Lynne Chantranupong

Education

2016 Ph.D, Biology, Massachusetts Institute of Technology
2010 B.Sc., Cell and Molecular Biology, University of Texas at Austin

Research Experience

2024 **Assistant Professor, Biology Department, Boston University**

2016 – 2023 **Postdoctoral Research Fellow, Hanna Gray Fellow**
Advisor: Dr. Bernardo L. Sabatini, Harvard Medical School
Projects: (1) Exploring neurotransmission with high resolution profiling of synaptic vesicles
(2) Dynamics of acetylcholine and dopamine release during decision making
Specialties: Neurobiology

2011 –2016 **Graduate Research Assistant**
Advisor: Dr. David M. Sabatini, Whitehead Institute & Massachusetts Institute of Technology
Thesis: Discovery of novel regulators of the amino acid sensing pathway of mTORC1
Specialties: Biochemistry, Cell Biology

2008 –2010 **Beckman Scholar**
Advisor: Dr. George Georgiou, University of Texas at Austin
Project: Engineering human Arginase I as a chemotherapeutic agent
Specialties: Protein engineering, Biochemistry

2007 –2008 **Undergraduate Research Assistant**
Advisor: Dr. James J. Bull, University of Texas at Austin
Project: Testing models of bacteriophage lysis times
Specialties: Experimental evolution

Teaching Experience

2014 **Teaching Assistant**: 7.05 Biochemistry, Massachusetts Institute of Technology
2011 **Teaching Assistant**: 7.012 Introduction to Biology, Massachusetts Institute of Technology

Selected Awards and Distinctions

2024 Hanna Gray Fellow (Faculty phase)
2017-2021 Hanna Gray Fellow (Postdoctoral training phase)
2017 Harold M. Weintraub Graduate Student Award
2016 Abraham J. Siegel Graduate Student Award, Whitehead Institute
2013-2016 Ruth Kirschstein F31 Graduate Research Fellowship
2010-2013 NSF Graduate Research Fellowship
2009-2010 Barry M. Goldwater Scholar
2008-2009 Arnold and Mabel Beckman Scholar

Publications (**denotes equal contribution)*

Postdoctoral work

1. **Chantranupong L**, Beron CC, Zimmer JA, Wen MJ, Wang W, Sabatini BL. Dopamine and glutamate regulate striatal acetylcholine in decision-making**.** ***Nature*** **(**2023); 1-3.

2. Hochbaum DR, Dubinsky AC, Farnsworth, HC, Hulshof L, Kleinberg G, Urke A, Wang W, Hakim R, Robertson K, Park C, Solberg A, Yang Y, Baynard C, Nadaf NM, Beron CB, Girasole AE, **Chantranupong L**, Cortopassi M, Prouty S, Geistlinger L, Banks A, Scanlan T, Greenberg ME, Boulting GL, Macosko EZ, Sabatini BL. Thyroid hormone rewires cortical circuits to coordinate body-wide metabolism and exploratory drive. ***bioRxiv*** (2023); https://www.biorxiv.org/content/10.1101/2023.08.10.552874v1

3. **Chantranupong L**, Saulnier JL, Wang W, Jones DR, Pacold ME, Sabatini BL. Rapid purification and metabolomic profiling of synaptic vesicles from mammalian brain. ***Elife*** (2020); 9, e59699.

4. Peixoto RT, **Chantranupong L**, Hakim R, Levasseur J, Wang W, Merchant T, Gorman K, Budnik B, Sabatini BL

Abnormal striatal development underlies the early onset of behavioral deficits in Shank3B-/- mice. ***Cell reports*** (2019); 29(7), 2016-2027.

5. **Chantranupong L**, Sabatini BL. Preview: Sunlight brightens learning and memory. ***Cell*** (2018);173(7):1570-1572.

Graduate work

6. Valenstein ML*, Rogala KB*, Lalgudi PV, Brignole EJ, Gu X, Saxton RA, **Chantranupong L**, Kolibius J, Quast JP, Sabatini DM. Structure of the nutrient sensing hub GATOR2. ***Nature*** (2022); 607 (7919), 610-616.

7. Shen K, Huang RK, Brignole EJ, Condon KJ, Valenstein ML, **Chantranupong L**, Bomaliyamu A, Choe A, Hong C, Yu Z, Sabatini DM. Architecture of the human GATOR1 and GATOR1-Rag GTPases complexes. ***Nature*** (2018); 556(7699):64-69.

8. Wolfson RW*, **Chantranupong L***, Wyant GA, Gu X, Orozco JM, Shen K, Condon K, Petri S, Kedir J, Scaria SM, Abu Remaileh M, Frankel WN, Sabatini DM. The KICSTOR complex recruits GATOR1 to the lysosomal surface and is necessary for nutrients to regulate mTORC1. ***Nature*** (2017); 543(7645), 438-442.

9. **Chantranupong L** and Sabatini DM. News and Views: Breaking down TORC1 regulation of the proteasome. ***Nature*** (2016) 536(7615):155-6.

10. Saxton RA, **Chantranupong L**, Knockenhauer KE, Schwartz TU, Sabatini DM. Mechanisms of arginine sensing by CASTOR1 upstream of mTORC1. ***Nature*** (2016) 536(7615):229-33.

