

CURRICULUM VITAE

VINAY PARIKH, Ph.D.

Assistant Professor

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Research Specialization

Neuroscience/ Neuropsychopharmacology

Research Focus

My research broadly concern mechanisms by which neurochemical substrates regulate information processing in brain circuits regulating cognitive operations, and more specifically, how these processes are influenced during developmental transitions and aging. I employ diverse and multi-disciplinary research approaches to understand how neurochemical signaling systems encode distinct cognitive operations and orchestrate information in neural networks necessary for higher cognitive functions including learning, attention, working memory and decision-making. As cognitive impairments represent an important attribute of major neuropsychiatric and age-related neurodegenerative disorders, I seek to explore neurobiological mechanisms that disrupt information processing and give rise to the cognitive symptoms associated with these disorders.

Education

- 1999 Punjabi University, Patiala (India)
 Ph.D., Pharmacology; (Advisor: Prof. Manjeet Singh)
- 1994 Gujarat University, Ahmedabad (India)
 Master of Pharmacy (M.Pharm.), Pharmacology
- 1992 Dr Harisingh Gour University, Sagar (India)
 Bachelor of Pharmacy (B.Pharm.), Pharmaceutical Sciences

Post-doctoral Experience

- 2004-2005 University of Michigan, Ann Arbor, MI, USA
 Neuroscience/Psychobiology; (Advisor: Prof. Martin Sarter)
- 2003-2004 Ohio State University, Columbus, OH, USA
 Neuroscience/Psychobiology; (Advisors: Profs. Martin Sarter &

John P. Bruno)
 2001-2003 Medical College of Georgia School of Medicine, Augusta, GA, USA
 Neurochemistry/Neuropsychopharmacology; (Advisor: Prof. Sahebarao P. Mahadik)

Professional Appointments

2009- Assistant Professor, Department of Psychology and Neuroscience Program, Temple University, Philadelphia, PA, USA
 2005-2009 Assistant Research Scientist, Department of Psychology, Biopsychology and Neuroscience Program, University of Michigan, Ann Arbor, MI, USA
 2004-2005 Research Fellow, Department of Psychology, Biopsychology and Neuroscience Program, University of Michigan, Ann Arbor, MI, USA
 2003-2004 Postdoctoral Researcher, Psychobiology and Behavioral Neuroscience Area, Department of Psychology, Ohio State University, Columbus, OH, USA
 2001-2003 Postdoctoral Fellow, Department of Psychiatry and Health Behavior, Medical College of Georgia School of Medicine, Augusta, GA, USA
 1998-2001 Executive-R&D, Department of Biological Research (Drug Discovery) Sun Pharmaceutical Industries Ltd., Baroda, India
 1994-1998 Senior Research Fellow, Department of Pharmaceutical Sciences and Drug Research (Faculty of Medicine), Punjabi University, India
 1992-1994 Junior Research Fellow, Department of Pharmacology, LM College of Pharmacy, Gujarat University, India

Honors/Awards

2008 Research Faculty Recognition Award, University of Michigan, USA
 2006 Rafaelson Young Investigator Award, Collegium Internationale Neuropsychopharmacologicum (CINP), USA
 2006 Travel Award, Winter Conference of Brain Research, USA
 2003 Young Investigator Award, International Congress of Schizophrenia Research, USA
 1997 Young Scientist Award (Medical and Veterinary Sciences), Indian Science Congress Association, India
 1996 Achari Prize, Indian Pharmacological Society, India
 1995 Senior Research Fellowship Award and Contingency Grant, Council of Scientific and Industrial Research, India
 1994 Jindal Prize, Indian Pharmacological Society (Gujarat Branch), India
 1993 First Prize in B.V. Patel Essay Competition, presented at Indian Pharmaceutical Congress, India

1992 Junior Research Fellowship, University Grants Commission, India
1992 G.P. Nair Award, Indian Drugs Manufacturer's Association, India
1992 Magna Cum Laude, Dr. Harisingh Gour University, India

Professional Affiliations

2006 – Present: Member, American Society for Neurochemistry
2006 – Present: Member, Collegium Internationale Neuropsychopharmacologicum
2005 – Present: Member, International Behavioral Neuroscience Society
2004 – Present: Member, Society for Neuroscience
1995 – 1998: Member, Indian Pharmacological Society
1996 – 1997: Member, Indian Science Congress Association

Reviewing Activities

Ad hoc Reviewer:

Analytical Chemistry, Biological Psychiatry, Brain Research, European Journal of Neuroscience, European Neuropsychopharmacology, Journal of Neuroscience Research, Pharmacology Biochemistry and Behavior, Psychiatry Research

