CurriculumVitae

Sanghamitra Bandyopadhyay, Ph. D.

Scientist G

CSIR-IndianInstituteofToxicologyResearch(IITR),Vishvigyan Bhawan, 31, Mahatma Gandhi Marg, Kaiser Bagh, Lucknow - 226 001, Uttar Pradesh, India.

AreaofSpecialization:Neurobiology;focusingonneurotoxicologyandneurodegeneration.

Teaching: Coordinating AcSIR-teaching course of "Research Methodology" at CSIR- IITR

PhD students (completed): **Degree awarded- 10**

CurrentlyregisteredPhDstudents:7

Extramuralgrants as an independentPI: (Detailedlist below)

Ongoing:2;MoES(PI), OLP-36

Completed:10;ICMR-2 (PI), DBT-2 (PI), SERB-3 (PI), SERB-SUPRA (Co-PI), DST, CSIR.

Honour: One amongst the 75 Indian Women selected from STEAM (Science, Technology, Engineering, Arts and Mathematics), honored by the Office of the Principal Scientific Adviser, Govt. of India and the British High Commission through a Book-She.

Ongoing

1. MoES (PI) Toward discovery and development of novel drugs and pharmaceuticals (MoES); SanctionedRs.14,597,000, January 2025-2027.
2. (OLP-36) Soymetide: A Promising Protective Agent to Mitigate Amyloidogenicity in Alzheimer's Disease; Sanctioned Rs. 75,21,000, April 2025-2027

Completed

1. ICMR (PI): Hippocampal E2, cognition loss and sexual dimorphism in adult rats: A comparativestudyonchronicBisphenolS,FandAexposures; Sanctioned Rs60,00,000,January 2022-2025.

2. DBT(PI):70Lakhs;StudyontheIntergenerationalEffectofMaternalVitaminD3Deficiency on Cognition and Hippocampal Neurons in Rats; Sanctioned Rs 68,35,024, August 2021-2024.
3. SERB(PI)-CRG:HippocampalE2,neuronaldysfunctionsandsexualdimorphisminadultrats: Effects of chronic arsenic exposure; Sanctioned Rs 47,08,240, March-2021-2024.
4. SERB-SUPRA (Co-PI): Anti-gerogenic Therapy to Augment Lifespan and Health span by Bioactive Peptides from Rasayana Herbs:Generation of PaC for the First-in-class Ayurveda-based Peptides; Sanctioned Rs 15,93,000, August 2020-2023
5. SERB (PI): To study the role of Gpr40 and PPARγ signaling induced by Docosahexaenoic Acid in alleviating heavy-metal(s) mediated astrocyte damage in the developing brain- Rs 30,67,000, June 2017-2020.
6. SERB(PI):MechanismofwhitematterdamagebyamixtureofAs,CdandPb:Investigating the role of glutamate metabolism during CNS development; Rs 48,48,000, May 2014- 2017
7. DBT(PI):Mechanismunderlyingwhitematterdamagebymetalsduringbrain development:Role ofglia-neuroninteraction-Rs64,00,000, June 2014-November2017.
8. DST(PI):Characterization of pathogenic mechanism of action of metal mixture on neurodevelopment-Rs. 20Lakhs; 2009-2012
9. ICMR(PI):Characterization oftheprotectiveroleof omega-3 fattyacidagainst neurodevelopmental damage in metal mixture exposed rat model-Rs. 40Lakhs; 2009-1012
10. CSIR-competitivegrant (PI): Unravelling NewPathobiological Mechanismof Developmental BrainDamage by EnvironmentalToxicants-Rs. 50lakhs; 2010-2013.

