

Diana M. Horrigan, Ph.D.
Diana_Horrigan@Brown.edu

1. Name, Position, Department

Diana M. Horrigan, Ph.D.
Senior Lecturer, Biology
Department of Pathology and Laboratory Medicine
Brown University
Providence, RI 02912

2. Address

Office: Biomedical Center, Room 485, 401-863-5014

3. Education

Brown University, Providence, RI 2001-2006

Degree: Ph.D. in Biomedical Sciences

Thesis Title: Defining the Mechanism of Retinoid Inhibition of the Rod Cyclic Nucleotide-gated Ion Channel

Department: Molecular Pharmacology, Physiology, & Biotechnology

Courses Taken: Biology of the Eukaryotic Cell (BIOL 2050); Mammalian Physiology (BIOL 1170); Neuropharmacology & Synaptic Transmission (NEUR 1670); Physiological Pharmacology (BIOL 1260); Molecular Genetics (BIOL 2540); Receptors, Channels, & Signaling (BIOL 2170); Cell Physiology & Biophysics (BIOL 1100); Principles of Neurobiology (NEUR 1020)

Assumption College, Worcester, MA 1997-2001

Degree: B.A., Cum Laude

Major: Biology

Minor: Spanish

Concentration: Secondary Education, Biology

Initial Teacher Certification in MA; #369540

Honors: Presidential Scholarship for Excellence in Academics (1997-2001)

4. Professional Appointments

Brown University, Providence, RI,

Medical Sciences Academic Unit, Biology Education, Primary Appointment

Department of Pathology & Laboratory Medicine, Secondary Appointment

Senior Lecturer 2021-present

Department of Molecular Pharmacology, Physiology & Biotechnology

Senior Lecturer 2019-2021

Lecturer 2011-2019

Bryant University, Smithfield, RI Winter 2016-present

Adjunct Clinical Assistant Professor, Brown-Partnered Physician's Assistant Program

Assumption College, Worcester, MA 2009-2011

Visiting Assistant Professor, Department of Natural Sciences

Brown University, Providence, RI September 2008- 2009
Research Assistant, Department of Molecular Pharmacology, Physiology, &
Biotechnology, Dr. Elena Oancea's lab

Bridgewater State College, Bridgewater, MA
Adjunct Lecturer, Department of Biological Sciences Fall 2008
Adjunct Lab Instructor (adjunct) Spring 2008
Visiting Assistant Professor 2006-2007

Society for Amateur Scientists, East Greenwich, RI/Aurora, IL 2007-2008
Director of Program Development, Labrats (an informal science education
program for 6th through 12th graders)

5. Teaching

Brown University, Providence, RI September 2011-present
Senior Lecturer

- BIOL 0800 Principles of Physiology (Fall 2011)
- BIOL 1100 Cell Physiology & Biophysics (Spring 2012- 2023)
- BIOL 1160 Exercise Physiology (Fall 2013)
- BIOL 2145 Molecular Targets of Drug Discovery (Spring 2013-2023)
- BIOL 2170 Molecular Pharmacology & Physiology (Fall 2012-Spring 2023)
- BIO 2190 (formerly 2940A) MPP Professional Development Seminar (2012-2021)
- BIOL 2250 Survey of Modern Therapeutics (Fall 2022- 2023)
- Brown/Pfizer Master of Art's Program: Molecular Targets of Drug Discovery, Fall 2019 (at Pfizer's Groton, CT site)

Guest Lectures

- BIOL 1100 Cell Physiology and Biophysics
 - Ligand-gated Ion Channels (Spring 2018)
- CEBI 0958 Drug Discovery: Treating Human Disease Through Medicine
 - Cardiovascular Physiology & Disease (Summer 2015)
 - Avenues for Careers in Science (Summer 2013)
- Hamilton House, Providence, RI (Fall 2014)
 - Invited Lecture: Extreme Physiology of the Human Body
- Brown HHMI Summer Scholars Program, Morgan Lab (Summer 2013)
 - Drug Discovery
- BIOL 1180 Comparative Animal Physiology (Spring 2013)
 - Blood Gas Transport
- BIOL 1160 Exercise Physiology (Fall 2012)
 - Muscle Physiology I & II
 - Endocrinology I & II
 - Microgravity
- BIOL 2170 (Fall 2011)
 - Respiratory Physiology I, II & III

Course Development

- BIOL 2145 Molecular Targets of Drug Discovery
 - Developed this course in 2012 to supplement courses in the MPPB/BME Ph.D. and Master's Programs, specifically for those students interested in careers in industry
- BIOL 2190 MPP Professional Development Seminar
 - I modified this course in 2012 to emphasize skills critical for success in graduate school, in particular the MPP Program

- Have continually re-focused the course to cover topics relevant for the T32 Training Grant as well as continued revisions to the MPP Graduate Program guidelines
- Moved the course from spring to fall semester so that students could write (and potentially submit) an NSF GRFP application, and to strengthen students' oral presentation skills in preparation for required departmental talk first year MPP students must give each May
- BIOL 2250 Survey of Modern Therapeutics
 - Volunteered to develop a new required course for the Therapeutic Sciences Graduate Program
 - Worked with industry partners to design innovative assessments to prepare students for a potential career in industry
 - Offered Fall 2022 for the first time

