

Dr. MOHAMMAD RUMMAN (Ph.D)

Assistant Professor

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RESEARCH EXPERIENCE

- **May 2023-present: Assistant Professor**, Dept. of Biosciences, Integral University, Lucknow.
- **Feb 2019-March 2023: Research Associate**, Dept. of Biochemistry, King Georges' Medical University (KGMU), Lucknow.
- **Jan 2017-Dec 2017: Post-doctoral scientist**, Molecular Endocrinology Laboratory (KMEB), Odense University Hospital (OUH), Odense, Denmark.
- **Nov 2009-Oct 2016: Ph.D student (Senior Research Fellow)**, Institute for Stem Cell Biology and Regenerative Medicine (InStem), National centre for Biological Sciences (NCBS), Bangalore, India.
- **August 2008-July 2009: Junior Research Fellow**, Centre for Cellular and Molecular Biology (CCMB), Hyderabad, India.

TEACHING EXPERIENCE

- **August 2007- July 2008: Lecturer**, Dept. of Biotechnology, Doon (P.G.) Paramedical College & Hospital (H.N.B. Garhwal University), Dehradun, India.

EDUCATION

- **Ph.D (Life Science, 2016)**

Institute for Stem Cell Biology and Regenerative Medicine (InStem), National Centre for Biological Science (NCBS), Bangalore, (Manipal University) India.

- **M.Sc. Biotechnology (2007)**

Hemwati Nandan Bahuguna (H.N.B.) Garhwal University, India

- **B.Sc. Zoology, Botany, Chemistry (2005)**

University of Lucknow, India.

FELLOWSHIPS AND AWARDS

- Secured five-year fellowship from **Council for Scientific and Industrial Research (CSIR-NET), Govt. of India** for Ph.D research in 2008.

MEMBERSHIPS

Life member, Society for Neurochemistry India (SNCI).

PUBLICATIONS

Original Articles

1. Gupta M, Rumman M, Singh B, Mahdi AA, Pandey S. Berberine ameliorates glucocorticoid-induced hyperglycemia: an in vitro and in vivo study. *Naunyn Schmiedebergs Arch Pharmacol.* 2023 Sep 14. doi: 10.1007/s00210-023-02703-2. Epub ahead of print. PMID: 37704773.

