Baskaran Thyagarajan, M. Pharm, Ph.D.,
Assistant Professor of Pharmaceutics, School of Pharmacy, Program in Neuroscience,
College of Health Sciences, University of Wyoming,
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http://sites.google.com/site/baskilab/

Education

Year	Institution	Degree
2001	Karl-Franzens University of Graz, Austria	Ph. D
1996	Banaras Hindu University, India	M. Pharm (Pharmaceutics)
1994	Madras Medical College, India	B. Pharm
1989	Madras College of Pharmacy, India	D. Pharm

Professional Experience (listing year, position and institution)

1. Aug, 2011 onwards

   Assistant Professor of Pharmaceutics

   College of Health Sciences, School of Pharmacy, University of Wyoming, Laramie, WY 82071

2. Oct, 2010 – July, 2011

   Research Assistant Professor
   Dept. of Medicine, Division of Nephrology, University of Rochester Medical Center, Rochester, NY 14642

3. Aug, 2005 – Sept., 2010

   Research Associate

   Department of Pharmacology and Physiology, University of Medicine and Dentistry of New Jersey, Newark, NJ 07103

4. Jan, 2004 – Aug, 2005

   Group Leader – New Drug Discovery

   Ranbaxy Research Laboratories, Gurgaon, Uttar Pradesh 122 001, India

5. Oct, 2002 – Dec, 2003

   Assistant Professor of Pharmacology and Toxicology,

   Department of Pharmacology and Toxicology, National Institute of Pharmaceutical

Education and Research, Punjab, India

6. Oct, 2001 – Sept, 2002

   Postdoctoral Fellow

   Department of Biological Chemistry, Johns Hopkins University, MD, USA

7. Aug, 1997 – Sept, 1998

   Lecturer of Pharmaceutics, University of Pune, India

8. Sept, 1996 – July, 1997

   Senior Research Scientist - Council for Scientific and Industrial Research, Dept. of Biotechnology, Central Leather Research Institute, India

9. Jan, 1990 – Dec, 1993

   Community Pharmacist-Retail (part time) at Swamy Raaj Medicals, Chennai, India

Awards and Honors

1. Research Associate at New Jersey Medical School, UMDNJ supported by a contract grant from the Defense Threat Reduction Agency, Department of Defense to investigate on development of botulinum neurotoxin therapeutics (2007 -2010).
2. NINDS Scholarship for attending conference of Keystone Symposium on The Transient Receptor Potential Ion Superfamily held in Breckenridge, Colorado, Sept. 18-23, 2007.
3. FASEB travel award for FASEB conference held at Snowmass, Colorado, June 2007.
4. Received Dept. of Science and Technology, Govt. of India research grant in 2004.
5. Received Dept. of Biotechnology, Govt. of India research grant in 2004.
6. Postdoctoral fellowship from Johns Hopkins University, Baltimore, Maryland, USA
7. Austrian Academic Exchange Scholarship for Ph. D research study in Austria (1998-2001).
8. Senior Research Fellowship from Council for Scientific and Industrial Research, India during 1996-1997.
9. Junior Research Fellowship from University Grants Commission, India during M. Pharm (1994-1996).
10. Indian Drug Manufacturers' Associations' G.P. Nair Award for securing University I rank in B. Pharm (1994).
11. Received Brihad Bharathiya Samaj, Gujarath, Merit Scholarship during B. Pharm (1989-1994).

Research and Scholarship

- **Grants and Funding:** (list year, PI or other investigators, name of grant, funding source, amount, indicate type of grant [research, teaching, clinical practice])

Past / Completed Research Grants

1. Analysis of role of TRPC channels in hyperglycemia –Research project Funded by Dept of Biotechnology, Govt. of India ($50,000) 2002-2003

Role: PI

2. Modulation of vascular and non-vascular smooth muscle contraction by oxidative stress – Research Project funded by the Dept. of Science and Technology, Govt. of India ($2,000) 2002-2003

Role: PI

3. 2012 University of Wyoming College of Health Sciences Faculty Grant-in-Aid ($7500.00)– TRPV1: A potential Target against Epilepsy

Role: PI

4. UW Neuroscience Center/NIH P30 Center Core Pilot Research Project funding ($100,000 for 2 years) - Lipid microdomains modulate synaptic functions at the neuromuscular junctions

Role: PI

Current support (Research Grants):

1. WY INBRE Pilot Project Funding ($100,000 for 2 years) – TRPV1: A spicy treat to counteract metabolic syndrome

Role: PI

2. Capsaicin antagonizes botulinum neurotoxin A at the motor nerve terminals. American Association of Colleges of Pharmacy New Investigator Award ($10,000.00 for 1 year)

Role: PI

3. TRPV1: A spicy target against obesity. Wyoming INBRE Bioinformatics Supplemental Program ($5,000.00 for 1 year).

Role: PI

4. TRPV1 regulates brown fat thermogenesis: Novel therapeutic potential for obesity.

Wyoming INBRE- CSU HPCRL Collaborative Project Proposal ($100,000 for 2 years)

