UT SOUTHWESTERN MEDICAL CENTER

Chen Liu

Curriculum Vitae (12/2025)

Center for Hypothalamic Research
Department of Internal Medicine
Department of Neuroscience
Peter O'Donnell Jr. Brain Insitute

5323 Harry Hines Blvd.
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Dallas, TX 75390-9077
Chen.Liu@UTSouthwestern.edu
www.chenliulab.us

Appointments

Associate Professor (with tenure)
Depts. of Internal Medicine and Neuroscience
Investigator, Peter O'Donnell Jr. Brain Insitute
Neuroscience Graduate Program
Molecular Metabolism & Metabolic Diseases Track
University of Texas Southwestern Medical Center, 2015.9-present

Education

Case Western Reserve University, Cleveland, OH, 2004-2010.
Ph.D., Dept. of Neurosciences, School of Medicine.
Pet-1 Is Required Across Different Stages of Life to Regulate Serotonergic Function.
Mentor: Evan S. Deneris, Ph.D.

Mentoring Statement

Over the past 15 years, I've had the privilege of mentoring high school students, undergraduates, graduate students, and postdoctoral fellows. I was trained by two highly supportive, hands-off mentors, and their approach has strongly shaped how I run my own lab. I strive to create an environment where trainees have the freedom and encouragement to explore ideas independently, while knowing that guidance, feedback, and support are always readily available. Below, I share a few thoughts for prospective students and postdocs who are considering joining our group.

For Graduate Students
My primary goal in mentoring graduate students is to help them develop strong critical thinking skills. This ability, to ask good questions, evaluate data thoughtfully, and think creatively, will serve you far beyond any single project or technique. I encourage students to step outside their comfort zones, learn new methods, and pursue curiosity-driven discoveries. Research can be challenging and often requires persistence and resilience, but you will never face those challenges alone—our lab is a supportive and collaborative team. I also believe in helping students progress efficiently and graduate on time, ideally within five years. A Ph.D. is an important milestone, but it's also the beginning of a longer and exciting academic journey.

For Postdoctoral Fellows
As a postdoc, you should be ready to design and carry out experiments independently, while continuing to grow as a scientist and future leader. This stage of training is about building the skills needed for independence, and I actively encourage postdocs to engage in grant writing early, including developing their own proposals. Regular presentation of your work, within the lab and at seminars and conferences, is an important part of this process. I strongly support postdocs attending national and international meetings each year to expand their professional networks. Together, we will work to define your unique research niche, build a strong publication record, and secure funding that will position you well for the next stage of your career. I am deeply committed to supporting each postdoc's transition to independence.

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Recent trainee achievements

Career Development Award (2025), The American Heart Association

PDA Travel Award (2025), UT Southwestern Medical Center

Basic Science Award (2024), The Ninth Seldin Research Symposium, UT Southwestern Medical Center

Career Development Award (2024), The American Heart Association

Best Poster Presentation (2024), Gordon Research Conference, Maine, USA

Best Oral Presentation (2024), CADA Annual Meeting, Orlando, Florida, USA

Basic Science Award (2023), The Eighth Seldin Research Symposium, UT Southwestern Medical Center

PDA Travel Award (2023), UT Southwestern Medical Center

Postdoctoral Fellowship Award (2023), The American Heart Association

Scholarship Award (2022), Keystone Symposium, Banff, Canada

Best Oral Presentation (2022), CADA Annual Meeting, New Orleans, USA

Selected publications (Corresponding † and first author* ONLY)

Xu, B, Li L, Chen M, Wu Z, Chen X, Swati, Wan R, Almeida A, Wyler S, **Liu C**†. Developmental reprogramming in the melanocortin neurons modulates diet-induced obeisty in mice (2026). ***Neuron***, in press

Xu, B, Lawler K, Wyler S, Li L, Swati, Keogh J, Chen X, Wan R, Almeida A, Kirsch S, Mountjoy K, Elmquist J, Farooqi S†, **Liu C**†. Orthopedia regulates Melanocortin 4 Receptor transcription and energy homeostasis (2025). ***Sci Transl Med***.

