Xu Xiao, Ph.D

E-mail: xxi240@uky.edu

Saha Cardiovascular Research Center

Department of Physiology

University of Kentucky

POSITION

11/2024-Present — **Assistant Professor**
Saha Cardiovascular Research Center,
Department of Physiology
University of Kentucky

08/2023-10/2024 — **Assistant Project Scientist**
Department of Pathology and Lab Medicine,
Department of Biological Chemistry
University of California, Los Angeles

08/2017-08/2023 — **Postdoctoral Fellow**
Mentor: Prof. Peter Tontonoz
Department of Pathology and Lab Medicine,
Department of Biological Chemistry,
University of California, Los Angeles

EDUCATION

09/2011- 07/2017 — **Doctor' s degree (Ph.D.)**
Mentor: Prof. Bao-Liang Song
Major in Biochemistry and Molecular Biology
Shanghai Institute of Biochemistry and Cell Biology (SIBCB),
Chinese Academy of Sciences (CAS), Shanghai, China

09/2007- 07/2011 — **Bachelor' s degree (B.S.)**
Major in Biological Engineering
College of Chemical Engineering
Northwest University, Xi'an, China

RESEARCH EXPERIENCE

Intracellular Cholesterol Transport in Physiology and Pathology
2017-2024

- Determined the impact of Aster-B on estradiol synthesis and female obesity. (***J Clin Invest***. 2024)
- Explored the role of hepatic nonvesicular cholesterol transport in systemic lipid homeostasis. (***Nat Metab***. 2023)
- Developed Asters-specific inhibitor to distinguish vesicular and nonvesicular sterol transport mechanisms in mammalian cells. (***Proc Natl Acad Sci U S A***. 2021)

Cholesterol Metabolism in Biochemistry and Molecular Biology

2011-2017

- Screening and identifying new cholesterol modification protein Smoothened, and elucidated its role in hedgehog signaling. (***Mol Cell***. 2017**)**
- Determined the role of UBIAD1 in cholesterol metabolism and Schnyder Corneal Dystrophy. (*Plos Genet*. 2019. Co-author)
- Screening and identifying novel SREBP pathway inhibitors. (*Toxicol Appl Pharmacol*. 2016; *Eur J Pharmacol*. 2016*; J Pharmacol Exp Ther*. 2014. Co-author)

PUBLICATIONS

Research:

1. **Xiao X**, Kennelly JP, Feng AC, Cheng L, Romartinez-Alonso B, Bedard A, Gao Y, Cui L, Young SG, Schwabe JW, Tontonoz P. Aster-B-dependent estradiol synthesis protects female mice from diet-induced obesity. **J Clin Invest**. **2024** Jan 4;134(4):e173002. https://doi.org/10.1172/JCI173002; PMID: 38175723; PMCID: PMC10866650.
2. **Xiao X,** Kennelly JP, Ferrari A, Clifford B, Whang E, Gao Y, Qian K, Sandhu J, Jarrett KE, Brearley-Sholto MC, Nguyen A, Nagari RT, Lee SM, Zhang S, Weston TA, Young SG, Bensinger SJ, Villanueva CJ, Vallim TA, Tontonoz P. Hepatic nonvesicular cholesterol transport is critical for systemic lipid homeostasis. **Nat. Metab**. **2023**. 5, 165–181. https://doi.org/10.1038/s42255-022-00722-6; PMID: 36646756; PMCID: PMC9995220.
3. **Xiao X**, Kim Y, Romartinez-Alonso B, Sirvydis K, Ory DS, Schwabe JWR, Jung ME, Tontonoz P. Selective Aster inhibitors distinguish vesicular and nonvesicular sterol transport mechanisms. **Proc Natl Acad Sci U S A**. **2021** Jan 12;118(2). https://doi.org/10.1073/pnas.2024149118; PMID: 33376205; PMCID: PMC7812747.
4. **Xiao X**, Tang JJ, Peng C, Wang Y, Fu L, Qiu ZP, Xiong Y, Yang LF, Cui HW, He XL, Yin L, Qi W, Wong CC, Zhao Y, Li BL, Qiu WW, Song BL. Cholesterol Modification of Smoothened Is Required for Hedgehog Signaling. **Mol Cell**. **2017** Apr 6;66(1):154-162.e10. https://doi.org/10.1016/j.molcel.2017.02.015; PMID: 28344083.
5. Kennelly JP, **Xiao X**, Gao Y, Kim S, Hong SG, Villanueva M, Ferrari A, Vanharanta L, Nguyen A, Nagari RT, Burton NR, Tol MJ, Becker AP, Lee. MJ, Ikonen E, Backus KM, Mack JJ, Tontonoz. P. (**2024**). Cholesterol binding to VCAM-1 promotes vascular inflammation. **Preprint bioRxiv** 2024.09.17.613543; doi: https://doi.org/10.1101/2024.09.17.613543. (**Co-first author**).

