Srujanika Rajalaxmi

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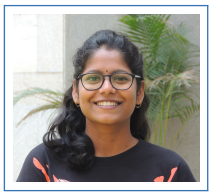

Education

2016 – 2021 **National Institute of Science Education and Research (NISER)**, Integrated M.Sc., Bhubaneswar, India
Department: School of Biological Sciences, Specialization: Cell Biology
GPA: 8.23/10

2013 – 2015 **Jawahar Navodaya Vidyalaya**, Senior Secondary Education
Percentage: 84

2008 – 2013 **Jawahar Navodaya Vidyalaya**, Secondary Education
GPA: 10/10

Publication

05 May 2023 **Proteomics of hypothermic adaptation reveals that RBM3 enhances mitochondrial metabolism and muscle stem-cell differentiation**
bioRxiv, doi:https://doi.org/10.1101/2023.05.05.539524
Manuscript under review: Communications Biology

Research Experience

2022 Feb-Ongoing **Leading project**, *Characterization of a rare genetic disorder of mitochondrial β-oxidation*,
Supervisor: **Dr. Arvind Ramanathan**, inStem, India

- Using human iPSC-derived skeletal muscle cells (2D and 3D cultures) to evaluate the metabolic, structural, and functional pathways that are dysregulated in Very long-chain acyl-CoA dehydrogenase deficiency
- Dissecting the mechanism of disease pathogenesis and investigating the role of long and very long chain fatty acids in regulating muscle physiology
- Bioengineering *in vitro* 3D skeletal muscle organoid model of VLCADD to screen nutraceuticals for potential therapeutic interventions

2021 Sept-Ongoing **Additional Project**, *Metabolic control of skeletal muscle homeostasis*,
Supervisor: **Dr. Arvind Ramanathan**, inStem, India

- Understanding the molecular mechanism underlying RBM3-mediated stress responses with a primary focus on translational regulation and the rewiring of mitochondrial metabolism
- Utilizing RBM3 to improve muscle regeneration in animal models of muscle injury and aging
- Standardization of lipid nanoparticle-mediated (LNP) delivery of RBM3 mRNA into myoblasts and myotubes

2019 – 21 **Dissertation**, *Characterization of the Brachyolmia causing mutant TRPV4 channel in various cellular functions*,
Supervisor: **Dr. Chandan Goswami**, NISER, Bhubaneswar, India

- Characterized a naturally occurring pathogenic mutant Transient Receptor Potential channel in osteogenic cells
- Investigated the effect of these critical mutations on cellular and subcellular organelle functions

2019 – 21 **Additional Project**, *Identification of a novel pathogenic human TRPV4 mutation and it's functional characterization*,
Supervisor: **Dr. Chandan Goswami**, NISER, Bhubaneswar, India

- Disease manifested as multiple defects in mitochondrial and cellular metabolism, musculature, neurological and immunological dysfunction
- Employed a combination of live cell imaging, molecular, and biochemical approaches to provide a comprehensive understanding of the cellular basis of disease phenotype and how we might alleviate the disease by targeting TRPV4

Summer 2019 **Summer Internship**, *Isolation and characterization of exosomes from Mesenchymal Stem Cells (MSCs)*,
Supervisor: **Dr. Sujata Mohanty**, Professor, Dept. of Stem Cell Facility, AIIMS, Delhi, India

- Understanding the role of MSCs and MSC-derived exosomes in the maintenance and restoration of tissue homeostasis
- Integrated the tissue-specific MSC exosomes within a hydrogel scaffold for tissue engineering to compare their wound healing properties *in vivo* in a mice injury model

Summer 2018 **Summer Internship**, *Isolation and identification of gluten degrading bacteria from sewage samples across India*,
Supervisor: **Dr. Yogesh Shouche**, Scientist-G at National Centre for Cell Science, Pune, India

- Intended to look for non-pathogenic gliadin degrading bacteria as a possible candidate for probiotic therapy in celiac disease and isolate gliadin-digesting enzymes from these bacteria for potential oral enzyme therapy

