

**BASKARAN THYAGARAJAN, M. Pharm., PhD**

Assistant Professor of Pharmaceutics

School of Pharmacy, College of Health Sciences, University of Wyoming

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**PERSONAL ATTRIBUTES**

Adaptable, versatile and enthusiastic

Creative, independent thinker and optimistic

Possess leadership skills to direct a productive team in basic and applied research

**PROFESSIONAL EXPERIENCE**

**Assistant Professor of Pharmaceutics** Aug, 2011 onwards

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

**Responsibilities:** Principal Investigator

**ResearchProjects:** Molecular mechanisms of neuronal exocytosis and endocytosis

Role of TRP channels in neurodegenerative diseases

Lipid microdomains in synaptic transmission

Botulinum Neurotoxin antidotes

Regulatory role of TRP channel proteins in synaptic transmission

Muscular dystrophy and TRP channel proteins

**Teaching:** Pharmaceutical Dosage forms Lab (PHCY 6101)

Biopharmaceutics and Pharmacokinetics (PHCY 6102)

**Research Assistant Professor** Oct 2010 – July, 2011

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

**Responsibilities:** Design, plan, execute experiments to analyze:

- ▶ Neurodegeneration – PIP2 – TRP channel proteins
- ▶ Regulation of IP3 receptors by pH
- ▶ Protons as signaling molecules

**Research Associate** 2005 – Sept. 2010

Dept of Pharmacology and Physiology, New Jersey Medical School, UMDNJ, Newark, NJ 07103

**Responsibilities:** I. Design, plan and execute experiments to elucidate

- ▶ Regulation of TRPV, TRPM, TRPC, and store operated channel functions by PIP<sub>2</sub>, PLC and Ca<sup>2+</sup>
- ▶ Molecular mechanisms that regulate uptake of botulinum neurotoxins (BoNTs)
- ▶ Neurotoxicology of Botulinum Neurotoxins

II. Supervise graduate students and M.S/lab rotation students

III. Analyze results, organize data, present in scientific conferences, write and publish manuscripts for peer review publications

**IV. Teaching:**

**Offered the following course lectures to students of**

**A. New Jersey Dental School, UMDNJ**

- a). General Anesthetics (1 credit);
- b). Neuromuscular blocking agents (1 credit)
- c). Antiarrhythmic agents (1 credit);
- d). Drug therapy during heart failure (1 credit)

**B. Principles in Pharmacology for Pharmacology and Physiology core, New Jersey Medical School, UMDNJ**

- a). Absorption and Distribution (2 credits);
- b). Biotransformation – Excretion (2 credits)
- c). Pharmacokinetics (2 credits);
- d). Drug Toxicity (2 credits)

**Group Leader – New Drug Discovery** 2004-2005

Ranbaxy Research Laboratories, Gurgaon, India

**Responsibilities:**

- ▶ Led a team of 6 scientists as a part of New Drug Discovery Research program. Established and carried out Good Laboratory Practice (GLP) compliant safety pharmacological assays for screening NCEs for hERG inhibition and prolongation of action potential duration.

**Assistant Professor** 2002-2004

Department of Pharmacology and Toxicology, National Institute of Pharmaceutical Education and Research, Punjab, India

**Responsibilities:**

- ▶ Streptozotocin induced diabetic rat model and vascular (thoracic aorta) and non vascular (vas deferens) smooth muscle ring as well as stripes preparation and measurement of contractions (isotonic and isometric) in organ baths.
- ▶ Intracellular Ca<sup>2+</sup> measurement in isolated primary smooth muscle cells from thoracic aorta and vas deferens

► Mentored MS students research on redox regulation of vascular (thoracic aorta) and nonvascular (vas deferens) smooth muscle preparations.

Teaching:

During my tenure as an Assistant Professor of Pharmacology and Toxicology, National Institute of Pharmaceutical Education and Research, India, my teaching included the following courses, lectures, discussion, demonstration and lab for M.S Pharmacology major students.