Bryant University, Smithfield, RI Winter 2016-present
Adjunct Clinical Assistant Professor, Brown-Partnered Physician's Assistant Program
Courses Taught

- PA 501 Physiology and Pathophysiology

Assumption College, Worcester, MA 2009-2011
Visiting Assistant Professor, Department of Natural Sciences
Courses Taught

- BIO 160 Concepts in Biology lab
- BIO 240 Mammalian Anatomy lecture and lab
- BIO 250 Microbiology lecture and lab
- BIO 340 Molecular and Cellular Biology lecture and lab
- BIO 102 Human Biology lecture and lab

Bridgewater State College, Bridgewater, MA
Adjunct Lecturer, Department of Biological Sciences Fall 2008
Adjunct Lab Instructor Spring 2008
Visiting Assistant Professor 2006-2007
Courses Taught

- BIOL 100 Introduction to Biology lecture
- BIOL 102 Introduction to Zoology lecture
- BIOL 200 Cell Biology lab

6. Advising and Service

a. Advising & Service to Brown University

Preview Day Representative for TSGP October 2023

- Organize events and serve as a representative for the Therapeutic Sciences Graduate Program (TSGP) to recruit
- Support Brown's commitment to diversity, equity and inclusion

Biotechnology Advisory Committee September 2023-present

- Work with other stakeholders to make recommendations to grow and improve the Biotechnology Master's Program

Therapeutic Sciences Graduate Program July 2023-present
Co-director of PhD Program

BioMed Biostatistics Taskforce July 2023-present

<i>Therapeutic Sciences Graduate Program Coordinator Search Committee</i>	Spring 2023, Fall 2023
<i>UTRA/SPRINT Reviewer</i>	Spring 2023
<i>BUE DIAP Phase II</i>	2022-present
<ul style="list-style-type: none"> • Participate in developing BUE DIAP Phase II goals 	
<i>Science Fridays</i>	2021-present
<i>MCB Lecturer Search Committee (successful search)</i>	Spring 2022
Served as Diversity Representative	
<i>Peer Evaluations</i>	
<ul style="list-style-type: none"> • Observe classes of peers (Lecturers, other instructors at Brown) and write peer evaluation reports 	
<i>Peer Mentoring</i>	
Milda Zizyte, Computer Science	2021-2023
<i>Biophysics Concentration Review Committee</i>	2021-2022
<i>MMI Lecturer Search Committee (successful search)</i>	Spring 2021
<i>Therapeutic Sciences Graduate Program</i>	2021-2023
Member of Development Committee	
Member of Organizing Committee	
Member of Graduate Program Committee	
Member of Admissions Committee	
Curriculum Director for PhD Program	
<i>Teaching in the Brown/Pfizer Master of Arts Program</i>	Fall 2019
<i>Standing Committee on Academic Code, elected member, 3-year term</i>	2018-2021
<i>First Year Advisor</i>	2012-2013, 2013-2014, 2015-2016, 2016-2017, 2018-2019, 2019-2020, 2020-2021, 2021-2022
<ul style="list-style-type: none"> • Academic advisor for 4-6 first year undergraduates each year • Worked in collaboration with Meiklejohn Peer Advisors 	
<i>MPPB/BME Career Panel Organizer/Facilitator</i>	2017-2021
<i>Member of the Molecular Pharmacology & Physiology Graduate Executive Committee</i>	
<ul style="list-style-type: none"> • Serve as a general member of the committee • Have worked with MPP and Biotech students to facilitate the nomination of a student-invited MPPB seminar speaker 	Fall 2016-2021
<i>Faculty Advising Fellow (FAF)</i>	3-year term, Fall 2016-2019
<ul style="list-style-type: none"> • Facilitate at least 3 student-faculty advising discussions per semester on topics ranging from double-concentrating, writing an honors thesis, leveraging a liberal education, etc. 	
<i>TEAM STEM: Team Enhanced Advising and Mentoring in STEM</i>	2016-present

- Meet with other TEAM members monthly to discuss topics related to advising in STEM fields
- Monthly readings related to TEAM meetings topic and participation in TEAM book club

Young Scholars Conference (hosted by GWISE) 2016-2018

- Poster judge

TEAM: Team Enhanced Advising and Mentoring 2015-2016, 2020-2022

- Meet with other TEAM members monthly to discuss topics related to advising in general
- Monthly readings related to TEAM meetings topic

WE-Teach-STEM: Women Educators Teaching in STEM, Sarah Doyle Women's Center 2015-2016

Concentration Advisor 2014-present

- Biology and Biophysics concentration advisor for 3-12 advisees per year, on average
- Work with advisees on formulating a concentration plan and future career plans

Sophomore Advisor 2013-present

- Continuation of academic advising for first year advisees plus additional advisees as assigned (3-7 advisees per year, on average)

