
CURRICULUM VITAE

1. **NAME:** Bal Ram Singh

2. **MAILING ADDRESS:**

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4. **EDUCATION:**

Ph. D. (Chemistry, Major-Biophysical Chemistry), 1987, Texas Tech University, Lubbock, TX, U.S.A. **Dissertation title:** Molecular topography and binding properties of phytochrome and other related tetrapyrrolic proteins.

M. Phil (Life Sciences, Major-Biophysical chemistry), 1982, Jawaharlal Nehru University, New Delhi, India. **Thesis title:** Dependence of spectroscopic characteristics of photosynthetic pigments on the organization of chloroplast membranes.

M. Sc. (Life Sciences, Major-Biochemistry), 1979, Jawaharlal Nehru University, New Delhi, India. **Thesis title:** Biophysical studies of natural and artificial membranes.

B. Sc. (Chemistry, Biology), 1977, Kamla Nehru Institute of Science and Technology, Avadh University, Faizabad, India.

5. **POSITIONS HELD:**

***DIRECTOR**, Botulinum Research Center, Institute of Advanced Sciences (December 2013 - present).

***PRESIDENT**, Institute of Advanced Sciences (May 2013 – present).

***PRESIDENT and CEO**, Prime Bio, Inc. (March 2013 – present).

***PRESIDENT and CEO**, BBTech, Inc. (March 1998 – 2013).

***DIRECTOR**, Botulinum Research Center, University of Massachusetts Dartmouth (2003-2013).

***DIRECTOR**, Center for Indic Studies, University of Massachusetts, Dartmouth (2000-2014).

***PROFESSOR**, Departments of Chemistry and Biochemistry, and Biology, University of Massachusetts, Dartmouth (1999-2014).

***SENIOR RESEARCH FELLOW**, School of Marine Science and Technology, University of Massachusetts Dartmouth (1997- 2014).

***VISITING ASSOCIATE PROFESSOR**, Department of Microbiology and Molecular Genetics, Harvard Medical School (1996-1997).

***ASSOCIATE PROFESSOR**, Department of Biology, University of Massachusetts Dartmouth (1997-1999).

***ASSOCIATE PROFESSOR**, Department of Chemistry, University of Massachusetts at Dartmouth (1995-1999).

***TENURE**, Department of Chemistry, University of Massachusetts Dartmouth, 1995.

***ASSISTANT PROFESSOR**, Department of Chemistry, University of Massachusetts at Dartmouth (1990-1995).

* **PROFESSOR, GRADUATE FACULTY**, University of Massachusetts at Amherst (February 1992-present)

***VISITING PROFESSOR**, Department of Biochemistry, Georgetown University/Center for Biomolecular Science and Engineering, Naval Research Laboratory, Washington, D.C. (June, 1991-August, 1991)

***ASSISTANT SCIENTIST**, Environmental Toxicology Center/Department of Food Microbiology and Toxicology, University of Wisconsin-Madison (November 1989-1990).

***ASSOCIATE RESEARCHER**, Department of Food Microbiology and Toxicology, UW-Madison (December 1988-October 1989).

***ASSISTANT RESEARCHER**, Department of Food Microbiology and Toxicology, UW-Madison (September 1988-November 1988).

***RESEARCH ASSOCIATE**, Department of Microbiology and Toxicology, UW-Madison (March 1987-August 1988).

***TEACHING AND RESEARCH ASSISTANT**, Department of Chemistry and Biochemistry, Texas Tech University, Lubbock, TX (1983-1986).

6. HONORS, AWARDS, FELLOWSHIPS:

***CO-CHAIR**, Botulinum Neurotoxin session at 19th Biennial Medical Defense Biocience Review, May 11-15, 2014.

***CHIEF GUEST**, International Conference on Upanishads, Allahabad University, Allahabad, India, February 18-20, 2014.

***PANELIST**, Panel of Safety and Regulation of Botulinum Neurotoxin Research - Implication of new Tier 1 Select Agent regulations, 50th Interagency Botulism Coordination Committee (IBRCC) Meeting, Annapolis, MD, October 20-23, 2013.

***EDITOR-IN-CHIEF**, The Botulinum Journal, 2007-present.

***EDITOR-IN-CHIEF**, Light on Ayurveda Journal, 2011 - 2013

***INAUGURAL KEYNOTE SPEAKER**, International Conference On the Nature of Consciousness: Classical and Contemporary Debates in Vedanta Philosophy, Department of Philosophy, Assam University, Silchar, India, November 21-14, 2013.

***KEYNOTE SPEAKER**, International Research Seminar on “Social Relevance of Literature and Global Context of Culture, P. G. Autonomous College, Shahadol, India, October 26-28, 2013.

***PANELIST**, U.S. Department of Health and Human Services Botulism/Botulinum Intoxication Clinical Guidance Workshop, April 17 – 18, 2013.

***A.C. MUKHERJEE DISTINGUISHED ANNUAL LECTURE SPEAKER**, Department of Philosophy, Allahabad University, India, August 30, 2012.

***INAUGURAL KEYNOTE SPEAKER**, 16th National Conference on Aerobiology & National Symposium on Biotechnology Applications in medicine and Environment, Bapuji Institute of Engineering & Technology, Davanagere, Karnataka, India, November 2010.

* **DR. B. K. SINGH MEMORIAL LECTURER**, Department of Chemistry, Allahabad University, India, December 2010.

***CHANCELLOR COLLOQUIUM DISTINGUISHED SPEAKER**, University of Massachusetts Dartmouth, December 3, 2009

***SCHOLARSHIP OF TEACHING AND LEARNING AWARD**, University of Massachusetts Dartmouth, 2009.

***RECOGNITION PLAQUE**, India Association of Greater Boston, 2009.

***RECOGNITION PLAQUE**, New Bedford Chamber of Commerce, 2008.

***ASSOCIATE EDITOR**, International Journal of Indian Culture and Business Management, 2006-present.

***PANEL MEMBER**, Joint Science and Technology Office of Chemical and Biological Defense (JSTO-CBD, DoD) Review, 2006-present.

CHAIRMAN, 42nd IBRCC 2006 Conference Session, Silver Spring, MD, November 14-17, 2006.

***MEMBER**, BoNT strategic planning break away session, Joint Science and Technology Office of Chemical and Biological Defense (JSTO-CBD), DoD, November 17, 2006.

***EXPERT PANEL MEMBER**, The National Toxicology Program (NTP) Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM) and the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM), NIH Conference, Baltimore, Maryland, November 13-14, 2006

***PANEL MEMBER**, Innovation and Industry Programs, Canadian Institutes of Health Research, 2007.

***CONSULTING EDITOR**, *Akhand Bharat Sandesh* (monthly newspaper) (2001-2004).

***BUREAU CHIEF**, United States, *Between the Media* (a monthly news magazine) (2000-2004).

***UNIVERSITY SERVICE AWARD**, UMass Dartmouth Alumni Association, 2004.

***MEMBER**, NIH Review Panel Biodefense Vaccines, 2003-2005.

***REVIEWER**, National Research Initiative (NRI) Pre-harvest food safety program, USDA, 2004.

***EXPERT MEMBER**, Biological Threat Characterization Program (BTCP), BTCP Bioterrorism Risk Assessment Workshop, Department of Homeland Security, 2004-2005.

MEMBER, NIH-Drug Discovery and Mechanisms of Antimicrobial Resistance Study Section, October 2004.

***MEMBER**, CDC Special Emphasis Panel (SEP) to evaluate the scientific merit of proposals to Determine the Pharmacokinetics of Clostridium Botulinum Neurotoxins A, B, C, E, and F. May 2004.

***MEMBER**, NIH Fellowship Study Section, 2003-2004.

***REVIEWER**, National Institutes of Health BCCB (Biophysical Chemistry) study section, October 2003.

***MEMBER**, Botulinum Neurotoxin Diagnostic Panel, National Institute of Allergy and Infectious Diseases, May 23, 2003.

***DIRECTOR**, Center for Indic Studies, UMass Dartmouth (2001-present)

***First UMD Faculty** to be put on Spotlight at Provost's website, 2002.

***MODERATOR**, Panel Discussion on 'Media Coverage of Terrorism in India and Pakistan', National Press Club, Washington, DC, April 26, 2002.

***PANELIST, Panel Discussion on** 'The mutual Understanding through respectful dialogue to help understand the recent Hindu and Muslim communal conflicts in India', Brown University, Providence, RI, May 15, 2002.

***PLENARY SPEAKER**, UMass Neuroscience Symposium, June 3, 2002, Worcester, MA

***FEATURED FACULTY**, UMass Board of Trustees, February 6, 2002.

***COORDINATOR**, International Conference on India's Influences and Contributions to the World, July 12-14, 2002, University of Massachusetts Dartmouth.

SESSION CHAIR, 38th Interagency Botulism Research Coordination Committee Meeting, October 17-19, 2001, Easton, MD.

***CHANCELLOR'S INNOVATIVE TEACHING AWARD**, (2000-2001), UMASS Dartmouth for the course *Chemistry of Mind* (CHM 550).

***HENRY DREYFUS TEACHER SCHOLAR AWARD** (1997), Camille and Henry Dreyfus Foundation.

***GUEST EDITOR**, Journal of Natural Toxins, Volume 7 issue 3, 1998.

*Nominated for the **US PROFESSOR OF THE YEAR**, by the Chancellor, University of Massachusetts Dartmouth, May 1998.

***FACULTY RECOGNITION**, the University of Massachusetts' second annual Scholarship Gala on September 1998.

***SYMPOSIUM CHAIRMAN**, Infrared Analysis of Peptides and Proteins, 216th National Meeting of American Chemical Society, Boston, MA, August 23-27, 1998.

GUEST EDITOR, Toxin Reviews, Special Issue on Biochemical and Toxic-Chemical Aspects of Botulinum Neurotoxins, 1997-1998.

***VISITING ASSOCIATE PROFESSORSHIP**, Harvard Medical School, 1996-1997.

UMASS DARTMOUTH FACULTY REPRESENTATIVE TO UMASS BOARD OF TRUSTEES, 1996-1997.

FEATURED SPEAKER, Symposium on "Chemistry: A Necessary Component of Post Secondary Education" at the 29th Central Regional Meeting of American Chemical Society, May 27-30, 1997.

***EDITORIAL BOARD MEMBER** (1996-2003), Journal of Natural Toxins.

***EDITORIAL BOARD MEMBER** (2003-present) Current Enzyme Inhibition.

***EDITOR** (1996), Natural Toxins 2, Plenum Press, New York.

***SCHOLAR OF THE YEAR AWARD** (1995), University of Massachusetts Dartmouth.

***TENURE (1995)**, University of Massachusetts Dartmouth.

***SYMPOSIUM CHAIRMAN** (1995) Natural Toxins, 209th national meeting of American Chemical Society, Anaheim, CA, April 2-7, 1995.

***CHANCELLOR'S INNOVATIVE TEACHING AWARD**, (1995-1996), UMASS Dartmouth.

***PANEL MEMBER** (1994), Pew Roundtable on Higher Education, UMass Dartmouth, September 27-28, 1994.

***CHANCELLOR'S INNOVATIVE TEACHING AWARD**, (1992-1993), UMASS Dartmouth.

***INVITED PLENARY LECTURE SPEAKER** at IVth Pan American Symposium on Animal, Plant and Microbial Toxins, Campinas, Brazil, July 27-31, 1992; **Topic:** Molecular Mechanism of Action of Clostridial Neurotoxins and its Implications to Other Fields.

***COORDINATOR, ROUND TABLE DISCUSSION** on "Bacterial Neurotoxins as Scientific and Medical Treasures" at the IVth Pan American Symposium on Animal, Plant and Microbial Toxins, Campinas, Brazil, July 27-31, 1992.

***YOUNG-INVESTIGATOR GRANT AWARD** (1991), National Foundation for Infectious Diseases.

***FACULTY-STAFF DEVELOPMENT TRAVEL AWARD** (1990), College of Agricultural & Life Sciences, University of Wisconsin, Madison.

***FACULTY-STAFF DEVELOPMENT TRAVEL AWARD** (1989), College of Agricultural and Life Sciences, University of Wisconsin, Madison.