Li L†, Xu, B, **Liu C**†. Sample enrichment for single-nucleus sequencing using concanavalin A-conjugated magnetic beads (2023). ***STAR Protocols***

Li L, Wyler SC, Leon-Mercado LA, Xu B, Oh Y, Swati, Chen X, R Wan, Arnold AG, Jia L, Wang G, Nautiyal K, Hen R, Sohn JW†, **Liu C**†. Delineating a serotonin receptor pathway for appetite suppression (2022). ***J. Exp Med.***

Yoo ES, Li L, Jia L, Lord CC, Lee CE, Vianna CR, Berglund ED, Cunningham KA, Xu Y, Sohn JW†, **Liu C**†. Gai/o-coupled Htr2c in the Paraventricular Nucleus of the Hypothalamus Antagonizes the Anorectic Effect of Serotonin Agents (2021). ***Cell Rep***.

Li L, Yoo ES, Li X, Wyler SC, Chen X, R Wan, Arnold AG, Birnbaum SG, Jia L, Sohn JW† **Liu C**†. The atypical antipsychotic risperidone targets hypothalamic melanocortin 4 receptors to cause weight gain. (2021). ***J. Exp Med.***

Chen X, Wyler SC, Li L, Arnold AG, Wan R, Jia L, Landy MA, Lai HC, Xu P, **Liu C**†. Comparative transcriptomic analyses of developing melanocortin neurons reveal new regulators for the anorexigenic neuron identity (2020). ***J. Neurosci***.

Park S, Williams KW, **Liu C**†, Sohn JW†. A neural basis for tonic suppression of sodium appetite (2020). ***Nat. Neurosci***.

Lord, CC, Wyler SC, Wan, R, Castorena, CM, Ahmed, N, Mathew, D, Lee, S, **Liu, C**†, Elmquist JK† (2017). The atypical antipsychotic olanzapine targets Htr2c to cause weight gain. ***J. Clin. Invest***.

Wyler, SC, Lord, CC, Lee, S, Elmquist, JK, **Liu, C**† (2017). Serotonergic control of metabolic homeostasis. ***Front. Cell. Neurosci***.

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Liu, C.*, Bookout, A.L.*, Lee, S., Sun, K., Jia, L., Lee, C., Udit, S., Deng, Y., Scherer, P.E., Mangelsdorf, D.J., et al. (2014). PPARgamma in vagal neurons regulates high-fat diet induced thermogenesis. ***Cell Metab***.

Liu, C., Lee, S., and Elmquist, J.K. (2014). Circuits controlling energy balance and mood: inherently intertwined or just complicated intersections? ***Cell Metab***.

Wang, Q.*, **Liu, C.***, Uchida, A., Chuang, J.-C., Walker, A., Liu, T., Osborne-Lawrence, S., Mason, B.L., Mosher, C., Berglund, E.D., et al. (2014). Arcuate AgRP neurons mediate orexigenic and glucoregulatory actions of ghrelin. ***Mol. Metab***.

Berglund, E.D.*, **Liu, C.***, Sohn, J.-W., Liu, T., Kim, M.H., Lee, C.E., Vianna, C.R., Williams, K.W., Xu, Y., and Elmquist, J.K. (2013). Serotonin 2C receptors in pro-opiomelanocortin neurons regulate energy and glucose homeostasis. ***J. Clin. Invest***.

Liu, C. and Elmquist, J.K. (2012). Tipping the scales early: probing the long-term effects of obesity. ***J. Clin. Invest***.

Liu, C., and Deneris, E.S. (2011). Transcriptional control of serotonin-modulated behavior and physiology. ***Neuropsychopharmacology***.

Liu, C., Maejima, T., Wyler, S.C., Casadesus, G., Herlitze, S., and Deneris, E.S. (2010). Pet-1 is required across different stages of life to regulate serotonergic function. ***Nat. Neurosci***.

Selected other Publications (as a contributing author)

Xun Y, Jiang Y, Xu B, Tang M, Ludwig S, Nakamura K, Mukhopadhyay S, **Liu C**, Beutler B, Zhang Z. GPR45 modulates Galpha(s) at primary cilia of the paraventricular hypothalamus to control food intake. ***Science*** 2025 Jun 5;388(6751):eadp3989.

