

Name: Dr. Prasad Tammineni

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Contact:

Area Of Research: Autophagy, vesicular trafficking, Mitochondria, lysosomes, Alzheimer's disease, Neurosciences

Faculty Details

Prasad Tammineni, Ph.D. is an Assistant Professor in the Department of Animal Biology at the University of Hyderabad (UoH). During his PhD, at University of Hyderabad, Dr. Tammineni was supported by CSIR fellowship to understand the mechanistic details of STAT3 transport to mitochondria and its non-canonical functions in redox homeostasis. He then moved to Rutgers University (USA) to conduct postdoctoral research on endo-lysosomal trafficking and autophagy regulation in Alzheimer's Disease, using transgenic mouse models and state-of-the art imaging modules. Dr. Tammineni then moved to MIT (USA), as a Picower Research Fellow, to investigate the mechanisms of synaptic plasticity in neurodevelopmental and neuropsychiatric disorders. Dr. Tammineni now runs a Molecular Neurosciences lab at UoH. Overarching goal of his research group is to understand the molecular mechanisms of membrane trafficking and how organelle/protein quality control is regulated in neuronal health and disease.

Education/Training

Picower Research Fellow – MIT, USA

Postdoctoral Research Associate – Rutgers University, USA

PhD – University of Hyderabad

MS – S.V. University, Tirupathi

Postdoctoral Awards

JPB Foundation-MIT Fellowship – MIT- JPB Foundation (2018)

Outstanding Postdoctoral Research Award – Rutgers University, USA (2018)

Doctoral Awards

K. V. Rao Young Scientist Award (2013)

CSIR Fellowship (2009-2014)

You can follow our lab updates here or on Pubmed

Lab Website

Notice Board

No Records Available

Students And Project Trainees

Students/Projects Trainees

Name	Joined As	Mail	Contact
Anusruti Sabui	Graduate Student	---	---
Mitali Biswas	Graduate Student	---	---
A Vigneshwar Reddy	Graduate Student	---	---
Rishab	Master's Thesis Student	---	---

Sofia Master's thesis student --- ---

Former Students/Projects Trainees

Name Joined As Working

Janakiramulu Pasula Project Assistant

Kashmiri Manishrao Lande Winter Internship Student Kashmiri is now a Junior Research Fellow at CCMB, Hyderabad

Preethi Kandagiri MSc Thesis Project Preethi is a Junior Research Fellow at NIAB, Hyderabad

Rajyalaxmi MSc thesis Project

Ghazala Rahman Master's thesis Student Currently a grad student at IIT, Hyderabad

Vismitha Nadig Int. MSc thesis student PhD in Max Planck, Germany

Publications

20 Jeong YY, Han S, Jia N, Zhang M, Sheshadri P, Tammineni P, Cheung J, Nissenbaum M, Baskar SS, Kwan K, Margolis DJ, Jiang P, Kusnecov AW, Cai Q. (2022) , Broad activation of the Parkin pathway induces synaptic mitochondrial deficits in early tauopathy. , Brain, Oxford University Press,145 (1),35022692,305-323.

19 Nyshadham SN Chaitanya, Prasad Tammineni, Ganji Purnachandra Nagaraju, Aramati BM Reddy (2022) , Pleiotropic roles of evolutionarily conserved signaling intermediate in toll pathway (ECSIT) in pathophysiology , Journal of Cellular Physiology, Wiley,,doi: 10.1002/jcp.30832, IF - 6.5.

18 Sabui A, Biswas M, Somvanshi PR, Kandagiri P, Gorla M, Mohammed F, Tammineni P*. (2022) , Decreased anterograde transport coupled with sustained retrograde transport contributes to reduced axonal mitochondrial density in tauopathy neurons , Frontiers in Molecular Neurosciences, ,,,.

17 Rajkishor Nishad, Dhanunjay Mukhi, Ashish Kumar Singh, Manga Motrapu, Kumaraswami Chintala, Prasad Tammineni, and Anil K. Pasupulati (2021) , Growth hormone induces mitotic catastrophe of glomerular podocytes and contributes to proteinuria , Cell Death and Disease, ,10.1038/s41419-021-03643-6,,.

16 Mohammed F, Gorla M, Bisoyi V, Tammineni P*, Sepuri NBV* (2020) , Rotenone-induced reactive oxygen species signal the recruitment of STAT3 to mitochondria , FEBS Letters, FEBS Press,doi: 10.1002/1873-3468.13741,,.