***TEXAS TECH UNIVERSITY OUTSTANDING GRADUATE STUDENT-TEACHER AWARD** (1985-1986).

***ROBERT A. WELCH FOUNDATION FELLOWSHIP AWARD**, Texas Tech University, Lubbock, TX (1984).

***SENIOR RESEARCH FELLOWSHIP**, Council of Scientific and Industrial Research, Government of India (1982-1983).

***JUNIOR RESEARCH FELLOWSHIP**, Council of Scientific and Industrial Research, Government of India (1980-1982).

***JUNIOR RESEARCH FELLOWSHIP**, Department of Science and Technology project, Government of India (1979-1980).

***UNIVERSITY MERIT SCHOLARSHIP**, Jawaharlal Nehru University, New Delhi, India (1977-1979).

***UNIVERSITY MERIT SCHOLARSHIP**, Avadh University, Faizabad, India (1975-1977).

***STATE MERIT SCHOLARSHIP**, Ministry of Education, Uttar Pradesh, India (1971-1973).

7. INVITED SEMINAR/SYMPOSIUM/WORKSHOP SPEAKER:

1. Department of Chemistry, University of Nebraska-Lincoln (November, 1987); Topic: Structure-Function Relationship of Botulinum Neurotoxins.

2. School of Life Sciences, Jawaharlal Nehru University, New Delhi, India (May, 1989); Topic: Structure-Function Relationship of Botulinum and Tetanus Neurotoxins.

3. National Institute of Immunology, New Delhi, India (August, 1989); Topic: Structure-Function Relationship of Clostridial Neurotoxins.

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4. A workshop on "Recent Advances in Bioenergetic Processes" Jawaharlal Nehru University, New Delhi, India (February, 1990); Topic: Plant photomorphogenic photoreceptor phytochrome: Molecular Topography and Light Signal Processing.
 5. Presentation entitled "Structural analysis of botulinum and tetanus neurotoxins using CD and FT-IR spectroscopy" at the *Second Asia-Pacific Congress on Animal, Plant and Microbial Toxins*, Banaras Hindu University, Varanasi, India, February 19-22, 1990.
 6. Center for Bio/Molecular Engineering, Naval Research Laboratory, Washington, D.C. (December, 1990) Topic: Spectroscopic Analysis of Structure-Function Relationship of Biomacromolecules.
 7. College of Arts and Sciences Food for Thought Seminar Series, Southeastern Massachusetts University (February, 1991); Topic: Thou Sword Turned into Plough Share. The Toxins.
 8. Department of Chemistry, Southeastern Massachusetts University (March, 1991); Topic: Spectroscopic Analysis of Structure-Function Relationship of Biological Macromolecules.
 9. Presentation entitled "Molecular differences between botulinum neurotoxin and its toxoid" at the Thirty sixth *Interagency Botulism Research Coordination Committee (IBRCC)* meeting, December 16-18, 1991, Philadelphia, PA.
 10. Department of Natural Sciences, Roger Williams College, Bristol, R.I. (December, 1991); Topic: Thou Sword Turned into Plough share. The Toxins.
 11. Division of Biology and Medicine, Brown University, Providence, R.I. (February, 1992); Topic: Structure-Function Relationship of Clostridial Neurotoxins.
 12. International Conference on Botulinum and Tetanus Neurotoxins: Neurotransmission and Biomedical Aspects, University of Wisconsin, Madison, WI (May 11-13, 1992); Topic: Comparative Topography of Botulinum and Tetanus Neurotoxins, and its Relationship to Their Function.
 13. Division of Molecular Biology, Office of Naval Research, Arlington, VA (August 1992); Topic: Structure-Function Relationship of Biological Macromolecules.
 14. Presentation entitled "Immunochemical characterization of botulinum neurotoxin in its purified and complex forms" at the Thirty seventh *Interagency Botulism Research Coordination Committee (IBRCC)* meeting, December 7-9, 1992, College Park, MD.

15. Department of Chemistry, Rhode Island College, Providence, RI (December 1992); Thou Sword Turned into Plow Share: Toxins as Scientific and Medical Tools.

16. Industrial Toxicology Research Institute, Lucknow, India (June 1993) Structure-Function Relationship of Botulinum and Tetanus Neurotoxins.

17. Presentation entitled "Structure-function relationship of botulinum and tetanus neurotoxins" at the *Third Asia Pacific Congress on Animal, Plant, and Microbial Toxins*, June 27-July 1, 1993, Kuala Lumpur, Malaysia.

18. Presentation entitled "Immunochemical properties and detection of botulinum neurotoxins" at the Thirty eighth *Interagency Botulism Research Coordination Committee (IBRCC)* meeting, November 15-17, 1993, Madison, WI.

19. Departments of Chemistry and Biochemistry, University of Massachusetts Amherst, MA (March 1994) Spectroscopic Analysis of Structure-Function Relationship of Bacterial Protein Toxins.

20. Department of Microbiology, Biochemistry and Molecular Biology, University of Idaho, ID (April, 1994) Structure-Function Relationship of Bacterial Protein Toxins.

21. Presented an invited seminar entitled "Botulinum Neurotoxin and Its Complexing Proteins" at the Toxinology Division, US Army Medical Institute of Infectious Diseases, Ft. Detrick, Frederick, MD, September 19, 1994.

22. Presented an invited seminar entitled "Biochemical and Immunological Characterization of Botulinum Neurotoxin and Its Complexing Proteins" at the U.S. Army Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD, September 20, 1994.

24. Presentation entitled "Role of Botulinum Complexing Proteins in the Detection of Botulinum Neurotoxins" at the Scientific Conference on Chemical and Biological Defense Research, Aberdeen Proving Ground, U.S. Army, Edgewood, MD, November 15-18, 1994.

25. Presented an invited seminar entitled "Thou sword turned into plowshare: the toxins" at the Department of Chemistry, University of Southern Maine, December 8, 1994.

26. Presented an invited seminar entitled "Structure-function relationship of clostridial neurotoxins" at the Department of Chemistry, Wesleyan University, March 8, 1995.

27. Presentation entitled "Structure-function relationship of bacterial protein toxins" at the 209th National Meeting of American Chemical Society, Anaheim, CA, April 2-6, 1995.

28. Presented an invited seminar entitled "Structure and Function of Bacterial Protein Toxins" at the School of Life Sciences, Jawaharlal Nehru University, New Delhi, India, December 26, 1995.

29. Presented an invited seminar entitled "Structure-function relationship of clostridial neurotoxins" at the Department of Chemistry, UMass Boston, February 27, 1996.

30. Presentation entitled "Partial nucleotide sequence of cinnamomin from *Phytophthora cinnamomin* pathogen of cranberry plants" at the Annual meeting of Cranberry Growers Association, March 1996, Taunton, MA.

31. Presentation entitled "Fourier transform infrared spectroscopic analysis of protein structure and adsorption to solid surface" at the '96 Annual Meeting of the Korean Society of Photoscience, Korea, June 6-8, 1996.

32. Presented a seminar entitled "Spectroscopic analysis of clostridial toxins" at the Department of Chemistry, University of Rhode Island, September 20, 1996.

33. Presented a seminar entitled "Spectroscopic analysis of structure-function of botulinum and tetanus neurotoxins" at Department of Chemistry, Boston University on October 30, 1996.

34. Presentation entitled "Botulinum neurotoxin complex and neurotoxin associated proteins (NAPs)" at the 1996 Meeting of Interagency Botulism Research Coordination Committee, Frederick, MD, November 6-8, 1996.

35. Presented an invited seminar entitled "Thou sword turned into plowshare" at the Department of Chemistry, Merrimack College, February 26, 1997.

36. Presented an invited seminar entitled "Cranberry and regulation of anthocyanin biosynthesis" at the Agricultural Research Division, Ocean Spray, Middleboro, April 17, 1997.

37. Presentation entitled "Development of active student participation as a method to instill favorable attitude for chemistry learning in non-science major students" at 29th Central Regional Meeting, American Chemical Society, May 28-30, 1997.

38. Presentation entitled "Molecular composition and topography of neurotoxin associated proteins (NAPs) of botulinum neurotoxin complex" at the Second

International Meeting on the Molecular Genetics and Pathogenesis of the Clostridia, Seillac, Onzain, France, June 22-25, 1997.

39. Presentation entitled "Teaching biochemistry laboratory course by using integrated research on xenobiotic detoxifying enzyme as an example" at the 214th National Meeting of American Chemical Society, September 7-11, 1997.

40. Presentation entitled "Structure-function relationship of a novel type E botulinum neurotoxin complex" at the 1997 Meeting of Interagency Botulism Research Coordinating Committee. Nov. 11-14, 1997, Bethesda, Maryland.

41. Presented an invited seminar entitled "Optical Fiber Biosensor Detection of Toxic Proteins " at the Department of Chemistry, UMass Lowell, February 2, 1998.

42. Presented an invited seminar entitled "How Does a Bacterium Design the Most Poisonous Poison? How Does It Work? " at the Zoology Department, Brigham Young University, Provo, UT, March 12, 1998.

43. Presented an invited seminar entitled "Critical Factors in Cranberry Color Development " at the Research and Development Division, Ocean Spray, Middleboro, March 20, 1998.

44. Presented a seminar entitled "Structure Function Relationship of Botulinum Neurotoxin Associated Proteins, at the IPSEN-Speywood, Ltd., Berkshire, United Kingdom, June 30, 1998.

45. Presented an invited seminar entitled "Debating the relevance of chemistry to non-science majors" at the 216th National Meeting of the American Chemical Society, Boston, MA, August 23-27, 1998.

46. Presented an invited seminar entitled "Overview of the IR spectroscopy of proteins" at the 216th National Meeting of the American Chemical Society, Boston, MA, August 23-27, 1998.

47. Presented an invited seminar entitled "Infrared analysis of biomacromolecules for their structure-function analysis" at the Department of Chemistry, Rensselaer Polytechnic Institute, Troy, NY, October 7, 1999.

48. Presented an invited seminar entitled "Infrared spectroscopic analysis of protein structure-function" at Amgen Corp, Thousand Oaks, CA, October 22, 1999.

49. Presented an invited seminar entitled "The complex nature of the most poisonous poison: the *Clostridium botulinum* agents and reagents" at Allergan Corp., Irvine, October 21, 1999.

50. Presented an invited seminar entitled “Glutathione-S-transferase as a major xenobiotic metabolism enzyme in animal, plant and microbial organisms” at Bridgewater State College, Bridgewater, MA, November 4, 1999.

51. Presented a seminar entitled “Molecular basis of the unique endopeptidase activity of botulinum neurotoxin: role of dynamic structure” at the International Conference 1999 on Basic and Therapeutic Aspects of Botulinum and Tetanus Toxins, Orlando, FL, November 16-18, 1999.

52. Presented a seminar entitled “Analysis of Botulinum Neurotoxin Complex”, at the IPSEN-Speywood, Ltd., Berkshire, United Kingdom, December 8, 1999.

53. Presented a seminar entitled “Chemical and Environmental Research Approaches in the United States” at Government Postgraduate College, Hoshangabad, India, December 17, 1999.

54. Presented a seminar entitled “Molecular Mechanism of the Most Poisonous Poison” at Jawaharlal Nehru University, New Delhi, India, January 17, 2000.

55. Presented a seminar entitled “Summary of Research on Cranberry Root Rot and Anthocyanin Biosynthesis” at the Ocean Spray Cranberries, Inc., Lakeville-Middleboro, April 13, 2000.

56. Presented a seminar entitled “Botulinum Toxin” at the DRDE, Gwalior, India, December 5, 2000.

57. Presented a seminar entitled “Everybody is a Scientist” at the Kriyayoga Research Institute, New Jhansi, Allahabad, India, July 9, 2001.

58. Presented a seminar entitled “Creation of a Scientific Field’ at Rani Durgawati University Jabalpur, India, July 25, 2001.

59. Presented a seminar entitled “Use of Computer in Teaching and Learning in USA” at Rani Durgawati University Jabalpur, India, July 25, 2001.

60. Presented a seminar entitled “Unique Structural Features of Botulinum Neurotoxin Required for Its Endopeptidase Activity” at the 38th Meeting of Interagency Botulism Research Coordinating Committee, October 17-19, 2001, Easton, Maryland.

61. Presented a seminar entitled “Intimate Details of the Most Poisonous Poison” at the St. Mary College, MD, October 19, 2001.

62. Presented a seminar entitled “Insight into the Inner Workings of the Most Poisonous Poison and Class Bioterror Agent” at Worcester Polytechnic Institute, Worcester, MA, October 9, 2002.

63. Presented a seminar entitled “Protein Structure, Neurotoxins and Mysteries of Neuronal Mechanisms” to the Biochemistry class at Worcester Polytechnic Institute, Worcester, MA, October 9, 2002.