Role: PI

Pending Support:

1. Modulation of nociceptive pain signaling mechanisms by botulinum neurotoxin. NIH R01 (1,250,000 for 5 years direct cost)

Role: PI

2. TRPV1: A novel therapeutic target to counteract obesity. INBRE Thematic Research Project (300,000/3 years direct cost)

Role: PI

3. TRPV1 channel: A potential therapeutic target to treat early-life seizures. (60,000/yr.). 2013-2014 Colorado Clinical and Translational Sciences Institute (CCTSI) Translational Pilot Collaboration Project

Role: Co-PI

4. TRPV1: A potential trigger for hyperthermia and hypoxic-ischemia induced early-life seizures ($30,000/yr.). Children Hospital Colorado Research Institute Pilot Project.

Role: Co-PI

TRAVEL AWARDS:

Received a Travel award ($250.00) from WYGEC for attending the Alzheimer's Workshop 2012 on Insight Into Alzheimer's and Other Memory Disorders, Jackson Hole, WY, June 07, 2012

Publications

1. Acute and chronic effects of botulinum neurotoxin A in mammalian neuromuscular junction. Padmamalini Baskaran and Baskaran Thyagarajan. Muscle and Nerve. 2013 Nov 12.
2. Deshpande, S and **B Thyagarajan.** Cotrimoxazole and Neonatal Kernicterus: A Review. Drug Chem Toxicol. 2013 Oct 7.
3. Baskaran, P, TE Lehmann, E Topchiy, N Thirunavukkarasu, S Deshpande, BR Singh and **B Thyagarajan.** Effects of Enzymatically Inactive Recombinant Botulinum Neurotoxin Type A at the Mouse Neuromuscular Junctions. Toxicon 2013 Jun 25. pii: S0041-0101(13) 00228-6.

4. Garcia CC, JG Potian, K Högnason, **B Thyagarajan**, L. G. Sultatos, VH Routh, and JJ McArdle. Acetylcholinesterase downregulation contributes to neuromuscular junction dysfunction in experimental type I diabetic neuropathy. Am. J. Physiol. 2012.
5. Allman E, **B Thyagarajan B** and KW Nehrke. The Inositol 1,4,5-Trisphosphate Receptor in *C. elegans*. WIREs Membrane Transport and Signaling. 2012.
6. Ho, M, LH Chang, M Pires-Alves, **B Thyagarajan**, JE Bloom, Z Gu, KK Aberle, SA Teymorian, Y Bannai, JJ McArdle and BA Wilson. Recombinant Botulinum Neurotoxin A Heavy Chain-based Delivery Vehicles for Neuronal Cell Targeting. Protein Eng Des Sel. 2011 Mar;24(3):247-53
7. Potian JG, Vishwendra Patel, JJ McArdle and **B Thyagarajan**. The inveterate botulinum neurotoxin A ushers in exoendocytic crypts. The Botulinum J. 2010. 1(4). 418-430.
8. Potian, JG, **B Thyagarajan**, K Hognason, F Lebeda, JJ Schmidt and JJ McArdle. Investigation of "*CRATKML*" derived peptides against botulinum neurotoxin A poisoning *in vivo* and *in vitro*. The Botulinum J. 2010. 1(4). 407-417.
9. **Thyagarajan, B**, JG Potian, CC Garcia, K Högnason, K Čapková, ST Moe, AR Jacobson, KD Janda & JJ McArdle. Effects of hydroxamate metalloendoprotease inhibitors on botulinum neurotoxin A poisoned mouse neuromuscular junctions. Neuropharmacology. 2010. March 10
10. **Thyagarajan, B**, N Krivitskaya, K Högnason, JG Potian, CC Garcia and JJ McArdle. Capsaicin protects functions of mouse neuromuscular junctions from the paralytic effects of botulinum neurotoxin A. J. Pharmacol. Exp. Ther. 2009; Nov; 331(2):361-71
11. Patel, RJ, PD Patel, MM Patel, NJ Patel and B Thyagarajan. Mechanisms of potentiation of Angiotensin II-induced contractile response of isolated rat aorta by hydrogen peroxide and tert-butyryl hydroperoxide. Ind. J. Pharmacol. 2009; 41(3): 140-143
12. Zakharian, E, **B Thyagarajan**, RJ French, E Pavlov and T Rohacs. Inorganic polyphosphate modulates TRPM8 channels. PLoS ONE. 2009;4(4):e5404
13. **Thyagarajan, B**, B Benn, S Christakos and T Rohacs. Phospholipase C mediated regulation of TRPV6 channels: implications in active intestinal Ca^{2+} transport. Mol

