

ZEYUAN **ZHANG**
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EDUCATION

APRIL 2022

PH.D. BIOMEDICAL SCIENCE, UNIVERSITY OF IOWA

MAY 2016

M.S. BIOMEDICAL SCIENCES, IOWA STATE UNIVERSITY

JULY 2015

M.S. BIOCHEMISTRY & MOLECULAR BIOLOGY, SHANGHAI NORMAL UNIVERSITY

JULY 2012

B.S. BIOLOGICAL SCIENCES, SHANGHAI NORMAL UNIVERSITY

RESEARCH EXPERIENCE

MAY 2024 – MARCH 2026

POSTDOCTORAL SCHOLAR, STANFORD UNIVERSITY

Mentor: Dr. Katrin Svensson

Project: Investigate the role of novel peptides in metabolic organs.

- Identified anorectic effects of CART¹⁻³⁴ peptide in vivo and initiated receptor deorphanization, advancing peptide-based obesity therapeutics.
- Exploring novel hepatokines in nutrient metabolism and cardiometabolic disease.

APRIL 2022 – DECEMBER 2023

SCIENTIST I, ALTOS LABS

Project: Hepatocyte-specific rejuvenation reprogramming in fatty liver disease.

- Established hepatocyte-specific partial reprogramming in vivo for fatty liver disease models.
- Validated AAV-mediated hepatocyte reprogramming using qPCR, metabolic profiling, and glucose/insulin tolerance testing.
- Applied multi-omics to dissect OSK-mediated glucose metabolism in vitro and in vivo.

JUNE 2017 – APRIL 2022

PH.D. RESEARCH IN CELL & DEVELOPMENTAL BIOLOGY, UNIVERSITY OF IOWA

Mentor: Dr. Ling Yang

Project: The molecular mechanism of organelle dysfunction in the context of obesity.

- Determined the effect of inflammatory stress on organelle function.
 - Demonstrated obesity impairs the enzymatic function of GSNOR, a major cellular denitrolylase, in the liver. Loss of GSNOR contributes to impaired lysosomal function and autophagy in the liver.

- Revealed the mechanism that GSNOR-mediated lysosomal nitrosative stress contributes to impaired hepatic autophagy and insulin resistance.
- Found obesity promotes lysosomal localization of inducible nitric oxide synthase (iNOS) and lysosomal nitric oxide production in the liver, impairing hepatic autophagy.
- In the brown adipose tissue (BAT), GSNOR is required to maintain metabolic homeostasis under overnutrition and cold stress conditions.
- Gain of BAT GSNOR improves whole-body glucose homeostasis in obesity.
- Examined the interaction between unfolded protein (UPR) response and autophagy and its functional consequence in obesity-associated metabolic dysfunction.
 - Identified a direct transcriptional regulation of sXBP1, a major transcriptional factor of UPR, on TFEB, a master transcriptional factor of autophagy, in the liver.
 - Uncovered the contribution of deletion of sXBP1-TFEB axis to obesity-associated hepatic metabolic dysfunction.
- Established the molecular mechanism underlying lysosome dysfunction in adipose homeostasis in the context of obesity.
 - Obesity disrupts lysosomal reductive enzyme activity in the adipose tissue.
 - Assessed the impact of dysregulated lysosome on the adipokine release in the adipose tissue.

AUGUST 2015 – MAY 2016

MASTERS RESEARCH IN BIOMEDICAL SCIENCES, IOWA STATE UNIVERSITY

Mentor: Dr. Steve Carlson

Project: Clinical and agricultural inhibition of myostatin pathways for beneficial myogenesis.

Classes: Anatomy, Cell Biology, Physiology, Microbiology, Pharmacology, Pathology

SEPTEMBER 2012 – JULY 2015

MASTERS RESEARCH IN BIOCHEMISTRY & MOLECULAR BIOLOGY, SHANGHAI NORMAL UNIVERSITY

Mentor: Dr. Zhongnan Yang

Project: Male sterility involves sporopollenin formation and its mechanism of restored fertility at low temperatures.

- Used scanning electron microscope (EM) and transmission EM to observe the differences in pollen coat patterns between mutant ms2 and wild-type Arabidopsis thaliana.
- Revealed putative working model for ms2 in the sporopollenin formation.

Project: Analysis of the interaction of four membrane proteins related to the primexine formation.

- Used the Split-Ubiquitin Based Membrane Yeast Two-Hybrid System to test the interactions of four membrane proteins.

FELLOWSHIP & AWARDS

2026-2027 **AMERICAN HEART ASSOCIATION POSTDOCTORAL FELLOWSHIP**

2025 **LIFE METABOLISM TRAVEL AWARD**

2019-2020 **AMERICAN HEART ASSOCIATION PRE-DOCTORAL FELLOWSHIP**

2018 **TRAVEL AWARD, "AUTOPHAGY AS A COMMON PATHWAY IN DISEASES, NIDDK**

2017 **PRESIDENTIAL PLENARY ORAL PRESENTATION**, 68TH ANNUAL MEETING OF THE AASLD

2013 **EXCELLENT STUDENT LEADER**, SHANGHAI NORMAL UNIVERSITY

2012 **NATIONAL ENCOURAGEMENT SCHOLARSHIP**, SHANGHAI NORMAL UNIVERSITY

OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS

2025-Current Member, American Heart Association

2025-Current Ad hoc reviewer: Autophagy, Acta Pharmaceutica Sinica B, Frontiers in Endocrinology, Metabolism Open

