

**Dr. Suman Mishra**

Assistant Professor

Department of Molecular Medicine and Biotechnology

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E-mail: [sumanm721@gmail.com](mailto:sumanm721@gmail.com), [sumanm@sgpgi.ac.in](mailto:sumanm@sgpgi.ac.in)**Research Interest:**

In my doctoral studies, I researched the biochemical and molecular characterization of arginase, where I learned all basic and advanced techniques useful in biochemical and molecular biology, along with writing skills as evidenced by seven first-author papers in a reputed journal. In my postdoctoral research as NPDF, I continued to enhance my technical skills in transcriptomics and genomics, investigating how mitochondria influence neural circuits to mediate behavior and perception in Lafora disease. In the last three years, I have published three papers in peer-reviewed journals on the role of transcriptomics and exosomes in feto-maternal health. My laboratory is interested in mitochondriomics to develop molecular diagnostics and therapeutic strategies in feto-maternal health and development.

In addition to my research, I am also committed to mentoring and teaching postgraduate students, and I am teaching MSc courses on topics ranging from immunology, physiology, and molecular medicine.

**Academic Qualifications:**

Degree	Institution	Year
Ph.D.	Banaras Hindu University	2017
M.Sc.	University of Allahabad	2010
B.Sc.	VBSP University	2008

**Administrative Responsibilities:**

1. Patient care services
2. Teaching: M.Sc. and PhD
3. Member in Departmental Committee

**Career Profile:**

1. Completed **Senior Demonstrator** in the Department of Molecular Medicine & Biotechnology, Sanjay Gandhi Postgraduate Institute of Medical Sciences.
2. **National Post Doctoral Fellow (DST-SERB sponsored)**, under mentorship of Prof. S. Ganesh, Lab#5, Biological Sciences and Bioengineering, Indian Institute of Technology, Kanpur.
3. **Post doctoral Fellow**, under supervision of Prof. S. Ganesh, Lab#5, Biological Sciences and Bioengineering, Indian Institute of Technology, Kanpur.

**Research grants:**

1. DBT BioCare **To identify IUGR-associated mitochondrial genes and their role in early pregnancy** -[ BT/PR51001/BIC/101/1280/2023 ]-ongoing
2. SERB-NPDF **To Study the role of PGC1 and NLRP3 in Lafora disease** – [PDF/2017/000451]-completed

## Publications: (Published 17)

(Cumulative IF-60, Citations-155, h-index-5, i-10 index-4)

[https://scholar.google.com/citations?hl=en&view\\_op=list\\_works&gmla=ALUCkoV2Ujznrqrek9FCX9Tj9pZWuZLAUoUcqbqZ2FZq5t5rVap35VttznbATJ62HWF69tcPkrqd9qkNoVCyATFjEgD&user=2ivm\\_zUAAAAAJ](https://scholar.google.com/citations?hl=en&view_op=list_works&gmla=ALUCkoV2Ujznrqrek9FCX9Tj9pZWuZLAUoUcqbqZ2FZq5t5rVap35VttznbATJ62HWF69tcPkrqd9qkNoVCyATFjEgD&user=2ivm_zUAAAAAJ)