Review Editor:

Frontiers in Integrative Neuroscience

Review Board Member:

Indian Journal of Pharmacology

Professional Activities

2008: Chair, Interactive Scientific Symposium, 26th CINP Meeting, Munich, Germany

Teaching Activities (current)

Fall 2009 : **Cellular and Molecular Neuroscience (NS 2122)**; undergraduate course

Publications in Peer-Reviewed Journals

2002 - Present

1. Howe WM, Ji J, Parikh V, Williams S, Sarter M. Enhanced shifting from endogenous to exogenous attention by selective stimulation of $\alpha 4\beta 2^*$ nAChRs: underlying cholinergic mechanisms. 2009; (under revision).

2. Parikh V, Ji J, Decker MW, Sarter M. β 2 subunit-containing and α 7 nAChRs differentially control prefrontal glutamatergic and cholinergic signaling. 2009; (under revision).
3. Sarter M, Parikh V, Howe MW. nAChR-agonist induced cognition enhancement: integration of cognitive and neuronal mechanisms. **Biochemical Pharmacology** 2009; 78: 658-667.
4. Sarter M, Parikh V, Howe, MW. Phasic acetylcholine and the volume transmission hypothesis: time to move on. **Nature Reviews Neuroscience** 2009; 10: 383-390.
5. Chiara G, Parikh V, Ward JR, Chiamulera C, Sarter M. Increases in cholinergic neurotransmission measured by using choline-sensitive microelectrodes: enhanced detection by hydrolysis of acetylcholine on recording sites? **Neurochemistry International** 2008; 52: 1343-1350.
6. Parikh V, Man K, Decker MW, Sarter M. Glutamatergic contributions to nAChR agonist-evoked cholinergic transients in the prefrontal cortex. **The Journal of Neuroscience** 2008; 28: 3769-3680.
7. Parikh V, Kozak R, Martinez V, Sarter M. Prefrontal acetylcholine release controls cue detection on multiple time scales. **Neuron** 2007; **56**: 141-54. [Preview: Hashemi P, Wightman, RM. Paying attention with the latest technology. **Neuron** 2007; 56: 4-5.]
8. Sarter M, Bruno JP, Parikh V. Abnormal neurotransmitter release underlying behavior and cognitive disorders: toward concepts of dynamic and function specific dysregulation. **Neuropsychopharmacology** 2007; 32: 1452-1461.
9. Pillai A, Parikh V, Terry AV, Mahadik SP. Long term antipsychotic treatments and crossover studies in rats: differential effects of typical and atypical agents on the expression of antioxidant enzymes and membrane lipid peroxidation in rat brain. **Journal of Psychiatric Research** 2007; 41: 372-86.
10. Terry AV, Parikh V, Gearhart DA, Pillai A, Nasrallah HA, Mahadik SP. Time dependent effects of haloperidol and ziprasidone on nerve growth factor, cholinergic neurons, and spatial learning in rats. **Journal of Pharmacology and Experimental Therapeutics** 2006; 318: 709-724.
11. Parikh V, Apparsundaram S, Kozak R, Richards JB, Sarter M. Reduced expression and capacity of striatal high-affinity choline transporter in hyperdopaminergic mice. **Neuroscience** 2006; 41: 379-389.
12. Parikh V, Sarter M. Cortical choline transporter function *in vivo*: equipotent uptake of

