Curriculum Vitae

Name Manjunatha B. Bhat [Manju]

Address

Office:
Winston-Salem State University (WSSU)
Department of Biological Sciences & Project Strengthen
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Professional Appointments

2018 – Present
Chair, Department of Biological Sciences
Winston-Salem State University
Winston-Salem, NC, U.S.A.

2016 – 2018
Co-Chair, Department of Biological Sciences
Winston-Salem State University
Winston-Salem, NC, U.S.A.

2014- Present
Associate Professor of Physiology
Department of Biological Sciences
Winston-Salem State University
Winston-Salem, NC, U.S.A.

2008- 2014
Assistant Professor of Physiology
Department of Life Sciences
Winston-Salem State University
Winston-Salem, NC, U.S.A.

2003- 2007
Assistant Professor (Adjunct)
Dept. of Biological, Geological & Environmental Sciences
Cleveland State University, Cleveland, OH, U.S.A.

2004- 2007
Assistant Professor
Department of Anesthesiology
Cleveland Clinic Lerner College of Medicine
of Case Western Reserve University, Cleveland, OH, U.S.A.

2000- 2007 Assistant Staff
Center for Anesthesiology Research
Division of Anesthesiology, Critical Care Medicine
& Comprehensive Pain Management. Cleveland Clinic,
Cleveland, OH, U.S.A.

Education & Training

1986 B.V.Sc. Veterinary Medicine
University of Agricultural Sciences, Bangalore, India.

1989 M.V.Sc. Pharmacology
Indian Veterinary Research Institute, Izatnagar, India.

1993 M.Sc. Pharmacology
University of Alberta, Edmonton, Canada.

1997 Ph.D. Physiology and Biophysics
Case Western Reserve University, Cleveland, OH, U.S.A.

1997-2000 Post-Doctoral Research Fellow
Dept. of Physiology and Biophysics
Case Western Reserve University, Cleveland, OH, U.S.A.

Research Dissertations

i. M.V.Sc. Thesis: Characterization of calcium channels in rat urinary bladder smooth muscle.

ii. M.Sc. Thesis: Functional and molecular properties of dihydropyridine binding protein in skeletal muscle transverse tubules.

iii. Ph.D. Thesis: Structure-function studies on ryanodine receptor calcium release channel.

Academic Awards/Honors

1981-1986	B.V.Sc.	Government of India National Loan Scholarship.
1986	B.V.Sc.	Dr. V. Mudaliar Veterinary College Silver Jubilee Gold Medal.
1986-1989	M.V.Sc.	Indian Veterinary Research Institute Fellowship.
1990-1993	M.Sc.	Alberta Heritage Foundation for Medical Research Studentship.
1996	Ph.D.	Best poster presentation by Graduate Student award at the 12th annual meeting of the Ohio Physiological Society, Cleveland, OH. December 14, 1996.
1997	Ph.D.	Semi-finalist in the Student Research Achievement Award (SRAA) competition at the 41st annual meeting of the Biophysical Society, New Orleans, LA, March 2-6, 1997.
1997- 1999	Post-Doc	American Heart Association (Northeast Ohio Affiliate) Post-Doctoral Fellowship Award.

2010-2011	WSSU	John Fountain Excellence in Teaching award, Winston-Salem State University.
2015-2016	WSSU	University of North Carolina Board of Governors Excellence in Teaching Award.

Current Research Interests

i. Mechanisms and regulation of intracellular calcium signaling.

ii. Intracellular calcium signaling in nociception.

iii. Anesthetic-mediated regulation of pain receptors.

Research Funding:

Completed:

i. Department of Defense (DOD) Instrumentation grant (Co-Principal Investigator)
"IX83 inverted fluorescence microscope for FRET and TIRF" (2013)

ii. Winston-Salem State University
(Research Initiation Program (RIP) Grant, Principal Investigator).
"Calcium signaling mechanisms in sensory neurons" (2009-2011)

iii. American Heart Association (National Center)
(Scientist Development Grant, Principal Investigator).
"Mechanisms of Capacitative Calcium Entry in Sensory Neurons" (2004-2007)

iv. National Institutes of Health (RO1) (Collaborating Investigator)
"Modifications of Small Heat Shock Proteins in the Lens" (2005-2007)

v. American Heart Association (Beginning Grant-in-Aid, Ohio Valley Affiliate).
"Mechanisms of Capacitative Calcium Entry in Sensory Neurons" (2003-2005)
(*Resigned effective January 01, 2004 upon approval of the AHA National Center grant*)

Research grant workshops attended:

QEM- NSF CAREER proposal workshop, Las Vegas (2009)
NSF Joint Annual Meeting (JAM 2010)- Bio invitee, Washington, D.C. (2010)
Univ of Kentucky/NIGMS Faculty Grant Writing Workshop, Lexington, KY (2013)

Research Training:

Research Fellows:

Dr. Yoko Arakawa (2007)
Dr. Ilir Elias Veizi (2006- 2007)
Dr. Hongyu Zhang (2002- 2005)
Dr. Seok Kon Kim (2002- 2003)
Dr. Yasuyuki Homma (2001-2002)

Research Technologists:

Renee Parker (2008- 2009)
Bridget Essley, B.A. (2005-2007)
Kristen Yankura, B.Sc. (2001- 2005)

Graduate Students:

Kristen Yankura, M.Sc. (Cleveland State University, 2002- 2004)

Graduate Students Advisory Committees:

Kristen Yankura (M.Sc. Supervisor and Chair of Thesis Advisory Committee, 2002-2004)
Spiro Mavroidis (Ph.D. Candidacy examination committee, Cleveland State University- 2004)
Sravan Mandadi (Ph.D. Thesis external examiner, University of Sydney, Australia, 2004)
Muneer Mirza (Ph.D. Candidacy examination committee, Cleveland State University- 2005)
Nikunj Sharma (Ph.D. Candidacy examination committee, Cleveland State University-2005)
Steve Schomisch (Ph.D. Candidacy examination committee, Cleveland State University-2005)
Nikunj Sharma (Ph.D. Thesis defense committee, Cleveland State University- 2007)
Cassandra Talerico (Ph.D. Thesis defense committee, Cleveland State University- 2007)
Hamiyet Unal (Ph.D. Thesis advisory committee, Cleveland State University, 2007- 2008)
Paige Richards (Ph.D. Thesis advisory committee, Wake Forest University, 2009- 2013)

Undergraduate research student training:

