

**ABID R. BHAT, Ph.D.**  
Research Associate, Department of Emergency Medicine  
University of Maryland School of Medicine

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**Contact information**

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Languages: English (proficient), Urdu (fluent), Hindi (fluent), Kashmir (native speaker)

**Education**

2008–2013 B. Pharm., University of Kashmir, Kashmir, India

2014–2016 M. Pharm. (Pharmacology), Punjab Technical University, Kapurthala, India

2017–2021 Ph.D. (Pharmacy), JSS Academy of Higher Education & Research, Mysore, India  
Thesis, “A study on the effects of cAMP specific PDE4 and PDE 10 inhibitors against sleep deprivation induced alterations in cognitive functions and neural plasticity in mouse model.” Thesis Advisor, Saravana Babu Chidambaram

2018–2019 Postgraduate Diploma in Regulatory Toxicology, JSS Academy of Higher Education & Research, Mysore, India

**Employment history**

08/2019–03/2020 Visiting Research Fellow, Macquarie University, Sydney, Australia

09/2021–07/2024 Postdoctoral Fellow, Department of Emergency Medicine, UMSOM

08/2024-present Research Associate, Department of Emergency Medicine, UMSOM

**Honors and Awards**

2014–2016 Tata Trusts Medical and Healthcare Scholarships, Mumbai, India

2018 Travel grant from International Brain Research Organization (IBRO) for 3rd IBRO-Asia-Pacific Regional Committee (APRC) Associate School of Neuroscience, Punjab University Chandigarh, India

2018 Best poster award at 3rd IBRO Neuroscience School, Punjab University Chandigarh, India

2019 Young Scientist Award from Food and Brain Research Foundation

2019 Travel grant from IBRO for APRC School on Advanced Techniques to Explore the Functions of Normal & Diseased Brain at Sree Chitra Tirunal Institute for Medical

2020 Sciences and Technology, Kerala, India  
Early Career Investigator Award from Society on NeuroImmune Pharmacology

### **Professional society membership**

2019–present Member, Society for Neurochemistry, India  
2020–present Member, Society for Ethnopharmacology, India  
2023- present Member, International Society for Neurochemistry

### **Completed grants**

04/2019–08/2021 Senior Research Fellowship (SRF) – PI, 100%  
“A study on the effects of cAMP specific PDE4 and PDE 10 inhibitors against sleep deprivation induced alterations in cognitive functions and neural plasticity in mouse model”  
Indian Council of Medical Research, 45/7/2019-PHA/BMS  
Annual direct costs: \$6390  
Total direct costs: \$12780

08/2019–03/2020 Exchange Fellowship, International Brain Research Organization  
“Effects of PDE4 and PDE10 inhibitors on quinolinic acid induced oxidative stress in human neurons”  
International Brain Research Organization  
Annual direct costs: \$8500  
Total direct costs: \$8500

### **Patents**

Inventors: Saravana Babu Chidambaram, **Abid Bhat**, Bipul Ray. An anti-stress and memory enhancing beverage composition. Indian Patent application number: 1/49270/2020-CHE. Submitted October 13, 2020.

### **Publications**

#### **Peer-reviewed journal articles**

1. Chidambaram SB, Rathipriya AG, Bolla SR, **Bhat A**, Ray B, Mahalakshmi AM, et al. Dendritic spines: Revisiting the physiological role. *Prog Neuropsychopharmacol Biol Psychiatry*. 2019;92:161-193. doi: 10.1016/j.pnpbp.2019.01.005 (*literature review, manuscript writing, figure preparation, revisions*)
2. Chidambaram SB, **Bhat A**, Ray B, Sugumar M, Muthukumar SP, Manivasagam T, et al. Cocoa beans improve mitochondrial biogenesis via PPAR $\gamma$ /PGC1 $\alpha$  dependent signalling pathway in MPP<sup>+</sup> intoxicated human neuroblastoma cells (SH-SY5Y). *Nutr Neurosci*. 2020;23(6):471-480. doi: 10.1080/1028415X.2018.1521088. (*Performed Western blotting and immunofluorescence experiments, data analysis, manuscript and figure preparation*)