15 Rathje M, Waxman H, Benoit M, Tammineni P, Leu C, Loebrich S, Nedivi E (2019) , Genetic variants in the bipolar disorder risk locus SYNE1 that affect CPG2 expression and protein function , Mol. Psychiatry, Nature Publishing Group,doi: 10.1038/s41380-018-0314-z,,.

14 Cai, Qian., Tammineni, Prasad., (2017) , Mitochondrial aspects of synaptic dysfunction in Alzheimer's disease , Journal of Alzheimer's Disease, IOS press,57,4,1087-1103.

- 13 Feng, Tuancheng., Tammineni, Prasad., Agrawal, Chanchal., Jeong, Yu Young., Cai, Qian., (2017) , Autophagy-mediated regulation of BACE1 protein trafficking and degradation , *Journal of Biological Chemistry, American Society for Biochemistry and Molecular Biology*,292,5,1679-1690.
- 12 Norris, Anne., Tammineni, Prasad., Wang, Simon., Gerdes, Julianne., Murr, Alexandra., Kwan, Kelvin Y., Cai, Qian., Grant, Barth D., (2017) , SNX-1 and RME-8 oppose the assembly of HGRS-1/ESCRT-0 degradative microdomains on endosomes , *Proceedings of the National Academy of Sciences, National Academy of Sciences*,114,3,E307-E316.
- 11 Tammineni, Prasad., Ye, Xuan., Feng, Tuancheng., Aikal, Daniyal., Cai, Qian., (2017) , Impaired retrograde transport of axonal autophagosomes contributes to autophagic stress in Alzheimer's disease neurons , *Elife, eLife Sciences Publications Limited*,6,,e21776.
- 10 Ye, Xuan., Feng, Tuancheng., Tammineni, Prasad., Chang, Qing., Jeong, Yu Young., Margolis, David J., Cai, Huaibin., Kusnecov, Alexander., Cai, Qian., (2017) , Regulation of synaptic amyloid- β generation through BACE1 retrograde transport in a mouse model of Alzheimer's disease , *Journal of Neuroscience, Society for Neuroscience*,37,10,2639-2655.
- 9 Tammineni, Prasad., Cai, Qian., (2017) , Defective retrograde transport impairs autophagic clearance in Alzheimer disease neurons , *Autophagy, Taylor & Francis*,13,5,982-984.
- 8 Lin, Mei-Yao., Cheng, Xiu-Tang., Tammineni, Prasad., Xie, Yuxiang., Zhou, Bing., Cai, Qian., Sheng, Zu-Hang., (2017) , Releasing syntaphilin removes stressed mitochondria from axons independent of mitophagy under pathophysiological conditions , *Neuron, Cell Press*,94,3,595-610. e6.
- 7 Tammineni, Prasad., Jeong, Yu Young., Feng, Tuancheng., Aikal, Daniyal., Cai, Qian., (2017) , Impaired axonal retrograde trafficking of the retromer complex augments lysosomal deficits in Alzheimer's disease neurons , *Human molecular genetics, Oxford University Press*,26,22,4352-4366.
- 6 Cai, Qian., Tammineni, Prasad., (2016) , Alterations in mitochondrial quality control in Alzheimer's disease , *Frontiers in cellular neuroscience, Frontiers*,10,,24.
- 5 Sepuri, Naresh Babu V., Tammineni, Prasad., Mohammed, Fareed., Paripati, Arunkumar., (2016) , Nuclear transcription factors in the mitochondria: a new paradigm in fine-tuning mitochondrial metabolism , *Pharmacology of mitochondria, Springer, Cham*,,,3-20.
- 4 Murari, Anjaneyulu., Thiriveedi, Venkata Ramana., Mohammad, Fareed., Vengaldas, Viswamithra., Gorla, Madhavi., Tammineni, Prasad., Krishnamoorthy, Thanuja., Sepuri, Naresh Babu V., (2015) , Human mitochondrial MIA40 (CHCHD4) is a component of the Fe-S cluster export machinery , *Biochemical Journal, Portland Press Limited*,471,2,231-241.
- 3 Nishanth, Reddy P., Prasad, Tammineni., Jyotsna, Radhika G., Reddy, Pratap K., Reddanna, Pallu., (2014) , Hepatoprotective effects of Terminalia chebula fruit extract against 2-AAF-induced hepatic damage in Albino mice: role of MDR1 and COX-2 , *Journal of herbs, spices & medicinal plants, Taylor & Francis*,20,4,402-420.
- 2 Tammineni, Prasad., Anugula, Chandrashekhar., Mohammed, Fareed., Anjaneyulu, Murari., Larner, Andrew C., Sepuri, Naresh Babu Venkata., (2013) , The import of the transcription factor STAT3

into mitochondria depends on GRIM-19, a component of the electron transport chain , Journal of Biological Chemistry, American Society for Biochemistry and Molecular Biology,288,7,4723-4732.