1. Anubhav Srivastava, Pransu Srivastava, Shashank Mathur, **Suman Mishra**, Sabiya Abbas, Amrit Gupta, Prabhaker Mishra, Meenakshi Tiwari, Lokendra Kumar Sharma "Analysis of cellular and cell free mitochondrial DNA content and reactive oxygen species levels in maternal blood during normal pregnancy: A pilot study" BMC Pregnancy and Childbirth (Revision submitted).
2. Kumar V, **Mishra S**, Sharma R, Agarwal J, Ghoshal U, Khanna T, Sharma LK, Verma SK, Mishra P, Tiwari S. Development of RNA-based assay for rapid detection of SARS-CoV-2 in clinical samples. *Intervirolology*. 2022 Feb 22. doi: 10.1159/000522337. Epub ahead of print. PMID: 35193136. 0300-5526
3. Rajni Sharma, Manju Kumari, **Suman Mishra**, Dharmendra K. Chaudhary, Alok Kumar, Batia Avni, and Swasti Tiwari, (2021) Exosomes secreted by Umbilical cord blood-derived mesenchymal stem cell attenuates diabetes in mice, *journal of diabetic research*, 23146745, vol. 2021, Article ID 9534574, 15 pages, 2021. <https://doi.org/10.1155/2021/9534574>, ISSN: 2314-6745, 10 dec 2021
4. Arshiya Parveen, **Suman Mishra**, Medha Srivastava, Dharmendra K Chaudhary, Deepa Kapoor, Amrit Gupta, Swasti Tiwari, (2021) Circulating placental alkaline phosphatase expressing exosomes in maternal blood showed temporal regulation of placental genes. *Frontiers in medicine*, 758971, 2296-858X, 2021 Dec 24;8:758971. doi: 10.3389/fmed.2021.758971. PMID: 35004728; PMCID: PMC8739800.
5. Maurya, S. K., Bhattacharya, N., **Mishra, S.** Bhattacharya, A., Banerjee, P., Senapati, S., & Mishra, R. (2021). Microglia Specific Drug Targeting Using Natural Products for the Regulation of Redox Imbalance in Neurodegeneration. *Frontiers in pharmacology*, 12, 654489. <https://doi.org/10.3389/fphar.2021.654489.1663-9812>, 13 april 2021, 1663-9812
6. **Chandra, P., Dixit, R., Pratap, A. Mishra S. et al. (2021)** Analysis of SET and MYND Domain-Containing Protein 3 (SMYD3) Expression in Gallbladder Cancer: a Pilot Study. *Indian J Surg Oncol* 12, 111–117 (2021). <https://doi.org/10.1007/s13193-020-01168-6.0975-7651> (0.56) ISSN 0976-6952. april 2021.
7. **Dixit R, Debnath A, Mishra S, et al. (2021)** A Study of Arginase Expression in Chronic Non-healing Wounds. *The International Journal of Lower Extremity Wounds*. April 2021. doi:10.1177/15347346211012381. ISSN 1534-7346 (IF 2.1)
8. **Mishra Suman, Mishra Rajnikant, (2021)** Impact of suitable control on a uniform interpretation of units for arginase assay, *Biochemistry and Biophysics Reports*, 25, 2021, 100910, ISSN 2405-5808, <https://doi.org/10.1016/j.bbrep.2021.100910>. IF2.6
9. **Suman Mishra** and Rajnikant Mishra (2017) "Tolerance of hyperammonemia in brain of *Heteropneustes fossilis* is supported by glutamate-glutamine cycle". *Journal of chemical neuroanatomy*. (Ip 3.0), Volume 80, March 2017, Pages 11-18. ISSN: 0891-0618.
10. **Suman Mishra**, Pradeep Jaiswara, Jitendra Kumar Patel and Rajnikant Mishra (2017) "Effect of aerial exposure on brain and liver of *Heteropneustes fossilis*" *International Journal of Innovative Research in Science, Engineering and Technology*, 2, 10.15680/IJIRSET.2017.0602039. ISSN 2319-8753
11. **Suman Mishra** and Rajnikant Mishra (2016) KCl-Dependent Release of Mitochondrial Membrane-Bound Arginase Appears to Be a Novel Variant of Arginase-II. *Scientifica*.

(IF-0.00) ISSN: 1573-4978 (Online) 0301-4851 (Print)  
<https://doi.org/10.1155/2016/3675283>,

