

JAY BHATT

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EDUCATION

University of Alabama at Birmingham (UAB)

PhD candidate, Neuroscience theme, Dr. Elizabeth Sztul's Lab

Birmingham, AL

2010-2016

Dissertation title: Structure-function relationships in the sec7 guanine nucleotide exchange factor GBF1

GBF1 is a guanine nucleotide exchange factor (GEF) that activates monomeric GTPases called ADP-ribosylation factors (ARFs) at the Golgi. GBF1 is a multidomain protein consisting of a central Sec7 domain that catalyzes ARF activation and other additional highly conserved non-catalytic domains with poorly understood functions. My project aimed to understand the role of the non-catalytic domains in regulating GBF1 activity and functioning at the Golgi.

Creighton University

Masters in Pharmaceutical Sciences, Pharmacology Theme, Dr. Shashank David's lab

Omaha, NE

2008-2010

Thesis title: Effects of Ifenprodil on the gating of NR1/2B NMDA receptors

Ifenprodil, a NMDA receptor antagonist, binds to the Amino Terminal Domain (ATD) of GluN1a/GluN2B subunit containing NMDA receptors. The aim of my project was to delineate the inhibitory effects of ifenprodil on GluN1/GluN2B NMDA receptor gating. I used techniques in electrophysiology, specifically cell-attached patches and outside-out patches in HEK293 cells and also developed various theoretical kinetic models to find out which NMDA receptor conformations are affected by the binding of ifenprodil.

Mumbai University, Bombay College of Pharmacy

Bachelor of Pharmacy

Mumbai, India

2004-2008

ADDITIONAL TRAINING

- Teaching Certificate, Center for the Integration of Research, Teaching and Learning Program (CIRTL) 2015
Trained to implement **evidence-based** teaching/mentoring practices in undergraduate STEM education
- Optical Microscopy and Imaging in Biomedical Sciences training course, Marine Biology Lab (MBL), Woods Hole, MA 2013
- Internship with Agog Pharmaceuticals, Mumbai, India 2007
Trained in Quality Control, Quality Assurance, Production and Packaging Departments

PUBLICATIONS

Peer-reviewed research:

- Bhatt JM**, Viktorova EG, Busby T, Wyrozumska P, Newman LE, Lin H, Lee E, Wright J, Belov GA, Kahn RA, Sztul E. Oligomerization of the Sec7 domain Arf guanine nucleotide exchange factor GBF1 is dispensable for Golgi localization and function but regulates degradation. *Am J Physiol Cell Physiol*. 2015 Dec 30. ajpcell.00185.2015
- Edwards MW, Aultman JA, Harber G, **Bhatt JM**, Sztul E, Xu Q, Zhang P, Michalek SM, Katz J. Role of mTOR Downstream Effector Signaling Molecules in Francisella Tularensis Internalization by Murine Macrophages. *PLoS One*. 2013 Dec 3; 8 (12)

3. Yadav R, Hillman BG, Gupta SC, Suryavanshi P, **Bhatt JM**, Pavuluri R, Stairs DJ, Dravid SM. Deletion of glutamate delta-1 receptor in mouse leads to enhanced working memory and deficit in fear conditioning. PLoS One, 2013 Apr 3; 8 (4)
4. **Bhatt JM**, Prakash A, Suryavanshi PS, Dravid SM. Effect of Ifenprodil on GLuN1/GluN2B NMDA Receptor Gating. Mol Pharmacol. 2013 Jan; 83 (1): 9-21.
5. Yadav R, Gupta SC, Hillman BG, **Bhatt JM**, Stairs DJ, Dravid SM. Deletion of Glutamate Delta-1 Receptor in Mouse Leads to Aberrant Emotional and Social Behaviors. PLoS One, 2012 Mar 7 (3)

Book chapter:

6. **Bhatt JM**, Styers ML, Sztul ES. Expression of epitope-tagged proteins in mammalian cells in culture. Immunoelectron microscopy: methods and protocols. Methods in Molecular Biology (Springer protocols), Humana Press. Dec 2015

Publication in-preparation:

1. **Bhatt JM**, Challa AK. First Year Course-Based Undergraduate Research Experience (CURE) using the CRISPR/Cas9 genome engineering technology in zebrafish. (Journal of Microbiology and Biology Education, Summer 2016)
2. **Bhatt JM**, Lee E, Bergstresser S, Kaushik N, Belov GA, Sztul E. Defining membrane association requirements for the Sec7 domain exchange factor GBF1