- A. CVS Physiology (2 credits)
- B. Central and Peripheral Nervous System (2 credits)
- C. Pharmacological Screening of Drugs (2 credits)
- D. Pharmacology I (General Pharmacology; 2 credits)
- E. Pharmacology II (CNS, ANS, CVS, Autocoids, Chemotherapeutic agents, Antimicrobials and NSAIDS; 4 credits)

**Designed and coordinated the following graduate (Ph. D.) courses**

a). Pharmacology specialization:

- A. Ion channels in drug discovery (2 credits)
- B. Fluorescence probes in cell signaling (2 credits)

b). Pharmacology and Pharminformatics specialization:

- A. Metabolomics – Metabolism and drug toxicity (4 credits)

**Postdoctoral Research Fellow** 2001-2002

Dept. of Biological Chemistry, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA

**Responsibilities:**

► Hypoxia – *Drosophila* TRP: Redox activation and retinal degeneration

**EDUCATION**

**PhD** 2001

Austrian Academic Exchange Scholar (PhD) at Dept. of Pharmacology and Toxicology, Karl-Franzens University of Graz, Austria

**Thesis:** Analysis of the role of TRP channel proteins in the regulation of cellular Ca<sup>2+</sup> signaling

**Master of Pharmacy** (Pharmaceutics – New Drug Delivery Systems) 1996

Department of Pharmaceutics, Banaras Hindu University Institute of Technology, Varanasi, India

**Thesis:** Preparation and evaluation of sustained release solid dispersions of diclofenac

## **Bachelor of Pharmacy**

1994

Madras Medical College, Chennai, India

**Thesis:** Toxicological aspects of clinical pharmacy: Analysis and assay of chemicals and drugs in biological fluids

## **AWARDS & RECOGNITION**

Research Associateship at New Jersey Medical School, UMDNJ supported by Department of Defense to investigate on development of botulinum neurotoxin A therapeutics

NINDS Scholarship for attending conference of Keystone Symposium on The Transient Receptor Potential Ion Superfamily held in Breckenridge, Colorado, Sept. 18-23, 2007.

FASEB travel award for FASEB conference held at Snowmass, Colorado, June 2007

Received Dept. of Science and Technology, Govt. of India research grant in 2004

Received Dept. of Biotechnology, Govt. of India research grant in 2004

Postdoctoral fellowship from Johns Hopkins University, Baltimore, Maryland, USA

Austrian Academic Exchange Scholarship for Ph.D research study in Austria

Senior Research Fellowship from Council for Scientific and Industrial Research, India during 1996-1997

Junior Research Fellowship from University Grants Commission, India during M. Pharm study

Indian Drug Manufacturers' Associations' G.P. Nair Award for securing University I rank in B. Pharm

Received Brihad Bharathiya Samaj, Gujarath, Merit Scholarship during years I, II, III and IV of B. Pharm study

## **PEER REVIEW PUBLICATIONS**

Allman E, **B Thyagarajan B** and KW Nehrke. The Inositol 1,4,5-Trisphosphate Receptor in *C. elegans*. WIREs Membrane Transport and Signaling. 2011

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 Engineering Design & Selection (PEDS) Nov. 04. 1-7, 2010

Potian JG, Vishwendra Patel, JJ McArdle and **B Thyagarajan**. The inveterate botulinum neurotoxin A ushers in exoendocytic crypts. The Botulinum Journal 2010. 1(4). 418-430.

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 Journal. 2010. 1(4). 407-417.

- 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
- 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
- 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-butryl hydroperoxide. *Ind. J. Pharmacol.* 2009; 41(3): 140-143
- Zakharian, E, **B Thyagarajan**, RJ French, E Pavlov and T Rohacs. Inorganic polyphosphate modulates TRPM8 channels. *PLoS ONE*. 2009;4(4):e5404
- 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 Mar;75(3):608-16
- Rohacs, T, **B Thyagarajan** and V Lukacs. Phospholipase C mediated modulation of TRPV1 channels. *Mol Neurobiol.* 2008 Apr-Jun;37(2-3):153-63
- Thyagarajan, B**, V Lukacs and T Rohacs. Hydrolysis of phosphatidylinositol 4,5-bisphosphate mediates calcium-induced inactivation of TRPV6 channels. *J. Biol Chem.* 2008 May 30;283(22):14980-7
- 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**)
- 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
- Meru, AV, S Mitra, **B Thyagarajan** and A Chugh. Intermittent claudication: An overview. *Atherosclerosis* 2006 Aug;187(2):221-37
- 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
- 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. Dec. 21, 276 (51). 48149-48158
- Lintschinger, 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

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 AND PRESENTATIONS**

### ***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.

### ***EXPRESSION OF TRP3 MODULATES THE CAPACITATIVE CALCIUM ENTRY INTO HEK293 CELLS***

**Baskaran T**, M Balzer-Geldsetzer and K Groschner . Naunyn-Schmiedeberg's Archives of Pharmacology Volume: 363 Issue: 4 Pages: R69-R69 2000.