64. Seminar entitled “Current and Unsettled Issues in the Molecular Action of Botulinum Neurotoxin.” POC Frank Lebeda, Headquarters Conference Room, 1100 – 1200. December 19, 2002.

65. Seminar entitled “Intimate Details of the Most Poisonous Poison on the Earth and Class A Bioterror Agent” at the School of Life Sciences, Jawaharlal Nehru University, New Delhi, December 30, 2002.

66. Seminar entitled “Food Pathogens and Biosensor’ at Teachers” Training School, Jawaharlal Nehru University, New Delhi, January 2, 2003.

67. Seminar entitled “Science of Philosophy and Indic Traditions” at the Center for Philosophy, Jawaharlal Nehru University, New Delhi, January 2, 2003.

68. Seminar entitled “The Real Science of Life” at the National Cadet Corp, University of Allahabad, India, January 20, 2003.

69. Seminar entitled “Kriyayog and Scientific Way of Building a Universal Life” at the Nirala House, University of Allahabad, India, January 27, 2003.

70. Seminar entitled “Inner Workings and Outward Effects of the Most Poisonous Poison, IPSEN Ltd., Slough, Berkshire, UK, January 30, 2003.

71. Seminar entitled “Current and Unsettled Issues in Molecular Steps in Botulinum Action.” Clostridia 03 Pathogenesis, Marine Biology Laboratory Woods Hole, Massachusetts, April 29, 2003.

72. Seminar entitled “Inside Biological Stories of the Most Poisonous Bioterror Agent, Department of Pathology, University of Connecticut at Storrs, January 29, 2004.

73. Seminar entitled "Fundamentals of Science and Society - A Peek into the Future of Science" presented at the School of Life Sciences, Jawaharlal Nehru University, New Delhi, December 19, 2003.

74. Seminar entitled "How Food Makes Everyone a Real Scientist", The Consortium for the Advancement of Teaching, Learning, and Scholarship (CATLS), UMass Dartmouth, September 14, 2004.

75. Seminar entitled “Variation in endopeptidase activity of botulinum neurotoxins with their molecular forms”, New England Regional Center of Excellence for Biodefense and Emerging Infectious Diseases (NERCE/BEID), First Annual Retreat New England Center, Durham, NH, September 19-20, 2004.

76. Seminar entitled "Structural Variations Governing the Endopeptidase Activity of Different Serotypes of Botulinum Neurotoxins, IBRCC 04, October 26-29, 2004.

77. Seminar entitled “Biodefense and biotechnology research at UMass Dartmouth”, New Bedford Mother’s Club, November 10, 2004.

78. Seminar entitled “A Journey through the “Diversiland” of India, UMass Dartmouth Library Associates, December 5, 2004.

79. Seminar entitled, Structure, function, and genomics of botulinum neurotoxin and neurotoxin associated proteins, Yang Ming University, Taipei, March 13, 2005.

80. Seminars entitled “India, Yoga and Diversity” presented to UMD’s Spotlight students on April 7 and 14, 2005.

81. A presentation entitled “Relevance of Crystal versus Solution Structure of Botulinum Neurotoxin for Understanding its Mechanism of Action” at the 42nd Interagency Botulism Research Coordinating Committee Meeting, Baltimore, MD, December 5-8, 2005

82. Seminar entitled “Yoga: its beginning and the benefits, was presented to UMass Dartmouth Library Associates, December 5, 2005.

83. Presented an invited talk entitled “Structure-Function of Botulinum Neurotoxins Relevant to Design of inhibitors Against Botulism”, Bioscience 2006 Medical Defense Review, Hunt Valley, Maryland, June 6-7, 2006

84. Seminar entitled “Value and Basis of Yoga and Ayurveda in Modern Medicine” presented at UMass Medical School, Worcester, June 9, 2006.

85. Presented an invited talk entitled “The Modern Good, the Bad, and the Beauty of an Ancient Biological Molecule”, UMass Lowell Sukant Tripathy annual Memorial Symposium, December 1, 2006.

86. Seminar entitled “Microbial Toxins – Curse or Boon?” presented to the Department of Medical Technology at National Taiwan University, Taipei, Taiwan, August 7, 2006.

87. Seminar entitled “Microbial Toxins – Curse or Boon?” presented to the Institute of Microbiology and Molecular Biology at Tzu Chi University, Hualien, Taiwan, August 11, 2006.

88. Seminar entitled “Microbial Toxins – Curse or Boon?” presented to the Department of Biological Science and Technology at National Chio-Tung University, Taiwan, August 14, 2006.

89. Seminar entitled “Microbial Toxins – Curse or Boon?” presented to the Department of Microbiology and Immunology at Yang Ming University, Taipei, Taiwan, August 7, 2006.

90. A presentation entitled “Critical Steps in the Mode of Action for Diagnostics and High Throughput Screening Botulinum of Neurotoxins” at the 43rd Interagency Botulism Research Coordinating Committee Meeting, November 14 - 17, 2006, Silver Spring, MD

91. Seminar entitled “Use bioengineering of botulinum neurotoxin for its application in targeting for different purposes in neuroscience” presented at the Nair Hospital & Medical School, Mumbai, India, January 5, 2007.

92. Seminar entitled “Physico-chemical Exploration of Molecules and Mind” presented at Allahabad University, Allahabad, India, January 8, 2007.

93. Seminar entitled “Chemistry of Mind” was presented at the Kamla Nehru Institute of Physical and Social Sciences, Sultanpur, India, January 11, 2007.

94. Seminar entitled “Scope of Biotechnology in Higher Education presented at \ Lucknow University, Lucknow, India, January 16, 2007.

95. A seminar entitled “Molecular Miracles in the Mechanism of Botulinum Neurotoxin Toxicity & Therapeutics”, at the Department of Medicine, UMass Medical School, March 21, 2007.

96. A presentation entitled “Issues in the Development of Therapeutics Against Botulism” at 3rd Botulism Small Molecule Drug Discovery Coordination Meeting at Tufts, May 7, 2007

97. A seminar entitled “Development of Antidotes Against the Most Toxic Substance Known Mankind” presented at the Department of Chemistry, University of Delhi, India, July 21, 2007.

98. A seminar entitled “Science, Civilization, and Education” was presented at Kurukshetra University, India, on June 22, 2007.

99. A presentation entitled “Role of NAPs in the Translocation of and Host Response to Type A Botulinum Neurotoxin” at the 44th annual meeting of the Interagency Botulism Research Coordinating Committee (IBRCC), to be held October 14-18, 2007 at the State of California Asilomar Conference Center.

100. A presentation entitled " Safety, Security, and Non-Proliferation Through Global Partnership in Toxin to Medicine Approach " at Bio-Non Proliferation Conference, Santa Fe, New Mexico, December 4-6, 2007

101. A presentation entitled, “Role of Indian Diaspora in the Socio-Political, Econo-Scientific, and Self-Image of India Inside and Outside of its Borders” University of Allahabad, Allahabad, India, January 9, 2008.

102. A presentation entitled “Biotechnological Approach to Pathogenic Resistance and Bioremediation” Agrochemicals protecting crop, health and natural environment, IUPAC Conference, January 8-11, 2008, New Delhi, India.

103. A presentation entitled “Scientific and Spiritual values within the Indian Joint Family Practices” at World Congress on Psychology and Spirituality, January 5-6, 2008, Delhi, India.

104. A presentation entitled “Role of Indian Diaspora in the Socio-Political, Econo-Scientific, and Self-Image of India Inside and Outside of its Borders”, Allahabad University-National Seminar, Taking stock on India–US Civil Nuclear Accord, January 4-5, 2008, Allahabad, India.

105. A presentation entitled “Science and Society” at the National Institute of Biologicals, Noida, UP, India January 17, 2008.

106. A presentation entitled “Role and Effects of Neurotoxin Associated Proteins in Stability, Pathogenesis and Host Response of Botulinum Neurotoxin Complex”, at Merz Pharmaceuticals, Frankfurt, Germany, February 17-19, 2008.

107. A presentation entitled “Role of Neurotoxin Associated Proteins in Stability, Pathogenesis and Host Response of Botulinum Neurotoxin Complex” at Ipsen, LTD, in Paris, France, March 2-5, 2008.

108. A presentation entitled "The Need of Scientific Approach and Language to Examine and Promote Indian Traditional Knowledge and Practices" at the Seventh Intl. Conference of the World Association of Vedic Studies, University of Central Florida, Orlando, FL, June 26-29, 2008

109. A presentation entitled " Chemistry of Satya and Ahimsa That Made Gandhi A Mahatma, at the Panel on "Gandhi's Legacy of Ahimsa" at the Eastern Connecticut State University October 2, 2008

110. A presentation entitled "Unique protein Conformation and Dynamics of the Most Poisonous Poison" Department of Chemistry, UMass Amherst, October 16, 2008.

111. A presentation entitled "Structure-Function, Countermeasures, and Therapeutic Uses of Botulinum Neurotoxins", at the 3rd International Conference on Natural Toxins, December 16-18, 2008, Cairo, Egypt.

112. A Special Lecture entitled "Scientific and Spiritual Examination of Values Embodied in Ancient Indian Texts Relevant to the Modern World", at WAVES India Conference, December 24, 2008.

113. A presentation entitled "Scientific and Spiritual Examination of Values Embodied in Ancient Indian Texts Relevant to the Modern World", at the ICIH 2009 Conference, January 2009, Delhi, India.

114. A presentation entitled " Unique Structural and Functional Mechanisms involved in Botulinum Action", Department of Physiology and Pharmacology, UMDNJ-New Jersey Medical School, Newark, NJ, March 16, 2009.

115. A presentation entitled "Why Isn't This Normal? Issues and Strategies for Overcoming Resistance Toward Contemplative Pedagogies", at the First annual conference for the Association for Contemplative Mind in Higher Education (ACMHE) Conference on " The Contemplative Heart of Higher Education, at Amherst College on April 24-26, 2009.

116. A presentation cum demonstration entitled "Yoga and Modern Science, Raytheon Corporation, Portsmouth, RI, May 18, 2009.

117. A presentation entitled "Scientific Approach to Examine and Promote Indian Traditional Vedic Knowledge and Practices Globally" SSEASR Conference, Bali Island, Indonesia, June 3-6, 2009.

118. A presentation entitled Science and Technology in Ancient Indian Text, Dev Sanskrit University, Haridwar, India, June 18, 2009.

119. A presentation entitled "A Scientific Approach to the Concept of Consciousness and Time and Context of Indian Philosophy" Eighteenth International Congress of Vedanta, July 16-19, 2009, University of Massachusetts Dartmouth.

120. A presentation entitled "India, A Diversiland, Classroom presentation in Dr.

Michael Baum's class of Political Science, October 8, 2009.

121. A presentation entitled "Doctrine of Karma – An Integral Perspective and Scientific Approach the Dharmic Paradigm", Uberoi Foundation Fall Experts Meeting, October 31, 2009.

122. A presentation entitled "Indic Studies Program at University of Massachusetts Dartmouth" Uberoi Foundation Fall Experts Meeting, November 1, 2009.

123. A presentation entitled " Vedic Sciences and indic Studies Program at University of Massachusetts Dartmouth", Vedic Science Retreat, University of Massachusetts Dartmouth, November 6, 2009.

124. A presentation entitled " A Proposed Model to Quantify Measurement of Consciousness as a function of time" Vedic Science Retreat, University of Massachusetts Dartmouth, November 7, 2009.

125. A presentation entitled "Chemistry, Physiology, Sociology, and Economics of Toxic BoNTs, Chancellor Colloquium of Distinguished Lecture Series, UMass Dartmouth, December 3, 2009.

126. A presentation entitled " Targeted Drug Delivery to Neuronal Tissue" at the Intl. Symposium on Drug Discovery and Development, University of Delhi, January 5-8, 2010.

127. A presentation entitled "Scientific Approach and Language to Examine and Promote Indian Traditional Knowledge and Practices" Delhi Public School, R. K. Puram, Delhi, India, January 7, 2010.

128. A presentation entitled "Science and Technology in Ancient Indian Texts Program at the Center for Indic Studies" Inaugural Address, Science and Technology in Ancient Indian Texts, Jawaharlal Nehru University, New Delhi, January 9, 2010.

129. A presentation entitled "Scientifying the Science – art of making everything a science, Plenary Speech, Science and Technology in Ancient Indian Texts", Jawaharlal Nehru University, New Delhi, January 9, 2010.