TEACHING EXPERIENCE

✚ Instructor, Special Topics: Molecular Genetics Research (CH460), Miles College, Fairfield, AL	2016
✚ Guest lecturer: Organic Chemistry II lab (CH306L), Miles College, Fairfield, AL	2015
✚ Teaching Assistant: Molecular genetics lab (STH-201), UAB	2015
✚ Guest lecturer: Historical Neuroscience Literature Journal Club (GBS-734), UAB	2012
✚ Tutored undergraduate students at Creighton University in biology, anatomy and physiology	2008-2009

RESEARCH MENTORING EXPERIENCE

Medical students	Melissa Mays, UAB	Summer 2013
	Dan Gioia, Creighton University	Summer 2009
Post-doctoral scholars	Dr. Nanda Thudi, UAB	2015
	Dr. Justyna Meissner, UAB	2015-present
Graduate students	William Hancock, UAB	2014
	Theodore Busby, UAB	2014
Undergraduate students	Akhil Kaushik, UAB	2014-present
	Shelby Bergstresser, UAB	2014-15
	Bliss Chang, UAB	2014
	Esha Kaushik, UAB	2013-present
	Shruti Simlot, UAB	2015-present
High School student	Neeralee Pandit, Oak Mountain High School	Summer 2014

AWARDS AND HONORS

Honors

- ✚ The Barker Award, Outstanding graduate student, UAB Graduate School, Excellence in graduate studies, exceptional hard work and dedication 2016
- ✚ University Leadership and Service Award, UAB Student Service, 40th Annual UAB Honors Convocation 2015
- ✚ Morris Award by Graduate Student Government, Exemplary leadership, generosity and service to UAB 2015
- ✚ "Best Student Award" awarded by the Indian Pharmaceutical Association for being the best student in the entire city of Mumbai (1 out of ~1000 students) 2008
- ✚ "Best Student Award", Bombay College of Pharmacy, Mumbai University (1 out of 66 students) 2008
- ✚ "Outstanding Student Award" St. Francis D'Assisi High School, Mumbai (1 out of 85 students) 2002

Scholarships

- ✚ Dean's Scholarship, UAB Graduate School (2 out of ~7000 graduate students) 2015
- ✚ CIRTL scholarship, to pursue to a teaching/professional development course at UAB 2015
- ✚ Ramesh Banatwala Memorial Scholarship, Mumbai University 2008
- ✚ Sir Ratan Tata Scholarship for academic excellence, Mumbai University 2006
- ✚ Sir Ratan Tata Scholarship for academic excellence, Mumbai University 2005

Competitions

- ✚ First prize, Poster competition, Alabama Academy of Science 92nd annual meeting 2015
- ✚ Second prize, Video contest, ASCB 'Share you Science' 2014
- ✚ First prize, Poster competition, Graduate Biomedical Sciences Research symposium, UAB 2014

Travel Awards

- ✚ Travel Award, Alabama Academy of Science 92nd annual meeting 2015
- ✚ Travel Scholarship, American Society for Cell Biology (ASCB)- Committee for Postdocs and Students (COMPASS) award 2014
- ✚ Travel Award, UAB Graduate Student Government, ASCB annual meeting 2014
- ✚ Travel Scholarship, American Society for Cell Biology (ASCB)- Committee for Postdocs and Students (COMPASS) award 2013
- ✚ Travel Award, UAB Graduate Student Government, ASCB annual meeting 2013
- ✚ Ireland Scholar, UAB, Travel to Marine Biology Lab (MBL), Woods Hole, MA 2013

RESEARCH GRANTS

- ✚ SigmaXi Grants-in-Aid of Research 2015-16
- ✚ Alabama Academy of Science Research Award 2015
- ✚ Golden Key Research Grant 2014