2. Molecular mechanisms underlying hyperglycemia associated cognitive decline. Gupta M, Pandey S, **Rumman M**, Singh B, Mahdi AA. (2022) *IBRO Neurosci Rep*. 14:57-63. doi: 10.1016/j.ibneur.2022.12.006. PMID: 36590246; PMCID: PMC9800261.
3. PTPRU, a quiescence-induced receptor tyrosine phosphatase negatively regulates osteogenic differentiation of human mesenchymal stem cells. **Rumman M**, Dhawan J. (2022) *Biochem Biophys Res Commun*. 636(Pt 1):41-49. doi:10.1016/j.bbrc.2022.10.062
4. Genistein suppresses microglial activation and inhibits apoptosis in different brain regions of hypoxia-exposed mice model of amnesia. **Rumman, M.**, Pandey, S., Singh, B., Gupta, M., & Mahdi, A., A. (2022) *Metabolic Brain Disease*. doi: 10.1007/s11011-022-01039-9. Epub ahead of print. PMID: 35895244.
5. SIRT1 mediates neuroprotective and neurorescue effects of camel α -lactalbumin and oleic acid complex on rotenone-induced Parkinson's disease. Ubaid, S., Pandey, S., Akhtar, M, S., **Rumman, M.**, Singh B., Mahdi, A, A,. (2022) *ACS Chemical Neuroscience*. 13(8):1263-1272.
6. Genistein prevents hypoxia-induced cognitive dysfunctions by ameliorating oxidative stress and inflammation in the hippocampus. **Rumman, M.**, Pandey, S., Singh, B., Gupta, M., Ubaid, S., & Mahdi, A., A. (2021) *Neurotoxicity Research*. 39(4):1123-1133.
7. mRNP granule proteins Fmrp and Dcp1a differentially regulate mRNP complexes to contribute to control of muscle stem cell quiescence. N Roy, S Sundar, M Pillai, F Patell-Socha, S Ganesh, A Aloysius, **M Rumman**, HP Gala, SM Hughes, P Zammit, J Dhawan (2021). *Skeletal Muscles*. 11, 18.
8. Role of Silent Information Regulator 1 (SIRT1) in Regulating Oxidative Stress and Inflammation. Saba Ubaid, **Mohammad Rumman**, Babita Singh, Shivani Pandey. *Inflammation*. 2020 Oct;43(5):1589-1598.
9. Neuroprotective and Neurorescue Mode of Action of *Bacopa monnieri* (L.) Wettst in 1-Methyl-4-phenyl-1,2,3,6-tetrahydropyridine-Induced Parkinson's Disease: An *In Silico* and *In Vivo* Study. Singh, B., Pandey, S., **Rumman, M.**, Kumar, S., Kushwaha, P., P., Verma, R., & Mahdi, A., A. (2021). *Frontiers in Pharmacology*. 12:616413.
10. Elucidating the Neuroprotective Role of Formulated Camel α -Lactalbumin-Oleic Acid Complex by Curating the SIRT1 Pathway in Parkinson's Disease Model. Ubaid, S., **Rumman, M.**, Singh, B., Akhtar, M. S., Mahdi, A. A., & Pandey, S (2020). *ACS chemical neuroscience*. 11(24), 4416–4425.
11. Neuroprotective effects of *Bacopa monnieri* in Parkinson's disease model. Singh, B., Pandey, S., **Rumman, M.**, & Mahdi, A. A. (2020). *Metabolic brain disease*, 35(3), 517–525.
12. Induction of quiescence enhances stemness in human bone marrow Mesenchymal stem cells and stimulates clinically relevant transcriptome. **Rumman. M.**, Majumder. A., Harkness. L., Kumar. V, Venugopal. B, Pillai. M.S, Kassem. M, Dhawan. J. (2018) *Stem Cell Res*. 30:69-80.
13. A fine balance: Epigenetic control of cellular quiescence by the tumor suppressor PRDM2/RIZ at a bivalent domain in the Cyclin A gene. Cheedipudi, Sirisha; Puri, Deepika; Saleh, Amena; Gala, Hardik; **Rumman, Mohammad**; Pillai, Malini; Sreenivas, Prethish; Arora, Reety; Sellathurai, Jeeva; Schroeder, Henrik; Mishra, Rakesh; Dhawan, Jyotsna. (2015) *Nucleic Acids Res. Jul 27;43(13):6236-56*.
14. Quiescence in adult stem cells: Biological significance and relevance to tissue regeneration. **Rumman M**, Dhawan J, Kassem M. (2015) *Stem Cells*. 33(10):2903-12.

Book chapters

1. Drugs from marine plants and algae. Shivani Pandey, **Mohammad Rumman**, Babita Singh, and Abbas Ali Mahdi (2022) *Biochemistry and Molecular Biology of Beneficial Plants*, Discovery Publishing House Pvt. Ltd., New Delhi, India, 2023.

2. Phytochemistry and Medicinal uses of Lemongrass *Cymbopogon citratus*. Shivani Pandey, Babita Singh, **Mohammad Rumman**, and Abbas Ali Mahdi (2021) *Plant Secondary Metabolites for Human Health*, Discovery Publishing House Pvt. Ltd., New Delhi (India): 141-149.
3. Mimicking muscle stem cell quiescence in culture: methods for synchronization in reversible arrest. Arora R, **Rumman. M**, and Dhawan J. (2017) *Methods Mol Biol.* **1556:283-302**.

CONFERENCE PROCEEDINGS/SEMINARS

Artificial Intelligence in Biological Sciences: Recent Trends, Dept. of Biosciences, Integral University, Lucknow, 23rd April 2024.