Laboratory Skills

Molecular	Cloning, SDS-PAGE, Western Blot, RNA isolation, qRT-PCR, Transfection, Transformation
	Retroviral transduction, Neon electroporation, Primer Designing, Lipid nanoparticle-based transfection
Biochemistry	Seahorse assay, Immunohistochemistry, Sandwich ELISA, Cell viability assay, Metabolite extraction from cells
Cell culture	**Primary:** Skeletal Muscle Stem Cells (Human and Murine), iPSC-derived muscle cells
	Mesenchymal Stem Cells, Bone Marrow Macrophages, Peritoneal Macrophages
	Cell lines: SaOS-2, MC3T3, and HaCaT, C2C12, HEK
	Exosome isolation from Mesenchymal Stem Cells
	Hydrogel scaffold preparation
3D culture	Generating skeletal muscle organoid from human and mice muscle stem cells
Bioengineering	Biofabrication of Ecoflex and PDMS scaffolds for muscle organoid generation
Cryosectioning	Mice skeletal muscles, Embryonic and postnatal mice brain
Microscopy	Confocal microscopy (Olympus FV3000), Calcium Imaging
Rodent handling	Mice Dissection, Harvesting Satellite cells, Bone Marrow and Peritoneal Macrophages, Skeletal muscle injury model in mice
Analysis tools	GraphPad Prism, Image processing using ImageJ and Fiji
Bioinformatics	MEGA-X

Scholastic Achievements and Fellowships

July 2021	**Best Thesis Award**
	School of Biological Sciences, NISER
May 2021	**Qualified the Joint Graduate Entrance Examination for Biology and Interdisciplinary Life Sciences**
2019	**Council of Scientific and Industrial Research- National Eligibility Test (CSIR-NET)**
	Secured All India Rank 100
2016-21	**Department of Atomic Energy, Government of India**
	Recipient of DISHA (DAE Incentive Scheme for Holistic Science Education and Augmentation) Fellowship

Workshops and Conferences Attended

24/11/22	Rare Genetic Diseases Research Summit 2022 organized by Organization for Rare Diseases India
Ongoing	The cytoskeleton of neurons and glia
Ongoing	World Wide Neuro
27/07/20	Alzheimer's Association International Conference, 2020 organized by the Alzheimer's association
29/06/20	Online Workshop on Scientific Writing and Research Ethics organized by DBT/Wellcome Trust India Alliance
11/01/19	Understanding Behavior 2019 Organized by IISER, Kolkata
28/10/17	Recent advancement in Neuroscience Organized by Indian Academy of Neuroscience at NISER

Courses taken

2021-23	Glial Neurobiology, Molecular basis of physiological processes, Fundamentals of Science Communication, Research and publication ethics
Semester 10	Advanced Biochemistry, Cancer Biology
Semester 9	Advanced Molecular Biology, Advanced Immunology
Semester 8	Bioinformatics and Computational Biology, Plant Developmental Biology, Evolutionary Biology, Enzymology
Semester 7	Developmental Biology, Advanced Cell Biology and Microscopy, Genetic Engineering, Virology
Semester 6	Immunology, Molecular Biology, Endocrinology, Structural Biology, Reagents in Organic Synthesis
Semester 5	Neurobiology, Animal Physiology, Plant Physiology, Principles of Drug Design, Reaction Mechanisms in Organic Chemistry
Semester 4	Cell Biology, Genetics, Ecology, Organometallic Chemistry
Semester 3	Microbiology, Biochemistry, Biophysics and Bio-statistics, Basic Inorganic Chemistry
	Click here to view the full transcript.

Posters and Presentations

Poster	**Rare Diseases Research Summit**
24/11/22	Developing human iPSC-derived skeletal muscle organoid models for Very Long Chain Fatty Acid Oxidation Disorder
Poster	**Rotation Project**
25/01/22	Chromatin regulation of cortical development and the role of Lysine-specific demethylase 1
Poster	**Rotation Project**
24/11/21	Charaterizing the role of RNA-Binding Motif Protein 3 in skeletal muscle homeostasis
Presentations	**M.Sc. Project**
09/07/21	Characterization of the Brachyolmia causing mutant TRPV4 channels in various cellular functions
	Summer Internship
26/07/17	Innate immune system, metabolism, and inflammatory bowel diseases
	Gut microbiome perturbation and its effect on various nervous system disorders
09/02/17	Bacterial altruism leading to population-wide resistance, Open Day 2017, Science Activity Club, NISER

References

Chandan Goswami
Professor
School of Biological Sciences
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