Tanya Zubov (2016- 2017) Winston-Salem State University (Chancellor's and RISE Scholar)
Courtney Murphy (2015) Winston-Salem State University (Chancellor's Scholar)
Bianca Golden (2015) Winston-Salem State University
Michelle Martinez (2015) Winston-Salem State University
Tiara Bouldrick Turnage (2015)
Aquila Barrett (2013-2014) Winston-Salem State University (Chancellor's Scholar)
Patrick Herriott (2014) Winston-Salem State University
Megan Hudson (2014) Winston-Salem State University (Chancellor's Scholar)
John Siegrist (2013) Winston-Salem State University
Amanda Nieves (2012-2014) Winston-Salem State University (Chancellor's Scholar)
Edie Pettiford (2012- 2013) Winston-Salem State University (MARC U*STAR Scholar)
Keiyana Hamlet (2011-2012, 2014) Winston-Salem State University
Joshua Hayes (2011-2012) Winston-Salem State University (Chancellor's Scholar)
Henelle Davis (2009- 2010) Winston-Salem State University
James Johnson (2008- 2009) Winston-Salem State University
Andrea Miller (2008) Winston-Salem State University
Lore McBroom (2008) Winston-Salem State University
Madison Miranda (2007) (Lakeland Community College, OH)
Sarah K. Haserodt (2006) (Wooster College, OH)
Neal M. Duggal (2006) (NEOUCOM, American Heart Association Summer Studentship)
Mary deBoer (2005) (Pomona College, American Heart Association Summer Studentship)
Mary Ann De Banate (2005) (Scripps College, Diabetes Association of Greater Cleveland Summer Internship)

High School research student training:

Warren Feng (2010) Reagan High School, Winston-Salem, NC
Kshipra Hemal (2010) Reynolds High School, Winston-Salem, NC.
Fatimah Muhammad (2004-2005) (East Tech High School, Cleveland, OH)
Mena Mekhail (2004-2005) (Case Western Reserve University)
Mary Anter (2004) (Loyola College, Diabetes Association of Greater Cleveland Summer Internship)
Brittany Page (2003- 2004) (John Hay High School / Howard Hughes Program)
Andrew Ibrahim (2002- 2003)
Arielle Bell (2001- 2003) (John Hay High School, Cleveland, OH / Howard Hughes Program)

Undergraduate teaching:

1988: General Pharmacology in Veterinary Sciences: Bidar Veterinary College, India.
1990: Course in Opioid Pharmacology: University of Alberta, Edmonton, Canada.
1991 & 1992: Laboratory course in Analytical Techniques: University of Alberta, Edmonton, Canada.

Winston-Salem State University:
2008, 2013: General Biology (BIO 1301)
2008 - Present: Anatomy & Physiology I (BIO 2311 & BIO 2111)
Anatomy & Physiology II (BIO 2312 & BIO 2112)
2012: Fundamentals of Anatomy & Physiology (BIO 3311)
2012: Introduction to Medical Physiology & Pharmacology (BIO 4352)
2012-Present: Neuroscience Seminar Course (NEU 300) at Wake Forest University, Winston-Salem, NC.
2018- Present: Neuroscience Seminar Course (BIO 3225)
2010- Present: Investigation & Research Courses (BIO 2277, BIO 3277, BIO 4277)

Medical School and Graduate teaching:

2002- 2007: Lectures to Pain medicine Fellows and Residents in the topic of "Basic Research in Pain Medicine", Cleveland Clinic.
2005 – 2007: Mentoring medical students in the topic of "Vascular Reactivity" (Cleveland Clinic Lerner College of Medicine)
2006- 2007: Mentoring medical students in the summer journal club course (Cleveland Clinic Lerner College of Medicine)
2007 – 2007: "Process of Discovery" lectures to first year medical students (Cleveland Clinic Lerner College of Medicine).

Professional Affiliations

- Human Anatomy & Physiology Society (HAPS)

Editorial/Peer Review Work

Journals: Involved in the review of manuscripts for the following journals:

American Journal of Physiology
Anesthesia and Analgesia
Anesthesiology
Biochemistry
Biophysical Journal
British Journal of Anesthesia
Cell Biochemistry and Biophysics
Cell Calcium
FASEB Journal
Journal of Biological Chemistry
Journal of Cell Biology,
Journal of General Physiology
Life Sciences
Molecular & Cellular Neuroscience
Proceedings of National Academy of Sciences
Neuropharmacology

Research Grant Reviews: Served as external grant reviewer for the following organizations:

1. San Antonio Life Sciences Institute (SALSI), The University of Texas Health Science Center at San Antonio. (2004)
2. Science Foundation Ireland. (2005)
3. Department of Defense – Congressionally directed medical research program. (2008)

University service:

- Institutional Animal Care and Use Committee (IACUC)
  Neuroscience minor (UNTRAC) curriculum committee
- Tri Beta Honor Society Selection Committee
- Masters program sub committee

- Faculty Search Committees
- MCAT Tutor program selection committee
- Faculty advisor for Minority Association of Premedical Students (MAPS)
- MARC U*STAR selection committee
- Student recruitment committee
- International Programs Committee
- Research Initiation Program (RIP) Grant Review
- Ph.D. thesis advisory committee (Ms. Paige Richards, Wake Forest University)
- Community outreach programs: SCITECH (WSSU), CERTL (WFU), Academic Challenge Event (ACE)
- Advisory Committee member, Occupational Therapy program, WSSU.
- GradesFirst Early Warning System- Faculty Trainer.
- Advisory Board Member, Center for Innovative and Transformative Instruction (CITI) (2017-Present)
- University Bookstore Advisory Committee member (2017- present)

Curricular Design/Revision/Research:

- General Education Curriculum- Advising Faculty Fellow (2014)- trained in appreciative advising model for incoming freshman students.
- Problem-centered learning and transparent pedagogical practice: AAC&U- sponsored project (2014-2016).
- Faculty Champion, Student Success Collaborative project leadership team at WSSU (2018-)
- Council on Undergraduate Research (CUR) project on incorporating research in undergraduate curriculum- Departmental leadership team (2017-present)