- endogenous and exogenous choline and effects of cholinergic deafferentation. **Journal of Neurochemistry** 2006; 96: 488-502.
13. Hernandez CM, Gearhart DA, Parikh V, Hohnadel EJ, Davis LW, Middlemore ML, Waller JL, Terry AV. Comparison of galantamine and donepezil for effects on nerve growth factor, cholinergic markers and memory performance in aged rats. **Journal of Pharmacology and Experimental Therapeutics** 2006; 316:679-694.
 14. Apparsundaram S, Martinez V, Parikh V, Kozak R, Sarter M. Increased capacity and density of choline transporters situated in synaptic membranes of the right medial prefrontal cortex of attentional task-performing rats. **The Journal of Neuroscience** 2005; 25:3851-3856.
 15. Martinez V, Parikh V, Sarter M. Sensitized attentional impairments and Fos-immunoreactive cholinergic neurons in the basal forebrain following administration of escalating doses of amphetamine. **Biological Psychiatry** 2005; 57:1138-1146.
 16. Sarter M, Parikh V. Choline transporters, cholinergic transmission and cognition. **Nature Reviews Neuroscience** 2005; 6:48-56.
 17. Parikh V, Pomerleau F, Huettl P, Gerhardt GA, Sarter M, Bruno JP. Rapid assessment of in vivo cholinergic transmission by amperometric detection of changes in extracellular choline levels. **European Journal of Neuroscience** 2004; 20: 1545-1554.
 18. Parikh V, Khan MM, Mahadik SP. Differential regulation of nerve growth factor and choline acetyltransferase expression with antipsychotics in rat cortex and nucleus basalis. **Journal of Psychiatric Research** 2004; 38: 521-529.
 19. Parikh V, Khan MM, Mahadik SP. Olanzapine counteracts modulatory effects of haloperidol on BDNF and TrkB receptors in rat hippocampus. **Neuroscience Letters** 2004; 356: 135-139.
 20. Parikh V, Terry AV, Khan MM, Mahadik SP. Modulation of nerve growth factor and choline acetyltransferase expression in rat hippocampus after chronic exposure with haloperidol, risperidone and olanzapine. **Psychopharmacology** 2004; 172:365-374.
 21. Evans DR, Parikh VV, Khan MM, Coussons C, Buckley PF, Mahadik SP. Red blood cell membrane essential fatty acid metabolism in early psychotic patients following antipsychotic drug treatment. **Prostaglandins Leukotrienes Essential Fatty Acids** 2003; 69: 393-399.
 22. Khan MM, Parikh VV, Mahadik SP. Antipsychotic drugs differentially modulate apolipoprotein D in rat brain. **Journal of Neurochemistry** 2003; 86:1089-1100.

23. Terry AV, Hill WD, Parikh V, Waller JL, Evans DR, Mahadik SP. Differential effects of haloperidol, risperidone and clozapine exposure on cholinergic markers and spatial learning performance in rats. **Neuropsychopharmacology** 2003; 28:300-309.
24. Parikh V, Evans DR, Khan MM, Mahadik SP. Nerve growth factor levels in never-medicated first-episode psychotic patients and medicated chronic schizophrenic patients. **Schizophrenia Research** 2003; 60:117-123.
25. Parikh V, Khan MM, Mahadik SP. Differential effects of antipsychotics on expression of antioxidant enzymes and membrane lipid peroxidation in rat brain. **Journal of Psychiatric Research** 2003; 37:43-51.
26. Terry AV, Hill WD, Parikh V, Evans DR, Waller JL, Mahadik SP. Differential effects of chronic haloperidol and olanzapine exposure on brain cholinergic markers and spatial learning in rats. **Psychopharmacology** 2002; 164: 360-368.
27. Khan MM, Evans DR, Gunna V, Scheffer RE, Parikh VV, Mahadik SP. Reduced erythrocyte membrane essential fatty acids and increased lipid peroxides in schizophrenia at the never-medicated first-episode of psychosis and after years of treatment with antipsychotics. **Schizophrenia Research** 2002; 58: 1-10.
28. Mahadik SP, Khan MM, Evans DR, Parikh VV. Elevated plasma level of apolipoprotein D in schizophrenia and its treatment and outcome. **Schizophrenia Research** 2002; 58: 55-62.
29. Doshi U, Salat P, Parikh V. Cytokines in asthma: Current trends and future prospects. **Indian Journal of Pharmacology** 2002; 34: 16-25.

1994 - 2001

30. Parikh V, Singh M. Possible role of nitric oxide release and mast cells in endotoxin-induced cardioprotection. **Pharmacological Research** 2001; 43: 39-45.
31. Salat P, Parikh V. Motilin receptor agonists as novel gastrointestinal prokinetic agents. **Indian Journal of Pharmacology** 1999; 31(5): 333-9.
32. Parikh V, Singh M. Possible role of adrenergic component and cardiac mast cell degranulation in preconditioning induced cardioprotection. **Pharmacological Research** 1999; 40: 129-37.
33. Parikh V, Singh M. Possible role of cardiac mast cell degranulation in norepinephrine induced preconditioning **Methods and Findings in Experimental and Clinical Pharmacology** 1999; 27(4): 269-74.

