DR MAMTA SAJWAN KHATRI

DST-Scientist, PI
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University of Hyderabad

Faculty -NIPER (Guest),
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OBJECTIVE – Exploring Careers in Life Sciences: Bridging Fundamental and Applied Science to Advance Translational Research in Health and Disease.

Areas of Interest- Life Science/Molecular and Cell Biology/Toxicology/Neuroscience/Molecular Signalling /Neurodegeneration- Neurodegenerative Disorders/ Health and Disease

RESEARCH AREA: "My current research focused on understanding the molecular mechanisms involving brain signaling molecules, specifically Glial Cell Line-Derived Neurotrophic Factor (GDNF) via its receptors (GFRα-1,4), Transforming Growth Factor (TGF), and other related essential transcription factors. This research aims to understand how these mechanisms establish gene expression patterns crucial for neuronal and gonadal development and functions. Our work also explores potential applications in targeting MPTP-neurodegenerative disorders and regenerative approaches to improve overall health outcomes."

CURRENT POSITION: DST- Research Scientist (University of Hyderabad)

Guest Faculty- National Institute of Pharmaceutical Education and Research (NIPER)- Hyderabad(Course: Molecular Biology)

Scientific Coordinator of the Federation of Asian Biotech Association (FABA) focusing on Industry-Academia Collaboration for the Promotion of Innovations & Translational Research

RESEARCH EXPERIENCE

- **Scientist-DST Principal Investigator, Ref- SR/WOS-A/LS-303/2017, University of Hyderabad,** Department of Science and Technology, India working on "*Regulation on Tyrosine hydroxylase: Implication on Neurodegeneration and gonadal functions"* **(1st Aug. 2018- 31st July 2021).**
- **Scientist-DST, Principal Investigator, Ref- SR/WOS-A/LS-36/2014, University of Hyderabad,** Department of Science and Technology**,** India worked on "*Impact of Glial-derived Neurotropic factor (GDNF) and its receptor α-1 Possible implication to brain dopaminergic activity* **(1stOct.2014- 30th Sept. 2017).**
- **Post-Doctoral Fellow, DBT-CREBB/DST-PURSE, University of Hyderabad,** Laboratory of Molecular Reproduction, University of Hyderabad, India worked on "*Identification of novel marker gene: Brain Sex differentiation*" **(15th Oct. 2010-30th Sept. 2013)**
- **Post-Doctoral Fellow, DBT, Bacteriology and Structural Biology:** Laboratory of Structural Biology

(Supervised by Dr. Shekhar C. Mande), Centre for DNA Fingerprinting and Diagnostics (CDFD) on "*Characterization of heat shock protein (Hsp70) of Mycobacterium tuberculosis"* (**11 Sept. 2008-10 Sept. 2010).**

- **PDF Training Molecular Biology Techniques and Neuroscience, Monash University, Malaysia** (**2013).**

EDUCATION QUALIFICATION

- **Ph.D. Zoology (Biological Science) -** Department of Zoology and Biotechnology, HNB Garhwal Central University, Srinagar/CDFD Hyderabad **(Awarded) 2009**
- Thesis entitled "***A Comparative Study of the Biological Sensitivity to the Common Steroidal Pheromones in two Sympatric Species of Barilius*"**
- **M.Sc. Animal Biology (Zoology),** Department of Zoology and Biotechnology, Garhwal Central University, Srinagar, India **(2003)**
  Courses Undertaken: (Cell and Molecular Biology, Biotechnology, Microbiology**,** Pheromonal Biology, Reproductive Biology, Cancer Biology, Biochemical and Biophysical Methods, Molecular Signalling, Signal transduction, Computer Application in Biology, etc.) Specialization- Molecular Signalling and steroid pheromones
- **B.Sc. Chemistry, Zoology, Botany,** Garhwal Central University, India **(2001)**

TEACHING EXPERIENCE

- **NIPER-**National Institute of Pharmaceutical Education and Research (***M. Pharma Students Course Molecular Biology***) (**April 2024-Continue**)
- **Teaching involves in FN231:** Foundation Biology Course (Molecular and Cell Biology) M.Sc. (5 years integrated) of the academic semester, School of Life Sciences, University of Hyderabad **(July 2018-continue)**
- **Lectureship,** Department of Forestry, HNB Garhwal University, India "Cell and Molecular Biology Unit **(May 2007-June 2008)**

