

RITHWIK PREMODO NAMBIAR

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Education

Indian Institute of Science Education and Research (IISER), Tirupathi <i>Professional Master's Degree in Biological Data Science</i>	2024-2025 CGPA: 9.7/10.00
Indian Institute of Science Education and Research (IISER), Thiruvananthapuram <i>BS-MS Dual Degree in Biological Sciences with minor in Chemical Sciences</i>	2016 - 2021 CGPA: 8.10/10.00
Kendriya Vidyalaya East Hill, Kerala <i>All India Senior School Certification Examination</i>	2015-2016 93.8/100

Publications

Journal of Cell Science https://doi.org/10.1242/jcs.239335	June 2020
<ul style="list-style-type: none">Nair SV, Narendradev ND, Nambiar RP, Kumar R, Srinivasula SM. Naturally occurring and tumor-associated variants of RNF167 promote lysosomal exocytosis and plasma membrane resealing. J Cell Sci. 2020 Jun 11;133(11):jcs239335. doi: 10.1242/jcs.239335. PMID: 32409562.	

Skills

Experimental: Molecular Cloning, Western Blotting, Protein Expression and Purification, Immunofluorescence, Fluorescence Microscopy, DNA/RNA isolation, Yeast Genetics, Yeast Cell Culture, Mammalian Cell Culture, Affinity Purification
Languages: R , Python , Bash , MATLAB , Perl
Computational skills: Machine Learning, Deep Learning, Bulk and scRNA Seq, Genome-Wide Association Studies
Packages: Scikit, PyTorch (Python), Seurat, Monocle, Tidyverse (R)
Softwares: Colab, RStudio, Cytoscape, GraphPad, Origin, ImageLab, QuantityOne, ImageJ

Research Experience

A Machine Learning Pipeline for Mitochondrial Dysregulation in Single Cells <i>Supervisor: Dr. Rajashekar Varma</i>	Mar 2025 – May 2025 <i>IISER Tirupati, Andhra Pradesh</i>
<ul style="list-style-type: none">* A transcriptome-based machine learning approach to classify mitochondrial health in single cells* Identified the top genes that contribute to dysfunction in mitochondria and identified the pathways and molecular processes they are involved in* Techniques used: Single-Cell Analysis using Seurat, used scikit libraries to create ML classifiers, R, Python	
Protein Subcellular Localisation Predictor <i>Supervisor: Dr. Debasish Koner</i>	Feb 2025 – May 2025 <i>IISER Tirupati, Andhra Pradesh</i>
<ul style="list-style-type: none">* A DL-based tool to predict the subcellular localisation of proteins from their amino acids* Compared different protein language models like ESM2, ProtBert and ProtT5 for this purpose* Techniques used: scikit and tensorflow libraries to create the neural networks, ESM2, ProtBert and ProtT5	
Temporal Dynamics of the OXPHOS complex assembly <i>Supervisor: Dr. Evgeny Onishchenko</i>	Mar 2022 – July 2023 <i>University of Bergen, Norway</i>
<ul style="list-style-type: none">* Studying the temporal dynamics of OXPHOS complex assembly in <i>Saccharomyces cerevisiae</i>* Techniques used: Yeast culture, Yeast genetics, Affinity purification, PCR, Molecular cloning, Western Blotting, Immunofluorescence, Microscopy, Image Analysis, Mammalian cell culture* Worked as a Teaching assistant for Structural Molecular Biology (MOL 310)* Worked as a Lab Teaching assistant for Experimental Molecular Biology (MOL 222) and Practical Biochemistry and Molecular Biology (MOL 300)	
Role of an CARP2 on clearance of defective mitochondria <i>Supervisor: Prof. Srinivasa Murthy Srinivasula</i>	Aug 2020 – May 2021 <i>IISER TVM, Kerala</i>
<ul style="list-style-type: none">* Studied the role of an endosome-associated E3 Ubiquitin ligase, CARP2 in the clearance of defective mitochondria from the cell (Mitophagy)* Wrote macros for ImageJ to automate the quantification of mitochondrial structure and mitochondrial content in normal vs CCCP-induced stress conditions	

- * **Techniques used:** PCR, Molecular cloning, Western Blotting, Immunofluorescence, Microscopy, Image Analysis, Mammalian cell culture

Phase separation of the different repeat sequences of Tau

January 2020 – July 2020

Supervisor: Dr. Vinesh Vijayan

IISER TVM, Kerala

- * Compared the conditions necessary for phase separation in different repeat sequences of Tau
- * **Techniques used:** Protein expression and purification, Western blotting,

Characterising the different isoforms of RNF167

May 2019 – March 2020

Supervisor: Dr. Srinivasa Murty Srinivasula

IISER TVM, Kerala

- * Identify and characterise the different isoforms of an E3 Ubiquitin ligase, RNF167
- * Used image to quantify the functions of different isoforms of RNF167 and their role in lysosomal exocytosis
- * Findings were published in the *Journal of Cell Science*, June 2020 <https://doi.org/10.1242/jcs.239335>
- * **Techniques used:** Molecular cloning, PCR, Agarose gel electrophoresis, Western Blotting, Microscopic image analysis, *in vitro* ubiquitin assays

Literature Review on HSCs in Aorta-Gonad-Mesonephros region

May 2018 – July 2018

Supervisor: Dr. Satish Khurana

IISER TVM, Kerala

- * Performed a literature review titled **rote a literature review on "Molecular Mechanisms Underlying the Emergence of Hematopoietic Stem Cells in the Aorta-Gonad-Mesonephros Region of the Mouse Embryo"**

Laser Physics

May 2017 – June 2018

Supervisor: Dr. V K Unnikrishnan

MAHE, Karnataka

- * Tested the apparatus and experiments for the lab courses in the Department of Atomic and Molecular Physics

Honours and Awards

Innovation in Science Pursuit for Inspired Research (INSPIRE) fellowship

2016-2021

- * Awarded by the Department of Science and Technology, Government of India to the top 1 percent students in the senior secondary board exams

Council of Scientific and Industrial Research National Eligibility Test (CSIR NET)

Dec 2020

- * Qualified for Lectureship/Assistant Professorship with an All India Rank of 29 in the CSIR NET exam Life Sciences exam conducted in December 2020

Workshops and Conferences

Frontier Symposium 2020

January 2020

IISER Thiruvananthapuram, Kerala

5th Asia Pacific Drosophila Research Conference

January 2020

IISER Pune, Maharashtra

Biostatistics: A User's Perspective

July 2019

IISER Pune, Maharashtra

Extracurricular

- Recipient of the Sports Citation award from the Sports Council, IISER Thiruvananthapuram for exemplary contribution to sports in IISER Thiruvananthapuram
- Head of Organisation for the Annual Sports Meet 2018
- Active member of the Science, Cultural and Sports Councils of IISER Thiruvananthapuram
- Won Silver medal in football in the 6th Inter-IISER Sports Meet held in IISER Mohali in December 2017
- Captained the college football team in the 9th Annual Inter-IISER Sports Meet held in IISER Pune in December 2020

Referees

Prof. Srinivasa Murty Srinivasula

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Major Project Supervisor

Dr. Vinesh Vijayan

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Minor Project Supervisor