34. Parikh V, Singh M. Possible role of cardiac mast cell degranulation and NO release in ischaemic preconditioned isolated rat heart. **Molecular and Cellular Biochemistry** 1999; 199: 1-6.
35. Parikh V, Singh M. Cardiac mast cell stabilization and cardioprotective effect of ischemic preconditioning in isolated rat heart. **Journal of Cardiovascular Pharmacology** 1998; 31: 779-785.
36. Parikh V, Singh M. Resident cardiac mast cells and cardioprotective of ischaemic preconditioning in isolated rat heart. **Journal of Cardiovascular Pharmacology** 1997; 30:149-156.
37. Kaur H, Parikh V, Sharma A, Singh M. Effect of amiloride a Na⁺/H⁺ exchange inhibitor on cardioprotective effect of ischemic preconditioning: Possible involvement of resident cardiac mast cells. **Pharmacological Research** 1997; 36: 95-102.
38. Singh M, Parikh V, Sharma A. Fundamentals and future prospects of gene therapy. **Drugs of the Future** 1997; 22: 995-1003.
39. Sharma A, Parikh V, Singh M. Pharmacological basis and drug therapy of Alzheimer's disease. **Indian Journal of Experimental Biology** 1997; 35: 1146-1155.
40. Parikh V, Shivprakash, Patel RB, Gandhi TP, Santani DD. Effect of aspirin on single and multiple dose pharmacokinetics of ciprofloxacin in rabbits. **Indian Journal of Pharmacology** 1996; 28: 25-28.
41. Shah DA, Usgaonkar RS, Pradhan RR, Parikh V. ISO-9000 and its applicability to pharmaceuticals - A pharmacist's perception. **Eastern Pharmacist** 1994 (May): 33-39.

Books and Chapters

1. Parikh V, Sarter M. Cognitive decline in laboratory animals: models, measures, and validity. In: **Encyclopedia of Behavioral Neuroscience** (Koob G, Thompson RF, LeMoal M, eds), 2009, Elsevier, Amsterdam, in press.
2. Sarter, M, Howe, WM, Parikh, V. Cholinergic transients mediating signal detection and processing mode shifts. In: **Monitoring Molecules in Neuroscience** (Phillips, PE, Sandberg, SG, Ahn, S, Phillips A, eds) 2008, pp 312-315, Vancouver, Canada: University of British Columbia Institute of Mental Health.
3. Parikh V, Sarter M. Cholinergic mediation of attention: the contribution of phasic versus tonic components of prefrontal cholinergic activity. In: **Molecular and Biophysical**

mechanisms of alertness, arousal and attention (Pfaff D, Kiefer B, eds) **Annals of the New York Academia of Sciences** 2008; 1129: 225-235.

4. Sarter M, Bruno JP, Parikh V, Martinez V, Kozak R, Richards JB. Forebrain dopaminergic-cholinergic interactions, attentional effort, psychostimulant addiction and schizophrenia. In: **Neurotransmitter interactions and cognitive function** (Levin ED, Butcher L, Decker M, eds) 2006, pp 65-85, Boston, MA: Birkhäuser.
5. Bruno JP, Sarter M, Gash C, Parikh V. Choline- and acetylcholine-sensitive microelectrodes and cholinergic transmission. In: **Encyclopedia of sensors** (Grimes GA, Dickey E, eds) Vol 2, 2006, pp 177-192, Stevenson Ranch, CA: American Scientific Publishers.
6. Mahadik SP, Parikh VV, Khan MM. The role of oxidative stress in modulating the membrane and phospholipid function in schizophrenia. In: **Phospholipid spectrum disorders in psychiatry and neurology** (Peet M, Glen I, Horrobin DF, eds) Second Edition, 2003, pp 277-288, Carnforth: Marius Press.
7. Mahadik SP, Khan MM, Parikh V. Effect of antipsychotics drugs on rat brain and on essential fatty acids in the erythrocytes of schizophrenic patients: Implications and outcome. In: **Phospholipid spectrum disorders in psychiatry and neurology** (Peet M, Glen I, Horrobin DF, eds) Second Edition, 2003, pp 289-298, Carnforth: Marius Press.

Scientific Presentations/Published Abstracts

2002 - Present

1. Parikh V, Welchko R, Cheema AA, Turner DL, Sarter M. Silencing of rat TrkA receptor expression using vector based RNAi: a novel tool to study trophic regulation of the developing and aging forebrain cholinergic system. **Society for Neuroscience Abstracts** 2009; 39: 831.10.
2. Sarter M, Cheema A, Young D, St. Peters M, Blakely RD, Parikh V. Molecular limits on cholinergic and cognitive capacities: exhausting intracellular choline transporter reserves. **Society for Neuroscience Abstracts** 2009; 39: 134.8.
3. Howe WM, Parikh V, Decker MW, Sarter M. Cognition enhancement by nAChR agonists: facilitation of cue detection based on augmented cholinergic transients in prefrontal cortex. **Society for Neuroscience Abstracts** 2009; 39: 873.20.
4. Ji J, Parikh V, Decker MW, Sarter M. Beta2- and alpha7-subunit containing nAChRs differentially control prefrontal cholinergic and glutamatergic signaling. **Society for Neuroscience Abstracts** 2009; 39: 873.24.