Pharmacol. 2009. 75(3):608-16

14. Rohacs, T, **B Thyagarajan** and V Lukacs. Phospholipase C mediated modulation of TRPV1 channels. Mol Neurobiol. 2008 Apr-Jun;37(2-3):153-63
15. **Thyagarajan, B**, V Lukacs and T Rohacs. Hydrolysis of phosphatidylinositol 4,5-bisphosphate mediates calcium-induced inactivation of TRPV6 channels. J. Biol Chem. 2008. 283(22):14980-7.
16. Lukacs, V, **Thyagarajan, B**, A Balla,T Balla and T Rohacs. TRPV1 – Regulation by phosphoinositides. The Journal of Neuroscience, June 27, 2007 26 (26): 7070-7080 **(First two authors contributed equally)**
17. Varnai, P, **B Thyagarajan,** T Rohacs and T Balla. Rapidly inducible changes in phosphatidyl inositol 4,5-bisphosphate levels to study multiple regulatory functions of the lipid in intact living cells. J Cell Biol. 2006 Nov 6;175(3):377-82
18. Meru, AV, S Mittra, **B Thyagarajan** and A Chugh. Intermittent claudication: An overview. Atherosclerosis 2006 Aug;187(2):221-37
19. **Baskaran, T**, R Malli, K Schmidt, WF Graier and K Groschner. Nitric oxide inhibits capacitative Ca^{2+} entry by suppression of mitochondrial Ca^{2+} handling. Br. J. Pharmacol. 2002. 137(6):821-30
20. **Thyagarajan, B**, M Poteser, C Romanin, H Kahr, MX Zhu and K Groschner. Expression of Trp3 determines sensitivity of capacitative Ca^{2+} entry to nitric oxide and mitochondrial Ca^{2+} handling. J. Biol. Chem. 2001. 276 (51). 48149-48158
21. Lintshinger, B, MB Geldsetzer, **T Baskaran**, WF Graier, C Romanin, MX Zhu and K Groschner. Coassembly of Trp 1 and Trp 3 proteins generates diacylglycerol- and Ca^{2+}-sensitive cation channels. J. Biol. Chem. 2000 Sep 8; 275 (36). 27799-27805
22. Dhanaraju, MD, KS Kumaran, **T Baskaran** and MS Moorthy. Enhancement of bioavailability of griseofulvin by its complexation with beta-Cyclodextrin. Drug Dev. Ind. Pharm. 1998. 24(6). 583-587

Abstracts published in special issues of journals:

1. Baskaran, P, JG Potian, JJ McArdle and **B Thyagarajan**. Botulinum neurotoxin A inhibits acetylcholine exocytosis independent of SNAP-25 cleavage. Toxicon 2012 68 page 100.
2. **Thyagarajan, B**., S Schreiner and P Baskaran. Capsaicin: A novel antidote against

botulinum neurotoxin A. Toxicon 60 (2) 2012.

- **Publications (Refereed Book and Monograph Chapters):** (your name in bold, indicate if data-based, student authors and/or invited publication)

1. *Guest Editor of a special issue of The Botulinum Journal that focused on the trafficking and metabolic stability in vivo of botulinum neurotoxins*

2. *Springer's Handbook of Toxinology: Biotolocal Toxins and Bioterrorism. Authored a chapter on Botulinum neurotoxin antidotes (INVITED REVIEW).*

- **Publications (Technical Reports):** (your name in bold, indicate if data-based, student authors and/or invited publication)
- **Publications (Book Reviews):** (your name in bold, indicate if data-based, student authors and/or invited publication)
- **Publications (Other):** (your name in bold, indicate if data-based, student authors and/or invited publication)
- **Presentations (Refereed National and International Abstracts):** (your name in bold, indicate if data-based, student authors and/or invited presentation)

1. Cholesterol depletion differentially regulates heat and cold activated TRP channels.

Baskaran Thyagarajan, Bayasgalan Surenkhuu and Padmamalini Baskaran. Rocky Mountain Regional Neuroscience Group Annual Meeting, Aurora CO, May 16, 2013.

2. Cholesterol rich lipid microdomains modulate the activation of TRP channel proteins.

Bayasgalan Surenkhuu, Padmamalini Baskaran and **Baskaran Thyagarajan**.College of Health Sciences, UWYO Grant Rounds, 19th Annual Research Day, April 12, 2013.

3. Toxicity profiles of deactivated recombinant botulinum neurotoxin at the mammalian neuromuscular junction.

Baskaran Thyagarajan, Teresa Lehmann, Elena Topchiy, Nagarajan Thirunavukkarasu, Sharad Deshpande, Shuowei Cai, Bal Ram Singh and Padmamalini Baskaran. College of Health Sciences, UWYO Grant Rounds, 19th Annual Research Day, April 12, 2013.

4. Capsaicin – A novel therapeutic drug to counteract obesity.

Padmamalini Baskaran, Kormakur Hognason, Jun Ren and **Baskaran Thyagarajan**. College of Health Sciences, UWYO Grant Rounds, 19th Annual Research Day, April 12, 2013.

5. Botulinum neurotoxin A inhibits pain via TRPV1-Protein kinase C dependent mechanisms.

Kenneth Brenneman, Padmamalini Baskaran and **Baskaran Thyagarajan**

Biophysical Society 57th Annual Meeting, Philadephia, PA Feb 2013.

