Title: **Programmable Microvesicles for Intracellular Macromolecule Delivery**
PI: Xuedong Liu Period: 12/1/21-11/30/25 R01GM144749
Sponsor: NIH/NIGMS Amount: \$216,000/year
2. Title: **Epithelial Cell Migration: Model Selection For Mechanistic Model Development**
PI: David Bortz, Co-PI: Xuedong Liu Period: 07/10/2017-5/31/2023 R01GM126559A
Sponsor: NIH/NIGMS Amount: \$385,000/year
3. Title: **Development of a Gectosome Therapy for Cardiovascular Diseases**
PI: Xuedong Liu Period: 1/1/22-12/31/23 R41HL162212
Sponsor: NIH/NHLBI Amount: \$319,000 total
4. Title: **Neuron Specific mRNA Transfer With Fusogenic Microvesicles**
PI: Xuedong Liu Period: 4/1/22-3/31/24 R03NS120072
Sponsor: NIH/NINDS Amount: \$100,000 (direct)
5. Title: **Developing newly combined therapeutic strategies for mature B cell lymphoma**
PI: Jing Hong Wang Sub-PI: Xuedong Liu Period: 4/1/19-3/31/24 R01CA229174
Sponsor: NIH/NCI Amount: \$200,000 (direct)
6. Title: **Substrate targeting mechanism of a DesCEND pathway**
PI: Bing Hao Sub-PI: Xuedong Liu Period: 8/15/21-8/14/25 R01GM126559A1
Sponsor: NIH/NHLBI Amount: \$382,451 (total)
7. Title: **Targeting GPR146 for the Treatment of Homozygous Familial Hypercholesterolemia**
PI: Donna Peak Sub-PI: Xuedong Liu Period: 5/1/22-4/30/24 R43 HL164233
Sponsor: NIH/NHLBI Amount: \$99,049 (total)
8. Title: **Neurotropic Gectosomes as A CNS Gene Delivery System for AD/ADRD Therapy Development**
PI: Gan Zhang Sub-PI: Xuedong Liu Period: 9/29/22-8/28/23 SBIR Contract
Sponsor: NIH/NIA Amount: \$99,065 (total)
9. Title: **A Novel Mechanism of Action for an Actionable Predictive Biomarker for Antitumor Therapies**
PI: Xuedong Liu Co-PI: Todd Pitts Period: 6/1/23-5/31/24
Sponsor: AB Nexus Program University of Colorado Amount: \$125,000
10. Title: **Programmable Gectosomes for Delivery of Therapeutic Nucleic Acids and Proteins**
PI: Xuedong Liu Period: 4/1/20-3/31/24 DO 2020-2454
Sponsor: Lab Venture Challenge Award-CU Boulder Amount: \$125,000
11. Title: **Task Order H: A New Approach for Anti-Viral Drug Discovery and Development**

PI: Xuedong Liu
Sponsor: State of Colorado OEDIT

Period: 4/1/22-3/31/24

DO 2022-2455
Amount: \$78,000

PAST SUPPORT:

1. Title: **Regulation of Tumor Suppression by TGF-beta in Lung Cancer**
PI: Xuedong Liu Period: 7/1/02-6/30/05 2R45CTRP
Sponsor: Colorado Tobacco Research Program Amount: \$423,572 (direct cost)
2. Title: **Biomedical and Molecular Analysis of the Smad Tumor Suppressor Signaling Complex**
PI: Xuedong Liu Period: 7/1/02-6/30/03
Sponsor: Elsa U. Pardee Foundation Amount: \$75,853 (direct cost)
3. Title: **Identification of the Downstream Transcription Targets of Smad Suppressors in Human Breast Cancer Cells**
PI: Xuedong Liu Period: 10/1/02-7/31/06 DAMD17-02-1-0350
Sponsor: U.S. Army Breast Cancer Research Program Amount: \$300,000 (direct costs)
4. Title: **Regulation of Ski and SnoN by Cell Cycle and TGF-beta**
PI: Xuedong Liu Period: 4/1/02-3/31/07 R01CA95527
Sponsor: National Institute of Health Amount: \$934,000 (direct costs)
5. Title: **Mechanisms of p27Kip Proteolysis in Cancer Cells**
PI: Xuedong Liu Period: 4/1/04-5/31/13 R01CA107098
Sponsor: National Institute of Health Amount: ~\$2,500,000 (direct costs)
6. Title: **Quantitative Analysis of TGF- β /Smad Signaling Dynamics**
PI: Xuedong Liu Period: 4/1/08-3/31/12 R01GM083172
Sponsor: National Institute of General Medicine Amount: \$720,000 (direct cost)
7. Title: **A Systems Biology Analysis of Spindle Checkpoint Signaling**
PI: Xuedong Liu Period: 05/21/2010 - 11/20/2010 F33GM093670
Sponsor: National Institute of General Medicine Amount: \$29,710 (direct cost)
8. Title: **Effective Treatment of Human Tumors with Isoform-specific Histone Deacetylase Inhibitors (HDACi)**
PI: Xuedong Liu, Co-I: Daniel Chan Period: 11/1/2010 - 10/30/2011
Sponsor: University of Colorado Cancer Center Amount: \$50,000 (direct cost)
9. Title: **Identification of Predictive Markers and Genomic Classifiers for Largazole and Paragazole in Breast Cancer**
PI: Xuedong Liu, Co-I: Gail Eckhardt Period: 4/1/2011 - 3/30/2012
Sponsor: University of Colorado Cancer Center Amount: \$50,000 (direct cost)
10. Title: **Largazole as a Novel and Selective Anti-Breast Cancer Agent**
PI: Xuedong Liu Period: 9/17/10-9/16/12 BC095674
Sponsor: U.S. Army Breast Cancer Research Program Amount: \$300,000 (direct cost)
11. Title: **Targeting Mitotic Kinase Mps1 for Cancer Therapy**
PI: Xuedong Liu Period: 4/1/10-5/31/12
Sponsor: State of Colorado and University of Colorado Technology Transfer Office (TTO)
Bioscience Discovery Evaluation Grant Program Amount: \$200,000 ((total)

12. Title: **The ImageXpress Micro Cellular Imaging and Analysis System**
 PI: Xuedong Liu Period: 9/26/11-9/25/12 S10 RR026680-01A1
 Sponsor: National Institute of Health Amount: \$380,120 (total cost)
13. Title: **Biological Applications of Novel Shape-Persistent Three-Dimensional (3-D) Organic Molecular Cage**
 PI: Xuedong Liu, Co-PI: Wei Zhang Period: 4/1/12-3/30/13
 Sponsor: The Butcher Award Amount: \$100,000 (total cost)
14. Title: **Isoform and Profile Specific HDAC Inhibitors for Triple Negative Breast Cancer**
 PI: Xuedong Liu Period: 7/1/2013-7/30/2014.
 Sponsor: Cancer League of Colorado Amount: \$30,000 (total cost)
15. Title: **Development of Proprietary Highly Potent and Selective HDAC6 Inhibitors for Cancer Therapeutics**
 PI: Xuedong Liu Period: 4/1/10-5/31/13 Amount: \$200,000 (total cost)
 Sponsor: Colorado Office of Economic Development and International Trade (OEDIT)
16. 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: \$100,000 (direct cost)
17. Title: **FACSaria Fusion Cell Sorter**
 PI: Xuedong Liu Period: 4/1/16-3/31/17 S10OD021601
 Sponsor: NIH/ORIP Amount: \$197,000/year (direct cost)
18. Title: **SPARTA: Subcellular Pan-Omics for Advanced Rapid Threat Assessment**
 PI: William Old; Co-PI: Xuedong Liu Period: 1/1/14-6/30/20 W911NF-14-2-0019
 Sponsor: DARPA Amount: \$15,000,000.
19. 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 R01GM113141A1
 Sponsor: NIH/NIGMS Amount: \$600,000 (direct cost)
20. Title: **Quantitative Analysis of Mechanochemical Signaling in Wound Response**
 PI: Xuedong Liu Period: 4/1/15-3/31/20 R01AR068254-01
 Sponsor: NIH/NIAMS Amount: ~\$1,100,000 (direct cost)
21. Title: **Opera Phenix High Throughput and High Content Confocal Microscope**
 PI: Xuedong Liu Period: 7/9/18-7/8/2019 S10OD025072-01(Liu)
 Sponsor: NIH/NIGMS Amount: \$ 1,112,715
22. Title: **Affinity-Mediated Covalent Conjugation: A Method for Direct Modification of Specific Receptors on Cell Membranes**
 MPI: Andrew Goodwin, MPI: Xuedong Liu Period: 01//2020 - 12/2022 R21GM135668
 Sponsor: NIH/NIGMS Amount: \$ 275,000