5. Paolone G, Ji J, Williams S, Howe MW, Ward J, Parikh V, Sarter M. Effects of the selective alpha 7 nAChR agonist ABT-107 on prefrontal glutamatergic and cholinergic activity and attentional performance. **Society for Neuroscience Abstracts** 2009; 39: 227.5.
6. Wescott SA, Gritton H, Parikh V, Bruno JP, Sarter M. Nicotine-evoked recruitment of prefrontal, signal detection-mediating mechanisms, are attenuated in the neonatal ventral hippocampal lesion model of schizophrenia. **Society for Neuroscience Abstracts** 2009; 39: 839.12.
7. Parikh V, Young D, Cheema A, Blakely RD, Sarter M. A model of cognitive dysfunction: constrained demands on cholinergic transmission and attentional capacities in CHT+/- mice. **Journal of Neurochemistry** 2009; 108(Suppl 1):71-72.
8. Parikh V, Sarter M. New approaches toward the preclinical screening of cognition enhancers: Modulation of cognition-evoked alterations in synaptic neurotransmission. **International Journal of Neuropsychopharmacology** 2008; 11:78.
9. Parikh V, Young D, Cheema A, Blakely RD, Sarter M. Molecular constraints on attentional capacities: failure to sustain cortical acetylcholine release and attentional performance by CHT+/- mice. **Society for Neuroscience Abstracts** 2008; 38: 134.2.
10. Jinzhao J, Parikh V, Decker MW, Sarter M. nAChR agonist-evoked glutamatergic and cholinergic transients in the prefrontal cortex of mice lacking the beta2- or alpha7-nAChR receptor subunit. **Society for Neuroscience Abstracts** 2008; 38: 290.19.
11. Howe WM, Parikh V, Giuliano C, Gritton H, Ward J, Sarter M. Prefrontal cholinergic transients indicating cue detection as a target for cognition enhancers. **Society for Neuroscience Abstracts** 2008; 38: 388.26.
12. Sarter M, Howe M, Parikh V. Cholinergic transients mediating signal detection and processing mode shifts. Monitoring Molecules in Neuroscience. **12th International Conference on In Vivo Methods** 2008 Vancouver, Canada.
13. Parikh V. New approaches toward the preclinical screening of cognition enhancers: Modulation of cognition-evoked alterations in synaptic transmission. **26th CINP Meeting** 2008, Munich, Germany.
14. Sarter M, Parikh V, Man K, Decker MW. Glutamatergic mediation of the "Cholinergic footprints" evoked by nicotine and the cognition enhancer ABT-089, an alpha 4 beta 2 nAChR-selective partial agonist. **Biochemical Pharmacology** 2007; 74: SMA23-SMA24.

15. Parikh V, Blakely RD, Sarter M. A model of cholinergic dysfunction: failure to maintain elevated levels of cortical cholinergic neurotransmission in mice with a heterozygous deletion of the choline transporter gene. **Society for Neuroscience Abstracts** 2007; 37: 579.19.
16. Giuliano C, Parikh V, Chiamulera C, Sarter M. Measuring cholinergic neurotransmission with enzyme-selective microelectrodes: effects of differential coating combinations and neuropharmacological implications. **Society for Neuroscience Abstracts** 2007; 37: 144.1.
17. Howe M, Parikh V, Martinez V, Sarter M. Prefrontal cholinergic switching from associational processing to cue detection: evidence from sub-second measures of prefrontal cholinergic neurotransmission, using choline-sensitive microelectrodes, in animals performing an operant sustained attention task. **Society for Neuroscience Abstracts** 2007; 37: 741.8.
18. Sarter M, Parikh V, Kozak R, Martinez V. Prefrontal acetylcholine release controls cue detection on multiple time scales. **Society for Neuroscience Abstracts** 2007; 37: 741.15.
19. Man K, Parikh V, Decker MW, Sarter M. Differential prefrontal "cholinergic footprints" evoked by the nicotine and the cognition enhancer ABT-089, an $\alpha_4\beta_2$ nAChR-selective ligand. **Society for Neuroscience Abstracts** 2007; 37: 746.12.
20. Parikh V, Kozak R, Martinez V, Sarter M. Phasic and tonic changes in cortical cholinergic neurotransmission evoked by attention-demanding cues and associated cognitive operations. **Society for Neuroscience Abstracts** 2006; 36: 369.14.
21. Man K, Parikh V, Decker MW, Sarter M. Differential cholinergic "footprints" evoked by nicotine and the $\alpha_4\beta_2$ -selective partial agonist ABT-089 in prefrontal cortex. **Society for Neuroscience Abstracts** 2006; 36:163.7.
22. Parikh V, Apparsundaram S, Kozak R, Richards JB, Sarter M. Dysregulated choline transporter function in hyperdopaminergic mice. **25th Annual CINP Meeting** 2006 Chicago, IL.
23. Sarter M, Parikh V, Kozak R, Martinez V, Dagenbach E. New insights into the functions of cortical cholinergic inputs based on studies using microdialysis or enzyme-selective microelectrodes. Monitoring Molecules in Neuroscience. **11th International Conference on In Vivo Methods** 2006 Sardinia, Italy.
24. Parikh V, Sarter M. Regulation and function of cortical high-affinity choline transporters measured in vivo using choline-selective microelectrodes. **39th Annual Winter Conference on Brain Research** 2006 Steamboat Springs, CO.