6. Cholesterol depletion differentially regulates heat and cold activated TRP channels.

Baskaran Thyagarajan, Bayasgalan Surenkhuu and Padmamalini Baskaran.

Biophysical Society 57th Annual Meeting, Philadelphia, PA Feb 2013.

7. Effects of enzymatically inactive recombinant botulinum neurotoxin type A at the mouse neuromuscular junctions.

Padmamalini Baskaran, Teresa Lehmann, Elena Topchiy, Nagarajan Thirunavukkarasu, Sharad Deshpande, Shuowei Cai, Bal Ram Singh and **Baskaran Thyagarajan.** Front Range Neuroscience Group Annual Meeting, Nov. 28, 2012, Fort Collins, CO.

8. Cholesterol depletion activates TRPV1.

Bayasgalan Surenkhuu, Padmamalini Baskaran, Suzanne Clark, Bruce Culver and **Baskaran Thyagarajan.** Front Range Neuroscience Group Annual Meeting, Nov. 28, 2012, Fort Collins, CO.

9. Lipid microdomains regulate neuronal endocytic mechanisms during development.

Padmamalini Baskaran, Xianshi Tang, Joseph Potian, Joseph McArdle and **Baskaran Thyagarajan.** Front Range Neuroscience Group Annual Meeting, Nov. 28, 2012, Fort Collins, CO.

10. Phosphoinositide regulation of TRPV1.

Lukacs, V, **B Thyagarajan** and T Rohacs. Biophysical Society 56th Annual Meeting, San Diego, CA Feb 2012.

11. Botulinum neurotoxin A inhibits acetylcholine exocytosis independent of SNAP-25 cleavage.

Baskaran P, JG Potian, JJ McArdle and **B Thyagarajan**. 7th International Conference on Basic and Therapeutic Aspects of Botulinum and Tetanus Toxins (TOXINS 2011), Santa Fe, NM, October 2011

12. Analysis of molecular mechanisms that integrate sensory perception of nutrient with rhythmic motor output.

Thyagarajan B and KW Nehrke, 18th International C. elegans Meeting, Los Angeles, CA. June 2011.

13. Complex regulation of TRPV1 by phosphoinositides.

Lukacs, V, **B Thyagarajan** and T Rohacs. Biophysical Society 55th Annual Meeting, Baltimore, MD March 2011

14. Cholesterol depletion sensitizes and enhances the uptake and inhibitory actions of botulinum

neurotoxin A during development

Thyagarajan, B, JG Potian, V Patel and JJ McArdle. Society for Neuroscience annual meeting, San Diego, CA, 2010, Nov 13-17

15. Characterization of an experimental model of myasthenia gravis with musk antibodies.

Patel, V, JG Potian, **B Thyagarajan,** J Michaels and JJ McArdle. Society for Neuroscience annual meeting, San Diego, CA, Nov. 2010.

16. Differential sensitivity of fast and slow twitch muscles to botulinum neurotoxin A

Potian, JG, **B Thyagarajan** and JJ McArdle. 17th BIENNIAL MEDICAL DEFENSE BIOSCIENCE REVIEW Hunt Valley, MD May 2010

17. 2,3-butanedione monoxime enhances acetylcholine release from botulinum neurotoxin A poisoned motor nerve terminals

Patel, V, JG Potian, **B Thyagarajan** and JJ McArdle. 17th BIENNIAL MEDICAL DEFENSE BIOSCIENCE REVIEW Hunt Valley, MD May 2010

18. Capsaicin interacts with clathrin coated pit dependent mechanisms to protect motor nerve terminals against botulinum neurotoxin A

Thyagarajan, B, JG Potian and JJ McArdle. Experimental Biology 2010, Annaheim Convention Center, Anaheim, CA. April 2010

19. Complex regulation of TRPV1 by phosphoinositides.

Lukacs, V, **B Thyagarajan** and T Rohacs. 54th annual meeting of the Biophysical Society, San Francisco, CA, Feb 2009

20. TRPV1 modulates acetylcholine release from motor nerve terminals.

Thyagarajan B, JG Potian, V Patel, CC Garcia and JJ McArdle. 54th annual meeting of the Biophysical Society, San Francisco, CA, Feb 2009

21. Sensitivity to botulinum neurotoxin A differs for fast and slow twitch muscles.

Potian J.G., **B Thyagarajan**, CC Garcia, K Hognason and JJ McArdle. 46th Interagency Botulism Research Coordinating Committee, October 2009; Alexandria, VA

22. Dysfunction of the peripheral neuromuscular system during experimental diabetic neuropathy.

Garcia, CC, JG Potian, **B Thyagarajan**, N Krivitskaya, VH Routh and JJ McArdle. Abstract at American Diabetes Association, June 2009; New Orleans, LO

23. Capsaicin protects mouse neuromuscular junctions from the paralytic effects of

botulinum neurotoxin A.

Thyagarajan, B, N Krivitskaya, K Hognason, JG Potian and JJ McArdle.