International seminar on Application of Microbes in Synthetic Biology, Dept. of Biosciences, Integral University, Lucknow, 18th September 2023.

XTH International Conference of Indian Academy of Biomedical Sciences (IABS), *Recent Trends in Biomedical Research: Current Challenges & Future Prospectives*. Dept. of Biochemistry, King George's Medical University, Lucknow & Dept. of Biotechnology, Era University, Lucknow. 7th-8th May 2022.

Virtual International Conference on Novel and Alternative Therapeutics for Neurodegenerative Diseases Mediated Through Unfolded Protein Response (UPR), School of Life Sciences, B.S. Abdur Rahman Crescent Institute of Science & Technology, Chennai, India, sponsored by International Brain Research Organization (IBRO) in association with Tamil Nadu State Council for Science & Technology (TNSCST), Sep 20-23, 2021.

3rd Indo-Danish Meeting on Musculoskeletal Stem Cell and Tissue Regeneration, 17-18th Sep 2013, Odense University Hospital (OUH), University of Southern Denmark (SDU), Odense, Denmark.

2nd Indo-Danish Symposium on Musculoskeletal Stem Cells and Tissue Regeneration, Nov 5-6, 2012, National Centre for Biological Sciences (NCBS), Bangalore, India.

2nd Indian Ocean Rim Muscle Colloquium, Feb 6-8, 2012, National Centre for Biological Sciences (NCBS), Bangalore, India.

8th Indo-Australia Biotechnology Conference on Stem Cell Biology, Dec 7-9, 2011, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, Karnataka, India.

RESEARCH SKILLS

- **Cell culture:** Isolation and culture of MSC from human and mice bone marrow and adipose tissue. Isolation and culture of mouse muscle stem cells. Transfection and lentiviral transduction of MSC. Assay development, proliferation and viability assays, cytotoxicity testing and other cell based assays using MSC. Stable cell line generation and selection of single cell clones. Osteogenic and adipogenic differentiation of MSC and quantification of differentiation by alizarin red and oil red O staining.
- **Animal handling:** In vivo mice experimentation including genotyping, IP injections, surgery, phenotypic evaluation, in vivo ectopic bone formation assays, micro-tomography (micro-CT) analysis of calcified tissue, dual energy X-ray absorptiometry (DEXA) for analysing bone mineral density, and tumor formation assay.
- **Molecular biology:** Isolation of DNA, RNA and proteins from mammalian cells. Cloning-restriction ligation, transformation, bacterial selection, isolation of plasmid, site-directed mutagenesis and agarose gel electrophoresis. Epigenetics-chromatin immunoprecipitation (ChIP) for detecting transcription factor binding sites and histone modifications in mammalian cells. SDS-PAGE & western-blotting; immuno-cytochemistry & immuno-fluorescence, histology and ELISA. Fixation, sectioning and immunohistochemistry of calcified and non-calcified tissues. Extracellular vesicles: isolation and characterization of exosomes from cell culture medium.
- **Imaging:** fluorescent & confocal microscopy, high content imaging using Operetta (Perkin Elmer).
- **Flow cytometry:** Immuno-phenotyping of cells (cell surface and intracellular markers) by multicolour flow cytometry. Hands on experience with BD FACS Caliber, BD FACSAria and Beckman Coulter Cytoflex S. Experienced in analysing flow cytometry data using FlowJo. Experienced in using Beckman coulter MoFlo XPD sorter and BD FACSAria FUSION. Experienced in multicolour cell sorting.

- **Transcriptome analysis** using gene expression microarray. ChIP-seq and RNA-seq including experimental design, library preparation and sequencing on Illumina Next Seq 500.
- **Bioinformatics:** Online database handling, Genespring, BLAST, CRAN-R, GSEA, DAVID, SnapGene and other online tools. Experienced in running scripts including FastQC, TopHat, Bowtie, Samtools, Cufflinks etc. used for NGS data analysis.