Seminars & Conferences

1. Graduate Student Research Symposium, Case Western Reserve Univ., Cleveland, OH. (1995)
2. 41st Annual meeting of the Biophysical Society, New Orleans, LA. (1997).
3. Case Western Reserve University, Dept. of Physiology and Biophysics, Cleveland, OH. (1997).
4. The Cleveland Clinic Foundation, Division of Anesthesiology, Cleveland, OH. (1999).
5. Rush Medical College, Department of Physiology, Chicago, IL. (1999)
6. The Cleveland Clinic Foundation, Center for Anesthesiology Research, Cleveland, OH. (2000)
7. Gordon Research Conference on Excitation-Contraction Coupling-Invited Speaker (2000).
8. University of Akron, Department of Biology, Akron, OH. (2001).
9. Cleveland State University, Department of Biological, Geological and Environmental Sciences, Cleveland, OH. (2003).
10. Northeastern Ohio Universities College of Medicine (NEOUCOM), Department of Physiology & Pharmacology, Rootstown OH. (2004).
11. MetroHealth Medical Center, Rammelkamp Center for Research & Education, Cleveland, OH (2005).
12. Cleveland Clinic Foundation, Division of Anesthesiology & Critical Care Medicine, Cleveland, OH. (2005).
13. Winston-Salem State University, Department of Life Sciences, Winston-Salem, NC. (2007)
14. Wake Forest University Baptist Medical Center, Dept. of Anesthesiology, Winston-Salem, NC. (2008).
15. Wake Forest University, Dept. of Biology, Winston-Salem, NC. (2008)
16. Invited speaker, Symposium of Young Neuroscientists and Professors of South East (SYNAPSE), Wake Forest University, Winston-Salem, NC. (2011)
17. Invited speaker, Science in the Mountains, Appalachian State University (Sponsored by NC Biotech Center) (2013)
18. Invited speaker, Virtual summit on Adaptive Learning and LearnSmart. Organized by Virginia State University. March 14, 2015.
19. 2015 Univ. of North Carolina System Student Success Summit, Raleigh, NC (April, 2015).

20. AAC&U Institute on General Education and Assessment, Univ. of Central Oklahoma. (June 1-6, 2015).
21. Invited speaker, Virtual summit on implementation of digital learning tools, organized by McGraw-Hill Education, August 14, 2015.
22. Invited speaker, Improving student learning experience and outcomes through high tech and high touch approaches. Leadership North Carolina conference at University of North Carolina Greensboro. December 3, 2015.
23. Invited speaker, "Calcium signaling in sensory neurons: mechanisms and anesthetic-mediated regulation. Kyoto University, Kyoto, Japan. July 20, 2017.

Publications

Full Papers:

1. **Manjunatha B. Bhat**, Santosh K. Mishra, and Vellanki Raviprakash (1989). Differential susceptibility of cholinergic and non-cholinergic neurogenic responses to calcium channel blockers and low Ca^{2+} medium in rat urinary bladder. *Br. J. Pharmacol.* **96**: 837-842.
2. **Manjunatha B. Bhat**, Santosh K. Mishra, and Vellanki Raviprakash (1989). Sources of calcium for ATP-induced contractions in rat urinary bladder smooth muscle. *Eur. J. Pharmacol.* **164**: 163-166.
3. Jianjie Ma, **Manjunatha B. Bhat**, and Jiying Zhao. (1995). Rectification of skeletal ryanodine receptor mediated by FK506 binding protein. *Biophys. J.* **69**: 2398-2404.
4. **Manjunatha B. Bhat**, Jiying Zhao, Hiroshi Takeshima, and Jianjie Ma. (1997). Functional calcium release channel formed by the carboxyl-terminal portion of ryanodine receptor. *Biophys. J.* **73**: 1329-1336.
5. **Manjunatha B. Bhat**, Jiying Zhao, Salim Hayek, Eric C. Freeman, Hiroshi Takeshima, and Jianjie Ma. (1997). Deletion of a.a. 1641-2437 from the foot region of skeletal muscle ryanodine receptor alters conduction properties of the calcium release channel. *Biophys. J.* **73**: 1320-1328.
6. **Manjunatha B. Bhat**, Jiying Zhao, Weijin Zang, C. William Balke, Hiroshi Takeshima, W. Gil Wier, and Jianjie Ma. (1997). Caffeine-induced release of intracellular calcium from chinese hamster ovary cells expressing skeletal muscle ryanodine receptor: Effects on full-length and carboxyl-terminal portion of calcium release channel. *J. Gen. Physiol*. **101**: 749-762.
7. Minh Lam, **Manjunatha B. Bhat**, Gabriel Nunez, Jianjie Ma, and Clark W. Distelhorst. (1998). Regulation of Bcl-xL channel activity by calcium. *J. Biol. Chem*. **273**: 17307-17310.
8. Kaisa M. Heiskanen, **Manjunatha B. Bhat**, Jianjie Ma, and Anna-Liisa Nieminen. (1999). Mitochondrial depolarization accompanies cytochrome c release during apoptosis in PC6 cells. *J. Biol. Chem.* **274**: 5674-5678.
9. **Manjunatha B. Bhat**, Salim M. Hayek, Jiying Zhao, Weijin Zang, Hiroshi Takeshima, Gil Wier, and Jianjie Ma. (1999). Expression and functional characterization of the cardiac muscle ryanodine receptor calcium release channel in CHO cells. *Biophys. J.* **77***:* 808-816*.*
10. Salim M. Hayek, Jiying Zhao, **Manjunatha B. Bhat**, Xuehong Xu, Ramakrishnan Nagaraj, Zui Pan, Hiroshi Takeshima, and Jianjie Ma. (1999). A negatively charged region of the skeletal muscle ryanodine receptor is involved in Ca-dependent regulation of the Ca release channel. *FEBS Lett*. **461**: 157-164.
11. Xuehong Xu, **Manjunatha B. Bhat**, Miyuki Nishi, Hisoshi Takeshima, and Jianjie Ma (2000). Molecular cloning of cDNA encoding the *Drosophila* ryanodine receptor and functional studies of the carboxyl-terminal calcium release channel. *Biophys. J.* **78**: 1270-1281.
12. Zui Pan, Derek Damron, Anna-Liisa Nieminan, **Manjunatha B. Bhat**, and Jianjie Ma. (2000). Depletion of intracellular Ca^{2+} by caffeine and ryanodine induces apoptosis of Chinese hamster ovary cells transfected with ryanodine receptor. *J. Biol. Chem.* **275**: 19978-19984.
13. Salim M. Hayek, Xinsheng Zhu, **Manjunatha B. Bhat**, Jiying Zhao, Hiroshi Takeshima, Hector H.

Valdivia, and Jianjie Ma. (2000). Characterization of a calcium regulation domain of the skeletal muscle ryanodine receptor. *Biochem. J.* **351**: 57-65.