### ***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

### ***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

### ***THE C-TERMINAL DOMAIN OF TRP3 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

### ***$Ca^{2+}$ 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

### ***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

### ***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

***AUGMENTATION OF HYDROGEN PEROXIDE RESPONSES IN THORACIC AORTA OF STREPTOZOTOCIN INDUCED DIABETIC RATS: ROLE OF TYROSINE KINASES***

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

***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)

***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

***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.

***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

***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

***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 52<sup>nd</sup> Annual meeting and 16<sup>th</sup> International Biophysics Congress February 2-6, 2008, Long beach, California

***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 52<sup>nd</sup> Annual meeting and 16<sup>th</sup> International Biophysics Congress February 2-6, 2008, Long beach, California

***THE ACTIVITY OF A MUTANT  $\delta 2$  IONOTROPIC GLUTAMATE RECEPTOR IS MODULATED BY PHOSPHATIDYLINOSITOL 4,5- BISPOSPATE (PIP2)***

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

***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

***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 Cemical Defense Bioscience Review 2008 held at Baltimore Marriott Hunt Valley Inn, Hunt Valley, MD 21031 from 01 to 06, June 2008

***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 2008 held at Baltimore Marriott Hunt Valley Inn, Hunt Valley, MD 21031 from 01 to 06 of June 2008

***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 2008 held at Baltimore Marriott Hunt Valley Inn, Hunt Valley, MD 21031 from 01 to 06, June 2008

***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 2008 held at Baltimore Marriott Hunt Valley Inn, Hunt Valley, MD 21031 from 01 to 06, June 2008

***THE ROLE OF PHOSPHOLIPASE C IN THE  $Ca^{2+}$ -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

***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

***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

***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

***TRPV1 MODULATES ACETYLCHOLINE RELEASE FROM MOTOR NERVE TERMINALS***

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

***COMPLEX REGULATION OF TRPV1 BY PHOSPHOINOSITIDES***

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

***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, Anaheim Convention Center, Anaheim, CA. April 2010

***2,3-BUTANEDIONE MONOXIME ENHANCES ACETYLCHOLINE RELEASE FROM BOTULINUM NEUROTOXIN A POISONED MOTOR NERVE TERMINALS***

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

***DIFFERENTIAL SENSITIVITY OF FAST AND SLOW TEITCH MUSCLES TO BOTULINUM NEUROTOXIN A***

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

***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 2010, Nov 13-17, San Diego, CA

***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 2010, Nov 13-17, San Diego, CA

***COMPLEX REGULATION OF TRPV1 BY PHOSPHOINOSITIDES***

Lukacs, V, B Thyagarajan and T Rohacs. Biophysical Society 55<sup>th</sup> Annual Meeting, Baltimore, March 5-9, MD

***ANALYSIS OF MOLECULAR MECHANISMS THAT INTEGRATE SENSORY PERCEPTION OF NUTRIENT WITH RHYTHMIC MOTOR OUTPUT***

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

***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), October 2011, Santa Fe, NM.

**TECHNICAL EXPERTISE**

Electrophysiology: Patch clamp, Two electrode voltage clamp, iontophoresis, electroretinogram, muscle mechanics, electromyography,

Confocal microscopy, Fluorescence microscopy, Calcium imaging, FRET, Immunohisto/cytochemistry

Proficiency in drugs for countermeasures against botulinum neurotoxins

Mitochondrial membrane potential and mitochondrial calcium transient measurements

Cellular oxygen consumption/nitric oxide production measurements

Intracellular Reactive oxygen/nitrogen species measurements with fluorescent probes

Cell culture (primary and cell lines) and transfection techniques, stable cell line development

Reporter assays and cell based assays for drug screening

Cloning, PCR, RT-PCR, immunoblotting, coimmunoprecipitation, intracellular cGMP measurement, IP turnover