25. Parikh V, Apparsundaram S, Richards JB, Sarter M. Choline transporter regulation in hyperdopaminergic mice. **Society for Neuroscience Abstracts** 2005; 35: 270.8.
26. M. Sarter, Parikh V, Martinez V, Kozak R. Phasic and tonic increases in cortical cholinergic neurotransmission in rats performing a conditioned appetitive response and detected by the amperometric measurement of extracellular choline. **Society for Neuroscience Abstracts** 2005; 35: 644.5.
27. Man K, Parikh V, Sarter M. Characterization and modulation of cortical high-affinity choline transporter function assessed in vivo. **Society for Neuroscience Abstracts** 2005; 35: 270.7.
28. Kozak R, Brown H, Parikh V, Martinez V, Bruno JP. What does acetylcholine do in the posterior parietal cortex (PPC)? Attentional performance-associated increases in PPC ACh efflux. **Society for Neuroscience Abstracts** 2005; 35: 644.1.
29. Martinez V, Parikh V, Sarter M. Sensitized attentional performance and fos-immunoreactive cholinergic neurons in the basal forebrain. **International Behavioral Neuroscience Society Meeting** 2005 14: 51.
30. Apparsundaram S, Martinez V, Parikh V, Sali A, Bruno JP, Sarter M. Choline transporter regulation in cognition: attention performance-induced increases in maximal choline transporter velocity in the right, but not left, frontal cortex. **Society for Neuroscience Abstracts** 2004; 34: 949.7.
31. Martinez V, Parikh V, Swinney KA, Werner CE, Bruno JP, Sarter M. Repeated amphetamine exposure impairs attention performance and induces Fos-like immunoreactivity in the nucleus basalis of Meynert. **Society for Neuroscience Abstracts** 2004; 34: 780.2.
32. Parikh V, Johnson B, Pomerleau F, Huettl P, Gerhardt GA, Sarter M, Bruno JP. Amperometric measurement of extracellular choline: a method for the detection of rapid changes in cholinergic transmission. **Society for Neuroscience Abstracts** 2004; 34: 949.6.
33. Terry AV, Parikh V, Nasrallah H, Mahadik SP. Time dependent effects of haloperidol and ziprasidone on nerve growth factor, cholinergic neurons and spatial learning in rats. **Biological Psychiatry** 2004; 55:14S.
34. Kozak R, Zmarowski A, Parikh V, Gatien ML, Sarter, M, Bruno JP. Modulation of cortical acetylcholine release by nucleus accumbens NMDA and dopamine receptors. **Society for Neuroscience Abstracts** 2003; 33: 247.12.