14. Jerry E. Chipuk, **Manjunatha B. Bhat**, Andrew Y. Hsing, Jianjie Ma, and David Danielpour (2001). Bcl-xL blocks TGF-β1-induced apoptosis by inhibiting cytochrome C release and not by directly antagonizing Apaf-1-dependent caspase activation in prostate epithelial cells. *J. Biol. Chem.* **276**: 26614-26621.

15. Zui Pan*, **Manjunatha B. Bhat***, Dongwook Shin, Anna-Liisa Nieminen, and Jianjie Ma. (2001). Synergistic movements of Ca^{2+} and Bax in cells undergoing apoptosis. *J. Biol. Chem.* **276**: 32257-32263. *equal contribution

16. **Manjunatha B. Bhat**, and Jianjie Ma. (2002). The transmembrane segment of ryanodine receptor contain an intracellular membrane retention signal for Ca^{2+} release channel. *J. Biol. Chem.* **277**: 8597-8601.

17. Kalanithee Paul-Pletzer, Takeshi Yamamoto, **Manjunatha B. Bhat**, Jianjie Ma, Noriaki Ikemoto, Leslie S. Jimenez, Hiromi Morimoto, Philip G. Williams, and Jerome Parness. (2002). Partial mapping of the dantrolene-binding site on the skeletal muscle ryanodine receptor. *J. Biol. Chem.* **277**: 34918-34923.

18. Dong Wook Shin, Zui Pan, Arun Bandyopadhyay, **Manjunatha B. Bhat**, Do Han Kim, and Jianjie Ma. (2002). Ca^{2+}-dependent interaction between FKBP12 and calcineurin regulates activity of the Ca^{2+} release channel in skeletal muscle. *Biophys. J.* **83***:* 2539-2549.

19. Dong Wook Shin , Zui Pan, Eun Kyung Kim, Jae Man Lee, **Manjunatha B. Bhat**, Jerome Parness, Do Han Kim, and Jianjie Ma. (2003). A retrograde signal from calsequestrin for the regulation of store-operated Ca^{2+} entry in skeletal muscle. *J. Biol. Chem.* 278: 3286-3292.

20. Mary L. Ruehr, Mary A. Russell, Donald G. Ferguson, **Manjunatha B. Bhat**, Jianjie Ma, Derek S. Damron, John D. Scott, and Meredith Bond. (2003). Targeting of PKA by mAKAP regulates phosphorylation and function of the skeletal muscle ryanodine receptor. *J. Biol. Chem.* **278**: 24831-24836.

21. Sravan Mandadi, Mistuko Numazaki, Makoto Tominaga, **Manjunatha B. Bhat**, Patricia J. Armati, and Basil D. Roufogalis. (2004). Activation of protein kinase C reverses capsaicin-induced calcium dependent desensitization of TRPV1 ion channels. *Cell Calcium.* **35**: 471-478.

22. Zui Pan, Yutaka Hirata, Ramakrishnan Y. Nagaraj, Jiying Zhao, Miyuki Nishi, Salim M. Hayek, **Manjunatha B. Bhat**, Hiroshi Takeshima, and Jianjie Ma. (2004). Co-expression of mg29 and ryanodine receptor leads to apoptotic cell death-effect mediated by intracellular Ca^{2+} release. *J. Biol. Chem.* **279**: 19387-19390.

23. BingFen Liu, **Manjunatha B. Bhat**, Dawn G. Smith, and Ram H. Nagaraj. (2004). Effect of dicarbonyl modification of fibronectin on retinal capillary pericytes. *Invest. Ophthalmol. Vis. Sci.* **45**: 1983-1995.

24. BingFen Liu, **Manjunatha B. Bhat**, and Ram H. Nagaraj. (2004). Alpha-B-crystallin inhibits glucose-induced apoptosis in vascular endothelial cells. *Biochem. Biophys. Res. Comm*. **321**: 254-258.

25. Ram H. Nagaraj, Tomoko Oya-Ito, **Manjunatha B. Bhat**, and Bingfen Liu. (2005). Dicarbonyl stress and apoptosis of vascular cells: prevention by alpha-B-crystallin. *Ann. N.Y. Acad. Sci.* **1043**: 158-165.

26. Ashis Biswas, Antonia Miller, Tomoko Oya-Ito, Puttur Santhoshkumar, **Manjunatha B. Bhat**, and Ram H. Nagaraj. (2006). Effect of site-directed mutagenesis of methylglyoxal modifiable arginine residues on the structure and chaperone function of human αA-crystallin. *Biochem*. **45**: 4569-4577.

27. Antonia G. Miller, Dawn G. Smith, **Manjunatha B. Bhat**, and Ram H. Nagaraj. (2006). Glyoxalase I is critical for human retinal capillary pericyte survival under hyperglycemic conditions. *J. Biol. Chem.* **281**: 11864-11871.

28. Sanjoy K. Bhattacharya, **Manjunatha B. Bhat**, and Hidenari Takahara. (2007). Calcium modulation of peptidyl arginine deaminase 2 and implication for neurodegeneration. *Exp. Eye. Res.* **31**: 1063-1071.

29. Ashis Biswas, Jeffery Goshe, Antonia G. Miller, Puttur Santhoshkumar, **Manjunatha B. Bhat**, and Ram H. Nagaraj. (2007). Paradoxical Effects of Substitution and Deletion Mutation of Arg^{56} on the Structure and Chaperone Function of Human αB-crystallin. *Biochem.* **46**: 1117-1127.

30. ChangWoo Lee, Si Ae Hwang, Sei-Heon Jang, **Manjunatha B. Bhat**, and Sadashiva S. Karnik. (2007). Manifold active-state conformations in GPCRs: Agonist-activated constitutively active mutant AT1 receptor preferentially couples to Gq compared to the wild-type AT1 receptor. *FEBS Lett*. **581**: 2517-2522.

31. Richard Stewart, Lele Song, Simon M. Carter, Charalambos Sigalas, Nathan R. Zaccai, Venkateswarlu Kanamarlapudi, **Manjunatha B. Bhat**, Hiroshi Takeshima and Rebecca Sitsapesan. (2008). Single-channel characterization of the rabbit recombinant RyR2 reveals a novel inactivation property of physiological concentrations of ATP. *J. Membrane Biol.* **222**: 65-77.

32. Pinaki Chaudhuri, Scott M. Colles, **Manjunatha B. Bhat**, and Linda M. Graham. (2008). Elucidation of a TRPC6-TRPC5 channel cascade that restricts endothelial cell movement. *Mol Biol Cell*. **19**:3203-3211

33. Ram H. Nagaraj, Ashis Biswas, Antonia G. Miller, Tomoko Oya-Ito, and **Manjunatha B. Bhat** (2008). The other side of the Maillard reaction. *Ann. N.Y. Acad. Sci.* **1126**: 107-112.