11. **Chantranupong L**, Scaria SM, Saxton RA, Gygi MP, Shen K, Wyant GA, Wang T, Harper JW, Gygi SP, Sabatini DM. The CASTOR proteins are arginine sensors for the mTORC1 pathway. ***Cell***. (2016) 165(1):153-64.

12. Saxton RA, Knockenhauer KE, Wolfson RL, **Chantranupong L**, Pacold ME, Wang T, Schwartz TU, Sabatini DM. Structural basis for leucine sensing by the Sestrin2-mTORC1 pathway. ***Science*** (2016); 351(6268):53-8.

13. Wolfson RL*, **Chantranupong L***, Saxton RA, Shen, K, Scaria SM, Sabatini DM. Sestrin2 is a leucine sensor for the mTORC1 pathway. ***Science*** (2015); 351(6268):43-8.

14. **Chantranupong L***, Wolfson RL*, Sabatini DM. Nutrient Sensing Mechanisms throughout Evolution. ***Cell*** (2015); 161(1):67-83.

15. Wang S*, Tsun ZY*, Wolfson RL, Shen K, Wyant GA, Plovanich ME, Yuan ED, Jones TD, **Chantranupong L**, Comb W, Wang T, Bar-Peled L, Zoncu R, Straub C, Kim C, Park J, Sabatini BL, Sabatini DM. Lysosomal amino acid transporter. SLC38A9 signals arginine sufficiency to mTORC1. ***Science*** (2015); 347(6218):188-94.

16. **Chantranupong L***, Wolfson RL*, Orozco JM, Saxton RA, Scaria SM, Bar-Peled L, Spooner E, Isasa M, Gygi SP, Sabatini DM. The Sestrins interact with GATOR2 to negatively regulate the amino-acid-sensing pathway upstream of mTORC1. ***Cell Reports*** (2014); 9(1):1-8.

17. Tsun ZY, Bar-Peled L*, **Chantranupong L***, Zoncu R, Wang T, Kim C, Spooner E, Sabatini DM. The Folliculin Tumor Suppressor Is a GAP for the RagC/D GTPases That Signal Amino Acid Levels to mTORC1. ***Molecular Cell*** (2013); 52 (4), 495-505.

18. Bar-Peled L*, **Chantranupong L***, Cherniack AD, Chen WW, Ottina KA, Grabiner BC, Spear ED, Carter SL, Meyerson M, Sabatini DM. A Tumor suppressor complex with GAP activity for the Rag GTPases that signal amino acid sufficiency to mTORC1. ***Science*** (2013) 340(6136):1100-6.

19. Thoreen CC, **Chantranupong L**, Keys HR, Wang T, Grey NS, Sabatini DM. A unifying model for mTORC1-mediated regulation of mRNA translation. ***Nature*** (2012) 485(7396):109-13.

Undergraduate work

20. Li W, Cantor JR, Yogesha SD, Yang S, **Chantranupong L**, Liu JQ, Agnello G, Georgiou G, Stone EM, Zhang Y. Uncoupling intramolecular processing and substrate hydrolysis in the N-terminal nucleophile hydrolase hASRGL1 by circular permutation. ***ACS Chemical Biology*** (2012); 7(11):1840-7.

21. **Chantranupong L**, Heineman RH. A common, non-optimal phenotypic endpoint in experimental adaptations of bacteriophage lysis time. ***BMC Evol Biol*** (2012); 12(1): 37.

22. Romero PA, Stone EM, Lamb C, **Chantranupong L**, Krause A, Miklos A, Hughes RA, Fechtel B, Ellington AD, Arnold FH, Georgiou G. SCHEMA Designed Variants of Human Arginase I & II Reveal Sequence Elements Important to Stability and Catalysis. ***ACS Synthetic Biology*** (2012); 1(6):221-8.

23. Stone EM, **Chantranupong L**, Gonzalez C, O'Neal J, Rani M, Vandenberg C, Georgiou G. Strategies for optimizing the serum persistence of engineered human arginase I for cancer therapy. ***Journal of Controlled Release*** (2012); 1:171-9.

24. Stone EM, **Chantranupong L**, Georgiou G. The second-shell metal ligands of human arginase affect coordination of the nucleophile and substrate. ***Biochemistry*** (2010); 49(49): 10582-8.

25. Stone EM, Glazer ES, **Chantranupong L**, Cherukuri P, Breece RM, Tierney DL, Curley SA, Iverson BL, Georgiou G. Replacing Mn^{2+} with Co^{2+} in human arginase I enhances cytotoxicity toward l-arginine auxotrophic cancer cell lines. ***ACS Chemical Biology*** (2010); 5(3): 333-42.

26. Cantor JR, Stone EM, **Chantranupong L**, Georgiou G. The human asparaginase-like protein 1 hASRGL1 is an Ntn hydrolase with beta-aspartyl peptidase activity. ***Biochemistry*** (2009); 48(46): 11026-31.

Patents

Methods of identifying modulators of Sestrin-GATOR2 interaction for modulating mTORC1 activity. Patent # 10168338. January 1, 2019. Inventors: Sabatini DM, **Chantranupong L**, Wolfson RL, Orozco JM, Saxton RA, Sengupta S.