Zhao S, Lin Q, Xiong W, Li L, Straub L, Zhang D, Zapata R, Zhu Q, Sun X, Zhang Z, Funcke J, Li C, Chen S, Zhu Y, Jiang N, Li G, Xu Z, Wyler SC, Wang, M, Bai J, Han X, Kusminski CM, Zhang N, An Z, Elmquist JK, Osborn O, **Liu C**, Scherer PE (2023). Hyperleptinemia contributes to antipsychotic drug-associated obesity and metabolic disorders. ***Sci Transl Med.***

Zapata RC, Zhang D, Libster A, Porcu A, Montilla-Perez P, Nur A, Xu B, Zhang Z, Correa SM, **Liu C**, Telese F, Osborn O (2023). Nuclear receptor 5A2 regulation of Agrp underlies olanzapine-induced hyperphagia. ***Mol Psychiatry.***

Shankar K, Metzger NP, Singh O, Mani BK, Osborne-Lawrence S, Varshney S, Gupta D, Ogden SB, Takemi S, Richard CP, Nandy K, **Liu, C**, Zigman JM (2021). LEAP2 deletion in mice enhances ghrelin's actions as an orexigen and growth hormone secretagogue. ***Mol Metab***.

Landy MA, Goyal M, Casey KM, **Liu C**, Lai HC (2021). Loss of Prdm12 during development, but not in mature nociceptors, causes defects in pain sensation. ***Cell Rep.***

Shankar K, Gupta D, Mani BK, Findley BG, Lord CC, Osborne-Lawrence S, Metzger NP, Pietra C, **Liu C**, Berglund ED, Zigman JM (2019). Acyl-ghrelin is Permissive for the Normal Counterregulatory Response to Insulin-induced Hypoglycemia. ***Diabetes***.

Jia L, Chang X, Qian S, **Liu, C**, Lord CC, Ahmed N, Lee CE, Lee S, Gautron L, Mitchell MC, Horton JD, Scherer PE, Elmquist JK (2018). Hepatocyte toll-like receptor 4 deficiency protects against alcohol-induced fatty liver disease. ***Mol Metab***.

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Caron A, Dungan Lemko HM, Castorena CM, Fujikawa T, Lee S, Lord CC, Ahmed N, Lee CE, Holland WL, **Liu C**, Elmquist JK (2018). POMC neurons expressing leptin receptors coordinate metabolic responses to fasting via suppression of leptin levels. ***Elife***.

Santoro A, Campolo, M, **Liu, C**, Sesaki, H, Meli, R, Liu, Z, Kim JD, Diano, S (2017). DRP1 suppresses leptin and glucose sensing of POMC neurons. ***Cell Metab***.

He Y, Shu G, Yang Y, Xu P, Xia Y, Wang C, Saito K, Hinton A Jr, Yan X, **Liu C**, Wu Q, Tong Q, Xu, Y (2016). A Small Potassium Current in AgRP/NPY Neurons Regulates Feeding Behavior and Energy Metabolism. ***Cell Rep***.

Jia, L., Vianna, C.R., Fukuda, M., Berglund, E.D., **Liu, C.**, Tao, C., Sun, K., Liu, T., Harper, M.J., Lee, C.E., et al. (2014). Hepatocyte Toll-like receptor 4 regulates obesity-induced inflammation and insulin resistance. ***Nat. Commun***.

Chen, Z., Holland, W., Shelton, J.M., Ali, A., Zhan, X., Won, S., Tomisato, W., **Liu, C.**, Li, X., Moresco, E.M.Y., et al. (2014). Mutation of mouse Samd4 causes leanness, myopathy, uncoupled mitochondrial respiration, and dysregulated mTORC1 signaling. ***Proc. Natl. Acad. Sci. U. S. A.***

Oh, E., Maejima, T., **Liu, C.**, Deneris, E., and Herlitze, S. (2010). Substitution of 5-HT1A receptor signaling by a light-activated G protein-coupled receptor. ***J. Biol. Chem.***

Research Support

Ongoing:

NIH R01 DK114036 (PI, Liu) **7/2017-2/2028**

Hypothalamic MC4Rs and Antipsychotic Drug-induced Metabolic Syndrome

NIH R01 DK130892 (PI, Liu) **1/2022-12/2026**

A Human Genetic Variant Ties Defective Hypothalamic Development to Obesity and Diabetes