3. Mahalakshmi AM, Ray B, Tuladhar S, **Bhat A**, Bishir M, Bolla SR. et al. Sleep, brain vascular health and ageing. *GeroScience*. 2020;42(5):1257-1283. doi:10.1007/s11357-020-00235-8. (*literature review, manuscript writing, figure preparation*)
4. Bishir M, **Bhat A**, Essa MM, et al. Sleep deprivation and neurological disorders. *BioMed Research International*. 2020; 2020: 5764017. doi: 10.1155/2020/5764017. (*literature review, manuscript writing, figure preparation*)
5. Mahalakshmi AM, Ray B, Tuladhar S, **Bhat A**, Paneyala S. et al. Does COVID-19 contribute to development of neurological disease? *Immun Inflamm Dis*. 2021;9(1):48-58. doi:10.1002/iid3.387. (*literature review, manuscript writing, figure preparation, revisions*)
6. Ray B, Mahalakshmi AM, Tuladhar S, **Bhat A**, Srinivasan A. et al. “Janus-faced”  $\alpha$ -synuclein: role in Parkinson’s disease. *Front Cell Dev Biol*. 2021; 9:673395. doi:10.3389/fcell.2021.673395. (*literature review, manuscript writing, figure preparation, revisions*)
7. Bishir M, Aslam M, **Bhat A**, Ray B, Elumalai P, Jyothi PR. et al. Acetylsalicylic acid improves cognitive performance in sleep deprived adult zebrafish (*Danio rerio*) model. *Front Biosci Landmark Ed*. 2021 May;26(6):114-124. doi: 10.52586/4928. (*Methodology, behavioral and biochemical assays, data analysis, manuscript writing*)
8. **Bhat A**, Mahalakshmi AM, Ray B, Tuladhar S, Hediya TA, Manthiannem E, et al. Benefits of curcumin in brain disorders. *BioFactors*. 2019 Sep;45(5):666-689. doi: 10.1002/biof.1533. Epub 2019 Jun 11.
9. **Bhat A**, Ray B, Mahalakshmi AM, Tuladhar S, Nandakumar DN, Srinivasan M, et al. Phosphodiesterase-4 enzyme as a therapeutic target in neurological disorders. *Pharmacol Res*. 2020 Oct: 160:105078. doi: 10.1016/j.phrs.2020.105078. Epub 2020 Jul 14.
10. **Bhat A**, Pires AS, Tan V, Babu Chidambaram S, Guillemin GJ. Effects of sleep deprivation on the tryptophan metabolism. *Int J Tryptophan Res*. 2020;13. doi:10.1177/1178646920970902
11. **Bhat A**, Tan V, Heng B, Lovejoy DB, Sakharkar MK, Essa MM, et al. Roflumilast, a cAMP-specific phosphodiesterase-4 inhibitor, reduces oxidative stress and improves synapse functions in human cortical neurons exposed to the excitotoxin quinolinic acid. *ACS Chem Neurosci*. 2020 Dec 16;11(24):4405-4415. Epub 2020 Dec 1. doi:10.1021/acchemneuro.0c00636
12. **Bhat A**, Tan V, Heng B, Chow S, Basappa S, Essa MM, et al. Papaverine, a phosphodiesterase 10A inhibitor, ameliorates quinolinic acid-induced synaptotoxicity in human cortical neurons. *Neurotox Res*. 2021 Aug;39(4):1238-1250. doi: 10.1007/s12640-021-00368-4. Epub 2021 Apr 29.
13. **Bhat A**, Bishir M, Pandi-Perumal SR, Chang SL, Chidambaram SB. Roflumilast, a phosphodiesterase-4 inhibitor, ameliorates sleep deprivation-induced cognitive dysfunction in C57BL/6J mice. *ACS Chem Neurosci*. 2022 Jul;13(13):1938-1947. doi: 10.1021/acchemneuro.2c00127. Epub 2022 Jun 23.
14. Thom SR, Bhopale VM, Arya AK, Ruhela D, **Bhat AR**, Mitra N, et al. Blood-borne microparticles are an inflammatory stimulus in type 2 diabetes mellitus. *ImmunoHorizons*. 2023;7(1):71-80. doi:10.4049/immunohorizons.2200099. (*biochemical assays, data analysis, figure preparation, manuscript writing*)
15. Arya AK, Balestra C, Bhopale VM, Tuominen LJ, Sokolowski AR, Dugrenot E, L’Her E, **Bhat AR**, et al. Elevations of extracellular vesicles and inflammatory biomarkers in