Biophysical Journal, Volume 96, Issue 3, Supplement 1, February 2009, Page 268a

24. The role of phospholipase C in the Ca2+-induced inactivation of TRPV6.

Thyagarajan, B, V Lukacs, B Benn, S Christakos and T Rohacs Biophysical Journal, Volume 96, Issue 3, Supplement 1, February 2009, Page 265a

25. Enhancement of neurotransmitter release from botulinum neurotoxin a (BoNT/A) poisoned motor nerve terminals by 2,3-butanedione monoxime (BDM).

Högnason, K, **B Thyagarajan**, JG Potian and JJ McArdle. 16th Biennial Medical Chemical Defense Bioscience Review , Hunt Valley, MD, June 2008

26. CRATKML peptide derivatives - novel therapeutic tools to treat botulinum neurotoxin A poisoning.

Högnason, K, **B Thyagarajan**, JG Potian, F Lebeda, JJ Schmidt and JJ McArdle. 16th Biennial Medical Chemical Defense Bioscience Review, Hunt Valley, MD, June 2008

27. Small molecule zn metallo-endoprotease inhibitors restore neurally-evoked acetylcholine release and mechanical activity to botulinum neurotoxin A poisoned muscle.

McArdle, JJ, **B Thyagarajan**, CC Garcia, N Krivitskaya, K. Högnason, A R Jacobson, S T Moe, K Capkova and KD Janda. 16th Biennial Medical Chemical Defense Bioscience Review, Hunt Valley, MD, June 2008

28. Cholesterol depletion enhances botulinum neurotoxin A potency at developing mouse neuromuscular junctions

Potian,JG, **B Thyagarajan**, N Krivitskaya, K Hognason and JJ McArdle. 16th Biennial Medical Chemical Defense Bioscience Review, Hunt Valley, MD 21031, June 2008

29. Capsaicin protects the mouse neuromuscular junction against the paralytic effects of botulinum neurotoxin A.

Thyagarajan,B, N Krivitskaya, JG Potian, K Hognason, N Souayah and JJ McArdle. 16th Biennial Medical Chemical Defense Bioscience Review 2008 held at Baltimore Marriott Hunt Valley Inn, Hunt Valley, MD 21031 from 01 to 06 of June 2008.

30. The activity of a mutant δ2 ionotropic glutamate receptor is modulated by phosphatidylinositol 4,5- bisphospate (PIP2).

Petrou, V. I, **B Thyagarajan**, T Rohacs, F Selimi, N Heintz and DE Logothetis. Joint meeting of the Biophysical Society 52nd Annual meeting and 16th International Biophysics Congress February 2-6, 2008, Long beach, California

31. Transient receptor potential channel TRPM8 is associated with polyphosphate and polyhydroxybutyrate.

Zakharian, E, **B Thyagarajan**, E Pavlov, RJ French and T Rohacs. Joint meeting of the Biophysical Society 52nd Annual meeting and 16th International Biophysics Congress February 2-6, 2008, Long beach, California

32. Hydrolysis of phosphatidylinositol 4,5-bisphosphate mediates calcium induced inactivation of TRPV6.

Thyagarajan,B, V Lukacs and T Rohacs. Joint meeting of the Biophysical Society 52nd Annual meeting and 16th International Biophysics Congress February 2-6, 2008, Long beach, California

33. Rapid pip_2 depletion inhibits menthol induced currents through both wild type and mutant TRPM8 channels in Xenopus oocyte expression system.

Louise Gil Mast, S, **B Thyagarajan**, V Lukacs and T Rohacs. FASEB Summer Research Conferences: ION CHANNEL REGULATION June 9 – 14, 2007, Snowmass Colorado

34. Regulation of TRPV1 by phosphatidylinositol 4,5-bisphosphate.

Lukacs, V, **B Thyagarajan**, A Balla, P Varnai, T Balla and T Rohacs. FASEB Summer Research Conferences: ION CHANNEL REGULATION June 9 – 14, 2007, Snowmass Colorado

35. Phosphatidylinositol 4,5-bisphosphate activates TRPV6 channels: a novel mechanism for Ca^{2+}-induced inhibition of TRPV6 currents.

Thyagarajan, B*, V Lukacs and T Rohacs. Keystone Symposia on The Transient Receptor Potential Ion Channel Superfamily September 18 - 23, 2007, Beaver Run Resort, Breckenridge, Colorado. *NINDS Scholar.

36. Phosphatidylinositol 4,5-bisphosphate activates TRPV6 channels: a novel mechanism for Ca^{2+}-induced inhibition of TRPV6 currents.

Thyagarajan, B, V Lukacs and T Rohacs. FASEB Summer Research Conferences: ION CHANNEL REGULATION June 9 – 14, 2007, Snowmass Colorado

37. Dual regulation of TRPV1 by phosphatidylinositol 4,5-bisphosphate.

Lukacs,V, **B Thyagarajan**, A Balla, P Varnai, T Balla and T Rohacs. Biophys. J. (Annual

Meeting Abstracts) 2007: 290a (First two authors contributed equally)

38. Augmentation of hydrogen peroxide responses in thoracic aorta of streptozotocin induced diabetic rats: role of tyrosine kinases.