130. A presentation entitled "India's Ancient Sciences - What do we have and where do we go from here?, Panel Discussion at Science and Technology in Ancient Indian Texts", Jawaharlal Nehru University, New Delhi, January 10, 2010.

131. A presentation entitled "Culture of India and Indian Diaspora in Global Context", Ram Manohar Lohia National Law University, Lucknow, India, January 11, 2010.

132. A presentation entitled "Role of Sanskrit in Modern Society", Rashtriya Sanskrit Vidyapeeth, New Delhi, India, January 21, 2010.

133. A presentation entitled "Scientifying the Science – art and business of making everything a science", Department of Chemistry and Biochemistry, University of Massachusetts Dartmouth, February 17, 2010.

134. A presentation entitled "Role of Botulinum Toxin Complexing Proteins and Binding of NAPs vs. Toxin to Different Cell Types, at MERZ, Frankfurt, Germany, March 16, 2010.

135. A presentation entitled "Relevance of the Crystal vs. Solution Structure of Botulinum Neurotoxin for Understanding its Mechanism of Action and Development of Inhibitors" Bioscience 2010, Hunt Valley, MD, May 25, 2010.

136. A presentation entitled " Botulinum Neurotoxin vs. Neuromedicine: Basic and Applied Research, Institute of Himalayan Bioresource Technology (CSIR) Palampur HP India, June 6, 2010.

137. A presentation entitled "Science, Society, and Sanskrit", Special Center for Sanskrit Studies, Jawaharlal Nehru University, June 10, 2010

138. A presentation entitled "Ayurved, and Modern Science - blurring the distinctions", Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University, June 22, 2010.

139. A presentation entitled "Integrating Traditional Knowledge with Modern Sciences", Special Center for Sanskrit Studies, Jawaharlal Nehru University, June 28, 2010

140. A presentation entitled "Science and Technology in Ancient Indian Texts Program at the Center for Indic Studies", Inaugural presentation at Symposium on Science and Technology in Ancient Indian Texts, University of Massachusetts Dartmouth, July 27, 2010.

141. A presentation entitled "Indic Studies Program", Nineteenth International Congress of Vedanta, University of Massachusetts Dartmouth, July 28-31, 2010

142. A presentation entitled "SALT and Learning Science through Experience and Subjective Objectivity", Nineteenth International Congress of Vedanta, University of Massachusetts Dartmouth, July 28-31, 2010

143. A presentation entitled "Prajatantra and Global Governance", .Keynote speech at Eighth International Conference of World Association of Vedic Studies, Trinidad and Tobago, August 4, 2010

- 144.** A presentation entitled "How to Revive Vedic Tradition in the Modern World", Eighth International Conference of World Association of Vedic Studies, Trinidad and Tobago, August 7, 2010
- 145.** A presentation entitled "Pluralism in Dharma Traditions", Uberoi Foundation Teacher Training Program in Dharmic Studies, August 16, 2010.
- 146.** A presentation entitled "India and Diversiland", Uberoi Foundation Teacher Training Program in Dharmic Studies, August 16, 2010.
- 147.** A presentation entitled "Challenges and Opportunities in Dealing with Botulinum Neurotoxins, Sandia National Laboratory, Livermore, CA, September 7, 2010.
- 148.** A presentation entitled "Botulinum Research Center, Opportunities and Challenges for Diagnostics and Detection of Toxins" Department of Electrical and Computer Engineering, University of Missouri, Columbia, MO, October 11, 2010.
- 149.** A presentation entitled "Unique Structure-Action Relationship and Evolution of Botulinum Neurotoxins, 47th IBRCC Meeting, Atlanta, GA, November 1-5, 2010.
- 150.** Conference Inaugural lecture entitled "How Biotechnology Transforms a Sword into Plowshare? - The Case of Botulinum Neurotoxins as Pharmaceuticals, Cosmeceuticals, and Drug Delivery Vehicles, 16th National Conference on Aerobiology & National Symposium on Biotechnology Applications in medicine and Environment, November 19-21st, 2010 at Davangere, Karnataka, India.
- 151.** Special lecture entitled "Scope and Source of Biotechnology, during 16th National Conference on Aerobiology & National Symposium on Biotechnology Applications in medicine and Environment, November 19-21st, 2010 at Davangere, Karnataka, India.
- 152.** Dr. B. K. Singh Memorial Lecture entitled "Unique Structure-Action and Biochemical Evolution of the Most Poisonous Poison Botulinum Neurotoxin, Department of Chemistry, Allahabad University, Allahabad, India, November 25, 2010.
- 153.** A presentation entitled "Role of Protein Dynamics in the Action of Botulinum Neurotoxins", presented at School of Life Sciences, Jawaharlal Nehru University, New Delhi, India, December 15, 2010.
- 154.** A presentation entitled "Origin, Evolution, and Structure-Action Relationship of Botulinum Neurotoxins", 4th International Conference on Natural Toxins, Suez Canal University, Ismailia, Egypt, December 20-22, 2010.
- 155.** A presentation entitled "Assays and Diagnostics of Biothreat Toxins",

Molecular Diagnostics Europe, London, UK, May 18-19, 2011.

156. A presentation entitled “Yoga and Ayurveda: Scientific Approach and Language to Examine and Promote Indian Traditional Knowledge and Practices, at Trindic Youth Camp, University of Massachusetts Dartmouth, July 3, 2011.

157. A presentation entitled “The Concept of *Vaiseshik* Elements of Substance in Modern Chemico-Physics” at the symposium on Science, Vedanta, and Foundations of Physics, University of Massachusetts Dartmouth, July 6-7, 2011.

158. An inaugural presentation on Symposium on the Origin of Indian Civilization, University of Massachusetts Dartmouth, July 8, 2011

159. A presentation entitled “Pluralism in Dharma”, Uberoi Fellow Teacher Training program, Center for Indic Studies, University of Massachusetts Dartmouth, July 18, 2011.

160. A presentation entitled “The Caste System – An Ongoing Social Issue”, Uberoi Fellow Teacher Training program, Center for Indic Studies, University of Massachusetts Dartmouth, July 25, 2011.

161. A presentation entitled “The Caste System – An Ongoing Social Issue”, Uberoi Fellow Teacher Training program, Center for Indic Studies, University of Massachusetts Dartmouth, July 25, 2011.

162. A presentation entitled “Scientific and Modern Practical Aspects of Varna, Jati, and Kula for Natural Traits, Freedom, and Social Training, World Association of Vedic Studies Conference, Piscataway, NJ, July 30-August 1, 2011.

163. A presentation entitled “Cellular Assays in Botulinum Research”, at the Botulinum Assay Workshop, Botulinum Research Center, University of Massachusetts Dartmouth, August 17, 2011.

164. A presentation entitled “Teacher Training Workshop Dharmic Traditions”, at the Experts Meeting of Uberoi Foundation, September 30, Los Angeles, CA.

165. A keynote presentation entitled “Indic Ideas, Science and Society”, IndiaFest 2011, Beaumont, TX, November 12, 2011.

167. A presentation entitled “Mahatma Gandhi's Chemistry of Satya and Ahimsa for Conflict Resolution, at “Eastern and Indigenous Perspectives on Sustainability and Conflict Resolution”, Nov 14,, 2011, Center for India Studies, University of South Florida, Tampa.

168. A distinguished lecture entitled “Chemistry of the Mind Approaching Mind and Consciousness Physicochemically to Advance Scientific Concepts”, *Maharishi University of Management, Fairfield, IA, December 11, 2011*

169. A seminar presentation entitled “Biological Manifestation of the Most Poisonous Poison, at School of Life Sciences, Jawaharlal Nehru University, New Delhi, India, December 29, 2011.

170. A keynote presentation entitled *Scientific Analysis of Vedantic Dharma of Matter and Consciousness, at 20th International Vedanta Congress, Jawaharlal Nehru University, New Delhi, India, December 31, 2011.*

171. A presentation entitled “Natural Herbal Compounds as Potent Antidotes against the Most Poisonous Poison, at Indo-US Workshop on “Green Chemistry for environments and sustainable development”, March 11-March 13, 2012, HNB Garhwal University, Dehradun, India

172. A presentation entitled “Veda and Thought Revolution”, at the Inaugural Session International Vedic Conference & 10th India Conference of WAVES, DSVV, Haridwar, March 14, 2012

173. A presentation entitled “Teaching and Learning Science through Experience and Subjective Objectivity, 10th World Association of Vedic Studies Conference, March 14-17, 2012, Dev Sanskriti University, Haridwar, India

174. A presentation entitled “*International Networking and Advancement of Indic Studies, Dev Sanskriti University, Haridwar, March 16, 2012.*

175. A presentation entitled “*The Dimensions of the Absolute: An Indian Scenario, at Zakir Hussain College, Delhi University, New Delhi, March 22, 2012.*

176. A presentation entitled “Current Issues of Botulinum Neurotoxin and Neuromedicine” at IPSEN-USA, May 1, 2012

177. A presentation entitled “Unique Enzyme Domain Folding of the Most Poisonous Poison, at the 18th Biennial Medical Chemical Defense Bioscience Review, May 24, 2012.

178. A presentation entitled “Modern Exploration of Indic Civilizational Values in Ramayana” at WAVES Conference, UMass Dartmouth, July 15, 2012.

179. A presentation entitled “Geography and Climate of India” at the Teacher Training Program sponsored by the Uberoi Foundation, UMass Dartmouth, July 23, 2012.

180. A presentation entitled “Introduction to Modern History and Culture of India” at the Teacher Training Program sponsored by the Uberoi Foundation, UMass Dartmouth, July 23, 2012.

181. A presentation entitled “Culture vs. Religion vs. Tradition” at the Teacher Training Program sponsored by the Uberoi Foundation, UMass Dartmouth, July 23, 2012.

182. A presentation entitled “Science of Veda Environmental Engineering and Issues” at Trindic Corps Youth Camp, UMass Dartmouth, July 30, 2012.

183. A presentation entitled “Youth Motivation” at Trindic Corps Youth Camp, UMass Dartmouth, August 1, 2012.

184. A presentation entitled “Botulinum Research Center: Future from the Past” at Sixth Botulinum Research Symposium, UMass Dartmouth, August 16-17, 2012.

185. A presentation entitled “How to Rescue Gandhi's Integrated Approach of Freedom through Self Reliant Education of Youth?” at Gandhirama 12, Jawaharlal Nehru University, New Delhi, India, August 21, 2012.

186. A seminar entitled “Development of Natural and Synthetic Compounds as Antidotes to the Most Poisonous Poison” at Department of Chemistry, Allahabad University, August 27, 2012.

187. A seminar entitled “Ancient Philosophy and Modern Science”, at the Department of Philosophy, Allahabad University, India, August 27, 2012.

188. A seminar entitled” Scientifying the Sanskrit vs. Sanskritizing the Science” at Special Center for Sanskrit Studies, Jawaharlal Nehru University, New Delhi, India, September 3, 2012.

189. A seminar entitled “Kissa Avadhi Kai (the Story of Avadhi)” at the Special Center for Sanskrit Studies, Jawaharlal Nehru University, New Delhi, India, September 3, 2012.

190. A presentation entitled “Science and Religion: Conflict and Resolution” at Providence Vedanta Society, September 9, 2012.

191. A presentation entitled “Concepts for the Revival of Traditional Links between India and South East - East Asia for Global Leadership” at the International Conference On South-East-East Asia and India: Historical Interconnections in Art, Architecture and Culture of Laos, Thailand, Cambodia and Vietnam, Centre for Indic-

Asian Studies, BHAGAT PHOOL SINGH MAHILA VISHWAVIDYALAYA, Khanpur Kalan, Sonapat, Haryana, India, 18-20 January 2013

192. A presentation entitled “Physics, Chemistry, and Biology of Sanskrit and Vice Versa” at the International seminar on Language and Power: Perspectives, Issues and Impact, Special Center for Sanskrit Studies, J.N.U in collaboration with University of Illinois, Urbana-Champaign, USA and Central Institute of Indian Languages, Mysore, April 6-7, 2013.

193. An invited presentation entitled “Delhi to Dartmouth – Lessons from the journey of an Asian American” as part of Annual Asian-Pacific American Heritage Month Celebration, Bristol Community College, Fall River, MA, April 9, 2013.

194. A presentation entitled “Chemistry of Yoga: A Mechanism to Create and Unite the World”, Holistic at a Workshop on Science and Art of Living, UMass Dartmouth, June 30, 2013.

195. A presentation entitled “Applying the Knowledge of Yoga and Bhagvad Gita for Science and Health Education”, at the 21st International Congress of Vedanta, July 11-14, 2013.