Tissue preparations of mouse extensor digitorum longus, triangularis sterni, diaphragm and rat thoracic aorta rings and stripes

Proficient in good laboratory practice (GLP) and GLP protocols

Proficiency in early stage of pharmaceutical development

**Animal models:** Rat models of diabetes, adjuvant induced arthritis and mouse model for botulinum neurotoxin poisoning, inflammation/pain

**Novel Drug Delivery systems:** Transdermal, buccal delivery systems, sustained release and controlled release formulations, solid dispersions, solvent evaporation techniques

**Targeted drug delivery:** Nanosomes, magnetic nanospheres and neuronal drug delivery via cargo proteins

**Proficient in behavioral pharmacological assays including plethysmography, rotarod, etc**

**Practical knowledge of operation of fluorescent plate readers/imagers, robotic liquid handling system, and associated computer software**

**Proficient in Windows, Photoshop, Microsoft office suite, pClamp, Clampex, Origin, etc**

## **PATENTS**

Patent Application entitled "Methods for Attenuating the Effects of Botulinum Toxin". Baskaran Thyagarajan and Joseph J. McArdle. USPTO application serial number 12/788,575

## **INVITED LECTURES/SEMINARS**

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

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

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

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

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

**Botulinum Neurotoxin A therapeutics: Rationale for a multi-drug approach**, 17<sup>th</sup> Biennial Medical Defense Bioscience review Sponsored by Joint Services Technology Office/Defense Threat Reduction Agency and US Army Medical Research and Materiel Comm and Hosted by US Army Medical Research Institute of Chemical Defense, Hunt Valley, MD May 2010

**TRPV1-Borulinum Neurotoxin A Cross Talk: An Emerging Prophylactic/Theapeutic Intervention.**

Albany College of Pharmacy, Vermont, VT. May 2010

**TRPV1-Lipid Microdomains-BoNT/A: A cross-talk that modulates neuronal exoendocytosis.**

National Brain Research Center, Manesar, India. July 2010

**“Endocytic pits disassembly hits BoNT/A uptake”: Novel mechanistic insight into BoNT/A**

**prophylaxis.** 4<sup>th</sup> Annual Botulinum Research Symposium, University of Massachusetts, Dartmouth, MA. August 19-20, 2010

**Multi-Drug Approach for Botulism Therapeutics,** Webinar, Advinus Therapeutics Limited, TATA Group,

Pune, India, February 2011.

**Therapeutic effects of capsaicin against botulinum neurotoxin A intoxication.** 48<sup>th</sup> Interagency

Botulism Research Coordinating Committee, October 2011, Santa Fe, NM

**WORKSHOPS/TRAINING**

“Advanced molecular biology for electrophysiologists”– May 1999, Medical University of Graz, Austria

Workshop on “Confocal Microscopy” – Johns Hopkins University – November 2001, MD, USA

Workshop on “Comet assays: Applications in Toxicology and Molecular Epidemiology” – February 7-11, 2003, Indian Toxicological Research Institute, Lucknow, India

Q T Prolongation - Action potential duration measurement training in the laboratory of Dr. András Varró, Professor, Dept. of Pharmacology and Pharmacotherapy, University of Szeged, Hungary – November 2004

“Botulinum Toxin Assay” Workshop – August 19-21, 2008 held at University of Massachusetts, Dartmouth, MA

“Botulinum neurotoxin and deep brain stimulation” – Workshop, Toxins 2011, October 2011, Santa Fe, NM

“Botulinum neurotoxin for cervical dystonia” – Workshop, Toxins 2011, October 2011, Santa Fe, NM.

**ADHOC REVIEWER FOR:**

Journal of Pharmacology and Experimental Therapeutics

Free Radical Biology and Medicine

Indian Journal of Dental Research

Frontiers in Neuroscience

Journal of Cell Biochemistry and Biophysics

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

### **PROFESSIONAL MEMBERSHIPS**

Professional member of American Physiological Society

Member of Society for Neuroscience

Member of Biophysical Society

Member of Society of General Physiologist

Life member of Association of Pharmaceutical Teachers of India

### **EXTRACURRICULAR ACTIVITIES**

Proficiency in

Star Gazing – Sky exploration

Singing (Carnatic vocal and light music) and Tabla (Indian Drums)

Re-recording, sound track mixing and making short films

Audiovisual aid development

Photography and video editing