SKILLS

- **Cell culture:** AML12, Huh7, HEK293A, MEF, 3T3L1, human adipocyte cell lines.
- **Biochemistry and Molecular biology:** Immunoprecipitation, western blot, real-time PCR, RNA-Seq, chromatin immunoprecipitation, subcellular fraction (nuclear, cytosol, ER, lysosome, mitochondria), flow cytometry, ELISA, site-directed mutagenesis, protein eukaryotic expression, in situ hybridization, biotin switch, tandem mass tag labeling, adenovirus construction, adenovirus purification, adenovirus and AAV-mediated gene delivery.
- **In Vitro Metabolic Profiling:** Glucose uptake, circulated and intracellular free fatty acid and free glycerol level, high-resolution respirometry.
- **In Vivo:** mouse colony maintenance, genotyping, experimental planning, injections (IP, IV, RO), water treatments, metabolic caging (CLAMS), EKO, glucose tolerance test, insulin tolerance test, insulin tolerance test, pyruvate tolerance test, tissue collection.
- **Primary cell isolation:** primary hepatocytes, Kupffer cells, immune cells, primary adipocytes, stromal vascular fraction.
- **Histology & Imaging:** paraffin section, frozen section, IHC staining, positron emission tomography scan, confocal microscopy, EM.
- **Software:** Microsoft Office, Prism, Benchling, Adobe Illustrator, FlowJo.

PATENTS

Zeyuan Zhang, Katrin J Svensson. 'Methods and composition for non-incretin peptides as obesity treatment'. Filing date: Sept 2024.

PUBLICATIONS

1. Zhao M*, Linde-Garelli KY*, **Zhang Z***, Toomer D, Reghupaty SC, Jimenez JI, Coassolo L, Wat LW, Fernandez D, Svensson KJ. ANGPTL3 orchestrates hepatic fructose sensing and metabolism. Cell Rep. 2025. PMID: 40638391. *Equal contribution.
2. **Zhang Z**, Svensson KJ. Discovery of peptides as key regulators of metabolic and cardiovascular crosstalk. Cell Rep. 2025. Review. PMID: 40526470
3. Qian Q, Li M, **Zhang Z**, Davis SW, Rahmouni K, Norris AW, Cao H, Ding WX, Hotamisligil GS, Yang L. Obesity disrupts the pituitary-hepatic UPR communication leading to NAFLD progression. Cell Metab. 2024. PMID: 38718793.
4. Sara Sebag*, **Zeyuan Zhang***, Qingwen Qian, Mikako Harata, Mark Li, Wenxian Li, Zhiyong Zhu, Leonid Zingman, Limin Liu, Vitor A. Lira, Matthew J. Potthoff, Alexander Bartelt, Ling Yang. ADH5-mediated NO Bioactivity Maintains

- Metabolic Homeostasis in Brown Adipose Tissue. *Cell Reports*. 2021. PMID: 34788615. *Equal contribution.
5. Mark Li, Fan Shao, Qingwen Qian, Wenjie Yu, **Zeyuan Zhang**, Biyi Chen, Dan Su, Yuwei Guo, An-Vi Phan, Long-sheng Song, Samuel B. Stephens, Julien Sebag, Yumi Imai, Ling Yang, Huojun Cao. A putative long noncoding RNA-encoded micropeptide maintains cellular homeostasis in pancreatic β -cells. *Molecular Therapy-Nucleic Acids*. 2021. PMID: 34513312.
 6. Tadmamol Krongbarammee, Min Zhu, Qingwen Qian, **Zeyuan Zhang**, Steven Eliason, Yi Shu, Fang Qian, Adil Akkouch, Dan Su, Brad A. Amendt, Ling Yang, Liu Hong. Plasmid encoding microRNA-200c ameliorates periodontitis and systemic inflammation in obese mice. *Molecular Therapy - Nucleic Acids*. 2021. PMID: 33664998.
 7. **Zeyuan Zhang**^{*}, Qingwen Qian^{*}, Mark Li, Wen-xing Ding, Fan Shao, Huo-jun Cao, Yang L. The unfolded protein response regulates hepatic autophagy by sXBP1-mediated activation of TFEB. *Autophagy*. 2020. PMID: 32597296. *Equal contribution.
 8. Qingwen Qian^{*}, **Zeyuan Zhang**^{*}, Mark Li, Kalie Savage, Dechun Cheng, Adam J. Rauckhorst, James A. Ankrum, Eric B. Taylor, Wen-xing Ding, Yi Xiao, Huo-jun Cao, Yang L. Hepatic lysosomal iNOS activity impairs autophagy in obesity. *Cell Mol Gastroenterol Hepatol*. 2019. PMID: 30926581. *Equal contribution.
 9. Qingwen Qian, **Zeyuan Zhang**, Allyson Orwig, Songhai Chen, Wen-Xing Ding, Yanji Xu, Ryan C. Kunz, Nicholas R.L. Lind, Jonathan S. Stamler, Ling Yang. S-Nitrosoglutathione Reductase Dysfunction Contributes to Obesity-Associated Hepatic Insulin Resistance via Regulating Autophagy. *Diabetes*. 2018. PMID: 29074597.
 10. Ke Wang, Zongli Guo, Wentao Zhou, Cheng Zhang, **Zeyuan Zhang**, Yue Lou, Shuangxi Xiong, Xiaozhen Yao, Jiongjiong Fan, Jun Zhu, Zhongnan Yang. The regulation of sporopollenin synthesis genes for rapid pollen wall formation in Arabidopsis. *Plant Physiology*. 2018. PMID: 30018171.