196. A presentation entitled “Practical Ayurved at TRINDICORPS Youth Camp, UMass Dartmouth, July 30, 2013,

197. A presentation entitled “In vivo toxicity and immunological characterization of detoxified recombinant Botulinum neurotoxin type A” at the 7th Annual Botulinum Research Symposium, UMass Dartmouth, August 14-16, 2013.

198. A presentation entitled “Language, Education, and Society” at the seminar on India's education Policy and Sanskrit, August 30, 2013.

199. A presentation entitled “UMass Dartmouth Indian Student Orientation” at UMass Dartmouth, October 4, 2013.

200. A panel presentation entitled “Panel of Safety and Regulation of Botulinum Neurotoxin Research- Implication of new Tier 1 Select Agent regulations” at IBRCC, 2013, Annapolis, MD, October 21, 2013.

201. A keynote speech entitled “Cultural Narrative of Avadhi Language and its Socio-Political implications through Ramayana for the Modern Globalized World” at the International Research Seminar on “Social Relevance of Literature and Global Context of Culture, P. G. Autonomous College, Shahadol, India, October 26-28, 2013.

202. An inaugural keynote presentation entitled “Scientific Explorations into Understanding the nature of Consciousness” at the International Conference On the

Nature of Consciousness: Classical and Contemporary Debates in Vedanta Philosophy, Department of Philosophy, Assam University, Silchar, India, November 21-14, 2013.

203. A workshop entitled “Teacher Training Program on Dharmic Traditions”, Hindu University of America, Orlando, FL, February 8, 2014.

204. A workshop entitled “Teacher Training Program on Dharmic Traditions”, Tampa, FL, February 9, 2014.

205. A seminar entitled “Swami Vivekananda Message of Modern Youth”, at Jawaharlal Nehru University, New Delhi, February 17, 2014.

206. Inauguration Chief Guest Speech entitled “Need and Utility and Use of Upanishadic Thoughts”, at International Conference on Upanishads, Allahabad University, Allahabad, India, February 18, 2014.

207. A seminar entitled, “Science, Sanskrit, and Society”, at Jagat Taran Girls Degree College, Allahabad, India, February 20, 2014.

208. A seminar entitled, “Vedantic Vision – Art of Living in Modern Times”, at Rajdhani College, University of Delhi, March 4, 2014.

209. A 3-day workshop entitled, “Science and Technology for Sanskrit Scholars”, at the Center for Sanskrit Studies, Jawaharlal Nehru University, New Delhi, March 10-12, 2014.

210. A seminar presentation entitled, “Beginning and More Beginning of Science, at the three day workshop on Science and Technology for Sanskrit Scholars, Jawaharlal Nehru University, New Delhi, March 10, 2014.

211. A seminar entitled “Role of Structure and Dynamics in the Unique Selectivity and Effectiveness of the Most Poisonous Poison - the Botulinum Neurotoxin, at the Department of Biomedical and Pharmaceutical Sciences, University of Montana, Missoula, MT, April 11, 2014.

212. A presentation entitled “Interplay between Protein Folding and Inhibitor Development for Botulinum Neurotoxins” at 19th Biennial Medical Chemical Defense Bioscience Review, May 12-15, 2014, Hunt Valley, MD.

213. A seminar entitled “Marching Forward in 21st Century, at Jagoworld Youth Workshop, Walpole, MA, May 17, 2014.

8. TEACHING EXPERIENCE:**COURSES TAUGHT/TEACHING:****Graduate:**

Physical Biochemistry (8 semesters)
Biophysical Techniques (1 semester)
Biochemistry Laboratory (14 semesters)
Biochemistry II (1 semester)
Biological Spectroscopy (3 semesters)
Fluorescence Spectroscopy for Biochemists (1 semester)
Chemistry of the Mind (5 semesters)
Chemical Biology and Technology (2 semesters)
Graduate Seminar (1 semester)

Undergraduate:

General Chemistry I (1 semester)
General Chemistry II (5 semesters)
General Chemistry Laboratory I (7 semesters)
General Chemistry Laboratory II (1 semester)
Introduction to Experimental Chemistry (1 semester)
Biochemistry Laboratory (13 semesters)
Undergraduate seminar (2 semesters)
Science of Kriyayoga (7 semesters)

9. STUDENT ADVISEMENT:**Visiting Scholars and Sabbatical visitors**

1. Professor (Mrs.) Nibedita Mukhopadhyay, IIT Kanpur, India (May 2004- July 2004)
2. Professor V. K. Das, Avadh University, India (June 2004- January 2005)
3. Professor (Mrs.) Shobha Das, Avadh University, India (September 2004-January 2005)
4. Professor David Busath, Brigham Young University (2006)
5. Professor Timothy Su, UMass Dartmouth (2004)
6. Professor Girish Jha, Jawaharlal Nehru University, India (2010-2013, Summer visits)
7. Dr. Yvette Rosser (2011)

Post-doctoral

1. Dr. S. K. Sharma (1994-2002)

2. Dr. H. D. Shukla (1996-1999)
3. Dr. Diana Ivanova (1999-2001)
4. Dr. Yu Zhou (1999-2008)
5. Dr. JingZhong Zhang (2000-2003)
6. Dr. Brian Blanchette (2001-2003)
7. Dr. Haihang Wang (2003-2011)
8. Dr. Roshan Kukreja (2007-2010)
9. Dr. Nagarajan Thirunavukkarsu (2007-2013)
10. Dr. Easwaran Ravichandran (2006-2013)
11. Dr. Pinke Fang (2008-2012)
12. Dr. Raj Kumar (2012-present)

Technical Research Assistant/Staff

Paul Lindo	1994 – 2013
Linda Barcomb-Caddle	1997-1998
Steve Riding	2002 – 2014
Wei Ping Yang	2004 – 2008
Jenny Davis	2007- 2013

Graduate:Current students

1. Harkiranpreet Kaur Dhaliwal (current Ph.D. student)
2. Mario Oliveira (current Ph.D. student)
3. Thomas Feltrup (current Ph.D. student)
4. Sirisha Mukkavali (current PhD student)

Former students

1. Ms. Fen-Ni Fu (M.S.; 1992; Ph.D., 1997)
2. Mr. Xu-hai Be (M.S., 1992)
3. Mr. David Ledoux (M.S.; 1994)
4. Mr. Yuhong Hu (M.S., 1995)

Placement

Scientist, Alkermese, Cambridge,
MA

Nissin Research
Inst, Boston,MA

Instructor, Naval Education
and Training Center,
Newport, RI

Senior Scientist, Cooley Group
Pawtucket, RI

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5. Ms. Melissa Silvia (M.S.; 1995) Scientist, Ciba-Corning, Boston, MA
 6. Mr. Zhong Zhang (M.S., 1996) Immunologic, Inc., Boston, MA
 7. Ms. Li Li (M.S.; 1997; Ph.D. 2000) Infimed, Cambridge, MA
 8. Mr. Mujibur Rahman (former M.S. student, 1993-1994) Long Island State Univ
 9. Mr. Towhid Hasan (former M.S. student, 1994-1995) M.S. degree with Dr. Wechter at UMass Dartmouth
Ph.D. candidate, Iowa State Univ.
 10. Ms. Bilian Li (M.S., 1997) Millenium Pharmaceutical, Inc., Boston, MA
 11. Ms. Sweta Parikh (M.S., 1998) Research Assistant, Creative BioMolecules, Hopkinton, MA
 12. Mr. Shuowei Cai (MS, 1999; Ph.D. 2001) Alkermese, Cambridge, MA
 13. Ms. Hong Yin (incomplete) Ph.D. candidate, Ohio State University
 14. Mr. James Kang (incomplete) Ph.D. candidate, University of Pennsylvania
 15. Mr. Yi Sun (M.S., 1999) Ph.D. candidate, New York University
 16. Mr. Dean Lee (M.S., 1999) Ph.D. candidate, New York Polytechnic University
 17. Ms. Erin Santos (M.S., 2003) Research Assistant, Biotechnology
 18. 17. Robin Nunes (M.S., 2004) Defense Contract Lab
 19. Krishna Chellapalli Information Technology industry
 20. Suzanne Shoosmith (M.S. 2005) Research Assistant, Alkermese, Cambridge, MA

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| 21. Amarnath Chennamaraju (joint with ECE) | Information Technology
industry |
| 22. Roshan Kukreja (Ph.D.2006) | Research Associate, UMass
Dartmouth |
| 23. Jiping Zhou (MS, 2007) | PhD. Student, University of
North Carolina |
| 24. Zhenjun Wang (Incomplete MS) | |
| 25. Sean Foss (MS, 2007) | Medical Student, College of
Naturopathic Medicine,
University of, Bridgeport, CT |
| 26. Sapna Sharma (MS 2007) | Research Associate, Joule
Unlimited Technology,
Boston, MA |
| 27. Tzoo-Wang Chang (PhD, 2011) | Research Associate, Harvard
Medical School, Cambridge,
MA |
| 28. Anne-Marie Bryant (MS, 2012) | PhD student, Worcester
Polytechnic Institute |
| 29. Michael Morse (Incomplete, MS) | Research Associate, Broad
Institute of MIT, Cambridge,
MA |
| 30. Michael Goykhman (MS, 2011; Incomplete PhD) | Echo Therapeutics, MA |
| 31. Thomas Feltrup (MS, 2012) | PhD student, UMass
Dartmouth/UMass Lowell
program |
| 32. Raj Kumar (PhD, 2012) | Research Associate, UMass
Dartmouth |
| 33. Koyel Ghosal (PhD, 2014) | |
| 34. Gowri Chellappn (PhD, 2014) | Scientist, Cubist
Pharmaceuticals |
| 35. Kruti Vasa Patel (PhD, 2014) | Research Associate, Institute
of Advanced Sciences |

Graduate Thesis/Dissertation Committee Member (present and past):

1. Ms. Fen-Ni Fu
2. Mr. Xu-hai Be
3. Mr. Zhan Shi
4. Ms. Jun Xue
5. Mr. Zhong Zhang
6. Mr. David Ledoux
7. Mr. Yuhong Hu
8. Ms. Melissa Silvia
9. Mr. Mujibur Rahaman
10. Mr. Towhid Hasan
11. Ms. LyLi
12. Ms. Madhusmita Mitra
13. Ms. Sweta Parikh
14. Mr. Ling Chen
15. Mr. X. Huang
16. Ms. Bilian Li
17. Mr. Yi Sun
18. Ms. Hong yin
19. Mr. S. Cai
20. Mr. James Kang
21. Mr. Dean Lee
22. Mr. Brian Blanchette
23. Mr. Saurabh Bhalerao
24. Mr. Praveen Singhal
25. Mr. Krishna Challapalli
26. Ms. Robin Nunes
27. Ms. Erin Laperriere/Santos
28. Mr. Naveen Bommareddy
29. Ms. Suzzanne Medeiros
30. Mr. Alex Chang
31. Ms. Roshan Kukreja
32. Ms. Ghuncha Ambrin
33. Ms. Sapna Sharma
34. Mr. C. Wang
35. Amarnath Chennamaraju
36. Mr. Sean Foss
37. Mr. Arindam Chaudhury
38. Mr. Jiping Zhou
39. Ms. Xia Feng
40. Mr. Mario Oliveira
41. Ms. Koyel Ghosal
42. Ms. Abla Tannous
43. Mr. Michael Morse
44. Ms. Pavithra Janardhanan

45. Ms. Harkiranpreet Dhaliwal
46. Michael Goykhman
47. Mr. Taylor Souza
48. Ms. Kruti Vasa Patel
49. Mr. Thomas Feltrup
50. Ms. Gowri Chellappan
51. Ms. Sirisha Mukkavalli

Undergraduate:

Current students

Former students

1. Ms. Karen Foster
2. Ms. Terry Lopes
3. Ms. Jennifer Doyle
4. Ms. Michelle Poirier
5. Mr. John Teixeira
6. Ms. Catherine LaFontaine
7. Mr. Daniel DeOliviera
8. Mr. Michael Zanis
9. Ms. Jie Ge
10. Mr. Brian Blanchette
11. Mr. Vinu Zachariah
12. Ms. Nancy Walsh-Sayles
13. Mr. Robert Boulanger
14. Ms. Robin Holzer
15. Ms. Gina Sardinha
16. Ms. Erin Eastwood
17. Mr. Erik Puffer
18. Ms. Colleen Boswell
19. Mr. Ricardo DeSouza
20. Betty Medeiros
21. Ms. Robin Nunes