Review:

1. **Xiao X**, Song BL. SREBP: a novel therapeutic target. **Acta Biochim Biophys Sin** (Shanghai). **2013 Jan**;45(1):2-10. https://doi.org/10.1093/abbs/gms112; **Review**. PMID: 23257291.

Other Publications:

1. Gao Y, Kennelly JP, **Xiao X**, Whang E, Ferrari A, Bedard A, Mack J, A Nguyen, Weston T, Uchiyama F, Lee MS, Young S, Bensinger S, Tontonoz P. T cell cholesterol transport is a metabolic checkpoint that links intestinal immune responses to dietary lipid absorption. **bioRxiv 2024**.03.08.584164; https://doi.org/10.1101/2024.03.08.584164.
2. Ferrari A, Whang E, **Xiao X**, Kennelly JP, Romartinez-Alonso B, Mack JJ, Weston T, Chen K, Kim Y, Tol MJ, Bideyan L, Nguyen A, Gao Y, Cui L, Bedard AH, Sandhu J, Lee SD, Fairall L, Williams KJ, Song W, Munguia P, Russell RA, Martin MG, Jung ME, Jiang H, Schwabe JWR, Young SG, Tontonoz P. Aster-dependent nonvesicular transport facilitates dietary cholesterol uptake. **Science**. **2023** Nov 10;

382(6671):eadf0966. https://doi.org/10.1126/science.adf0966; PMID: 37943936.