INDEPENDENT RESEARCH PROJECTS COMPLETED, PI

S. No.	*Project Title*	*Funding Body & Ref No.*	*Sanctioned Amount*	*Duration*
1.	*Regulation of Tyrosine hydroxylase: Implication on catecholamines in normal & neurodegenerative stress*	*Department of Science and Technology (DST), & Ref. No. SR/WOS- A/LS-303/2017), Principal Investigator*	*Rs. 34 Lakhs 54 Thousand*	*3 years (1-8-2018 to 31-7-2021)*
2.	*Understanding the impact of transforming growth factors and neurotrophin of the brain in the regulation of gonadal functions*	*Department of Science and Technology (DST) & Ref. No: SR/WOS- A/LS -36/2014. Principal Investigator*	*Rs. 29 Lakhs, 20 Thousand*	*3 years (1-10-2014 to 30-9-2017)*

AWARDS /RECOGNITION

AWARDS

- **Received Honour by Academic Panel of India for Science for Women: Technology and Innovation "SWATI"** *https://herald.uohyd.ac.in/swati-science-for-women-technology-and-innovation-honour* **(2024)**
- **Prof. G.P. Talwar Young Scientist Award** by the Indian Society for the Study of Reproduction &Fertility (ISSRF), on 13 February **(2022)**
- **Dr. Mridula Kamboj Young Scientist Award** by the Indian Society for the Study of Reproduction and Fertility (ISSRF), 16 February (**2020)**
- **Awarded Women Scientist, Department of Science and Technology, -** Ref SR/LS-303/2017 **(2018)**
- **Awarded Women Scientist, Department of Science and Technology, Ref** SR/LS-36/2014 **(2014)**
- **International Brain Research Organization (IBRO), Translational Neuroscience Travel Grant,DHAKA, Bangladesh (2017)**
- **Best work presentation Award** 35th Annual meeting of SRBCE, University of Hyderabad **(2017)**
- **Siva Gayathri Memorial Award,** Meet of the Society for Biotechnologists, Chennai **(2016)**
- **International Brain Research Organization (IBRO)** Neuroscience Travel Grant, Malaysia **(2013)**

FELLOWSHIPS

Post-Doctoral Fellow DBT, under **Dr. Shekhar C. Mande**, CDFD Hyderabad India **(2010)**

Post-Doctoral Fellow DBT/ DST-PURSE, University of Hyderabad, India **(2013)**

MEMBERSHIP/SCIENTIFIC ACTIVITIES/ REVIEWER

- Executive member of the Indian Society of Comparative Endocrinology (ISCE)
- Life Membership of the Indian Society for the Study of Reproduction and Fertility (ISSRF)
- Member of the Federation of Asian Biotech Association (FABA) Academy
- Member of The International Neuroendocrine Federation (INF)
- Reviewer for several scientific journals like Gene, Gene Reports, Plos One
- Review Editor: Frontiers in Endocrinology (Reproductive Biology)

SCIENTIFIC OUTREACH: MENTOR/RESOURCE PERSON IN THE SKILL DEVELOPMENT PROGRAMS & HANDS-ON TRAINING

- **Scientific Organizer: Organized** International Conference on Molecular Signalling (ICMS), University of Hyderabadon 1st to 3rd 2024.
- Organized and Participated in **Cyberbiosecurity Best Practices Workshop for Vaccine R&D and Manufacturing Facilities** 29 February -2nd March 2024.
- Organized and participated **Biorisk Management Workshop for Research Institutions with BSL-3 Laboratories,** June 30th- July 2, 2023
- **Mentor/Resource Person:** University of Hyderabad, 21-27April 2022**,** This program aimed to train histology and Immunohisto/cytochemistry tounravel tissue architecture and protein localization in animal tissue samples.
- **Biorisk Management workshop for Research Institutions with BSL-3 laboratories organized and participated on Nov 18-20 2022 and June 20th- July 2nd 2023 in Hyderabad.**
- **Workshop/hands-on training on CRISPR-CAS9:** Mastering the Art of Plant Genomics, 25th Septemberto 30th September 2023 Agri Biotech Foundation and FABA
- **Hands-on Training on Current Trends in Biotechnology**, 15th-25th June 2023, conducted by Biotech Foundation and Federation of Asian Biotech Association, Hyderabad.