Placement

Research Chemist, SAIC
 Ph.D. candidate SUNY Buffalo
 Ph.D. candidate at UC-Berkeley
 Ph.D. candidate at UC-Berkeley
 M.S. candidate, UMass Dartmouth
 Springborn, Marion, MA
 Ph.D. candidate at Boston Univ
 Ph.D. candidate, Washington State
 University
 Ph.D. candidate, MIT
 Ph. D. student at UMass Dartmouth
 Mass General Hospital
 Pfizer
 Ph.D. candidate, Boston College
 Medical Student, Albany Medical Center
 Boston Medical Center
 Ph.D. candidate, Boston University
 Ph.D. candidate, University of Wisconsin-
 Madison
 Medical student, UMass Worcester Medical
 School
 Medical student, UMass Worcester Medical
 School
 Medical student, UMass Worcester Medical
 School
 Ph.D. candidate, UMass Dartmouth/Lowell

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| 22. Ms. Erin LaPerriere | Ph.D. candidate, UMass Dartmouth/Lowell |
| 23. Ellen McNally | Chiropractic School, NY |
| 24. Mathew Stankiewicz | - |
| 25. Ms. Amelia Thomas | Research Assistant, MIT |
| 26. Patrick Kielty (from Stonehill College) | UMass Amherst |
| 27. Greg Pask (from Muhlenberg College, PA) | PhD candidate |
| 28. Ms. Sangita Murali Rajagopalan | Medical student, St. John's Medical School |
| 29. Kristina Lopes | Inside Chemistry Specialist, Waters, Milford, MA |
| 30. Ausubel Pichardo | Dominical Republic Army |
| 31. Brendan Kenyon | Brigham & Women's Hospital/Harvard Institute of Medicine |
| 32. Alessandra Geffner-Smith (Mt. Holyoke College) | PhD student, University of Padova |
| 33. Hymlaire Lamisere | Tufts University research program |
| 34. Kevin Vilaire | US Army |

10. STUDENT RESEARCH AWARDS (based on research with B.R.Singh)

32. Brendan Kenyon, awarded UMass Dartmouth Office of Undergraduate Research grant for a project entitled "Effect of LC/A and LC/E on Neurotoxicity", Fall 2013.
31. Kevin Vilaire, awarded UMass Dartmouth Office of Undergraduate Research grant for a project entitled "Comparison of Protein Profiles of Human (M17) Neuroblastoma Cells with and without treatment of C-terminal Heavy Chain of Botulinum neurotoxin", Fall 2013.

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30. Mr. Hymlaire Lamisere, awarded UMass Dartmouth Office of Undergraduate Research grant for a project entitled “Polymer Scaffolds for Designing Botox Patch Delivery System”, Fall 2013.
 29. Ms. Gowri Chellappan (graduate student) won Travel Award from the Northeastern Section of the American Chemical Society to the German Exchange Program for Fruehjahrs symposium during March 16-18, 2012.
 28. Dr. Yu Zhou, ASBMB Travel Award for the annual meeting in Washington, DC, April 28-May 1, 2007.
 27. Ms. Sapna Sharma (graduate student) won Travel Award from the Northeastern Section of the American Chemical Society to the German Exchange Program for Fruehjahrs symposium during March 16-18, 2006.
 26. Ms. Ghuncha Ambrin (graduate student) received Honorary Mention at the Poster Session Competition of MEDI (Biomedical Engineering Alliance and Consortium) Conference 2005, University of Connecticut, Storrs, October 2005.
 25. Ms. Ghuncha Ambrin (a graduate student) won the Best Poster Award at the 1st Annual Biomedical Research Symposium, April 22, 2005, University of Massachusetts Lowell.
 24. Miss Amelia Thomas (undergraduate student) won the First Prize in Chemistry presentation at the 10th Undergraduate Research, Scholarly, Creative, and Public Service Activities, Massachusetts Public System of Higher Education, Boston, April, 2004.
 23. Mr. Erik Puffer (undergraduate student) won the First Prize in Chemistry presentation at the 5th Annual Undergraduate Research, Scholarly, Creative, and Public Service Activities, Massachusetts Public System of Higher Education, Boston, April, 1999.
 22. Miss Gina Sardinha (undergraduate student) won the First Prize in Biology presentation at the 5th Annual Undergraduate Research, Scholarly, Creative, and Public Service Activities, Massachusetts Public System of Higher Education, Boston, April, 1999.
 21. Miss Erin Eastwood (undergraduate student) won the Second Prize in Chemistry presentation at the 5th Annual Undergraduate Research, Scholarly, Creative, and Public Service Activities, Massachusetts Public System of Higher Education, Boston, April, 1999.
 20. Mr. Shuowei Cai (graduate student) won the Philip Levine Prize from the Northeastern Section of the American Chemical Society on May 13, 1999, for his excellent graduate research work in Analytical Organic Chemistry.

19. Miss Erin Eastwood (undergraduate student) successfully competed for a travel award (\$250 plus registration fee) from *American Society for Biochemistry and Molecular Biology* to present a paper at Society's annual meeting and International Congress in San Francisco, CA, May 16-20, 1999
18. Mr. Erik Puffer (undergraduate student) won the Top Prize in an Undergraduate Research Competition at the International Congress of Biochemistry and Molecular Biology, May 16-20, 1999.
17. Mr. Erik Puffer (undergraduate student) successfully competed for a travel award (\$250 plus registration fee) from *American Society for Biochemistry and Molecular Biology* to present a paper at Society's annual meeting and International Congress in San Francisco, CA, May 16-20, 1999.
16. Mr. Robert Boulanger, Jr. was selected as one of the two national recipients of the 1998 Award for Excellence in Undergraduate Research in Agricultural Chemistry, Division of Agriculture and Food Chemistry, American Chemical Society.
15. Mr. Robert Boulanger, Jr. received Grant-in-Aid from the Northeastern Section of American Chemical Society to attend and present a paper entitled "Light Regulation of Flavonol and Anthocyanin Biosynthesis in Cranberry Plants" at the 215th National Meeting of the American Chemical Society, March 30, 1998.
14. Mr. Brian Blanchette (undergraduate student) won First Place in an Undergraduate Research Competition at the International Congress of Biochemistry and Molecular Biology, August 23-28, 1997.
13. Mr. Brian Blanchette (undergraduate student) successfully competed for a travel award (\$250 plus registration fee) from *American Society for Biochemistry and Molecular Biology* to present a paper at Society's annual meeting and International Congress in San Francisco, CA, August 24-29, 1997.
12. Mr. Brian Blanchette (undergraduate student) successfully competed for the UMass Dartmouth Honors Program Undergraduate Research Grant to study "*Detection, isolation and structure-function relationship of glutathione-S-transferases of shellfish from PCB-contaminated areas of New Bedford Harbor*" (\$500) in the Spring 1997.
11. Mr. Robert Boulanger (undergraduate student) successfully competed for the UMass Dartmouth Honors Program Undergraduate Research Grant to study "*Phytochrome-mediated regulation of anthocyanin biosynthesis in cranberry plants and fruits*" (\$400) in the Spring 1997.

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10. Mr. Vinu Zachariah (undergraduate student) successfully competed for the UMass Dartmouth Honors Program Undergraduate Research Grant to study "*Biochemical basis of plant aging*" (\$350) in the Spring 1997.
 9. Mr. Robert Boulanger successfully competed for the 1997 Flack Norris award with a research proposal entitled "Molecular Basis and Mechanism of Light Regulation of Anthocyanin Biosynthesis in Cranberry Plants and Fruits."
 8. Ms. Fen-Ni Fu (Ph.D. student) was nominated for the Philip L. Levine Memorial Prize for the outstanding graduate student pursuing Ph.D. degree. The awardee selected is by the Northeastern Section of the American Chemical Society. She won the 1995 prize along with a graduate student from Brandeis University.
 7. Ms. Fen-Ni Fu (Ph.D. student) successfully applied for a Travel Award to attend the Protein Society meeting in Boston, MA during July 1995.
 6. Ms. Jie Ge (undergraduate student) successfully competed for the 1994 James Flack Norris Summer Research Scholarship with a research proposal entitled "Detection, Isolation, and Structure-Function Relationship of Glutathione-S-Transferase, a Detoxifying Enzyme, from Marine Organisms."
 6. Ms. Fen-Ni Fu (Ph.D. student) was nominated for the participation in a short course on Fourier Transform Spectrometry during the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Detroit, MI, October 16-17, 1993. She was one of the two students selected nationally for the course.
 4. Ms. Michelle Poirier (undergraduate student) successfully competed for the 1993 James Flack Norris Summer Research Scholarship with a research proposal entitled "Enzymatic activity of glutathione-S-transferase in non-aqueous solvents"
 3. Ms. Michelle Poirier (undergraduate student) successfully competed for the 1992 Pfizer Summer Research Fellowship with a research proposal entitled "Enzymatic activity of glutathione-S-transferase in non-aqueous solvents"
 2. Mr. Daniel DeOliveira (undergraduate student) participated in student research competition at American Association of Advancement of Science Annual Meeting, February 11-16, 1993, Boston, MA, for his research entitled "Estimation of protein secondary structures using the amide III region of Fourier transform infrared spectroscopy". Won second prize in the physical sciences competition.
 1. Karen Foster (undergraduate student) submitted on March 6, 1992, a paper entitled "Spectroscopic Analysis of the Structural Basis of Enzymatic Activity in Non-Aqueous Solvents" for Waldo Semon Undergraduate Research Symposium. She was selected as one of the six finalists for the Symposium.

11. RESEARCH EXPERIENCE:

1979-1983: Structure-function studies of chloroplast membranes, School of Life Sciences, Jawaharlal Nehru University, New Delhi, India.

1983-1987: Molecular topography and binding properties of phytochrome and other tetrapyrrolic proteins, Department of Chemistry, Texas Tech University.

1987-1990: Structure-function studies of botulinum, tetanus and staphylococcal toxins, Food Research Institute, University of Wisconsin, Madison.

1990-present: Molecular mode of action of botulinum and tetanus neurotoxins; molecular basis of enzymatic activity in organic solvents; Department of Chemistry, University of Massachusetts Dartmouth.

1999-present: Science of philosophy and its relationship to ancient and modern society

12. MEMBERSHIP IN PROFESSIONAL SOCIETIES:

American Society for Biochemistry and Molecular Biology (1990-present)

American Association for the Advancement of Science (1988-present)

American Chemical Society (1988-present)

American Society for Microbiology (1995-present)

American Society for Photobiology (1983-1993)

International Society on Toxinology (1988-2012)

New York Academy of Sciences (1991-2010)

Society for Applied Spectroscopy (1990-2005)

Sigma Xi (1992-present)

The Protein Society (1990-2012)

13. PUBLICATIONS:

A. Chemistry related Publications

1. Chellappan, G., Kumar, R., Cai, S. and Singh, B. R. (2014) Role of Neurotoxin Associated Proteins in the Low pH Induced Structural Changes in the Botulinum Neurotoxin Complex. *The Protein Journal*, 33, Issue 6, pp 557-564
2. Kumar R, Kukreja RV, Cai S, Singh BR. (2014) Differential role of molten globule and protein folding in distinguishing unique features of botulinum neurotoxin. *Biochim Biophys Acta*. 2014 Jun; 1844(6):1145-52. doi: 10.1016/j.bbapap.2014.02.012. Epub 2014 Feb 22. PMID: 24568862