Patel, RJ and **B Thyagarajan**. Second Annual World Congress on Insulin Resistance Syndrome" held at Los Angeles, California, U.S.A. November 18-20, 2004

39. Mechanisms underlying modulation of contractile responses to angiotensin ii by reactive oxygen species in rat thoracic aorta.

Patel, RJ and **B Thyagarajan**. International Symposium on Recent Advances in Pharmacology, New Delhi, India in January 2004

40. Enhanced H_2O_2 responses in thoracic aorta of hyperglycemic rats: evidence of tyrosine kinases as drug targets.

Patel, RJ, and **B Thyagarajan**. Indian Pharmacological Society Conference held at New Delhi, India. December 2003

41. Ca^{2+} channel function of TRP3 requires targeting to cholesterol-rich membrane domains.

Balzer-Geldsetzer, M, **B Thyagarajan**, I Wakabayashi and K Groschner. Biophys. J. (Annual Meeting Abstracts) 2002: 623d.

42. The c-terminal domain of TRP is an essential determinant of plc-dependent regulation and subcellular localization.

Groschner, K, **B Thyagarajan** and M Balzer-Geldsetzer. Biophys. J. (Annual Meeting Abstracts) 2002:21d

43. Analysis of the role of subcellular localization of TRP proteins for Ca^{2+} signaling in HEK293 cells.

Balzer-Geldsetzer, M, EM Rath, **T Baskaran** and K Groschner. Biophys. J. (Annual Meeting Abstracts) 2001: 205a

44. Differential modulation of capacitative and TRP3-mediated ca^{2+} entry into HEK293 cells by nitric oxide donors.

Thyagarajan, B, C Romanin, MX Zhu and K Groschner. Biophys. J. (Annual Meeting Abstracts) 2001: 202e

45. Expression of TRP3 modulates the capacitative calcium entry into HEK293 cells.

Baskaran T, M Balzer-Geldsetzer and K Groschner . Naunyn-Schmiedebergs Archives of Pharmacology **Volume:** 363 **Issue:** 4 **Pages:** R69-R69 2000.

46. ACE inhibitors – Market survey and performance.

Padmamalini, B, Mittal S. and **B Thyagarajan**. Joint congress of Federation of Asian Pharmaceutical Association and Indian Pharmaceutical Association (1998) - Received **best poster award.**

- **Presentations (Refereed Local and Regional Abstracts):** (your name in bold, indicate if data-based, student authors and/or invited presentation)
- **Presentations (Other)**: (your name in bold, indicate if data-based, student authors and/or invited presentation) – **INVITED PRESENTATION**

  1. Emerging strategies to counteract botulinum neurotoxin intoxication. Defense Threat Reduction Agency, June 05, 2013.

  2. TRP channels, denegenerative diseases and beyord. INBRE Retreat Jan 26, 2013 at Fort Collins, CO.

  3. TRP Channel Protein: Truly Remarkable Proteins in Physiology and Disease. BASKILAB Data Blitz, Front Range Neuroscience Group Annual Meeting, Nov. 28, 2012 Fort Collins. CO.

  4. Botulinum Neuro Toxin, Tool & Therapy: "Take A Shot To Shoot A Frown". 6th Annual Botulinum Research Symposium, University of Massachusetts, Dartmouth, MA. August 16-17, 2012.

  5. Capsaicin: A novel Antidote Against Botulinum Neurotoxin A. 17th International Conference of the International Society on Toxinology and Venom Week 2012, Hawaii, July 2012.

  6. Therapeutic effects of capsaicin against botulinum neurotoxin A intoxication. 48th Interagency Botulism Research Coordinating Committee, Santa Fe, NM, October 2011.

  7. Multi-Drug Approach for Botulism Therapeutics, Webinar, Advinus Therapeutics Limited, TATA Group, Pune, India, February 2011.

  8."Endocytic pits disassembly hits BoNT/A uptake": Novel mechanistic insight into BoNT/A prophylaxis. 4th Annual Botulinum Research Symposium, University of Massachusetts, Dartmouth, MA. August 19-20, 2010.

  9. TRPV1-Lipid Microdomains - BoNT/A: A cross-talk that modulates neuronal exoendocytosis. National Brain Research Center, Manesar, India. July 2010.

  10. TRPV1-Borulinum Neurotoxin A Crosstalk: An Emerging Prophylactic/Therapeutic Intervention. Albany College of Pharmacy, Vermont, VT. May 2010.

11. Botulinum Neurotoxin A Therapeutics: Rationale for a multi-drug approach, 17th Biennial Medical Defense Bioscience review, Hunt Valley, MD, May 2010.

12. Cholesterol depletion sensitizes mouse neuromuscular junctions to the neuroparalytic effects of botulinum neurotoxin A, Interagency for Botulism Research Coordinating Committee 46th Annual meeting, Alexandria, VA, Oct 2009.