34. Qing Liu, **Manjunatha B. Bhat**, Wayne D. Bowen, and Jianguo Cheng. (2009). Signaling pathways from CB1 receptor activation to inhibition of NMDA-mediated calcium influx and neurotoxicity in dorsal root ganglion neurons. *J. Pharmacol Exp.Ther*. **331**: 1062-1070.

35. Hamiyet Unal, Rajaganapathi Jagannathan, **Manjunatha B. Bhat**, and Sadashiva S. Karnik. (2010). Ligand-specific conformation of extracellular loop-2 in the Angiotensin I type 2 receptor. *J. Biol. Chem*. **285**: 16341-16350.

36. Ilir Elias Veizi, Hongyu Zhang, Kristen Yankura, Bridget Essley, and **Manjunatha B. Bhat**. (2018). Store-operated calcium entry is important for fast refilling of the endoplasmic reticulum stores in nociceptive neurons. (In preparation).

37. Tanya Zubov, Bianca Golden, and **Manjunatha B. Bhat** (2018). Regulation of calcium signaling by propofol analogs: effects on vanilloid- and ryanodine receptors. (In preparation).

Book Chapters/ Review Articles:

1. Susan M. J. Dunn, **Manjunatha B. Bhat**, and Murat A. Oz (1994). The molecular structure and gating of calcium channels. In: *Ion Channels and Ion Transport* (Foa, P. P., Walsh, M., Eds.) Springer-Verlag, New York., pp 1-18.

2. Jianjie Ma, Salim M. Hayek, and **Manjunatha B. Bhat.** (2004). Membrane topology and membrane retention of ryanodine receptor calcium release channel. *Cell Biochem. Biophys.* **40**: 207-224.

3. **Manjunatha B. Bhat**. (2013). Cultivating problem solving and decision-making abilities – the teacher's role. In: Facilitating seven ways of learning (Davis J.R., Arend B.D., Eds.) Stylus, Steerling, VA. Pp 168-169 (case study).

Abstracts:

1. **Manjunatha B. Bhat**, Susan M. J. Dunn, and George B. Frank. (1992). Functional characterization of voltage-sensitive calcium channels in skeletal muscle transverse tubules. *FASEB J.* **6(5)**:

A1486.

2. Jianjie Ma, **Manjunatha B. Bhat**, and Ziying Zhao. (1995). Novel gating of the sarcoplasmic reticulum calcium release channel mediated by the FK506 binding protein. International conference on receptor regulated calcium influx. Asilomar Conference Center, Pacific Grove, CA. May 14-18.
3. **Manjunatha B. Bhat**, Mitchell L. Drumm, Hiroshi Takeshima, and Jianjie Ma. (1995). Heterologous expression of skeletal muscle ryanodine receptor in CHO cells. *Platform presentation at CWRU Graduate Student Research Symposium*, November 8.
4. **Manjunatha B. Bhat**, Mitchell L. Drumm, Hiroshi Takeshima, and Jianjie Ma. (1996). Heterologous expression of skeletal muscle ryanodine receptor in CHO cells. *Biophys. J.* **70**: A282.
5. Jianjie Ma, **Manjunatha B. Bhat**, and Jiying Zhao. (1996). Rectification of skeletal muscle ryanodine receptor mediated by FK506 binding protein. *Biophys. J.* **70**: A282.
6. **Manjunatha B. Bhat**, Jiying Zhao, Hiroshi Takeshima, and Jianjie Ma. (1996). Functional calcium release channel formed by the carboxyl-terminal portion of ryanodine receptor. Poster presentation at the 12th annual meeting of the Ohio Physiological Society, Cleveland, OH. Dec 14, 1996.
7. **Manjunatha B. Bhat**, Jiying Zhao, Hiroshi Takeshima, and Jianjie Ma. (1997). Carboxyl-terminal portion of the skeletal muscle ryanodine receptor forms functional calcium release channel. *Biophys. J*. **72**: A333 (*Platform Presentation*).
8. **Manjunatha B. Bhat**, Jiying Zhao, Salim Hayek, Eric C. Freeman, Hiroshi Takeshima, and Jianjie Ma. (1997). Deletion of a negatively charged amino acids from the foot region of skeletal muscle ryanodine receptor alters conduction properties of the calcium release channel. *Biophys. J.* **72**: A169.
9. Jianjie Ma, **Manjunatha B. Bhat**, Salim Hayek, Hiroshi Takeshima, and Jiying Zhao. (1997). Structure and function of ryanodine receptor calcium release channel in striated muscles. *Advances in Biophysics.* Presented at the second East Asian Symposium on Biophysics, Beijing, China. May 19-23.
10. **Manjunatha B. Bhat**, Salim M. Hayek, Jiying Zhao, Weijin Zang, Hiroshi Takeshima, W.Gil Wier, and Jianjie Ma. (1998). Heterologous expression and functional characterization of the cardiac ryanodine receptor calcium release channel. *Biophys. J.* **74**: A58.
11. **Manjunatha B. Bhat**, Jiying Zhao, Weijin Zang, C. W. Balke, Hiroshi Takeshima, W. Gil Wier, and Jianjie Ma. (1998). Effect of caffeine on the full-length and carboxyl-terminal skeletal muscle ryanodine receptor calcium release channels expressed in chinese hamster ovary cells. *Biophys. J.* **74**: A59.
12. Salim M. Hayek, **Manjunatha B. Bhat**, Jiying Zhao, Ramakrishnan Y. Nagaraj, Xuehong Xu, Julia C. Osterland, Hiroshi Takeshima, Miyuki Nishi, and Jianjie Ma. (1998). Testing the role of the D3 region in the function of the skeletal and cardiac ryanodine receptors. *Biophys. J.* **74**: A59.
13. Kaisa M. Heiskanen, **Manjunatha B. Bhat**, Jianjie Ma, and Anna-Liisa Nieminen. (1998). Mitochondrial depolarization accompanies cytochrome c release during apoptosis in PC6 cells. 28th Annual Meeting of Society of Neuroscience,Nov. 7-12. Los Angeles, CA.
14. **Manjunatha B. Bhat**, Jiying Y. Zhao, Salim M. Hayek, Miyuki Nishi, Hiroshi Takeshima, and Jianjie Ma. (1999). Functional evidence supporting the four/six transmembrane topology of the ryanodine receptor Ca^{2+} release channel. *Biophys. J.* **76**: A301.
15. **Manjunatha B. Bhat**, Minh Lam, and Jianjie Ma. (1999). Localization of the intra cellular membrane-retention signal of the ryanodine receptor. *Biophys. J.* **76**: A303.
16. Xuehong Xu, **Manjunatha B. Bhat**, Miyuki Nishi, Hiroshi Takeshima, and Jianjie Ma. (1999). Molecular Cloning of cDNA encoding the Drosophila ryanodine receptor and functional studies of the carboxyl-terminal calcium release channel. *Biophys. J.* **76**: A303.