NIH R01 DK136592 (PI, Liu) **4/2024-3/2029**

Deconstruct Raphe Serotonin Neurons that Regulate Satiety

American Heart Association 24CDA1257999 (Mentor, Liu) **9/2024-9/2027**

AHA Career Development Awardee

American Heart Association 25CDA144497 (Mentor, Liu) **9/2025-9/2028**

AHA Career Development Awardee

UTSW Medical Foundation Research Start-up (PI, Liu) **9/1/2015-present**

Completed:

2024	Postdoctoral Fellowship Award (mentor, AHA23POST1019715)
2020	Scientist Development Award (AHA 16SDG2726001)
2019	Pilot & Feasibility Award (NIH U01NS090405)
2018	Pilot & Feasibility Award (UTSW)

2018 Grossman Endowment Award for Diabetes Research

2016 Beginning Grant-in-Aid Award (AHA 16BGIA27260023)

2014 Fellowship, Davis Foundation in Eating Disorder Research.

2014 Fellowship, American Diabetes Association.

2011 Ruth L. Kirschstein National Research Service Award (T32).

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Awards and Honors

6/2022 Young Investigator Award, Chinese American Diabetes Association

6/2018 Grossman Award for Excellence in Diabetes Research

1/2014 Scholarship, Keystone Symposium 2014, Vancouver, Canada.

1/2014 Scholarship, Molecular Neuroanatomy Course, Allen Brain Institute.

10/2011 Fellowship, Davis Foundation in Eating Disorder Research

1/2011 Ruth L. Kirschstein National Research Service Award (NRSA)

4/2011 Doctoral Excellence Award, Case Western Reserve University

5/2010 Vance Lemmon Award, Case Western Reserve University

5/2008 The President's Award, Case Western Reserve University

5/2008 Excellence in Science Program, American Association for the Advancement of Science (AAAS)

Invited Talks

09-16-2025 7th International Melanocortin Meeting, Cambridge, United Kingdom

07-31-2025 Quebeck Heart and Lung Institue, Quebec City, Canada (**invited by students**)

07-09-2025 International Society for Serotonin Research, Vienna, Austria

04-29-2025 BHRI Virtual Seminar Series, Kent State University, Ohio

02-05-2024 Keystone Symposium: Vancouver, BC, Canada

04-26-2023 International Society for Serotonin Research, Cancun, Mexico

12-01-2022 Chinese American Diabetes Association (virtual)

11-02-2022 Dept. of Neuroscience, Case Western Reserve University, Cleveland

02-01-2021 Keystone Symposium: Obesity: From Cell to Patient, 2021 (virtual)

12-09-2020 Korean Basic Dental Science Society 19th Annual Meeting (virtual)

12-04-2015 American Society for Epilepsy Annual Meeting, Philadelphia, PA.

11-20-2015 Department of Neurology, Baylor College of Medicine, Houston, TX.

Services

2023- *UTSW Graduate School Admissions Committee*

2021- *Standing member for AHA Fellowsihp Review Committee*

12-2025 *Ad hoc Reviewer for NIH Director's Pioneer Award (DP1)*

07-2025 *Ad hoc Reviewer for NIH Special Emphasis Panel ZRG1-EMS-S(90)*

12-2024 *Ad hoc Reviewer for NIH Director's Pioneer Award (DP1)*

06-2023 *Ad hoc Reviewer for NIH DDK-B Study Section*

05-2023 *Ad hoc Reviewer for French National Research Agency*

01-2023 *Ad hoc Reviewer for NIH Director's Pioneer Award (DP1)*

10-2022 *Ad hoc Reviewer for NIH POMD Study Section*

05-2022 *Ad hoc Reviewer for NIH DDK-B Study Section*

2016-2021 Early-career reviewer for eLife

Ad hoc Reviewer for EMBO Reports, EMBO Molecular Medicine, eLife, Endocrine Reviews, J. of Comparative Neurology, Molecular Metabolism, Molecular Psychiatry, Nature Communications, Plos Biology, Trends in Neurosicences, etc.

Memberships

2008 – Society for Neuroscience (SFN)

2013- American Heart Association (AHA)

2022- International Society for Serotonin Research (ISSR)

2023- American Diabetes Association (ADA)

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