13. TRP Traps BoNT: An Emerging Crosstalk, 3rd Annual Botulinum Research Symposium, University of Massachusetts, Dartmouth, MA. August 20-21, 2009.

14. "Hot" chili pepper keeps neuromuscular junction "cool": Capsaicin preserves mouse neuromuscular junction functions from the paralytic effects of botulinum neurotoxin A, 2nd Annual Botulinum Research Symposium held at University of Massachusetts, Dartmouth. August 21-22, 2008.

15. TRP-NO-mitochondria – a cross talk, Birla Institute of Technology and Science, Pilani, India in August 2002.

16. TRP channels in cellular calcium signaling, National Institute of Pharmaceutical Education and Research, Mohali, India, in July 2002.

- **Continuing Education and Faculty Development Activities**: (list of continuing education activities you have provided to others).
- **Patents**

  *Patent Application entitled "**Methods for Attenuating the Effects of Botulinum Toxin**"*. Baskaran Thyagarajan and Joseph J. McArdle. **USPTO Application # 20100303932**
- **Work in Progress:** (List grants, publications and presentations that are in progress, either submitted and under review or in preparation for submission.)
  - For publications that are in preparation, specify the stage of preparation, for instance,

    Data collection initiated/in progress (number of subjects or samples to date / total number intended)

    1. Anti-obesity potential of capsaicin: Evaluation of the role of TRPV1 in brown fat thermogenesis and metabolic function. This is a long-term (32 weeks) study of high fat diet induced obesity. The first phase of the study will end by the mid of December 2013. We are collecting and analyzing data from the animals that had already reached the 32 weeks time point. The data obtained from this study will be used as preliminary data for a federal or private organization that support obesity research.

    Data analysis in progress

1. Cholesterol depletion sensitizes neonatal mice to botulinum neurotoxin A (New additional data from knockout mouse are being analyzed for the submission of this manuscript. Previous version of the manuscript is being revised to include the new data)

Manuscript in preparation – specify potential submission date

1. Evaluation of cross talk between TRPV1 and PPAR in 3T3-L1 adipocytes
   Anticipated submission date: Mid-December 2013
2. Recovery from botulinum neurotoxin A poisoning following repeated injections of capsaicin.
   Anticipated submission date: Early December 2013
3. Antinociceptive potential of botulinum neurotoxin A
   Anticipated submission date: February 2014
4. Capsaicin modulates acetylcholine release from the motor nerve terminals (Submitted on 10/27/2013)
5. Acute and chronic effects of botulinum neurotoxin A in mammalian neuromuscular junction (Accepted)

- For grants in preparation – specify potential submission date

1. Novel therapeutic strategies for symptomatic relief from botulinum neurotoxin intoxication. AREA R15 application Due on November 18, 2013

- **Undergraduate and Graduate Student Research Supervision (Supervisor, Committee Chair or Co-chair)** (Name of student, thesis/dissertation title and year)

Current

1. Bayasgalan Surenkhuu, Neuroscience Master Graduate Student. Role of transient receptor potential proteins in excitotoxicity.
   Role: Co-supervisor, Co-Chair. Primary guide for master thesis research project.
2. Amanda Nutt, First Year Pharm D student. Undergraduate research trainee.
   Role: Supervisor
3. Kevin Fettel - Work-Study Student. **Wyoming EPSCoR/INBRE Fall 2013**
   Undergraduate research funding: Mechanisms by which TRPV1 channel proteins inhibit obesity
   Role: Supervisor
4. Zhen Lu, Ph.D Student, Neuroscience Program. Molecular mechanisms of Huntington's Disease

Role: Thesis Committee Member

5. Elena Topchiy, Ph.D Student, Dept. of Chemistry. Light chain metalloendoproteae inhibitors
   Role: Thesis Committee Member

Past

1. Rashwin Patel, Mechanisms of potentiation of Angiotensin II-induced contractile response of isolated rat aorta by hydrogen peroxide and tert-butyryl hydroperoxide, 2003

Role: Supervisor

2. Kanaiyalal Prajapathy, Redox regulation of vas deferens smooth muscle, 2003

Role: Supervisor

3. Vikram Sharma, Analysis of role of TRPC3 channel protein expression in diabetes, 2003

Role: Supervisor

4. Cytoskeletal proteins modulate capacitative calcium entry, 2003

Role: Supervisor

5. Dhanaraj, C-reactive protein – A redox sensor in metabolic diseases,

Role: Co-Supervisor.

6. Lead a team of 4 Senior Research Scientists, 2 Research Scientists, 2 Research Associates and 1 Research Technician at Ranbaxy Research laboratory, New Drug Discovery Research, Safety Pharmacology Group, Haryana, India.

7. Shannon Schreiner, Master Graduate Student, Botulinum neurotoxin A
A potential antidote for pain, 2012

Role: Supervisor

8. Xianshi Tang, Research Assistant. Role of lipid microdomains in the regulation of synaptic functions. June 2012-Dec 2012

Role: Supervisor

9. Ana Mulinovic, rotation student from Molecular and Cellular Life Sciences program – TRPV1 and ASIC: Modulation by lipid microdomains.

