Faculty CV

Name

Naresh Babu V. Sepuri

Designation

Professor

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Profile photo (1 photo upto 10 MB)

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Add file

Links of Personal webpage/Google scholar/LinkedIn etc.

https://scholar.google.co.in/citations?user=VwqALJsAAAAJ&hl=en
ORCID: 0000-0001-7077-1255

Broad areas of research (only keywords)

Mitochondrial biology, autophagy, Lipid homeostasis,

Professional Experience

Post-doctoral Fellow at University of Pennsylvania, Philadelphia, USA 1996-1998
Post-doctoral Fellow at Johns Hopkins University, Baltimore, USA-1999-2001
Post-doctoral Research Assistant, Thomas Jefferson University, Philadelphia, USA-2001-2005
Research Associate, University of Pennsylvania, Philadelphia, 2005-2007
Associate Professor, University of Hyderabad, 2007-2015
Professor, University of Hyderabad, 2015-

Education/Training

BSc 1987: Silver Jubilee Govt College, Kurnool, AP
MSc 1989: Sri Krishnadevara University, Anantapur, AP
M.Phil 1992: University of Hyderabad, Hyderabad
PhD 1996: University of Hyderabad, Hyderabad

Detailed research interests (Upto 2 paragraphs or 10 bullet points)

Naresh Sepuri's lab uses mammalian and yeast model systems to understand mitochondrial retrograde signaling, redox homeostasis, and inter-organellar communication in health and disease. Using yeast models to study redox biology, his lab demonstrated that Mge1, an evolutionarily conserved nucleotide exchange factor of Hsp70, acts as an oxidative sensor to regulate mitochondrial Hsp70, and that it is reversibly regulated by methionine sulfoxide reductase. His group has shown that the importance of methionine sulfoixide reductase in regulating Cvt autophagy pathway and also involved in regulating Atg8 transcription to modulate the general autophagy. Further, his group has demonstrated the significance of mitochondrial complex I-generated ROS in recruiting transcription factor STAT3 to mitochondria and retrograde signaling. Recently, they demonstrated that Pil1, an eisosomal protein in yeast, regulates mitochondria shape, dynamics, mitophagy, and cell death thus linking mitochondria with plasma membrane domains. In a recent key study, his group has shown that a specific subpopulation of mitochondria controls lipid droplet dynamics. For the first time, they demonstrate the presence of two distinct populations of mitochondria in rat liver, namely, cytoplasmic mitochondria, and lipid droplet-associated mitochondria. They show that lipid droplet mitochondria exhibit higher fatty acid oxidation and the cytoplasmic mitochondria are associated with higher respiration capacity. Further, they demonstrated the importance of such functional segregation of mitochondria as any aberration in lipid droplet-associated mitochondria may lead to NAFLD. The studies from his lab underscore the intricate interaction, signaling, cooperation displayed by mitochondria and other cellular organelles to maintain cellular homeostasis.

Selected publications (upto 5)

1. Pathak D, Krishnamoorthy T, Sepuri NBV. Analysis of mitochondrial biogenesis regulation by oxidative stress. Methods Enzymol. 2024;707:519-539. doi: 10.1016/bs.mie.2024.07.060.
2. Chatterjee A, Sepuri NBV. Methionine sulfoxide reductase 2 regulates Cvt autophagic pathway by altering the stability of Atg19 and Ape1 in Saccharomyces cerevisiae. J Biol Chem. 2024 Jan 20;300(3):105662. doi: 10.1016/j.jbc.2024.105662. Epub ahead of print. PMID: 38246354; PMCID: PMC10875273.
3. Talari NK, Mattam U, Meher NK, Paripati AK, Mahadev K, Krishnamoorthy T & Sepuri NBV (2023) Lipid associated mitochondria promotes fatty acid oxidation with distinct bioenergetic pattern in wistar male rats. Nature Communications. doi.org/10.1038/s41467-023-36432-0 (Featured in Top 50 articles of Nature Communications in Health Sciences division)
4. Pal A, Paripati AK, Deolal P, Chaterjee A, Prasad PR, Adla P, Sepuri, NBV. Eisosome protein Pil1 regulates mitochondrial morphology, mitophagy and cell death in Saccharomyces cerevisiae. Journal of Biological Chemistry.(2022) Nov;298(11):102533.doi: 10.1016/j.jbc.2022.102533. Epub 2022 Sep 24
5. Mattam U, Noble Kumar T, Venkata Ramana T, Sepuri NBV. Aging reduces kisspeptin receptor (GPR54) expression levels in the hypothalamus and extra-hypothalamic brain regions. M. Exp Ther Med. 2021.

Selected projects (upto 5)

1. DBT project (2024-2027): Functional, proteomic and metabolomic analysis of lipid associated mitochondria: A unique approach to ameliorate nonalcoholic fatty liver disease
2.MHRD-STAR (2003-2026): Mitochondrial haplogroup variation to Mycobacterium infection and severity
3.GATES foundation (2023-2026):Mitochondrial DNA haplogroups variation and Covid19 infection severity
4.SERB (2023-2026):Role of Mia40 and its glutathionylated mutants in PINK1 mediated mitophagy" Grant amount
5.CSIR (2023-2026):Role of Mge1, a mitochondrial co-chaperone of Hsp70, in mitochondrial mediated abiotic stress response. Grant amount

Selected patents (a paragraph or upto 5 bullet points)

1. Design, synthesis and evaluation of B4N (DUHSLBTMV16072018-1) and T4N (DUHSLBTMV16072018-2), the derivatives of Nordihydro guairetic acid (NDGA) as potential inhibitors of dengue virus protease. Musturi Venkataramana, Chaitanya G, Lekha Gandhi, Ravikumar Y and Naresh Babu Sepuri.

Current PhD scholars and broad research topics

1. Priyanka Adla: Mitochondrial derived vesicles and their characterization
2. Niroj Meher: Role of Kisspeptin in liver mitophagy and autophagy
3. Ankur Chatterjee: Mitochondrial heterogenity in the liver
4. Pushpa Rani Prasad: Role of Lsp1 and Mrp8 in modulating the mitochondrial metabolism in Saccaromyces cerevisiae
5. Dheeraj Pathak: Mitochondirial derived vesicles as a therapeutic tools to cure mitochondria diseases
6. Lahari Y: Mr2 role in lipolyation and copper toxicity