INVITED GUEST TALKS

- + 'Creating and Presenting Dynamic Posters' workshop, Undergraduate summer research programs, UAB 2015
- + Challenges of international students. UAB International Mentors Program, Birmingham, AL 2014 and 2015
- + 'My research at UAB', Birmingham Rotary Club, Birmingham: International Guest Perspective 2014
- + Opportunities for international graduate students at UAB. International students Orientation 2014
- + Graduate School- Research and Beyond! Mumbai University, BN College of Pharmacy, Mumbai, India 2014
- + How to successfully apply and interview for Graduate School? S.T.E.M. conference hosted at UAB, sponsored by ASCB, Birmingham, AL 2013
- + Cell Biology- Vesicle formation and Beyond! Oakwood University, Huntsville, AL 2013

ORAL PRESENTATIONS

- + University of Alabama at Birmingham, CDIB Departmental Retreat 2015, Birmingham, AL
 - o Title: Structure-function investigation of the C-terminal HDS domains of the Sec7 Guanine nucleotide exchange factor GBF1
- + University of Alabama at Birmingham, Graduate Student Research Days 2015, Birmingham, AL
 - o Title: Structure-function investigation of the C-terminal HDS domains of the Sec7 Guanine nucleotide exchange factor GBF1
- + University of Alabama at Birmingham 2014, Birmingham, AL
 - o Title: Understanding the role of ARF-GEFs in membrane traffic
- + Southern Cell Biology Research Symposium 2013, Tuskegee University, AL
 - o Title: Molecular mechanisms regulating vesicle formation
- + University of Alabama at Birmingham, CDIB Department Retreat 2013, Birmingham, AL
 - o Title: Molecular mechanisms regulating vesicle formation
- + University of Alabama at Birmingham 2013, Birmingham, AL
 - o Title: Molecular mechanisms regulating vesicle formation
- + University of Alabama at Birmingham 2012, Birmingham, AL
 - o Title: Molecular mechanisms regulating vesicle formation
- + Creighton University Research Day 2010, Omaha, NE
 - o Title: Effects of Ifenprodil on NR1/NR2B NMDA Receptor Gating

POSTER PRESENTATIONS

- + Graduate Student Research Exchange Day, UAB 2015, Birmingham, AL
 - o Title: First Year Course-Based Undergraduate Research Experience (CURE) Using the CRISPR-Cas9 Genome Engineering Technology in Zebrafish
- + Society for Advancement of Biology Education Research (SABER) National meeting 2015, Twin cities, MN
 - o Title: First Year Course-Based Undergraduate Research Experience (CURE) Using the CRISPR-Cas9 Genome Engineering Technology in Zebrafish
- + Alabama Academy of Science, 92nd Annual meeting 2015, Livingston, AL
 - o Title: Structure-function investigation of the C-terminal HDS domains of the Sec7 Guanine nucleotide exchange factor GBF1
- + ASCB Annual meeting 2014, Philadelphia, PA
 - o Title: Structure-function investigation of the C-terminal HDS domains of the Sec7 Guanine nucleotide exchange factor GBF1

- ✚ National Association of Graduate and Professional students (NAGPS), University of Missouri – Columbia 2014, Columbia, MO
 - Title: Role of HDS3 domain in regulating the activity of Sec7 guanine nucleotide exchange factor GBF1
- ✚ Graduate Biomedical Sciences Research Symposium, UAB 2014, Birmingham, AL
 - Title: Role of HD S3 domain in regulating the activity of Sec7 guanine nucleotide exchange factor GBF1
- ✚ ASCB Annual meeting 2013, New Orleans, LA
 - Title: Role of HDS3 domain in regulating the activity of Sec7 guanine nucleotide exchange factor GBF1
- ✚ STEM conference at UAB, sponsored by ASCB 2013, Birmingham, AL
 - Title: Role of HDS3 domain in regulating the activity of Sec7 guanine nucleotide exchange factor GBF1
- ✚ Graduate Biomedical Sciences Research Symposium, UAB 2013, Birmingham, AL
 - Title: Role of HDS3 domain in regulating the activity of Sec7 guanine nucleotide exchange factor GBF1
- ✚ University of Alabama at Birmingham, Student Research Retreat 2012, Birmingham, AL
 - Title: Molecular mechanisms regulating vesicle formation
- ✚ University of Alabama at Birmingham, 2011, Birmingham, AL
 - Title: Subcloning Mammalian Flippase Tails into a Bacterial Expression Vector
- ✚ University of Alabama at Birmingham, “Neuroscience Day” 2011, Birmingham, AL
 - Title: Individual variability in oscillatory EEG activity correlates to behavior
- ✚ University of Alabama at Birmingham, 2010, Birmingham, AL
 - Title: siRNA Mediated Knockdown of the Chaperones that interact with Hsc70 in Glioma cells
- ✚ SFN Conference "Neuroscience 2010", 2010, San Diego, CA
 - Title: Effects of Ifenprodil on NR1/NR2B NMDA Receptor Gating
- ✚ Midwest Student Biomedical research Forum 2010, Omaha, NE
 - Title: Allosteric modulation of NR1/NR2B NMDA receptor by Ifenprodil
- ✚ Avishkar Inter-Collegiate Research Convention 2008, Mumbai, India
 - Title: Caffeine and Caffeine Dependence