TEACHING EXPERIENCE:

2015-Present BCHM 5821: Signaling Journal Club
 Supervised a 1 credit journal club (~12 students)

Fall 2022 BCHM 4740: Biochemistry: Central Dogma

Taught 40 hours (28 students)

Fall 2021 **BCHM 4740: Biochemistry: Central Dogma**
Taught 40 hours (27 students)

Spring 2020 **BCHEM 5771: Advanced Biochemistry**
Taught 40 hours (13 students)

Fall 2018 **CHEM 5771: Advanced Biochemistry**
Taught 40 hours (12 students)

Spring 2018 **BCHM 5801: Advanced Signal Transduction and Cell Cycle Regulation**
Taught 5 hours (20 students)

Spring 2016 **BCHM 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

2022-present	Graduate admissions committee
2020-present	Department Awards Committee
2000-present	Faculty Director, Flowcytometry Core Facility, University of Colorado-Boulder
2011-present	Faculty Co-director, Chemical Biology Core Facility at CU.
2019	Associate Chair, Department of Biochemistry, CU-Boulder
2018-2019	Junior faculty search committee
2017	Undergraduate honor thesis committee
2013-2016	Graduate admissions committee
2012-2013	Department Awards Committee
2011-2013	Department Executive Committee
2010-2011	Department Awards Committee
2010-2011	Department Safety Committee
2010-2011	Institutional Biosafety Committee
2003-2011	Graduate admissions committee
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	Director, Flowcytometry Core facility, Department of 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

2022	Chair of Program Committee of the Structural and Chemical Biology Section, AACR
2009	Section Chair, World Cancer Congress 2009. Beijing China
2006	Session Chair, Gordon Conference on Signal Transduction
2005	Co-chair, CU-Array Chemistry and Biology Symposium on Protein Kinases

Editorial Board Member

2001-present	Journal of Cellular and Molecular Medicine
2017-2027	Journal of Biological Chemistry

Reviewer for Journals and Granting Agencies

2023	Ad hoc member NIH CBP study section
2022	Review panel member NIH/NIAID RFA-AI-22-025
2022	Ad hoc member NIH BST-10 study section
2021	Chair, DOD Breast Cancer Research Program Review Panel CET-9
2021	Israel Science Foundation (ISF)
2021	NIH Fellowship Review Panel (F05U)
2020	Ad hoc member NIH BST-55 study section 2X
2020	DOD Breast Cancer Research Program Review Panel CET-8
2019	Co-chair CCTSI review panel, University of Colorado
2019	Ad hoc member NIH BST-55 study section
2019	Ad hoc member NIH ZRG1 CB-H study section

2019 DOD BRCP review panel
2018 Ad hoc member NIH BST-55 study section
2018 Ad hoc member of NIGMS R35 study section
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 US Army Breast Cancer Research Program 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 *Nature Chemical Biology*, *Cell Reports*, *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*.

BOOKS

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

Zhike Zi and Xuedong Liu. **TGF- β Signaling**
Method in Molecular Biology, Springer, Nature 2022.