Meenakshi Sharma, Ph.D
Research Associate
Harry & Diane Rinker Health Science Campus,
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EDUCATION

1998-2003	Ph.D. in Biomedical Sciences/Toxicology From: Dr. B. R. Ambedker Center for Biomedical Research, University of Delhi, India. Dissertation entitled "*The synthesis of novel diallyldisulphide compounds having antilipidemic and antioxidant activity*". Advisor: Dr. Manisha Tiwari, Associate Professor
1996-1998	M.Sc. in Toxicology From**:** Department of Toxicology, Jamia Hamdard, Delhi, India. **Main Subjects**: Biochemistry, Immunology, Genetics, Pharmacology, Biostatistics, Principles in toxicology, Heavy metals toxicology, Occupational Toxicology, Environmental Toxicology, Cosmetics Toxicology, Carcinogensis, Neuro-behavioral toxicology, Nutrition Toxicology, Petroleum Toxicology, Forensic toxicology, Predictive Toxicology, Pesticides Toxicology, Analytical Toxicology.
1993-1996	BSc (Hons) Zoology, University of Delhi, India. **Main Subjects**: Cell Biology, Genetics, Biochemistry, Ecology, Vertebrates, Invertebrates, Comparative Anatomy, Histology, Physiology, Embryology, Botany and Chemistry.

CONTINUING EDUCATION

Continually attending professional development courses to enhance my expertise in teaching and subjects.

- **University Teaching 101** Online course from Coursera, John Hopkins University course, completed.
- **Introductory Physiology** Online course from Coursera, Duke University course finishing date, 15th June 2015.
- **Physics** from Saddleback College, California, finishing date, 8th August 2015.

POSITIONS AND EMPLOYMENT

06/2015-presently	Senior Research Associate at School of Pharmacy, Chapman University, Irvine, California, United States.
04/2014-05/2015	Volunteer Research Scientist at School of Pharmacy, Chapman University, Irvine, California, United States.

03/2013-03/2014

Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi, India**.**

Research Scientist Pool Officer worked on the project entitled **"Modulation of G protein coupled receptors signaling due to alteration in the homocysteine levels in neurodegenerative and cardiovascular disease"** sponsored by Council of Scientific and Industrial Research, Govt. of India.

- Worked on transgenic Drosophila model of Alzheimer's disease.

06/2007-03/2013

Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, University of Rhode Island, US

Post Doctoral Research Associate

- Studied D2-Dopamine Receptor Wnt Pathway Crosstalk.
- Developed bioluminescence resonance energy transfer assays for monitoring interactions between the D2 dopamine receptor and RGS9-2 and arrestin.
- Studied Role of RGS9-2 in schizophrenia and Parkinson's disease (PD) pharmacotherapy.
- Studied inducible expression of RGS9 in mouse embryonic stem cell-derived neurons.
- Studied Polymorphism of the RGS9 gene identified in Parkinson's and schizophrenia alters splicing efficiency and PTB binding.
- Studied whether D2 dopamine receptor targets to Lipid raft.
- Studied D2 dopamine receptor and Regulator of G protein coupled receptor co-localization by different biochemical and molecular assay

04/2005-02/2007

Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, India.

Assistant Professor/Principal Investigator

Assistant Professor of Toxicology at Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi, India.

- Taught Toxicology: Basics and Fundamentals of Toxicology, Carcinogenesis, Molecular Toxicology, Biochemistry, Neurobehavioral Toxicology, Occupational Toxicology, Biostatistics
- Took Teaching Lab of Toxicology, under MSc–Ph.D. program in Biomedical Sciences.

Principal Investigator for a grant entitled "*Development of homocysteine-induced atherosclerotic rat model and its possible mode of action for causing atherosclerosis.*" from Department of Science and Technology, Govt. of India.

- Studied the effect of hyperhomocysteinemia on cardiovascular risk factors and initiation of atherosclerosis in a rat model.

- Effects of nitric oxide modulators on cardiovascular risk factors in Mild hyperhomocysteinaemic Rat Model.

08/2003-04/2005 Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi, India.

Research Associate

- Synthesis, DNA binding, and cytotoxic evaluation of new analogs of diallyldisulfide, an active principle of garlic.
- Inhibitory effect of novel diallyldisulfide analogs on HMG-CoA reductase expression in hypercholesterolemia rats: CREB as a potential upstream target.
- Neuroprotective role of *Convolvulus pluricaulis* on aluminum induced neurotoxicity in rat brain.
- The effect of the aqueous extract of the roots of *Asparagus racemosus* on hepatocarcinogenesis initiated by diethylnitrosamine.