LAB SKILLS

<u>Molecular Biology</u>	DNA amplification, primer design, PCR, molecular subcloning, mutagenesis, gel electrophoresis, protein expression and purification, Western blot, Co-Immunoprecipitation, Pull-down assays, limited proteolysis with Trypsin, CRISPR guide RNA design
<u>Imaging:</u>	Immunofluorescence, Confocal Z-stack imaging, colocalization analysis, Live cell imaging: FRAP analysis, iVision imaging software, Volocity software
<u>Bioinformatics:</u>	Sequence alignment, BLAST analysis, numerous proteomics tools
<u>Cell culture:</u>	<ul style="list-style-type: none"> ✚ Mammalian cell culture: HeLa, HEK 293, D54 MG, U251 and SKMG cell lines ✚ Primary Neuronal cultures: Neocortical Neuron culture and Cerebral Granule Neuron culture ✚ Transient transfections, siRNA mediated protein silencing, generating stable cell lines
<u>Animal behavior:</u>	Behavioral tests in mice to study depression, anxiety, social behavior; learning and memory such as open field, forced swim, elevated plus maze, resident intruder, 8-arm radial maze, conditioned place preference and novel object recognition.
<u>Electrophysiology:</u>	Patch clamp techniques- whole cell recordings and single channel recordings (cell-attached and outside-out modes), QuB software

EDITORIAL EXPERIENCE

- ✚ Reviewer, Nevada State Undergraduate Research Journal (NSURJ) 2014
- ✚ Reviewer, Public Information Committee, ASCB Press Book 2014
- ✚ Editorial team, ASCB COMPASS blog (~50 articles) 2014
- ✚ Reviewer, ePoster talk abstracts for ASCB Annual Meeting (5 sessions) 2013 and 2014

AMERICAN SOCIETY FOR CELL BIOLOGY (ASCB) INVOLVEMENT

- ✚ Chair, Annual meeting ePoster sessions, Membrane traffic and Organelle dynamics sessions (5 sessions) 2013 and 2014
- ✚ Editorial team, COMPASS blog (~50 articles) 2014-2016
- ✚ Public Information Committee (PIC) Associate 2014
- ✚ Member, Committee for Postdocs and students (COMPASS) 2013-2016

LEADERSHIP POSITIONS

- ✚ Student Advisor, UAB's 5-year Quality Enhancement Plan (QEP 2015-2020) 2014-15
- ✚ President, Association of Indian Students, UAB, Birmingham, AL 2012-13
- ✚ Senator, Graduate student Government (GSG) at UAB 2012-15
- ✚ Secretary, International Student Association, Creighton University, Omaha, NE 2009-10

COMMUNITY INVOLVEMENT

- ✚ Project leader, UAB GSG Toys for Tots drive 2013, 2014 and 2015
- ✚ Judge, UAB Summer Research EXPO, Life Sciences Posters 2013 and 2014
- ✚ Judge, Central Alabama Regional Science and Engineering Fair (CARSEF), Chemistry research projects, 5th-9th grade students 2013
- ✚ Event leader, "Brain Awareness Week" at the McWane Science Center organized by the Comprehensive Neuroscience Center (CNC-UAB) 2013
Taught kids (age 3-15 yrs.) how the human brain and eye function and what is the biological basis of optical illusions (**Total attendance: 245+ kids over 5 days**)
- ✚ Volunteer, "Brain Awareness Week", McWane Science Center. 2012
Taught kids (age 3-15 yrs.) how the human brain works, performed brain dissections and chemosensory demonstrations in human taste perception and optical illusions