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Open Positions

We are always looking for highly motivated researchers across multiple positions!

If you are interested in understanding the mechanisms regulating neuronal health and disease, send an email with your CV to Tammineni: prasadtammineni@uohyd.ac.in

Graduate Students: We welcome graduate students through PhD program at Department of Animal Biology. Candidates with CSIR-JRF will be given preference, but not essential.

Research Technicians and Internships: We are open to train students across different educational backgrounds. To apply for a position, please send me an inquiry email describing your research interests and expectations along with your CV.

Postdocs: We are also interested in motivated postdocs. Prospective postdocs are encouraged to send me an email with definite research questions, career goals and a CV. Postdocs with independent funding will be encouraged.

Our Mission

The goal of Tammineni lab is to provide an environment where science can be done with free spirit. We are committed to train students, postdocs, and research technicians towards their goals. We are open to discussions, collaborations and thrive on honesty and ethical values while pursuing science.

Research

Neurodegenerative diseases affect a staggering percentage of population worldwide. However, these diseases are often untreatable because of the lack of our understanding of the disease biology. The overarching goal of our lab is to investigate molecular mechanisms of membrane trafficking and quality control pathways in neurodegenerative disorders with a special emphasis on Alzheimer's and Parkinson's Disease. Using transgenic mouse models of AD and PD and state-of-the art imaging approaches, we are investigating the following questions; (1) the interplay between endo-lysosomal and mitochondrial quality control (2) Relevance of autophagy and other quality control mechanisms in early onset or progression of Neurodegenerative diseases; (3) cytoskeletal remodeling during axon transport and neuronal communication. My long-term goal is to establish how trafficking pathways are coupled with quality control mechanisms in neuronal health and disease.

Membrane Trafficking in Neuronal Health and Disease

Neurons have complex structural geometry. Since axons grow so long, they face unique challenges in delivering or collecting cargo from the tip of axons. We study how this trafficking, along the axons, is regulated in neuronal health and disease. Our lab is particularly interested in how organelle and receptor trafficking is regulated in neurons and how they go awry in Alzheimer's disease (AD) and Parkinson's Disease (PD). Ongoing projects in the lab address the following questions: (1) Mechanistic and Regulatory aspects of endo-lysosomal and mitochondrial transport (2) Dynamic interplay between cytoskeleton and adaptor proteins during transport (3) How neuronal activity and metabolic stress regulates membrane and receptor trafficking.

Autophagy in Protein and Organelle Quality Control

Neurons are post mitotic in nature. They heavily rely on quality control pathways to remove protein aggregates and defective organelles. Autophagy is one such important process in which autophagosomes engulf protein aggregates and damaged organelles to transport them to lysosomes for degradation. Defects in autophagy have been implicated in many neurological disorders. Our lab is interested in how and whether autophagy pathways are deregulated during the onset or progression of AD and PD. Long-term goal of the lab is to understand how the quality control processes communicate with trafficking pathways during neurodegeneration. Additional projects in the lab seek to understand the inter organelle cross talk with a special focus on ER, Mitochondria and endo-lysosomes, during the initiation and progression of AD. We anticipate that these projects would help in generating a snapshot of organelle dynamics and their interactome, thus improve our understanding of AD pathophysiology.

Cytoskeleton Re-modelling during Synaptic Plasticity

Synapse is a highly specialized structure composed of various signalling molecules and scaffolding proteins. It is subjected to dynamic remodelling according to the intensity of synaptic input. Actin serves as the principal architectural component of the spine, facilitating the assembly of diverse postsynaptic proteins. However, regulatory mechanism of actin dynamics during neuronal activation remains not well studied. Using state-of-the-art imaging techniques, we would like to investigate the spatio-temporal regulation of actin remodelling during neuronal activation. Specifically, we would like to investigate the role of activity regulated proteins in dendritic structural plasticity and AMPA receptor trafficking and their relevance in neuropsychiatric and neurodegenerative disorders.