Teaching Assistant of Toxicology in M.Sc.–Ph.D. Program in Dr. B. R. Ambedkar Center for Biomedical Research from July 2002- Jan 2003.
Teaching Assistant of Immunology in M.Sc.–Ph.D. Program in Dr. B. R. Ambedkar Center for Biomedical Research from Feb 2003- July 2003.

08/1998-08/2003 Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, India

Ph.D Candidate (Junior Research Fellow and Senior Research Fellow)

- The synthesis of novel diallyldisulphide compounds having antilipidemic and antioxidant activity.
- Extraction of active extracts of *Withania somnifera* and studied its stress indices in a rat model.

Teaching Assistant of *Genetics* in MSc–PhD. Program in Dr. B. R. Ambedkar Center for Biomedical Research from Feb 2002- July 2002.
Teaching Assistant of *Toxicology* in MSc–PhD. Program in Dr. B. R. Ambedkar Center for Biomedical Research from July 2001-Jan 2002.
Teaching Assistant of *Organic Chemistry* in MSc–PhD. Program in Dr. B. R. Ambedkar Center for Biomedical Research from Feb 2001-July 2001.

1996-1998 Summer project “The impact of leather industries on the environment” in Jamia Hamdard, Delhi.

Summer trainee on the project “Approaches for predicting the carcinogenic potential of Mineral Base oils” in Indian Oil Corporation, Faridabad for 4 months.

TEACHING EXPERIENCE

Post Doctoral Fellow (06/2007-02/2013): Neuroscience Molecular Biology Lab at College of Pharmacy, University of Rhode Island.

- Guided and trained undergraduate and graduate students in lab with laboratory research and safety protocols of lab.

Assistant Professor (04/2005-02/2007): Toxicology and Pharmacology at Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi, India.

- Taught Toxicology Course: Basics and Fundamentals of Toxicology, Carcinogenesis, Molecular Toxicology, Biochemistry, Neurobehavioral Toxicology, Occupational Toxicology, Biostatistics.
- Lab Teaching for course in Toxicology, under MSc–PhD. program in Biomedical Sciences.

Teaching Assistant (08/1998-04/2005): Teaching Assistant of Genetics, Immunology, Toxicology and Organic Chemistry in MSc–PhD. Program in Dr. B. R. Ambedkar Center for Biomedical Research.

LABORATORY EXPERIENCE

- Established Toxicology Teaching labs and design excellent experiment protocols for MSc-PhD combined Program for Biomedical Sciences at Dr. B. R. Ambedkar Centre for Biomedical Research, University of Delhi, India **(July, 1998-August, 2003).**
- Established Research Lab at Dr. B. R. Ambedkar Centre for Biomedical Research, University of Delhi, India as Research Associate, Assistant Professor, and Principal Investigator **(Oct, 2003-Feb 2007).**
- Assist in establishing research labs of Dr. Abraham Kovoor (Associate Professor, University of Rhode Island) at College of Pharmacy, University of Rhode Island in Rhode Island, United States **(Apr, 2007-Mar, 2013).**
- Worked as Post-doctoral Fellow in Research area of Neuro-Science: Assigned to develop, design, verify, review and validate the safety protocol for the experiments, sample and study document preparation and data collection, interpretation and analysis, keeping records of SOPs and follow all safety procedure. Approved for working in BSL1, 2 and 3 from the University of RI, safety and risk management department **(Apr, 2007-Mar, 2013).**

LABORATORY SKILLS

Molecular biology and Toxicological: DNA and RNA isolations, NanoDrop quantification, polymerase chain reaction, gene splicing by overlap extension, reverse transcription polymerase chain reaction, polymerase chain reaction optimization, primer design, dye terminator sequencing reactions, electrophoresis, E. coli and mammalian cell cloning and recombinant protein expression, protein purification by density gradient and affinity column, protein quantification by densitometry and Bradford assay, sodium dodecyl sulfate polyacrylamide gel electrophoresis, western blot, enzyme-linked immunosorbent assay, preparative chromatography. Neurobehavioral, environmental, cosmetics, analytical toxicological studies, spectrophotometer, spectrofluorimeter, nuclear magnetic resonance spectroscopy, infrared spectroscopy, HPLC, light microscopy, fluorescent microscopy, confocal microscopy, microtome in tissue preparation.

Cell culture and microbiology: Cell culture maintenance, cell line archiving and storage, transient and stable transfections, E. coli transformation, isolation and propagation of primary mouse embryonic

fibroblast, media and reagent preparation, agar plate preparation, colony isolation and screening, fluorescence microscopy.