Patent:"**ModelofAlzheimer'sdisease"**,Europeanpatentgranted;**No.0036NF2013-EP**

a. **BriefCV**:IobtainedPh.D.fromCalcuttaUniversity,India,in2001.Ipursuedmy post-doc.attheDepartmentofPsychiatry,HarvardUniversity,Boston,USA, inthefield ofneurodegeneration.ReturningtoIndia,Ijoinedas a Scientist(IndependentInvestigator, Govt. of India) at CSIR-Indian Institute of Toxicology Research, Lucknow in 2007. Currently, I hold the position of a Principal Scientist at the CSIR-Indian Institute of Toxicology Research, Lucknow. My major research interests are Neurobiology, with special emphasis on Neurodegeneration and Developmental neurotoxicology. Basic mechanisms in Alzheimer's disease are major research pursuits of mine. Additionally, determination/characterization of cellular pathogenic mechanisms of action in developmental neurotoxicity and their neurobehavioral consequences are my interests. Animal and cell culture-based studies are performed in my laboratory, identifying histopathological and mechanism-based work.

Important Publications for last 10 years

1. Das U, Shukla N, Ojha D, Sagar G, Roy SK, Bandyopadhyay S. Bisphenol S and F disrupt cerebellar functions and neuronal health: The role of estrogen receptor and BMP2 signaling. *Toxicol Lett*. Published online January 30, 2026. doi:10.1016/j.toxlet.2026.111850. Impact Factor: 2.9

2. Garg A, Bandyopadhyay S. Role of an interdependent Wnt, GSK3-β/β-catenin and HB-EGF/EGFR mechanism in arsenic-induced hippocampal neurotoxicity in adult mice. *Chemosphere*. 2024;352:141375. doi:10.1016/j.chemosphere.2024.14137. Impact Factor: 8.1

3. Garg A, Bandyopadhyay S. A comprehensive review of arsenic-induced neurotoxicity: Exploring the role of glial cell pathways and mechanisms. *Chemosphere*. 2025;372:144046. doi:10.1016/j.chemosphere.2024.144046. Impact Factor: 8.1

4. Garg A, Saroj J, Tiwari S, et al. Exploring the potential anti-senescence effects of soybean-derived peptide Soymetide in mice hippocampal neurons via the Wnt/β-catenin pathway. *Front Pharmacol*. 2025;16:1510337. Published 2025 Feb 25. doi:10.3389/fphar.2025.1510337. Impact Factor: 4.8

5. Vishwakarma J, Gupta K, Mishra J, et al. Hypothyroidism induces motor deficit via altered cerebellar HB-EGF/EGFR and autophagy. *J Endocrinol*. 2023;257(1):e220338. Published 2023 Mar 14. doi:10.1530/JOE-22-0338

6. Gupta K, Vishwakarma J, Garg A, et al. Arsenic Induces GSK3β-Dependent p-Tau, Neuronal Apoptosis, and Cognitive Impairment via an Interdependent Hippocampal ERα and IL-1/IL-1R1 Mechanism in Female Rats. *Toxicol Sci*. 2022;190(1):79-98. doi:10.1093/toxsci/kfac087. Impact factor: 4.849

7. Pandey R, Garg A, Gupta K, et al. Arsenic Induces Differential Neurotoxicity in Male, Female, and E2-Deficient Females: Comparative Effects on Hippocampal Neurons and Cognition in Adult Rats. *Mol Neurobiol*. 2022;59(5):2729-2744. doi:10.1007/s12035-022-02770-1. Impactfactor: 4.260

8. Bandyopadhyay S. Role of Neuron and Glia in Alzheimer's Disease and Associated Vascular Dysfunction. *Front Aging Neurosci*. 2021;13:653334. Published 2021 Jun 15. doi:10.3389/fnagi.2021.653334. Impact factor: 4.504

9. Mishra J, Vishwakarma J, Malik R, et al. Hypothyroidism Induces Interleukin-1-Dependent Autophagy Mechanism as a Key Mediator of Hippocampal Neuronal Apoptosis and Cognitive Decline in Postnatal Rats. *Mol Neurobiol*. 2021;58(3):1196-1211. doi:10.1007/s12035-020-02178-9.Impactfactor: 4.260

10. Pandey R, Shukla P, Anjum B, et al. Estrogen deficiency induces memory loss via altered hippocampal HB-EGF and autophagy. *J Endocrinol*. 2020;244(1):53-70. doi:10.1530/JOE-19-0197. Impact factor: 4.381