17. Ramakrishnan Y. Nagaraj, **Manjunatha B. Bhat**, Miyuki Nishi, Hiroshi Takeshima, and Jianjie Ma. (1999). Co-expression of ryanodine receptor and MG29 (a novel triad junction protein) in CHO cells. *Biophys. J.* **76**: A470.

18. Julia C. Osterland, Salim M. Hayek, Xuehong Xu, **Manjunatha B. Bhat**, and Jianjie Ma. (1999). Interaction of the II-III loop of DHP receptor with domains of the ryanodine receptor studied with a mammalian two-hybrid system. *Biophys. J.* **76**: A467.

19. Keshore R. Bidasee, **Manjunatha B. Bhat**, J. A. Coles and Henry. R. Besch. (1999). Novel endogenous modulators/regulators of ryanodine receptors II: An amino-containing molecule of molecular weight 816.5 Da. *Biophys. J.* **76**: A468.

20. Xinsheng Zhu, Salim M. Hayek, **Manjunatha B. Bhat**, Hiroshi Takeshima, Jianjie Ma, and Hector H. Valdivia. (1999). Molecular interactions between imperatoxin A and the skeletal ryanodine receptor. *Biophys. J.* **76**: A395.

21. Kaisa M. Heiskanen, **Manjunatha B. Bhat**, Jianjie Ma, and Anna-Liisa Nieminen. (1999). Mitochondrial depolarization precedes Bax redistribution to mitochondria. 38th Annual Meeting of the Society of Toxicology, March 14-18. New Orleans, LA.

22. Anna-Liisa Nieminen, **Manjunatha B. Bhat**, H.-W. Wang, Jianjie Ma, and Kaisa M. Heiskanen. (1999). Visualization of cytochrome c release during apoptosis using green fluorescent protein. Keystone Symposium AApoptosis and Programmed Cell Death. April 6-11, Beaver Run Resort, Breckenridge, Colorado, USA, Abstract Book 232.

23. Kaisa M. Heiskanen, Lin Li, **Manjunatha B. Bhat**, Paola D. Pichiule, Jianjie Ma, and Anna-Liisa Nieminen. (1999). Bax induces mitochondrial swelling in mouse hepatocytes. American Association for the Study of Liver Diseases. *Hepatology*. **30**: 389A. Suppl.

24. Kaisa M. Heiskanen, Lin Li, **Manjunatha B. Bhat**, Paola D. Pichiule, Jianjie Ma, and Anna-Liisa Nieminen. (1999). Mitochondrial swelling is a critical event in Bax-induced apoptosis in mouse hepatocytes. Cold Spring Harbor Laboratory Meeting, AProgrammed Cell Death, Sept. 24-Oct 03. Cold Spring Harbor, New York. USA. Abstract Book., p84.

25. **Manjunatha B. Bhat**, Kaisa M. Heiskanen, Anna-Liisa Nieminen, and Jianjie Ma. (2000). Movement of Bax from cytosol to intracellular membranes in cells undergoing apoptosis. *Biophys. J.* **78**: 73A.

26. Salim M. Hayek, Xinsheng Zhu, Zui Pan, Jiying Zhao, **Manjunatha B. Bhat**, Hiroshi Takeshima, Hector Valdivia, and Jianjie Ma. (2000). Ca-dependent inactivation of the cardiac ryanodine receptor expressed in Chinese hamster ovary cells. *Biophys. J.* **78**: 124A.

27. Xinsheng Zhu, Salim M. Hayek, **Manjunatha B. Bhat**, Jiying Zhao, Hiroshi Takeshima, Hector Valdivia, and Jianjie Ma. (2000). Biochemical and functional characterization of a Ca-regulatory domain of the skeletal muscle ryanodine receptor. *Biophys. J*. **78**: 124A.

28. Zui Pan, Derek Damron, Anna-Liisa Nieminen, **Manjunatha B. Bhat**, and Jianjie Ma. (2000). Depletion of intracellular Ca by caffeine and ryanodine induces apoptosis of Chinese hamster ovary cells transfected with ryanodine receptor. *Biophys. J.* **78**: 187A.

29. Jerry E. Chipuk, Andrew Y. Hsing, **Manjunatha B. Bhat**, Jianjie Ma, and David Danielpour. (2000). Bcl-xL is a potential regulator of apoptosis induced by TGF-β1 in NRP-154 rat prostatic epithelial cells. *Programmed Cell Death Regulation: Basic Mechanism and Therapeutics, AACR.*

30. **Manjunatha B. Bhat**, and Jianjie Ma. (2001). Identificaton of the intracellular localization signal of ryanodine receptor. *Biophys. J.* **80**: 137a.

31. Salim M. Hayek, Miyuki Nishi, **Manjunatha B. Bhat**, Hiroshi Takeshima, and Jianjie Ma. (2001). Generation of mutant mice with knock-in of a mutant skeletal muscle ryanodine receptor lacking the negatively charged D3 region. *Biophys. J.* **80**: 382a.

32. Kalanithee Paul-Pletzer, Takeshi Yamamoto, **Manjunatha B. Bhat**, Jianjie Ma, Noriaki Ikemoto, Leslie S. Jimenez, and Jerome Parness. (2001). Partial mapping of the dantrolene-binding site on

the skeletal muscle ryanodine receptor. *Biophys. J.* **80**: 383a.