Role: Supervisor

10. Kenneth Brenneman, Undergraduate research student. Role of TRPM2 in

neurodegeneration.

Role: Supervisor – Served as mentor for two projects funded by Wyoming EPSCoR/INBRE undergraduate research funding awarded to Kenneth Brenneman

1. Wyoming EPSCoR/INBRE Spring 2013 undergraduate research funding: "Investigating the mechanisms of Ca^{2+} induced neurotoxicity"
2. Wyoming EPSCoR/INBRE Fall 2012 Undergraduate research funding: "Redox regulation of TRPM2 channel protein".

- **Consulting and Other Scholarship Activities**

  Consultant for the project Drug Interactions and Toxicity for SEARCH (Society for Education, Action and Research in Community Health), an organization registered as a public trust and charitable society in India established to develop an institution of community health which provided health care to the local population, and generated knowledge for the global community by way of research.

Teaching
Current: 2012 - Present

Course Number	Course Name	Year	Credit Hours	Number of Students
PHCY 6101	Pharmaceutical Dosage forms Lab	2012	1 (12 hr./week lab course)	43
PHCY 6102	Biopharmaceutics and Pharmacokinetics	2012	4	47

Past:

PHCY 6101	Pharmaceutical Dosage forms Lab	2012	1 (4 hr. lab)	44
PHCY 6102	Biopharmaceutics and Pharmacokinetics	2012	4	38
	General Anesthetics	2010	1	120
	Neuromuscular blocking agents	2010	1	120
	Biopharmaceutics and Pharmacokinetics	2010	2	8
	Drug Toxicity	2010	2	8

	Cardiovascular system Physiology	2002	2	24
	Central and Peripheral Nervous System	2002	2	24
	Pharmacological Screening of Drugs	2002	2	40
	Pharmacology I (General Pharmacology)	2003	2	12
	Pharmacology II (CNS, ANS, CVS, Autocoids, Chemotherapeutic agents, Antimicrobials and NSAIDS)	2003	4	12
	Ion channels in drug discovery (Ph.D course)	2003	2	4
	Fluorescence probes in cell signaling	2003	2	4
	Metabolinomics – Metabolism and drug toxicity	2003	4	8

- **Guest lectures**

Wyoming INBRE Outreach teaching seminar: TRP Channels: Truly Remarkable Proteins in Physiology and Disease Fall 2012

- **Advising**

Year	Number of Undergraduate Advisees	Number of Graduate/Resident Advisees
2013	2	8 (4 Pharm D students in 2013)
2012	2	3

University Service (Listing of Committee/Administrative Responsibilities)

- **University of Wyoming**

  1. Member (Toxin Specialist) of Institutional Biosafety Committee, University of Wyoming – Represent School of Pharmacy, Review and approve protocols, write, review and enforce lab protocols for the use of biotoxins, Provide guidance for minimizing health and environmental exposures to biological hazards, oversight for research with biological materials, and compliance with the OSHA Blood borne Pathogen standard. Evaluate risk and define containment and practices for safe work with infectious agents and biologically derived infectious materials.

  2. Member of University of Wyoming Graduate Council

- **College of Health Sciences**

  1. Task force member of CHS diversity Committee

- **Division/School**

  1. Safe coordination of activities/research practices for the II floor of the School of Pharmacy.

  2. Space and Equipment Committee of the School of Pharmacy.

Professional/Community Service

- **Community Service Activities**

  1. Polio eradication program – Rotary club sponsored activity in villages of southern parts of India 1990-1994

  2. "Arivoli Iyakkam" (knowledge forum) – Eradication of illiteracy – Program sponsored by the Govt. of India (1992-1994)

  3. Congenital Heart Diseases – Eye Opener - An awareness program sponsored by Park Middle School, NJ.

  4. Judge for Senior Students State Science Fair 2013

- **Professional Memberships and Activities** (including grant and manuscript review)
- **Reviewer for:**

  Journal of Experimental Neurology
  Journal of Pharmacology and Experimental Therapeutics
  Journal of Pharmacy and Pharmacology
  Free Radical Biology and Medicine
  Indian Journal of Dental Research
  Frontiers in Neuroscience
  Journal of Cell Biochemistry and Biophysics
  PLoS ONE
  The Botulinum Journal
  Life Sciences
  Marine Drugs
  Reviewer for grant proposals that are submitted to Institute of Translational Health Sciences (ITHS), University of Washington, USA
  Co-Chair Formulation Design and Development Abstracts screening and review for American Association of Pharmaceutical Scientists Annual Conference 2013

- **Professional memberships**

  American Physiological Society
  Society for Neuroscience
  American Heart Association

Biophysical Society

Society of General Physiologist

Association of Pharmaceutical Teachers of India

American Association of Colleges of Pharmacy

International Society of Toxinology

American Association of Pharmaceutical Scientists