3. Patel K, Cai S, Singh BR. (2014) Current strategies for designing antidotes against botulinum neurotoxins. *Expert Opin Drug Discov.* 2014 Mar;9(3):319-33. doi: Epub 2014 Feb 13. PMID: 24520991.
4. Kumar R, Kukreja RV, Li L, Zhmurov A, Kononova O, Cai S, Ahmed SA, Barsegov V, Singh BR. (2014) Botulinum neurotoxin: unique folding of enzyme domain of the most-poisonous poison. *J Biomol Struct Dyn.* 2014;32(5):804-15. doi: 10.1080/07391102.2013.791878. Epub 2013 Jun 8. PMID: 23746226.
5. Janardhanana, P., Mello, C. M, Singh, B. R., Lou, J. Marks, J. D. and Cai, S. (2014) RNA aptasensor for rapid detection of natively folded type A botulinum neurotoxin. *Talanta.* In press.
6. Bryant AM, Cai S, Singh BR. (2013) Comparative immunochemical characteristics of botulinum neurotoxin type A and its associated proteins. *Toxicon.* 2013 Sep;72:126-32. doi: 10.1016/j.toxicon.2013.06.011. Epub 2013 Jun 28. PMID: 23811077
7. Baskaran P, Lehmann TE, Topchiy E, Thirunavukkarasu N, Cai S, Singh BR, Deshpande S, Thyagarajan B. (2013) Effects of enzymatically inactive recombinant botulinum neurotoxin type A at the mouse neuromuscular junctions *Toxicon.* 2013 Sep;72:71-80. doi: 10.1016/j.toxicon.2013.06.014. Epub 2013 Jun 25. PMID: 23810945
8. Bryant, A.-M, Davis, J. Cai, S. and Singh, B. R. (2013) Molecular Composition and Extinction Coefficient of Native Botulinum Neurotoxin Complex Produced by *Clostridium botulinum* Hall A Strain. *Protein Journal*, 32(2), 106-117.
9. Feltrup, T. M. and Singh, B. R. (2012) Development of a Fluorescence Internal Quenching Correction Factor to Correct BoNT/A Endopeptidase Kinetics Using SNAPtide. *Anal Chem.* 84,10549-10553
10. Lakshminarasimhan, D., Kumarana, D., Agarwal, R. Singh, B. R. and Swaminathan, S. (2012) Cloning, Expression and Purification of Botulinum Neurotoxin Type A Heavy chain – Crystallographic Evidence for a Putative Tetrameric Pore. *The Botulinum Journal*, 2, 135-149.
11. Kumar R, Zhou Y, Ghosal K, Cai S, Singh BR. (2012) Anti-apoptotic activity of hemagglutinin-33 and botulinum neurotoxin and its implications to therapeutic and countermeasure issues. *Biochem Biophys Res Commun.* 417,726-731.
12. Shah A., Rasapalli, S., Mello C., Singh BR, Cai S (2012) Antibacterial activities of commonly used traditional Chinese medicines as cold and flu remedies, *J Med. Plants Res.*, 6, 234-242.
13. Anderson, G. P., Zabetakis, D., Bernstein, R. D., Cai, S. Singh, B. R. and Goldman, E. R. (2011) Evaluation of anti-hemagglutinin Hn-33 single domain antibodies: kinetics, binding epitopes, and thermal stability. *The Botulinum Journal*, 2, 56-68.

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14. Thirunavukkarasu N., Ghosal, K. J., Kukreja, R., Zhou, Y., Dombkowski, A., Cai, S. and Singh, B.R. (2011) Microarray analysis of differentially regulated genes in human neuronal and epithelial cell lines upon exposure to type A botulinum neurotoxin. *Biochem Biophys Res Commun.* 405, 684-690.
 15. Fang, P. K., Raphael, B. H., Maslanka, S. E., Cai, S. and Singh, B. R. (2010) Analysis of genomic differences among Clostridium botulinum type A1 strains. *BMC Genomics.* 11, 725.
 16. Thirunavukkarasu, N., and B.R. Singh (2010). Structure and trafficking potentials of Botulinum Neurotoxin in drug delivery. *The Botulinum Journal, 1*, 349-357.
 17. Wang, H. H., Riding, S., Lindo, P. and Singh, B. R. (2010) Endopeptidase activities of botulinum neurotoxin type B complex, holotoxin, and light chain. *Appl. Environ. Microbiol.* 76, 6658-6663.
 18. Hale, M., Riding, S. and Singh, B. R. (2010) Near-infrared imaging of balb/c mice injected with a detoxified botulinum neurotoxin A. *The Botulinum J. 1*, 431-441.
 19. Chang, T. W., Blank, M., Janardhanan, P., Singh, B. R., Mello, C., Blind, M. and Cai S. (2010) In vitro selection of RNA aptamers that inhibit the activity of type A botulinum neurotoxin. *Biochem Biophys Res Commun.* 396, 854-860.
 20. Kukreja, R. V., Sharma, S. K., Singh, B. R. (2010) Molecular basis of activation of endopeptidase activity of botulinum neurotoxin type E, *Biochemistry*, 49, 2510-2519.
 21. Frank J. Lebeda, Regina Z. Cer, Uma Mudunuri, Robert Stephens, Bal Ram Singh and Michael Adler (2010) The Zinc-Dependent Protease Activity of the Botulinum Neurotoxins. *Toxins 2*, 978-997
 22. Singh, B. R., Thirunavukkarasu, N., Ghosal, K., Ravichandran, E., Kukreja, R., Cai, S. (2010) Clostridial neurotoxins as a drug delivery vehicle targeting nervous system, *Biochimie 92*, 1252-1259.
 23. Shukla, H. D. and Singh, B. R. (2009) Hemagglutinin-33 in the neurotoxin complex of type A *Clostridium botulinum* is a Heat Shock Protein. *The Botulinum J. 1*, 309-317.
 24. Singh, B. R. (2009) The second annual Dartmouth botulinum research symposium discusses the effect of botulinum neurotoxin on the central nervous system. *The Botulinum J. 1*, 340-346.
 25. Zhang, P., Ray, R., Singh, B. R., Li, D., Adler, M. and Ray, P. (2009) An efficient drug delivery vehicle for botulism countermeasure. *BMC Pharmacol.* 9, 12.

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26. Cai, S., Lindo, P., Park, J. B., Vasa, K. and Singh, B. R. (2010) The Identification and Biochemical Characterization of Drug-Like Compounds that Inhibit Botulinum Neurotoxin Serotype A Endopeptidase Activity. *Toxicon*, 85, 818-826.
 27. Feng, X. and Singh, B. R. (2009) Molecular identification of glutathione S-transferase gene and cDNAs of two isoforms from northern quahog (*Mercenaria mercenaria*). *Comp Biochem Physiol B Biochem Mol Biol*. 154, 25-36.
 28. Kukreja, K., Chang, T.Z., Cai, S., Lindo, P., Riding, S. Zhou, Y., Ravichandran, R. and Singh, B. R. (2009) Immunological characterization of the Subunits of Type A Botulinum Neurotoxin and Different Components of its Associated Proteins. *Toxicon*, 53, 616-624.
 29. Sharma, S., Cai, S., and Singh, B. R. (2008) Here a method, there a method, everywhere many methods. What should a laboratory do to validate an assay for the detection of botulinum neurotoxins? *The Botulinum J* 1, 183-198.
 30. Yang, Y., Lindo, P., Riding, S. Chang, T. W., Cai, S., Van, T., Kukreja, R., Zhou, Y., Vasa, K. and Singh, B. R. (2008) Expression, Purification and Comparative Characterization of Enzymatically Deactivated Recombinant Botulinum Neurotoxin Type A. *The Botulinum Journal*, 1, 219-241.
 31. Kukreja, R. and Singh, B. R. (2007) Comparative Role of Neurotoxin-Associated Proteins in the Structural Stability and Endopeptidase Activity of Botulinum Neurotoxin Complex Types A and E. *Biochemistry*. 46, 14316-14324.
 32. Zhou, Y. and Singh, B. R. (2007) Characterization of Environmental Stress-Regulated Anthocyanin Production and Growth of Cranberry Callus. *Journal of Applied Horticulture*, 9, 17-21.
 33. Cai, S., Singh, B. R., Sharma, S. (2007) Botulism Diagnostics: from Clinical Symptoms to in vitro Assays, *Critical Reviews in Microbiology*, 33,109-125.
 34. Blanchette, B. N., Feng, X. and Singh, B. R. (2007) Marine Glutathione-S-transferases. *Marine Biotechnology*, 9, 513-542.
 35. Blanchette, B. N. and Singh, B. R. (2007) A High Pressure Liquid Chromatography-Based Assay For Glutathione-S-Transferase Class Distinction Assay. *J. Biochem. Biophys. Meth.* 70, 761-765.
 36. Cai, S., Singh, B. R. (2007) Strategies to Design Inhibitors of Clostridium botulinum Neurotoxin, *Infectious Disorders - Drug Targets* 7, 47-57..
 37. Cai, S., Kukreja, R., Shoesmith, S., Chang, T. Z. and Singh, B. R. (2006) Botulinum Neurotoxin Light Chain Refolds at Endosomal pH for its Translocation. *Protein J.*, 25, 455-462.

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38. Kukreja, R., Sharma, S., Cai, S. and Singh, B. R. (2007) Role of Two Active Site Glu Residues in the molecular Action of botulinum neurotoxin endopeptidase. *Biochim. Biophys. Acta* 1774, 213-222.
 39. Singh, B. R. (2006) Botulinum neurotoxin structure, engineering, and novel cellular trafficking and targeting. *Neurotoxicity Res.* 9, 73-92.
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 41. Parikh, S. and Singh, B. R. (2007) Comparative Membrane Channel Size and Activity of Botulinum Neurotoxins A and E. *Protein J.* 26, 19-28.
 42. Sharma, S., Zhou, Y., Singh, B. R. (2006) Cloning, expression, and purification of C-terminal quarter of the heavy chain of botulinum neurotoxin type A, *Protein Expr Purif.* 45, 288-295..
 43. Kukreja, R. and Singh, B. R. (2005) Biologically active novel conformational state of botulinum, the most poisonous poison. *J Biol. Chem.* 280, 39346-39352.
 44. Zhou, Y., Foss, S., Lindo, P., Sarkar, H. and Singh, B. R. (2005) Hemagglutinin-33 of type A botulinum neurotoxin complex binds with synaptotagmin II. *FEBS Journal*, 272, 2717-2726.
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 46. Sharma, S. K. and Singh, B. R. (2004) Botulinum toxin in neurological diseases. *Saudi Arabian J. Rehabilitation.* 10, 111-117.
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 48. Sharma, S. K. and Singh, B. R. (2004) Enhancement of the Endopeptidase Activity of Purified Botulinum Neurotoxins A and E by an Isolated Component of the Native Neurotoxin Associated Proteins, *Biochemistry*, 43, 4791-4798.