33. Dongwook Shin, Zui Pan, Arun Bandyopadhyay, **Manjunatha B. Bhat**, Do Ham Kim, and Jianjie Ma. (2001). Modulation of skeletal muscle ryanodine receptor by calcineurin. *Biophys. J.* **80**: 453a.
34. Yasuyuki Homma, Bishoy Gad, Renee Villaire, Kristen Yankura, Derek Damron, and **Manjunatha B. Bhat**. (2001). Characterization of calcium signaling in nociceptive neurons. *Presented at the Research Day 2001,* Division of Anesthesiology, The Cleveland Clinic Foundation.
35. Dongwook Shin, JaeMan Lee, Zui Pan, **Manjunatha B. Bhat**, Jianjie Ma, and DoHan Kim. (2002). The physiological role of the aspartate-rich region of calsequestrin in regulation of Ca^{2+} homeostasis in skeletal muscle. *Biophys. J*. **82**: 642a.
36. Kalanethe Paul-Pletzer, Takeshi Yamamoto, Noriaki Ikemoto, **Manjunatha B. Bhat**, Jianjie Ma, Leslie S. Jimenez, Hiromi Morimoto, Philip G. Williams, and Jerome Parness. (2002). The dantrolene binding site on the skeletal muscle ryanodine receptor comprises amino acids 590-609. *Biophys. J*. **82**: 81a.
37. Sanjay Bhatia, Leonardo Lozada, **Manjunatha B. Bhat**, P. Krez, and Zeyd Ebrahim. (2002). Utility of a simple method of individualizing hyperventilation among neurosurgical patients.*10th annual meeting of the European Society of Anesthesia*, Nice, France. April 6-9.
38. Yasuyuki Homma, Kristen Yankura, and **Manjunatha B. Bhat**. (2002). Capacitative calcium entry activated by Ca^{2+} release via ryanodine receptors in rat dorsal root ganglion neurons. *10th World Congress on Pain*. San Dieago, CA. August 17-22.
39. Yasuyuki Homma, Seok Kon Kim, Kristen Yankura, and **Manjunatha B. Bhat.** (2002). Propofol potentiates the Ca^{2+} release channel activity of ryanodine receptor in rat dorsal root ganglion neurons. *Annual Meeting of the American Society of Anesthesiologists.* Orlando, FL. October 12-16.
40. Seok Kon Kim, Yasuyuki Homma, Kristen Yankura, and **Manjunatha B. Bhat** (2002). Capacitative Ca^{2+} entry mediated by ryanodine receptors in rat dorsal root ganglion neurons. *Annual meeting of the American Society of Anesthesiologists.* Orlando, FL. October 12-16.
41. Sanjay Bhatia, Zeyd Ebrahim, Leonardo Lozada, **Manjunatha B. Bhat**, and Armin Schubert. (2002). Patient characteristics associated with jugular bulb desaturation during hyperventilation for neurosurgical procedures. *Annual meeting of the American Society of Anesthesiologists*. Orlando, FL. October 12-16.
42. Seok Kon Kim, Yasuyuki Homma, and Kristen Yankura, and **Manjunatha B. Bhat** (2002). Capacitative Ca^{2+} entry mediated by ryanodine receptors in rat dorsal root ganglion neurons. *Annual meeting of the Society for Neuroscience.* Orlando, FL. November 2-7.
43. Mary L. Ruehr, Mary A. Russell, Donald G. Ferguson, **Manjunatha B. Bhat**, Jianjie Ma, Derek S. Damron, John D. Scott, and Meredith Bond. (2003). Targeting of PKA by mAKAP increases ryanodine receptor phosphorylation and regulates ryanodine receptor function. *Annual Meeting of the ASBMB,* San Diego, CA. April 11-15, 2003.
44. Bingfen Liu, Anoop K. Padival, **Manjunatha B. Bhat**, Dawn H. Smith, and Ram H. Nagaraj. (2003). Dicarbonyl modification of an extracellular protein causes apoptosis of retinal pericytes. *Annual meeting of the American Diabetes Association*, New Orleans, LA. June 13-17.
45. Seok Kon Kim, and **Manjunatha B. Bhat.** (2003). Regulation of calcium signaling by protein kinase C in rat dorsal root ganglion neurons. *Annual Meeting of the American Society of Anesthesiologists,* San Francisco, CA. October 11-15.
46. Kristen Yankura, Hongyu Zhang, and **Manjunatha B. Bhat** (2003). Role of vanilloid receptor in the capacitative calcium entry in sensory neurons. *Annual meeting of the American Society of Anesthesiologists,* San Francisco, CA. October 11-15.
47. Hongyu Zhang, Kristen Yankura, and **Manjunatha B. Bhat**. (2003). Expression of endogenous TRP

proteins in sensory neurons. *Annual meeting of the American Society of Anesthesiologists*, San Francisco, CA. October 11-15.

48. Seok Kon Kim, Hongyu Zhang, and **Manjunatha B. Bhat.** (2003). Regulation of calcium signaling by protein kinase C in rat dorsal root ganglion neurons. *Annual Meeting of the Society for Neuroscience,* New Orleans, LA. November 8-12.

49. Mary Ruehr, Daniel Zakhary, Russ Desnoyer, Christine S. Moravec, James B. Young, Patrick McCarthy, **Manjunatha B. Bhat**, Derek S. Damron, John D. Scott, and Meredith Bond. (2004). Regulation of PKA targeting by AKAPs in failing hearts. *XVIII World Congress of International Society of Heart Research*, Brisbane, Australia, August 7-11.

50. Kristen Yankura, Hongyu Zhang, Minh Lam, Anna_Liisa Nieminen, and **Manjunatha B. Bhat** (2004). Functional interaction between ryanodine- and vanilloid receptors. *Annual meeting of the American Society of Anesthesiologists,* Las Vegas, NV. October 23-27*.*

51. Hongyu Zhang, Kristen Yankura, and **Manjunatha B. Bhat**. (2004). Propofol-induced activation of vanilloid receptor: role of protein kinase C. *Annual meeting of the American Society of Anesthesiologists,* Las Vegas, NV. October 23-27*.*

52. **Manjunatha B. Bhat**, Hongyu Zhang, and Kristen Yankura. (2004). Inhibition of the Ca^{2+} release channel activity of ryanodine receptor by propofol. *Annual meeting of the American Society of Anesthesiologists,* Las Vegas, NV. October 23-27*.*

53. **Manjunatha B. Bhat**, Hongyu Zhang, and Kristen Yankura. (2005). Activation of vanilloid receptor (TRPV1) by propofol in rat dorsal root ganglion neurons. *International Anesthesia Research Society 79th clinical and scientific congress.* Honolulu, HI. March 11-15.

54. **Manjunatha B. Bhat**, Kristen Yankura, and Hongyu Zhang. (2005). Calcium signaling in sensory neurons: interaction between ryanodine- and vanilloid receptors. *World congress on pain*, Sydney, Australia. August 21-26.