- closed circuit SCUBA divers. *Int J Mol Sci.* 2023 Mar 22;24(6):5969. doi: 10.3390/ijms24065969. (biochemical assays, data analysis, manuscript writing)
16. Thom SR, Bhopale VM, **Bhat AR**, Arya AK, Ruhela D, Qiao G, et al. Neuroinflammation with increased glymphatic flow in a murine model of decompression sickness. *J Neurophysiol.* 2023 Mar 1;129(3):662-671. doi: 10.1152/jn.00005.2023. Epub 2023 Feb 8. (rodent MRI, immunofluorescence, flow cytometry, data analysis, manuscript writing)
  17. **Bhat AR**, Arya AK, Bhopale VM, Imtiyaz Z, Xu S, Bedir D, et al. Persistent neuroinflammation and functional deficits in a murine model of decompression sickness. *J Appl Physiol.* E-pub ahead of print April 25, 2024. doi:10.1152/jappphysiol.00097.2024
  18. Imtiyaz Z, Bhopale VM, Arya AK, **Bhat AR**, Thom SR. Microparticles in human perspiration as an inflammatory response index. *Diagnostics.* 2024;14(12):1293. doi:10.3390/diagnostics14121293 (sample collection, preparation, data analysis, manuscript writing)

### **Submitted or In-Revision Peer-reviewed journal articles.**

1. Arya AK, Sethuraman K, Waddell J, Cha YS, Liang Y, Bhopale VM, **Bhat AR**, Imtiyaz Z, Dakessian A, Lee Y, Thom SR. Inflammatory responses to acute carbon monoxide poisoning and the role of plasma gelsolin. *Sci Adv* 2024 (under review).
2. **Bhat AR**, Arya AK, Bhopale VM, Imtiyaz Z, Thom SR. Recombinant human plasma gelsolin suppresses neuroinflammation and preserves hippocampal neurogenesis in murine decompression sickness model. *J Neurophysiol.* 2024 (under review).

### **Book Chapters**

1. Chidambaram SB, Tuladhar S, **Bhat A**, Mahalakshmi AM, Ray B, Essa MM, et al. Autism and Gut–Brain Axis: Role of Probiotics. In: Essa M, Qoronfle M (eds). *Personalized Food Intervention and Therapy for Autism Spectrum Disorder Management.* (vol. 24 of Advances in Neurobiology). Cham, Switzerland: Springer, 2020. pp 587–600. doi: 10.1007/978-3-030-30402-7\_21
2. Chidambaram SB, Chethan N, Rao SB, **Bhat A**, Ray B, Tousif AH, et al. Probiotics, prebiotics, and synbiotics on neurological disorders: relevance to Huntington’s disease. In: *Food for Huntington’s Disease.* Hauppauge, NY: Nova Science Publishers, Inc., 2018. pp.105–140. ISBN: 9781536138559
3. Chidambaram SB, **Bhat A**, N. Chethan N, Rao SB. Ray B, Tousif AH, Mahadevan M, Sathiya S, Manivasagam T, Essa MM, Meena KS. Beneficial roles of curcumin, the curry spice. In: *Food for Huntington’s Disease.* Hauppauge, NY: Nova Science Publishers, Inc., 2018. pp 251-268. ISBN: 9781536138559
4. Chidambaram SB, **Bhat A**, N. Chethan N, Rao SB. Ray B, Tousif AH, Mahadevan M, Sathiya S, Manivasagam T, Essa MM, Meena KS. Management of Huntington's disease: perspectives from the siddha system of medicine. In: *Food for Huntington’s Disease.* Hauppauge, NY: Nova Science Publishers, Inc., 2018. pp 159-180. ISBN: 9781536138559

### **Poster presentations**

1. “Cocoa beans protect SH-SY5Y (human neuroblastoma cells) against MPP+ induced neurotoxicity via improving mitochondrial biogenesis and functions.” 37th Annual Conference of Society of Toxicology (STOX-2017), Chandigarh, India, November 18-19, 2017.
2. “Angiotensin II receptor type 2 (AT2R) activation elicits cognitive restoration in REM sleep-deprived mice.” (**Best Poster Award**) 3rd IBRO-APRC Chandigarh Associate School of Neuroscience, Chandigarh, Punjab, India, October 21-28, 2018.
3. “Microparticles produced by decompression stress expressing neuroinflammatory markers induce neurological dysfunction in mice.” 11th IBRO World Congress of Neuroscience, Granada, Spain, September 9-13, 2023.

### **Oral presentations**

1. “Sleep and Cognition,” IBRO-APRC School on Advanced Techniques to Explore the Functions of Normal & Diseased Brain, Trivandrum, Kerala, India, April 22-May 6, 2019.
2. “Roflumilast, a cAMP specific phosphodiesterase-4 inhibitor, alleviates redox signaling and improve synapse functions in human cortical neurons exposed to the excitotoxin quinolinic acid.” Annual Conference of Society for Neurochemistry, India, December 7-9, 2020.