11. Kushwaha R, Mishra J, Gupta AP, et al. Rosiglitazone up-regulates glial fibrillary acidic protein via HB-EGF secreted from astrocytes and neurons through PPARγ pathway and reduces apoptosis in high-fat diet-fed mice. *J Neurochem*. 2019;149(5):679-698. doi:10.1111/jnc.14610. Impact factor: 4.609

12. Kumar H, Chattopadhyay S, Das N, et al. Leprosy drug clofazimine activates peroxisome proliferator-activated receptor-γ and snergizes with imatinib to inhibit chronic myeloid leukemia cells. *Haematologica*. 2020;105(4):971-986. doi:10.3324/haematol.2018.194910Imp. Factor: 7.116

13. Kushwaha R, Mishra J, Tripathi S, et al. Arsenic Attenuates Heparin-Binding EGF-Like Growth Factor/EGFR Signaling That Promotes Matrix Metalloprotease 9-Dependent Astrocyte Damage in the Developing Rat Brain. *Toxicol Sci*. 2018;162(2):406-428. doi:10.1093/toxsci/kfx264. Impact Factor: 4.081

14. Pandey R, Rai V, Mishra J, Mandrah K, Kumar Roy S, Bandyopadhyay S. From the Cover: Arsenic Induces Hippocampal Neuronal Apoptosis and Cognitive Impairments via an Up-Regulated BMP2/Smad-Dependent Reduced BDNF/TrkB Signaling in Rats. *Toxicol Sci*. 2017;159(1):137-158. doi:10.1093/toxsci/kfx124. Impact Factor: 4.081

15. Tripathi S, Kushwaha R, Mishra J, et al. Docosahexaenoic acid up-regulates both PI3K/AKT-dependent FABP7-PPARγ interaction and MKP3 that enhance GFAP in developing rat brain astrocytes. *J Neurochem*. 2017;140(1):96-113. doi:10.1111/jnc.13879. Impact Factor: 4.609.

16. Ashok A, Rai NK, Raza W, Pandey R, Bandyopadhyay S. Chronic cerebral hypoperfusion-induced impairment of Aβ clearance requires HB-EGF-dependent sequential activation of HIF1α and MMP9. *Neurobiol Dis*. 2016;95:179-193. doi:10.1016/j.nbd.2016.07.013. Impact Factor: 5.227.

17. Kushwaha R, Mishra J, Tripathi S, Khare P, Bandyopadhyay S. Arsenic, Cadmium, and Lead Like Troglitazone Trigger PPARγ-Dependent Poly (ADP-Ribose) Polymerase Expression and Subsequent Apoptosis in Rat Brain Astrocytes. *Mol Neurobiol*. 2018;55(3):2125-2149. doi:10.1007/s12035-017-0469-7. Impactfactor: 4.260

18. Ashok A, Rai NK, Tripathi S, Bandyopadhyay S. Exposure to As-, Cd-, and Pb-mixture induces Aβ, amyloidogenic APP processing and cognitive impairments via oxidative stress-dependent neuroinflammation in young rats. *Toxicol Sci*. 2015;143(1):64-80. doi:10.1093/toxsci/kfu208. Impact Factor: 4.081

19. Maurya SK, Mishra J, Abbas S, Bandyopadhyay S. Cypermethrin Stimulates GSK3β-Dependent Aβ and p-tau Proteins and Cognitive Loss in Young Rats: Reduced HB-EGF Signaling and Downstream Neuroinflammation as Critical Regulators. *Mol Neurobiol*. 2016;53(2):968-982. doi:10.1007/s12035-014-9061-6. Impact Factor: 5.076.

20. Mudawal A, Singh A, Yadav S, et al. Similarities in lindane induced alterations in protein expression profiling in different brain regions with neurodegenerative diseases. *Proteomics*. 2015;15(22):3875-3882. doi:10.1002/pmic.201400407.Impact Factor: 4.2.