Animal experience: Rat and Mouse handling, breeding, dosing, and dissection; mouse genotyping, experience with mouse surgery and anesthesia, blood-collection.

Hematology: Differential leukocyte counts by light microscopy, total serum protein by refractometry, packed cell volume by microhematocrit centrifugation.

Safety compliance – Certifications for BSL1/2+, Blood-borne pathogen, radiation safety, chemical and hazardous waste management, animal welfare, controlled substances.

Computer literacy: Microsoft Office Word, Excel and PowerPoint, Prism, EndNote, Photoshop, Google.

Language proficiency: Excellent oral and written English.

EXTERNAL REVIEWER OF GRANT APPLICATION

2014-till present External reviewer for extramural grant in the area of Life Science at National Center of Science and Technology, Republic of Kazakhistan, Kazakhistan.

REVIEWER OF PEER- REVIEWED JOURNAL

- Lipids
- International Journal of Developmental Neuroscience
- African Journal of Pharmacy and Pharmacology
- Indian Journal of Pharmaceutical Sciences

Honors

2005-2007 Awarded Young Scientist Project from Department of Science and Technology (DST), Govt. of India

2013-2016 Awarded Senior Research Associate Fellowship from Council of Scientific and Industrial Research (CSIR), Govt. of India

PROFESSIONAL MEMBERSHIPS

2002-present Indian Chemical Society, India
2004-2008 American Chemical Society, US
2005-present Full Membership of "Society of Toxicology (SOT)", US.
2009-2013 College of Pharmacy Professional Research Society, URI, US
2010-2014 AAAS/Science Membership", US
2012-present Indian Society of Neuroscience, India

PEER REVIEWED PUBLICATIONS/PATENTS

*corresponding author

23. **Sharma M***, Tiwari M, Tiwari R*(**2015**) Hyperhomocysteinemia: Impact on neurodegenerative diseases. *Basic and Clinical Pharmacology and Toxicology*, Accepted Mini review.

22. Yuan T, Nahar, P; **Sharma M**, Liu K, Slitt A, Aisa HA; and Seeram NP **(2014)** Indazole-type alkaloids from *Nigella sativa* seeds exhibit antihyperglycemic effects via AMPK activation in vitro. *Journal of Natural Products,* 77(10):2316-2320.

21. **Sharma M**[#] Shen C[#], Reid CD[#], Li P, Celver J, Seman NA, Chen J, Vasan KS, Wang H, Gu T, Liu Y, Mohamud WNW, Shen H, Brismar K, Fairbrother.W, Kovoor A, Gu.FH, **(2014)**. A polymorphic Microdeletion in the RGS9 Gene Suppresses PTB Binding and Associates with Obesity. *J Diabetes and Metabolism*, 5:435. **equal contribution**

20. Octeau CJ, Schrader MJ, Masuho I**, Sharma M**, Aiudi C, Chen KC, Kovoor A, Celver J **(2014)** Functional interactions between G protein beta 5 and D2-dopamine receptors. *PLoS ONE*, 9(8):e105791.

19. Cox JC, **Sharma M**, Leckman FJ, Zuccolo J, Zuccolo A, Kovoor A, Swedo ES, and Cunningham WM **(2013)** Brain Autoantibody Targets Dopaminergic Neurons in Transgenic Mice and Signals Dopamine D2 Receptor: Implications in Human Disease. *J Immunol.* 191:5524-5541.

18. Celver J, **Sharma M,** Thanawala V, Octeau CJ, and Kovoor A **(2013)** Arrestin dependent but GRK independent uncoupling of D2R in Xenopus oocytes**.** *J Neurochem*. 127(1):57-65.

17. **Sharma M**, Celver J, Octeau CJ, and Kovoor A **(2013)** Compartmentalization of D2-Dopamine Receptor. *J. Biol. Chem.* 288(18):12554-68.

16. Celver J, **Sharma M**, and Kovoor A **(2012)** D2-Dopamine receptors target regulator of G protein signaling 9-2 (RGS9-2) to detergent-resistant membrane fractions. J. *Neurochem*.120(1):56-69.

15. Waugh JL, Celver J, **Sharma M**, Dufresne RL, Terzi D, Risch SC, Fairbrother WG, Neve RL, Kane JP, Malloy MJ, Pullinger CR, Hamilton SP, Gold SJ, Zachariou V, and Kovoor A **(2011)** Association Between Regulator of G Protein Signaling 9-2 and Body Weight. *PLoS ONE*, 6(11): e27984.