PROFESSIONAL SKILLS

Molecular Genomics: Extensive experience in molecular biology techniques, Molecular Cloning usinggene-specific and RACE strategies, Plasmid Isolation, siRNA gene transient silencing, Real-Time PCR, Immunohistochemistry (IHC), In situ Hybridization (ISH), Cell Culture, mRNA/total RNA isolation, Reverse transcription, Gel-extraction, Ligation, Transformation, qPCR.

Cell-Culture: Handling different cell lines, Primary and Secondary cell culture, Transfections study (*in vitro* and *in vivo*), toxicological analysis,

Bioinformatics: Primer designing, sequence, and protein analysis are using GENE RUNNER, CLUSTAL Omega Analysis, NCBI Nucleotide/ protein BLAST Analysis

Proteomics & Chromatography: HPLC-based quantitative purification of recombinant proteins andHPLC-ECD quantification of monoamines, other techniques: Biochemical analysis, Flow Cytometry, Cryostat, Transmission Electron Microscopy, Crystallography

PUBLICATIONS IN PEER-REVIEWED SCIENTIFIC JOURNALS

- **Mamta, S.K (2024).** Dopamine depletion by MPTP-MPP+ targeted neurotoxicity: Regulation ofDA-ergic activity in the brain**. Molecular *Neurobiology*** *(Under Revision).*
- **Mamta, S.K.** and B. Senthilkumaran **(2023**). MPTP induces neurodegeneration by modulating dopaminergic activity in the brain. ***Neurotoxicology and Teratology* 95 (2023) 107146 (IF -4.07)ISSN: 0892-0362** https://doi.org/10.1016/j.ntt.2022.107146
- **Mamta S.K,** Anusha, N., Senthilkumaran, B. **(2022).** Transforming growth factor β: Cloning andexpression profiling in brain. ***Journal of Endocrinology and Reproduction* 26(1), 43- 52. ISSN: 2455-1244**
- **Mamta, S.K. (2022).** Implicating transforming growth factor Tgf-β, and sex steroids in brain- gonadal functions (A review)**. *Journal of Reproduction and Healthcare Medicine* 2022, 3(9), 1-6. ISSN: 2214-420X**
- Deepa S[1]., **Mamta S.K[1]**., Anitha A[1]. Senthilkumaran B **(2022).** Exposure to carbon nanotubes affects the testis and brain of common carp. ***Environmental Toxicology and Pharmacology*.** 95(2022) 103957 **(IF-5.78). ISSN: 1382-6689.** https://doi.org/10.1016/j.etap.2022.103957
- Kumar, V., Manu, S., Caroline, K., Sekhar, A., **Mamta, S.K.,** Sandeep, M., ... & Umapathy**,** G. **(2022).** Discovery of 16-Androstenes (Androstenone and Androstenol), Their Synthesis Pathway, and Possible Role in Reproduction of Mouse Deer (*Moschiola indica*). ***Cells,*** 11(23), 3837. **(IF-*7.66*). *ISSN:* 2073-4409** https://doi.org/10.3390/cells11233837
- **Mamta S.K.**, Sudhakumari, CC., Kagawa, H., Dutta-Gupta, A., Senthilkumaran, B. **(2020).** Controlled release of sex steroids through osmotic pump alters brain GnRH1 and catecholaminergic system dimorphically. ***Brain Research Bulletin***, 164,325-333. **(IF-4.077) ISSN:0361-9230** https://doi.org/10.1016/j.brainresbull.2020.08.022
- **Mamta, S.K.** and Senthilkumaran, B. **(2018).** GDNF family receptor α-1 in the catfish: Possible implication to brain dopaminergic activity. ***Brain Research Bulletin*,** 140:270-280 **(IF-4.077) ISSN: 0361-9230** https://doi.org/10.1016/j.brainresbull.2018.05.010
- **Mamta, S.K.**, Raghuveer, K., Sudhakumari, C.C., Rajakumar, A., Basavaraju, Y., Senthilkumaran,B.**(2014).** Cloning and expression analysis of tyrosine hydroxylase and changes in catecholaminelevels in the brain during ontogeny and after sex steroid analogs exposure in the catfish, *Clariasbatrachus*. ***General and Comparative Endocrinology*,** 197: 18-25 **(IF-3.25) ISSN: 10956840, 00166480** https://doi.org/10.1016/j.ygcen.2013.11.022
- Swathi T[1]., Akanksha P[1]., **Mamta S.K[2].,** Senthilkumaran, B. **(2021).** Development and organization of gonadal steroidogenesis in bony fishes-**A Review*. Aquaculture and Fisheries*** 6, 223-246 **(IF-3.59) ISSN:20961758, 2468550X** https://doi.org/10.1016/j.aaf.2020.09.004