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49. Zhou, Y. and Singh, B. R. (2004) Cloning, high-level expression, single-step purification, and binding activity of His(6)-tagged recombinant type B botulinum neurotoxin heavy chain transmembrane and binding domain. *Protein Expr Purif.* 34, 8-16.
 50. Cai, S. and Singh, B. R. (2004) A Distinct Utility of Amide III Infrared Band for Secondary Structure Estimation of Aqueous Protein Solutions Using Partial Least Square Methods, *Biochemistry*, 43, 2541-2549
 51. Sharma, S. K., Ramzan, M. A. and Singh, B. R. (2003) Separation of the Components of Type A Botulinum Neurotoxin Complex by Electrophoresis. *Toxicon* 41, 321-331.
 52. Blanchette, B. N. and Singh, B. R. (2003) An enzyme based dechlorination of a polychlorinated biphenyl (PCB) mixture, Aroclor 1248, using glutathione S-transferases from the northern quahog *Mercinaria mercinaria*. *J. Protein Chem.* 22, 377-386.
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 54. Zhou, Y. and Singh, B. R. (2002) Red Light Activates Flowering and Anthocyanin Biosynthesis in American Cranberry. *Plant Growth and Regulation* 38, 165-171
 55. Blanchette, B.N. and Singh, B.R. (2002) Induction of Glutathione-S-Transferase in the Northern Quahog *Mercinaria mercinaria* after Exposure to Aroclor 1248. *J. Protein Chem.* 21, 489-494.
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 57. Blanchette, B.N. and Singh, B.R. (2002) Isolation and Characterization of the Glutathione S-Transferase Isozyme Q1 from the Northern Quahog *Mercinaria mercinaria*. *J. Protein Chem.* 21, 151-159.
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 59. Cai, S. and Singh, B. R. (2001) Role of disulfide-cleavage induced molten globule state of type A botulinum neurotoxin in its endopeptidase activity. *Biochemistry*, 40, 15327-15333.
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61. Cai, S. and Singh, B. R. (2001) A Correlation between Differential Structural Features and the Degree of Endopeptidase Activity of Type A Botulinum Neurotoxin in Aqueous Solution, *Biochemistry* 40, 4693-4702.
 62. Zachariah, V. N., Walsh-Sayles, N. and Singh, B. R. (2000) Isolation, Purification and Characterization of Glutathione-S-Transferase from Oat (*Avena sativa*) Seedlings. *J. Protein Chem.*, 19, 425-430.
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 64. Li and Singh, B. R. (2000) Role of zinc binding in type A botulinum neurotoxin light chain's toxic structure. *Biochemistry* 39, 10581-10586.
 65. Singh, B. R. (2000) Intimate details of the most poisonous poison. *Nature Struct. Biol.* 7, 617-619.
 66. Li, B., Qian, X., Caruso, F. L., Singh, B. R. and Sarkar, H. K. (2000) Cloning and sequence analysis of a *Phytophthora cinnamomi* gene which encodes for cinnamomin, a toxin with implications in root rot of cranberry. *J. Natural Toxins* 9, 113-123.
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 69. Li, L. and Singh, B. R. (1999) High level expression, purification and characterization of recombinant type A botulinum neurotoxin light chain. *Protein Expression Purification*, 17, 339-344.
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372. Thomas Feltrup, Raj Kumar, Shuowei Cai and Bal Ram Singh (2013) Differential Activity of BoNT/A and BoNT/E with Respect to Substrate Length Demonstrates the Involvement of Exosite Binding in Endopeptidase Activity. Seventh Annual Botulinum Research Symposium, University of Massachusetts Dartmouth, August 14-16, 2013.
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366. Sirisha Mukkavalli, Koyel Ghosal, Vijay Chalivendra and Bal Ram Singh (2013) Confocal and Atomic Force Microscopic Analysis of Bhasma Effect on the Tight Junctions of Intestinal Epithelial Cells. Seventh Annual Botulinum Research Symposium, University of Massachusetts Dartmouth, August 14-16, 2013.
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362. Koyel Ghosal, Martha Hale, Shuowei Cai and Bal Ram Singh (2013) Role of Hn33 in the Passage of BoNT Across Lung Barriers. Seventh Annual Botulinum Research Symposium, University of Massachusetts Dartmouth, August 14-16, 2013.
361. Sivappa Rasapalli, Abasaheb Dhawane, Menglong Yu, Shuowei Cai, Bal Ram Singh, Steven M. Kwasny, Donald T. Moir, Timothy J. Opperman, and Terry L. Bowlin (2013) Design, synthesis and evaluation of 4/5-acyl-2-aminoimidazolyl analogues of oroidin for biofilm inhibition. Seventh Annual Botulinum Research Symposium, University of Massachusetts Dartmouth, August 14-16, 2013.
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343. Kruti P. Vasa, Virinder S. Parmar, Shuowei Cai, and Bal Ram Singh (2012) Natural Herbal Compounds as Potent Antidotes against the Most Poisonous Poison. an Indo-US Workshop on “Green Chemistry for environments and sustainable development” on March 11-March 13, 2012, Dehradun, India.
342. Sun, Y., Wang, L. and, Singh, B. R. (2011) Botulinum Neurotoxin Type A Complex Proteins Bind to Neuronal as well as Non-neuronal Cells. 7th Triennial Basic and Therapeutic Aspects of Botulinum and Tetanus Toxins - Toxins 2011 which will be held in Santa Fe, New Mexico from October 2-5, 2011.
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331. M. J. Oliveira, R. Kukreja, S. Cai ,and B. R. Singh (2011) A theoretical 3-D structure of full length botulinum neurotoxin light chain A and molecular dynamics of its dimer. Fifth Annual Botulinum Research Symposium, August 17-18, 2011.

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328. K.J. Ghosal, N. Thirunavukkarasu, S. Cai and Bal R. Singh (2009) “Upregulations of SNAP-25 gene expression by Brn-3a – A potential antidote for Botulism” 15th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 28-29, 2009.
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325. P. Janardhanan, T-W. Chang, P.K. Fang, S. Cai and Bal Ram Singh (2009) “Surface Plasmon Resonance to study binding of RNA aptamers to light chain BoNT/-A”, 15th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 28-29, 2009.
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323. P. Lindo, S.J. Riding, J.A. Davis, S. Cai and Bal Ram Singh (2009) “Comparative Biochemical Analysis of the complex of Clostridium botulinum Type A2 (Kyoto F) with Type A1 (Hall), Type B (Okra), Type E (Alaska) and Type F (Langland)”, 15th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 28-29, 2009.
322. M. Morse, R. Kukreja, S. Cai and Bal Ram Singh (2009) “A Structural Characterization of a Double-Mutated BoNT/A relative to Type A Toxin”, 15th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 28-29, 2009.

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315. Shuowei Cai, Tzoo-Chang Wang, Pavithra Janardanan, Jong-Baek Park and Bal Ram Singh (2008) Design and Development of Novel Inhibitors of Clostridium botulinum Neurotoxins. 45th Meeting of Interagency Botulism Research Coordination Committee, Philadelphia, September 14-18, 2008.
316. Bal Ram Singh, Yu Zhou, Jong-Baek Park, David Buck, Sapna Sharma, and Shuowei Cai (2008) Receptor(s) for Botulinum Neurotoxins – the Issue of Multiplicity. 45th Meeting of Interagency Botulism Research Coordination Committee, Philadelphia, September 14-18, 2008.
315. Koyel J. Ghosal, Roshan Kukreja, Shuowei Cai and Bal Ram Singh (2008) Selective Entry of Deactivated Recombinant BoNT/A and Hn-33 in Neuronal and Epithelial

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314. B. R. Singh, M. J. Oliveira, G. Ambrin, R. Kukreja and S. Cai (2008) Fluorescence anisotropy analysis of the botulinum neurotoxin type A Light Chain interaction with its substrate peptide. 45th Meeting of Interagency Botulism Research Coordination Committee, Philadelphia, September 14-18, 2008.
313. Easwaran Ravichandran, Roshan Kukreja, Kruti Vasa, Weiping Yang, Paul Lindo, Stephen Riding, Shuowei Cai, and Bal Ram Singh (2008) *In vitro* and *in vivo* evaluation on selectively mutated botulinum neurotoxin type A. 45th Meeting of Interagency Botulism Research Coordination Committee, Philadelphia, September 14-18, 2008.
312. Hai-Hong Wang, Stephan Riding, Paul Lindo, Shuowei Cai and Bal Ram Singh (2008) Stability of Botulinum Neurotoxin Type A As Affected by Different Storage Conditions. 45th Meeting of Interagency Botulism Research Coordination Committee, Philadelphia, September 14-18, 2008.
311. Raj Kumar, Shuowei Cai, and Bal Ram Singh, (2008) “Protein Flexibility Through Hydrogen Exchange”, 14th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 29-30, 2008.
310. Koyel J. Ghosal, Shuowei Cai, Bal Ram Singh, (2008) “Selective Entry of Deactivated Recombinant BoNT/A in Neuronal Cells to Demonstrate its Drug Delivery Potential”. 14th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 29-30, 2008.
309. Pavithra Janardhanan, Tzoo-Wang Chang, Bal Ram Singh, and Shuowei Cai (2008) “Improving Amplification, Separation and Recovery Yield of DNA Fragments from SELEX Cycle”. 14th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 29-30, 2008.
308. Tzoo-Wang Chang, Charlene M. Mello, Shuowei Cai, Bal Ram Singh (2008) “Development and Screening of RNA Aptamers for Type A Botulinum Neurotoxin Light Chain by Using Surface Plasmon Resonance”. 14th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 29-30, 2008.
307. Michael Morse, Roshan Kukreja, Shuowei Cai, and Bal Ram Singh (2008) “Probing the Secondary Structure of a Double Mutated Botulinum Neurotoxin” 14th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 29-30, 2008.

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304. Nagarajan Thirunavukkarasu, Yu Zhou, Roshan Kukreja, Shuowei Cai and Bal Ram Singh, (2008) "Microarray Analysis of Differentially Regulated Genes in Human Neuroblastoma and Colon Carcinoma Cell Lines Upon Botulinum Neurotoxin Type A (Bont-A) Complex Intoxication", 14th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 29-30, 2008.
303. Kruti P. Vasa, Shuowei Cai and Bal Ram Singh, (2008) "Endopeptidase Activity of Deactivated Recombinant Botulinum Neurotoxin Type A", 14th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 29-30, 2008.
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298. Singh, B. R. (2008) Biotechnological Approach to Pathogenic Resistance and Bioremediation "IUPAC Sponsored First International Conference on Agrochemicals Protecting Crop, Health and Natural Environment" being organized at IARI New Delhi on 8-11 January 2008.
297. Bal Ram Singh, Shuowei Cai, Yu Zhou, Roshan Kukreja, Koyel Ghasal, Nagarajan Thirunavukkarsu, Stephen Riding, Paul Lindo, and Martha Hale (2007) Role of NAPs in the Translocation of and Host Response to Type A Botulinum Neurotoxin. 44th

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296. Amita Sachdeva, Shuowei Cai, Bal Ram Singh, Protein-Based Drug Formulation in Solid and Solution States-Changes in Protein Secondary Structure Analyzed by FT-IR Spectroscopy, 234th National American Chemical Society Meeting, Boston, 2007.
295. Roshan Kukreja, Shuowei Cai and Bal Ram Singh, Immunological characterization of type A botulinum neurotoxin and its purified and complex forms, 234th National American Chemical Society Meeting, Boston, 2007.
294. Tzoo-Wang Chang, Paul Lindo, Shuowei Cai and Bal Ram Singh, Construction of C-terminal GFP tag of recombinant SNAP-25 chimeric protein for assaying botulinum neurotoxin enzyme activity, 234th National American Chemical Society Meeting, Boston, 2007.
293. Katie Goodwin, Shuowei Cai, and Bal Ram Singh, Fluorescent dye release from liposomes to develop high throughput screening for botulinum neurotoxin activity, 234th National American Chemical Society Meeting, Boston, 2007.
292. Yu Zhou and Bal Ram Singh, Resistance of Hemagglutinin-33, the Type A Botulinum Neurotoxin Associated Protein to Lysosomal Proteases, 234th National American Chemical Society Meeting, Boston, 2007.
291. Hai-hong Wang and Bal Ram Singh, Effect of tryptic cleavage on proteolytic activity of botulinum neurotoxin type A light chain, 234th National American Chemical Society Meeting, Boston, 2007.
290. Jiping Zhou and Bal Ram Singh, Establishing a Direct Interaction between type A botulinum neurotoxin and a toxin protection protein using two-hybrid system in yeast cells, 234th National American Chemical Society Meeting, Boston, 2007.
289. Mario Oliveira, Malinda Tupper, Michael Callahan, and Bal Ram Singh, Using Differential Mobility Spectroscopy for the Detection of Biological Threat agents: Botulinum Neurotoxins, 234th National American Chemical Society Meeting, Boston, 2007.
288. Shuowei Cai, Paul Lindo and Bal Ram Singh, (2007) "Developing Antidotes Against Botulism Using High-Throughput Screening", 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
287. Amita Sachdeva, Shuowei Cai, Bal Ram Singh, (2007) "Protein-Based Drug Formulation in Solid and Solution States-Changes in Protein Secondary Structure

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286. Tzoo-Wang Chang, Paul Lindo and Bal Ram Singh, (2007) "Construction of C-Terminal GFP Tag of Recombinant SNAP-25 Chimeric Protein for Assaying Botulinum Neurotoxin Enzyme Activity". 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
285. Yu Zhou and Bal Ram Singh (2007) "Proteolysis of Type A Botulinum Neurotoxin by Lysosoma Proteases. 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
284. Chun-Hsing Chen and Bal Ram Singh (2007) "The Ultimate Chemistry of Human Relationships" 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
283. Xia Feng and Bal Ram Singh, (2007) "Identification and Analysis of Pollution-Detoxifying Enzyme from Northern Quahog (*Mercinaria Mercinaria*)". 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
282. Katie L. Goodwin, Shuowei Cai and Bal Ram Singh, (2007) "Fluorescent Dye Release from Liposomes to Develop High Throughput Screening for Botulinum Neurotoxin Activity". 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
281. Koyel Ghosal, Yu Zhou, Shuowei Cai and Bal Ram Singh, (2007) "Preparation and Characterization of Recombinant Heavy Chain N-Terminal Domain to Type A Botulinum Neurotoxin", 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
280. Roshan V. Kukreja, Shuowei Cai and Bal Ram Singh, (2007) "Immunological Characterization of Type A Botulinum Neurotoxin and Its Purified and Complex Forms", 13th Annual Sigma Xi Research Exhibit, University of Massachusetts Dartmouth, North Dartmouth, MA, April 24-25, 2007.
279. Yu Zhou and Bal Ram Singh (2007) Resistance of Type A Botulinum Neurotoxin to Lysosomal Proteases. American Society for Biochemistry and Molecular Biology (ASBMB) and Experimental Biology Annual Meeting 2007, Washington, DC, USA, April 28 - May 2, 2007.
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