35. Terry AV, Hernandez CM, Hohnadel B, Parikh V, Mahadik S. Comparison of galantamine and donepezil for effects of nerve growth factor, cholinergic markers and behavioral performance in aged rats. **Society for Neuroscience Abstracts** 2003; 33: 681.15.
36. Parikh V, Khan MM, Brogdon S, Salat P, Buckley PF, Mahadik SP. Risperidone prevented and restored the haloperidol-induced reduction in expression of nerve growth factor and choline-acetyltransferase in basal forebrain-cortical projections in rat. **NCDEU Meeting** 2003 Session I-106, 130.
37. Nasrallah HA, Mahadik SP, Parikh V. Effects of chronic exposure with ziprasidone versus haloperidol on nerve growth factor levels and choline-acetyltransferase immunoreactivity in rats: A controlled study. **American Psychiatric Association Meeting** 2003.
38. Parikh VV, Khan MM, Buckley PF. Differential effects of antipsychotics on antioxidant enzymes and membrane lipid peroxidation in rat brain", **American Psychiatric Association Meeting** 2003, 239.
39. Terry AV, Parikh V, Mahadik SP. Differential effects of haloperidol and risperidone on nerve growth factor, cholinergic neurons and spatial learning in rats. **Schizophrenia Research** 2003; 60:117.
40. Parikh V, Terry AV, Mahadik SP. Modulation of brain nerve growth factor and choline-acetyltransferase expression by chronic exposure to haloperidol, risperidone and olanzapine in rats. **Schizophrenia Research** 2003; 60:113.
41. Evans DR, Parikh V, Khan MM, Buckley PF, Mahadik SP. Nerve growth factor in never-medicated first episode psychotic and medicated-schizophrenic patients: possible implications for treatment outcome. **Schizophrenia Research** 2003; 60:99.
42. Evans D, Khan MM, Parikh V, Coussons C, Brogdon S, Buckley PF, Mahadik SP. Membrane essential polyunsaturated fatty acid metabolism in first episode of psychosis and after treatment with antipsychotics. **Biological Psychiatry** 2003; 53:180S.
43. Mahadik SP, Khan MM, Parikh VV. Atypical antipsychotics trigger neuronal remodeling in adult rat brain. **Biological Psychiatry** 2003; 53:109S.
44. Parikh V, Khan MM, Salat P, Kalla A, Mahadik SP. Effects of risperidone, olanzapine and clozapine vs. haloperidol on nerve growth factor and cholinergic activity in rat brain. **Biological Psychiatry** 2003; 53:26S.

45. Khan MM, Parikh V, Mahadik SP. Risperidone but not haloperidol enhanced olfactory GABAaminergic neuroplasticity in rat. **Biological Psychiatry** 2003; 53:142S.
46. Khan MM, Parikh V, Salat P, Mahadik SP. Risperidone but not haloperidol triggers neurogenesis in the subventricular zone and migration to the olfactory bulb in rats: possible implications for improved olfaction. **Schizophrenia Research** 2003; 60:109.
47. Khan MM, Parikh V, Salat P, Mahadik SP. Risperidone but not haloperidol triggers neurogenesis in the subventricular zone and migration to the olfactory bulb in rats: possible implications for improved olfaction. **Biological Psychiatry** 2003; 53:87S.
48. Khan MM, Parikh V, Mahadik SP. Prevention and restoration of haloperidol-induced reduction of apolipoprotein D by risperidone or clozapine paralleled the GABAaminergic changes in rat brain. **Biological Psychiatry** 2003; 53:88S.
49. Mahadik S, Parikh V, Khan MM, Salat P, Kalla A, Buckley F. Risperidone prevents and restore haloperidol-induced oxidative stress mediated brain injury **Biological Psychiatry** 2003; 60:112.
50. Mahadik S, Parikh V, Khan MM, Salat P, Kalla A, Buckley F. Risperidone prevents and restore haloperidol-induced oxidative stress mediated brain injury **Schizophrenia Research** 2003; 60:112.
51. Khan MM, Parikh V, Salat P, Mahadik SP. Risperidone but not haloperidol triggers neurogenesis in the subventricular zone and migration to the olfactory bulb in rats: possible implications for improved olfaction. **American College of Neuropsychopharmacology Meeting** 2002; p 101.
52. Parikh V, Terry AV, Mahadik SP. Antipsychotics differentially affect the expression of growth factors in rat brain. **Society for Neuroscience Abstracts** 2002; 32: 893.10.
53. Mahadik SP, Parikh V, Khan MM, Buckley PF. Differential effects of antipsychotics on nerve growth factor in rat brain. **NCDEU Meeting** 2002; Session II-8.
54. Khan MM, Evans DR, Parikh VV, Harrison S, Chiu F, Buckley PF, Mahadik SP. Elevated levels of apolipoprotein D (Apo D) in never-medicated first-episode psychotic patients and medicated schizophrenic patients. **Biological Psychiatry** 2002; 51:116S.
55. Khan MM, Parikh VV, Mahadik SP. Effects of chronic exposure of antipsychotics on apolipoprotein D in rat brain. **Biological Psychiatry** 2002; 51:168S.

56. Parikh VV, Khan MM, White JR, Buckley PF, Mahadik SP. Atypical antipsychotics such as risperidone and clozapine do not induce the oxidative stress and the lipid peroxidation similar to haloperidol in rats. **Biological Psychiatry** 2002; 51:184S.