- Senthilkumaran, B., Sudhakumari, C.C., **Mamta**, **S.K.,** Raghuveer, K., Swapna, I., Murugananth Kumar. R. **(2015).** "Brain sex differentiation" in teleosts: Emerging concepts with potential biomarkers. ***A Review*. *General and Comparative Endocrinology*,** 220: 33- 40 **(IF-3.2) ISSN: 10956840, 00166480** https://doi.org/10.1016/j.ygcen.2015.06.003
- Murugananthkumar, R., Akhila, M.V., Rajakumar, A., **Mamta, S.K.,** Sudhakumari, C.C., Senthilkumaran, B. **(2015).** Molecular cloning, expression analysis and transcript localization oftesticular orphan nuclear receptor 2. ***General and Comparative Endocrinology*** 239:71-79 **(IF-3.2) ISSN: 10956840, 00166480** https://doi.org/10.1016/j.ygcen.2015.10.009
- Prathibha, Y., Murugananthkumar, R., Rajakumar, A., Laldinsangi, C., Sudhakumari, C.C., **Mamta S.K.**, Dutta-Gupta A. and Senthilkumaran, B. **(2014).** Gene expression analysis in gonads and brain after exposure to Malathion. ***Ecotoxicology and Environmental Safety*,** 102: 210–219 **(IF-7.1) ISSN: 0147-6513**https://doi.org/10.1016/j.ecoenv.2013.12.029
- Laldinsangi C, Vijayaprasadarao, K, Rajakumar A, Murugananth kumar R, Prathibha Y, Sudhakumari C.C, **Mamta, S.K.**, Senthilkumaran, B. **(2014).** Two-dimensional proteomic analysisof gonads after exposure to endosulfan and malathion. ***Environmental Toxicology and Pharmacology*** 37(3):1006-1014. **(IF-5.78) ISSN:1382-6689** https://doi.org/10.1016/j.etap.2014.03.007
- Bhatt, J.P., Shobha, J. and **Mamta, S. (2011).** Age-Dependent Olfactory Sensitivity in Male Fish to the Ovarian Odours of Conspecific Female. In: "**Himalayan aquatic biodiversity conservation& new tools in biotechnology"** (J.P. Bhatt, M. Thapliyal, A. Thapliyal Eds.), Trans Media Publication, UK (***A Review)*** Chapter VI, pp. 68-85 (ISBN:9788190477833)
- **Mamta, S.** and Bhatt, J.P**. (2009).** Use randomly amplified polymorphic DNA (RAPD), PCR marker in a genetic study of *Parapenaeopsis stylifera* and *Penaeus indicus* (Shrimp)**. *Journal of Nature Conservation*** 21(1): 97-103 **(IF-2.289)**
- **Mamta, S.** and Shobha, J**. (2008).** Food diversity and feeding habit of a hill stream minor carp (*Barilius bendelisis*). ***Aquaculture and Fisheries*** 9 (2):151-155 **(3.2)**
- **Mamta, S.** and Shobha J. **(2007).** Electrophoretic Variation of Protein Profile in the different organ of male and female species of cold-water *Barilius* in Garhwal Himalaya. ***AquacultureandFisheries*** 8 (2):263-268 **(IF 3.2)**
- Bhatt, J.P and **Mamta S. (2001).** Ovarian steroid sulfate functions as a priming pheromone in male *Barilius* (Ham.). ***J. Biosciences*** 26: 253-263 **(IF-2.79) ISSN: 0250-5991**

PARTICIPATED I N SEVERAL INTERNATIONAL/NATIONAL CONFERENCES AND WORKSHOPS

REFEREES

I. **Dr. Shekhar C Mande**,
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