3. Qian K, Tol MJ, Wu J, Uchiyama LF, **Xiao X**, Cui L, Bedard AH, Weston TA, Rajendran PS, Vergnes L, Lin CH, Jin B, DeNardo LA, Black DL, Whitelegge JP, Wohlschlegel JA, Reue K, Shivkumar K, Chen FJ, Young SG, Li P, Tontonoz P. CLSTN3β enforces adipocyte multilocularity to facilitate lipid utilization. **Nature. 2023** Jan; 613(7942): 160–168. https://doi.org/10.1038/s41586-022-05507-1; PMCID: 9995219; NIHMSID:1875067; PMID: 36477540.
4. Abrego J, Sanford-Crane H, Oon C, **Xiao X**, Betts CB, Sun D, Nagarajan S, Diaz L, Sandborg H, Bhattacharyya S, Xia Z, Coussens LM, Tontonoz P, Sherman MH. A Cancer Cell-Intrinsic GOT2-PPARδ Axis Suppresses Antitumor Immunity. **Cancer Discov**. **2022** Oct 5;12(10):2414-2433. https://doi.org/10.1158/2159-8290.CD-22-0661; PMID: 35894778; PMCID: PMC9533011.
5. Priest C, Nagari R, Bideyan L, Lee S, Nguyen A, **Xiao X** and Tontonoz P. Brap regulates liver morphology and hepatocyte turnover via modulation of the Hippo pathway. **Proc Natl Acad Sci U S A**. **2022** Apr 27;119 (18). https://doi.org/10.1073/pnas.2201859119; PMID: 35476518; PMCID: PMC9171358.
6. Ferrari A, He C, Kennelly JP, Sandhu J, **Xiao X**, Chi X, Jiang H, Young SG, Tontonoz P. Aster Proteins Regulate the Accessible Cholesterol Pool in the Plasma Membrane. **Mol Cell Biol**. **2020** Sep 14;40(19). https://doi.org/10.1128/MCB.00255-20; PMID: 32719109; PMCID: 7491948.
7. Zhou QD, Chi X, Lee MS, Hsieh WY, Mkrtchyan JJ, Feng AC, He C, York AG, Bui VL, Kronenberger EB, Ferrari A, **Xiao X**, Daly AE, Tarling EJ, Damoiseaux R, Scumpia PO, Smale ST, Williams KJ, Tontonoz P, Bensinger SJ. Interferon-mediated reprogramming of membrane cholesterol to evade bacterial toxins. **Nat Immunol**. **2020** Jul;21(7):746-755. https://doi.org/10.1038/s41590-020-0695-4; PMID: 32514064; PMCID: 7778040.
8. Gao J, Littman R, Diamante G, **Xiao X**, Ahn IS, Yang X, Cole TA, Tontonoz P. Therapeutic IDOL Reduction Ameliorates Amyloidosis and Improves Cognitive Function in APP/PS1 Mice. **Mol Cell Biol**. **2020** Mar 30;40(8). https://doi.org/10.1128/MCB.00518-19; PMID: 31964754; PMCID: 7108818.
9. Jiang SY, Tang JJ, **Xiao X**, Qi W, Wu S, Jiang C, Hong J, Xu J, Song BL, Luo J. Schnyder corneal dystrophy-associated UBIAD1 mutations cause corneal cholesterol accumulation by stabilizing HMG-CoA reductase. **PLoS Genet**. **2019** Jul; 15(7):e1008289. https://doi.org/10.1371/journal.pgen.1008289; PMID: 31323021; PMCID: 6668851.
10. Sandhu J, Li S, Fairall L, Pfisterer SG, Gurnett JE, **Xiao X**, Weston TA, Vashi D, Ferrari A, Orozco JL, Hartman CL, Strugatsky D, Lee SD, He C, Hong C, Jiang H, Bentolila LA, Gatta AT, Levine TP, Ferng A, Lee R, Ford DA, Young SG, Ikonen E, Schwabe JWR, Tontonoz P. Aster Proteins Facilitate Nonvesicular Plasma Membrane to ER Cholesterol Transport in Mammalian Cells. **Cell**. **2018** Oct 4;175(2):514-529.e20. https://doi.org/10.1016/j.cell.2018.08.033; PMID: 30220461; PMCID: 6469685.
11. Ding L, Li J, Song B, **Xiao X**, Zhang B, Qi M, Huang W, Yang L, Wang Z. Curcumin rescues high fat diet-induced obesity and insulin sensitivity in mice through regulating SREBP pathway. **Toxicol Appl Pharmacol**. **2016** Aug 1; 304:99-109. https://doi.org/10.1016/j.taap.2016.05.011; PMID: 27208389.
12. Li J, Ding L, Song B, **Xiao X**, Qi M, Yang Q, Yang Q, Tang X, Wang Z, Yang L. Emodin improves lipid and glucose metabolism in high fat diet-induced obese mice through regulating SREBP pathway. **Eur J Pharmacol**. **2016** Jan 5; 770:99-109. https://doi.org/10.1016/j.ejphar.2015.11.045; PMID: 26626587.
13. Ding L, Li J, Song B, **Xiao X**, Huang W, Zhang B, Tang X, Qi M, Yang Q, Yang Q, Yang L, Wang Z. Andrographolide prevents high-fat diet-induced obesity in C57BL/6 mice by suppressing the sterol regulatory element-binding protein pathway. **J Pharmacol Exp Ther**. **2014** Nov; 351(2):474-83. https://doi.org/10.1124/jpet.114.217968; PMID: 25204338.

Research Highlight and Commentary:

1. **Xiao X**, Tontonoz P. USP20 links feeding-induced cholesterol synthesis and energy expenditure. **Sci. China Life Sci. 2021;** 64, 337–338 (2021). **Research Highlight**. https://doi.org/10.1007/s11427-020-1867-8.
2. **Xiao X**, Tontonoz P. PUFAs regulate SREBP1c through phosphorylation of Insig2. **Proc Natl Acad Sci U S A. 2024** Oct;121(40):e2416363121. **Commentary**. https://doi.org/10.1073/pnas.2416363121. PMID: 39312672.

FELLOWSHIP AND GRANTS

- 06/2024: **Pilot and Feasibility Projects in Endocrinology & Diabetes**, UCSD-UCLA Diabetes Research Center.
- 04/2023: **George J. Popjak Fellowship** in Research Related to Atherosclerosis, UCLA.
- 07/2018 – 06/2020: **AHA Postdoctoral Fellowship**, 18POST34030388.