55. Kristen Yankura, Hongyu Zhang, Minh Lam, Anna_Liisa Nieminen, and **Manjunatha B. Bhat** (2005). Regulations of ryanodine receptor function by vanilloid receptor. A*nnual meeting of the American Society of Anesthesiologists,* Atlanta, GA. October 22-26*.*

56. **Manjunatha B. Bhat**, Hongyu Zhang, and Kristen Yankura. (2005). Intracellular calcium signaling in nociceptive and nonnociceptive neurons. A*nnual meeting of the American Society of Anesthesiologists,* Atlanta, GA, October 22-26*.*

57. **Manjunatha B. Bhat**, Bridget V. Essley, and Hongyu Zhang. (2006). Role of vanilloid receptor in calcium homeostasis in nociceptive neurons. *Annual meeting of the American Society of Anesthesiologists*. Chicago, IL. October 14-18.

58. Hongyu Zhang, Kristen Yankura, and **Manjunatha B. Bhat.** (2006). Propofol-mediated desensitization of vanilloid receptor: role of protein kinase c. *Annual meeting of the American Society of Anesthesiologists*. Chicago, IL. October 14-18.

59. Hongyu Zhang, Kristen Yankura, and **Manjunatha B. Bhat.** (2006). Activation of vanilloid receptor by Alkylphenols. *Annual meeting of the American Society of Anesthesiologists*. Chicago, IL. October 14-18.

60. **Manjunatha B. Bhat**, Stephen Yates, and Bridget Essley. (2006). Effect of levetiracetam on intracellular Ca^{2+} signaling in sensory neurons. *American Epilepsy Society,* San Diego, CA. December 1-5.

61. Ilir Elias Veizi, and **Manjunatha B. Bhat.** (2007). Store-operated calcium entry in nociceptive neurons. *Annual meeting of the Biophysical Society*, Baltimore, MD. March 3-7.

62. Richard Stewart, Lele Song, Kanamarlapudi Venkateswarlu, **Manjunatha B. Bhat**, Hiroshi Takeshima, and Rebecca Sitsapesan. (2007). Single-channel study of recombinant rabbit RyR2 identifies a novel inactivating property of ATP. *Life Sciences 2007 Meeting*, Glasgow, U.K. July 8-

12.

63. Qing Liu, **Manjunatha B. Bhat**, Jianguo Cheng, and Wayne D. Bowen. (2007). Modulation of NMDA-induced intracellular Ca^{2+} homeostasis by cannabinoid receptors in spinal sensory neurons. *Annual meeting of the American Society of Anesthesiologists.* San Francisco, CA. October 14-17.
64. Ilir Elias Veizi, and **Manjunatha B. Bhat**. (2007). Calcium signaling through store-operated channels in human airway epithelial cells. *Annual meeting of the American Society of Anesthesiologists.* San Francisco, CA. October 14-17.
65. **Manjunatha B. Bhat**, and Ilir Elias Veizi. (2007). Inhibition of neuronal ryanodine receptor-mediated calcium signaling by pyrazole derivative, BTP2. *Annual meeting of the American Society of Anesthesiologists.* San Francisco, CA. October 14-17.
66. Bridget V. Essley, Yoko Arakawa, and **Manjunatha B. Bhat.** (2007). PKC-dependent activation of vanilloid receptor by propofol. *Annual meeting of the American Society of Anesthesiologists.* San Francisco, CA. October 14-17.
67. Jeffrey L. Overholt, **Manjunatha B. Bhat** and Azeez Aileru (2009). Comparison of K, Na and Ca current density in dorsal root ganglia neurons from mRen27 hypertensive and control rats. Faces of Health conference. Winston-Salem, NC. November 3-6.
68. Belen Belete, Exzaveia Logan, Amber Johnson, **Manjunatha B. Bhat** and Azeez Aileru. (2009). Age dependent expression of Angiotensin receptor-1 (AT-1) in the superior cervical ganglia of (mRen2)27 versus Sprague-Dawley (HnSD) rats. Faces of Health conference, Winston-Salem, NC. November 3-6.
69. Sarah H. Lindsey, **Manjunatha B. Bhat**, Azeez A. Aileru, and Mark C. Chappell (2011). GPR30 regulates Ang II binding and calcium mobilization in mesenteric smooth muscle cells. Submitted for presentation at Experimental Biology 2011 conference, Washington, D.C. April 9-13.
70. Joshua Hayes, Keiyana Hamlet, Danzel Scotton, Chinameze Okoro, and **Manjunatha B. Bhat** (2012). Mechanisms of propofol-induced pain. WSSU Scholarship Day, April 10
71. Keiyana Hamlet, Niaya McCleave, **Manjunatha B. Bhat**, and Jeffrey L. Overholt. (2013). The effect of propofol and capsaicin on TRP currents in DRG neurons. WSSU Scholarship Day, Apri 9.
72. Niaya McCleave, Keiyana Hamlet, **Manjunatha B. Bhat**, and Jeffrey L. Overholt. (2013). Pain sensing mechanisms: TRPV1 and propofol. WSSU Scholarship Day, April 9.
73. Edie A. Pettiford, Amanda Nieves, John A. Siegrist, Jeffrey L. Overholt, and **Manjunatha B. Bhat.** (2013). Propofol-induced pain: role of TRP channels. WSSU Scholarship Day, Apil 9.
74. Aquila Barrett, Patrick Herriott, Jr., Jeffrey L .Overholt, and **Manjunatha B. Bhat** (2014). TRPV1 receptor activation by propofol analogs. Summer Undergraduate Research Experience (SURE) presentation. June 2014.
75. Taylor Young, Brianna Hughes, **Manjunatha B. Bhat**, and Jeffrey L. Overholt. (2014). Pain sensing mechanisms: Effects of propofol and capsaicin on TRP currents in DRG cells. Annual Biomedical Research Conference for Minority Students (ABRCMS), San Antonio, TX, Nov 12-15, 2014.
76. Tanya Zubov, Bianca Golden, **Manjunatha B. Bhat**. (2016). Mechanisms of propofol-induced pain: effects of capsaicin- and ryanodine receptors. WSSU Scholarship Day, April 14.
77. Tanya Zubov, Bianca Golden, **Manjunatha B. Bhat**. (2016). Mechanisms of propofol-induced pain: effects of capsaicin- and ryanodine receptors. Annual Biomedical Research Conference for Minority Students (ABRCMS), Tampa, FL. Nov 8-13, 2016.
78. Tanya Zubov, and **Manjunatha B. Bhat** (2017). Regulation of calcium signaling by propofol analogs: effects on capsaicin- and ryanodine receptors. WSSU Scholarship Day, April 6.

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