12. **Suman Mishra** and Rajnikant Mishra (2016) Biochemical and molecular characterization of mitochondrial membrane-bound arginase in *Heteropneustes fossilis*. *Molecular Biology Reports*. (IF-2.3) ISSN: 1573-4978 (Online) 0301-4851 (Print) Mol Biol Rep 2016 May;43(5):359-369. doi: 10.1007/s11033-016-3965-3.
13. Brij Bharti, Sachin Shukla, Ratnakar Tripathi, **Suman Mishra**, Mohan Kumar, Manoj Pandey and Rajnikant Mishra (2016), Level of PAX5 seems critical in differential diagnosis of Non-Hodgkin's Lymphoma. *Indian Journal of Medical Research*. 143(Suppl 1): S23–S31.may 2016 (IF-1.5) ISSN: - 0975–9174 (Online); -0971-5916 (Print),
14. **Suman Mishra** and Rajnikant Mishra (2017), Mitochondrial Membrane-Bound Activity of Arginase Is Independent of Nitrogen Excretion Pattern in Ureogenic and Non-Ureogenic Vertebrates. *Indian Journal of Experimental Biology Indian J Exp Biol*, 55 (2), 74-80 (IF-1.16) ISSN: 0975-1009 (Online); 0019-5189 (Print)
15. **Suman Mishra** and Rajnikant Mishra (2015), Effect of KCl concentration on mitochondrial integrity. *International Journal of Proteomics*, <http://dx.doi.org/10.1155/2015/647408> (IF-0) ISSN: 2090-2174 (Online); 2090-2166 (Print)
16. **Suman Mishra**, Shashank Kumar Maurya, Khushboo Srivastava, Sachin Shukla, Rajnikant Mishra, (2015) Pax6 influences expression patterns of genes involved in neurodegeneration. *Annals of Neurosciences* 22(4), 226-231.(IF-0)ISSN: 0976-3260 (Online); 0972-7531 (Print)
17. **Suman Mishra** and Rajnikant Mishra (2015) Impact of isoforms of arginase on biology of ammonia and urea metabolism: A promising approach for metabolic therapy of various malignancies. *Journal of Scientific Research*, 59, 31-45.(IF-0) ISSN: 0447-9483(Print)

#### **Professional Skills Training:**

1. Participated in Workshop on 'Basic to Advanced Bioinformatics, Machine Learning, and Multiomics data analysis' organized by Nextgenhelper, New Delhi from March 12 -31, 2022.
2. Successfully participating in expert consultation webinar on spreadsheet data management: simple, convenient yet powerful by ICMR-National Institute Of Occupational Health, Ahmedabad, on 09th march, 2022
3. Successfully participated in the one-week online training on "Basics of R and Python Programming" organized by the Department of Statistics, Institute of Science, Banaras Hindu University, Varanasi, from 11th - 15th March 2022.
4. Successfully participating In SPARC sponsored "**International Workshop on Neurobiology of Pain & Itch**", June 29 to July 03, 2021, organized by the Department of Pharmaceutical Engineering & Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi, India
5. Completed refresher course Science Academies' refresher course on "*Experimental biology: orthodox to modern*", at "**PG & Research Department of Botany, St. Joseph's College (Autonomous), Tiruchirappalli, Tamilnadu, India.**" On 7<sup>th</sup> November – 19<sup>th</sup> November, 2016.
6. Completed three days course on "**Advances microscopy and Imaging techniques**" in BHU Varanasi at 11th to 13th august 2015.
7. Completed three days course on "**Workshop on Proteomics**" in BHU Varanasi at **16th to 18th may 2016.**

8. Participated as a **Student Resource Person** in “**Brain storming meeting on translational neuroscience**” (27-28 September, 2011) held at **Banaras Hindu University, Varanasi, India.**

#### **Book Chapter:**

1. Shashank Kumar Maurya, Ratnakar Tripathi, **Suman Mishra** and Rajnikant Mishra, Expression and regulation of Pax6 in brain of aging mice, (2017) Topics in Biomedical Gerontology. 279-289. ISBN 978-981-10-2155-8