1996 – 2001

57. Salat P, Parikh V, Udawadia BP. Protective effect of progesterone in strychnine induced convulsions: Possible involvement of its neuroactive steroid metabolite. **Indian Journal of Pharmacology** 2000; 32:72.
58. Singh M, Parikh V. Role of nitric oxide and cardiac mast cells in cardioprotective effect of endotoxin-induced myocardial preconditioning. **Naunyn-Schmiedebergs Archives of Pharmacology** 1998; 358(1):P36115.
59. Parikh V, and Singh M. Role of nitric oxide in the protective effect of endotoxin induced myocardial preconditioning. **Indian Journal of Pharmacology** 1998; 30: 112-113.
60. Parikh V, Singh M. Degranulation of resident cardiac mast cells as a possible target for cardioprotective effect of ischaemic preconditioning. **Indian Journal of Pharmacology** 1997; 29:25.
61. Parikh V, Singh M. Role of resident cardiac mast cells in the cardioprotective effect of ischaemic preconditioning. **Indian Journal of Pharmacology** 1996; 28:42.

Invited Talks/Presentations, Colloquia and Seminars

- 2009: **Neuroscience Colloquium**; Temple University, Philadelphia, PA, USA
- 2009: **40th American Society for Neurochemistry Meeting**, Charleston, SC, USA. **Scientific session**: Aging and Neurodegenerative disorders.
- 2009: **School of Medicine and Biomedical Sciences, SUNY**, Buffalo, NY, USA.
- 2008: **Temple University**, Philadelphia, PA, USA.
- 2008: **University of Alabama School of Medicine**, Birmingham, AL, USA.
- 2008: **Yale University School of Medicine**, CT, USA.
- 2008: **26th Annual CINP Meeting**, Munich, Germany. **Interactive Scientific Symposium**: Preclinical detection and characterization of cognition enhancers: New targets, research approaches and challenges.
- 2008: **University of Tennessee College of Medicine**, Memphis, TN, USA
- 2008: **Medical University of South Carolina**, Charleston, SC, USA
- 2008: **University of Georgia**, Athens, GA, USA.
- 2008: **University of Colorado**, Boulder, CO, USA.
- 2008: **University of Texas Medical Branch**, Galveston, TX, USA.
- 2007: **Saint Louis University School of Medicine**, St. Louis, MO, USA

- 2007: **University of Maryland School of Medicine**, Baltimore, MD, USA
- 2007: **University of Missouri**, Kansas City, MO, USA.
- 2007: **University of Kansas**, Lawrence, KS, USA.
- 2006: **25th Annual CINP Meeting**, Chicago, IL, USA.
- 2006: **39th Annual Winter Conference of Brain Research**, Steamboat Springs, CO, USA.
- 2005: **Society for Neuroscience Annual Meeting**, Washington, DC, USA. **Minisymposium:**
New insights into the cellular regulation and cognitive functions of forebrain cholinergic neurotransmission.
- 2005: **Biopsychology Colloquium, University of Michigan**, Ann Arbor, MI, USA.
- 2003: **International Congress of Schizophrenia Research**, Colorado Springs, CO, USA.
- 2003: **Ohio State University**, Columbus, OH, USA.
- 2002: **Institute of Molecular Medicine and Genetics, Medical College of Georgia**, Augusta, GA, USA.
- 2000: **Sun Pharma Advanced Research Center**, Baroda, India.
- 2000: **MS University**, Baroda, India.
- 1999: **Zyodus Cadila Pharmaceuticals**, Ahmedabad, India.
- 1997: **84th Annual Indian Science Congress Association Meeting**, New Delhi, India.
- 1996: **29th Annual Conference of Indian Pharmacological Society**, Hyderabad, India.

Workshop Participation

- 1) Second-by-second electrochemical measurement in biological systems, Center for Sensor Technology, University of Kentucky, KY, USA, May 13-15th, 2004.
- 2) National workshop on mathematical modeling of pharmacokinetic data, K.B. Institute of Pharmaceutical Education and Research, Gandhinagar, India, November 5-7th, 1998.

Current Research Funding

1. *National Institute on Aging (1R03: AG029592-01A2):* Cholinergic and cognitive decline in response to TrkA knockdown using RNAi; (Role: Principal Investigator; 2008-2010)
2. *National Institute of Mental Health (1R01: MH080332-01A1):* Nicotinic regulation of cortical ACh release and behavioral function; (Role: Co-Investigator; PI: Martin Sarter); 2007-2011
3. *National Institute of Mental Health (1R21: MH080426):* *In vivo* screening of cholinergic cognition enhancers; (Role: Co-Investigator; PI: Martin Sarter); 2007-2010