14. **Sharma M**, Celver J, and Kovoor A **(2011)** Regulator of G protein signaling 9-2(RGS9-2) mRNA is up regulated during neuronal differentiation of mouse embryonic stem cells. *NeuroSci Lett.* 502(3): 123-128.

13. Celver J, **Sharma M**, and Kovoor A **(2010)** RGS9-2 mediates specific inhibition of agonist induced internalization of D2-dopamine receptors. *J. Neurochem*. 114(3):739-749.

12. **Sharma M,** Li L, Celver J, Killian C, Kovoor A, and Seeram NP **(2010)** Effects of fruit ellagitannin extracts, ellagic acid, and their colonic metabolite, urolithin A, on Wnt signaling. *J Agric Food chem.* 58(7):3965-3969.

11. Rai SK,**Sharma M**, and Tiwari M **(2009)** Inhibitory effect of novel diallyldisulfide analogs on HMG-CoA reductase expression in hypercholesterolemia rats: CREB as a potential upstream target. *Life Sci.* 85(5-6):211-219.

10. Bihaqi SW, **Sharma M**, Singh AP, and Tiwari M **(2009)** Neuroprotective role of *Convolvulus pluricaulis* on aluminum induced neurotoxicity in rat brain. *J Ethnopharmacol.* 124(3):409-415.

9. Agrawal A, **Sharma M**, Rai SK, Singh, B, Tiwari M, and Chandra R **(2008)** The effect of the aqueous extract of the roots of *Asparagus racemosus* on hepatocarcinogenesis initiated by diethylnitrosamine. *Phytother Res.* 22(9):1175-1182.

8. **Sharma M***, Rai SK, Tiwari RK, Tiwari M, and Chandra R **(2008)** Effects of Nitric Oxide Modulators on Cardiovascular Risk Factors in Mild Hyperhomocysteinaemic Rat Model. *Basic Clin Pharmacol Toxicol.* 103(1):25-30. **Corresponding author**

7. Rai SK, **Sharma M**, and Tiwari M **(2008)** Synthesis, DNA binding, and cytotoxic evaluation of new analogs of diallyldisulfide, an active principle of` garlic. *Bioorg Med Chem.* 16(15):7302-7310.

6. **Sharma M***, Rai SK, Tiwari M, and Chandra R. **(2007)** Effect of hyperhomocysteinemia on cardiovascular risk factors and initiation of atherosclerosis in Wistar rats. *European Journal of Pharmacology,* 574(1): 49-60. **Corresponding author**

5. **Sharma M**, Tiwari M, and Chandra R **(2004)** Bis[3-(4'-substitutephenyl)prop-2ene]disulphides as a New Class of antihyperlipidemic Compounds. *Bioorg. Med. Chem. Lett.* 14: 5347-5350.

4. Mathur S, Kaur P, **Sharma M**, Tiwari M, and Chandra R. **(2004)**. The treatment of skin carcinoma induced by UVB radiation, using 1 oxo-5β, 6β-epoxy with-2-enolide isolated from the roots of *Withania somnifera* in a rat model. *Phytomedicine,* 11(5):452-460.

3. Kaur P, **Sharma M**, Mathur S, Tiwari M, Divekar HM, Kumar R, Srivastava KK, and Chandra R. **(2003)** Effect of 1-oxo-5β, 6β-epoxy-with-2-ene-27-ethoxy-olide isolated from the roots of *Withania somnifera* on stress indices in wistar rats, *J. Alt. Compl Med.* 9(6): 897-907.

2**.** Kaur P, Mathur S, **Sharma M**, Tiwari M, and Srivastava KK*, et al.* **(2001)** A biologically active constituent of withania somnifera (ashwagandha) with antistress activity. *Indian Journal of Clinical Biochemistry*, 16, 195-198.

1 Chandra R, Tiwari M, Kaur P, **Sharma M**, Jain R, and Dass S **(2000)** Metalloporphyrins—Applications and clinical significance. *Indian Journal of Clinical Biochemistry*, 15 (1), 183-199

PATENTS GRANTED

Two Indian Patents have been granted, with the help of the Patent Facilitating Cell, of the Department of Science and Technology, Govt. of India.

(1) Novel diallyldisulphide compounds having antilipidemic and antioxidant activity, **GRANTED 2011–Patent No. 245820. http://www.allindianpatents.com/patents/245820**

(2) A process for the preparation of novel diallyldisulphide derivatives. **GRANTED 2009 Patent No. 236214. http://www.allindianpatents.com/patents/236214**