#### **Symposia/Workshops/Posters/oral presentations:**

1. Presented a **poster presentation** entitled “*Analysis of mitochondrial Arginase*”, at **6th Annual Conference of Society for Mitochondrial Research and Medicine-India and International conference on Mitochondria in Health and Disease** (10 February-11 February, 2017) held at **Jawahar Lal Nehru University, Delhi, India.**
2. Presented a **poster presentation** entitled “*Biochemical and Molecular characterization of isoforms of arginase: impact of isoforms on biology of ammonia and urea metabolism*”, at “**Indo-US Conference on Advances in Enzymology: Implications in Health, Disease and Therapeutics**” (15 January – 19 January, 2017) held at **ACTREC, Mumbai, Maharastra, India.**
3. Presented a poster **presentation** entitled “*Arginase and Phosphate dependent glutaminase support tolerance against hyperammonemia*”, at **XXXIII Annual Conference of Indian Academy of Neurosciences** (31 October -02 November, 2015) held at **Punjab University, Chandigarh, Punjab, India.**
4. Presented an **oral presentation** entitled “*Arginase: A multifunctional enzyme*”, at **National Conference On “Recent Trends In Zoological Sciences”** (25-26 March, 2015) held at **Department of Zoology, Udai Pratap (Autonomous) College, Varanasi, Uttar Pradesh, India.**(best Oral Presentation Award).
5. Presented an **ePoster presentation** entitled “*Inhibition of glutamamte accumulation responsible for the hyperammonemia*”, at “**Neurocon-2015 : International Conference on "Development, Degeneration and Regeneration of Neurons : Neurochemistry to Clinical Neurology"**” (7-10 January, 2015), held at **Department of Biochemistry, Institute of Post Graduate Medical Education & Research, Kolkata, West Bengal, India.**
6. Presented an **poster presentation** entitled “*Mystery of mitochondrial membrane-bound arginase in Heteropneustes fossilis*”, at **XXXVIII All India Cell Biology Conference and International Symposium on “Cellular Response to Drugs”** (10-12 December, 2014), held at **CDRI, Lucknow, Uttar Pradesh, India.**
7. Presented an **oral presentation** entitled “*Hyperammonemia induces depletion of cellular energy and neuronal degeneration in brain of Heteropneustes fossilis*”, at **International Symposium on Translational Neuroscience & XXXII Annual Conference of Indian Academy of Neurosciences** (01-03 November, 2014) held at **NIMHANS, Bangluru, Karnataka, India.**
8. Presented a **poster** entitled “*Mitochondrial membrane bound arginase seems to be similar to ARG II in liver of mouse*” at **National Conference on “Recent trends in proteins structural biology”** (16-18 December, 2013), held at **Jamia Millia Islamia, New Delhi, India.**
9. Presented a **poster** entitled “*Analysis of mitochondrial membrane bound arginase in Mus musculus and Heteropneustes fossilis*” at **National Conference on “Emerging trends and challenges in basic and translational research in biochemistry”** (4-5 February, 2013), held at **Banaras Hindu University, Varanasi, U.P., India.**

### **Invited Talk/oral presentations:**

1. Invited lecture entitled “*Exosomes Secreted by Umbilical Cord Blood-Derived Mesenchymal Stem Cell Attenuate Diabetes in Mice*”, at “**International conference on current perspectives of biochemistry in health and disease**” (7 May – 8 May, 2022) held at **Era University, Lucknow**.
2. Invited lecture entitled “*Exosomes Secreted By Umbilical Cord Blood-Derived Mesenchymal Stem Cell Promote Pancreatic Regeneration And Insulin Secretion In Mouse Model Of Type 2 Diabetes*”, at **10th Annual meeting of the International Society for Extracellular Vesicles** (18 May -21 May, 2021) held virtually.
3. Invited lecture entitled “*Role of mitochondria in lafora disease*”, at “**International conference on current perspectives o biochemistry in health and disease**” (11 January – 12 January, 2020) held at **Department of Zoology, Institute of Science, Banaras Hindu University, Varanasi, India**.

### **Scholarships / Awards:**

1. **National Post Doctoral Fellowship-2018**
2. **Best oral presentation award** in National Conference On “**Recent Trends In Zoological Sciences**” (25-26 March,2015) held at Department of Zoology, Udai Pratap (Autonomous) College, Varanasi.
3. Qualified **CSIR NET –LS-** June 2015.
4. Qualified **GATE-2013** in Life sciences (XL).
5. Qualified **GS-2013** in Life sciences.
6. Qualified **ICMR- JRF -2012** qualified in life science.
7. Qualified **UGC-JRF-2012**
8. Awarded by **UGC-RFS-2011-2012**

### **Membership of Professional bodies:**

1. Life member of Indian Academy of Neuroscience (2014)
2. Life member of Indian Society of Cell Biology (2014)
3. Life member of Society of neurochemistry India (2017)
4. Life member of Society for Mitochondria Research and Medicine (2024)
5. Bentham Ambassador from 2020-2024