AWARDS AND HONORS

- 2024: Trainee award, Academy of Cardiovascular Research Excellence (ACRE).
- 2024: Postdoctoral Researcher Award, American Society for Biochemistry and Molecular Biology (ASBMB).
- 2023: Postdoctoral Fellow Research Award, The Chinese American Liver Study (CALS).
- 2023: Chancellor's Award for Postdoctoral Research Nominee, UCLA.
- 2023: LABEST Pearl Cohen Poster Competition, Metabolism Track – 1st Place.
- 2023: Cardiovascular theme Poster Competition 3rd place, UCLA Cardiovascular Theme.
- 2018: Excellent Doctoral Dissertation of Chinese Academy of Sciences.
- 2017: The Ray Wu Prize for Excellence in Life Science Research.
- 2017: Outstanding Graduates of Shanghai.
- 2016: Merit Student, Chinese Academy of Sciences.
- 2013: Excellent Student Cadres, Chinese Academy of Sciences.
- 2011: Outstanding Graduates, Northwest University.
- 2011: Touching colleges and universities of Shaanxi province award.

ACADEMIC ACTIVITIES

- **Invited talk**. Academy of Cardiovascular Research Excellence (ACRE). ACRE-SAHR@ISHR-NAS 2024, Long Beach, California, US.
- **Invited talk**. American Society for Biochemistry and Molecular Biology, DiscoverBMB 2024, San Antonio, Texas, US.
- **Poster presentation**. UCSD/UCLA Diabetes Research Center 2024 Retreat, Los Angeles, California. US. 2024.
- **Poster presentation**. American Liver Foundation, 32nd Annual Irwin M. Arias Symposium, Boston, Massachusetts, US. 2023.
- **Poster presentation**. AASLD Annual Meeting, Boston, Massachusetts, US. 2023.
- **Invited talk**. 2023 CALS 2023 Annual Meeting. Online meeting, 2023.
- **Invited talk**. 2023 CADA Annual Meeting. San Diego, California, US. 2023.
- **Poster presentation**. ASBMB Deuel Conference on Lipids, Dana Point, California, US. 2023.
- **Invited talk**. The 5th Symposium of Metabolic Biology Academic Subgroup of Chinese Biophysical Society. Online meeting, 2022.
- **Poster presentation**. ASBMB Deuel Conference on Lipids, Monterey, California, US. 2022.

- ASBMB Deuel Conference on Lipids, Coronado, California, US. 2020.
- ASBMB Deuel Conference on Lipids, Dana Point, California, US. 2019.
- The Cold Spring Harbor Asia Conference on Lipid Metabolism and Metabolic Disorders, Suzhou, China. 2017.
- Chinese Congress of Biochemistry and Molecular Biology, Hangzhou, China. 2016.
- Chinese Congress of Biochemistry and Molecular Biology, Xiamen, China. 2014.
- The Cold Spring Harbor Asia Conference on Metabolism and Obesity, Suzhou, China. 2013.

PROFESSIONAL ACTIVITIES

- 2023- present: Member, American Society for Biochemistry and Molecular Biology (ASBMB).
- 2023- present: Member, American Association for the Study of Liver Diseases (AASLD).
- 2023- present: Member, American Heart Association (AHA).
- 2023: Reviewer with Dr. Peter Tontonoz for *Cell Metabolism, Nature Metabolism*, *Developmental Cell*, *Cell Reports*, *PNAS* and *FEBS*.
- 2022- 2023: Member, Biophysical Society of China.
- 2022: Reviewer with Dr. Peter Tontonoz for *PNAS*, *EMBO*, *eLife* and *Circulation Research*.
- 2021: Reviewer with Dr. Peter Tontonoz for *Cell*, *JCI*, *PNAS* and *EMBO*.
- 2020: Reviewer with Dr. Peter Tontonoz for *JCI*, *Genes & Development*, *eLife* and *ATVB*.
- 2018- 2020: Member, American Heart Association (AHA).

TEACHING EXPERIENCE

Served as a laboratory teaching assistant at UCLA:

- 07/2021-09/2021, Sara Frigui, Rotation MD-Ph.D. student.
  Current: UCLA Medical Scientist Training Program.
- 09/2019-02/2020, Xuan Niu, Visiting faculty.
  Current: Attending physician and scientist in Renmin Hospital of Wuhan University.
- 07/2018-10/2018, Xiangyu Liu, Cross-Disciplinary Scholars in Science Summer Student.
  Current: Ph.D. Student at Harvard University.

Served as a laboratory teaching assistant at SIBCB:

- 04/2015-08/2016, Zhiping Qiu, Ph.D. student in Wuhan University.
- 02/2014-04/2014, Chuxiao Liu, Rotation Ph.D. student in. SIBCB.
- 03/2013-06/2013, Scientific tutor of students from Shanghai High School.

Tutored a dozen students in the “Sunlight Tutor” voluntary activity at Northwest University.