Informal Advising Roles 2011- present

- Have met with many undergraduate and graduate students outside of class time to discuss such topics as course selection, career options and post-graduation plans
- Have written letters of recommendation for graduate school, medical school, summer internships, fellowships, etc.
- Continuation of informal advising for two of my first year advisees from 2012-2013 academic year
- As Course Director of BIOL 2190 Molecular Pharmacology and Physiology Professional Development Seminar, I informally advise all first year MPP Ph.D. students who are required to take this course
- Participation in Advising Open Houses for students sponsored by The College

b. Service to the Scientific Profession

Reviewer, Handbook of Ion Channels, CRC Press February 2020

Reviewer, CourseSource open-access journal 2018-present

Ad Hoc Reviewer, Top Hat online textbook, Biology for Non-Majors, 2018-present
Chapter 29: Audition

Contributing Author, Top Hat online textbook, Anatomy & Physiology in Context
Chapter 13: Specialized Senses 2016-present

Review Editor, Frontiers in Molecular Neuroscience 2016-present

Ad Hoc Reviewer, Frontiers in Genetics 2018-present

Ad Hoc Reviewer, Journal of Undergraduate Neuroscience Education 2016

c. STEM Outreach and Public Service

Facilitator, STEM Career Day, grades 7-8 March 2022
Our Lady of the Valley Regional School, Uxbridge, MA

- Gave an informational presentation on careers in STEM followed by Q&A

Facilitator, STEM Research Day, grades 6-8 March 2019, 2022
Our Lady of the Valley Regional School, Uxbridge, MA

- Several Brown graduate students gave short research presentations to middle school students
- Individual group Q&A sessions

Career Night Panelist, Assumption College November 2019

Participant, FaB (Find a Biophysicist) Network 2018-Present

Co-facilitator, After School STEM Program, grades K-3 2015-2019
Our Lady of the Valley (OLV) Regional School, Uxbridge, MA

- Weekly after school science club to engage young children in science, math and engineering related activities

South Shore Regional Science Fair, Judge 2007-2010, 2012

7. Honors & Awards

Elizabeth LeDuc Award for Excellence in Teaching in the Life Sciences 2019

8. Thesis Committees & Independent Study Projects

Cynthia Bui	Brown University, earned MS degree (Biotechnology) spring 2023
Rebeka Sowers	Brown University, earned MS degree (Biotechnology) spring 2023
Tobias Hildebrandt	Brown University, earned MS degree (Biotechnology) spring 2023
Kevin Song	Brown University, earned MS degree (Biotechnology) spring 2023
Sarah Twinney	Brown University, earned MS degree (Biotechnology) spring 2023
Yoonah Lee	Brown University, Independent, Study Fall 2022
Garrison Keithline	Brown University, earned MS degree (Biotechnology) spring 2022
Joshaya Trotman	Brown University, earned MS degree (Biotechnology) spring 2022
Huy Tran	Brown University, earned ScB degree (Biology), Indep Study Spring 2021
Derek Rott	Brown University, earned MS degree (MPPB), Spring 2019
Clara Maynard	Brown University, earned BA degree (Biology), indep. study, Spring 2017
Srinidhi Bellamkonda	Brown University, earned MS degree (BME), Spring 2017
Kevin Wood	Brown University, earned MS degree (BioMed), Spring 2017
Elizabeth Bolton	Brown University, earned BS degree (Biochemistry), Spring 2016
Samantha Woodward	Brown University, earned MS degree (MPPB), Spring 2016
Kent Leslie	Brown University, earned MS degree (MPPB), Spring 2015
Jennifer Nedow	Brown University, earned MS degree (MPPB), Spring 2015
Michelle Bookstaver	Brown University, earned MS degree (BME), Spring 2014

9. Conferences & Seminars Attended (since 2011)

<i>Publishing in The Biophysicist, The Biophysical Society, webinar</i>	January 2022
<i>Rethinking Assignments Across Disciplines, Brown University</i>	October 2021
<i>Evidence-Based Approaches to Improve Your Teaching-Designing Assessments, The Biophysical Society, webinar</i>	April 2021
<i>Biophysicists Address Covid-19 challenges, The Biophysical Society, webinar</i>	October 2020
<i>The Do's and Don'ts of Managing a Pivotal Gene Therapy Trial, webinar</i>	January 2020
<i>Transporters in Drug Discovery & Development Workshop, Univ. of RI</i>	August 2019
<i>Massachusetts STEM Summit, Worcester, MA</i>	November, 2018
<i>What is a Course-based Undergraduate Research Experience (CURE) and how do I teach one?, Sheridan Center, Brown University</i>	September 2018
<i>How to Teach Students with Asperger's, SEAS Office, Brown Univ.</i>	September 2015
<i>Informal Science Communication Workshop, Sheridan Center, Brown Univ.</i>	April 2015
<i>Using Case Studies in Science, Sheridan Center, Brown University</i>	March 2014
<i>Talking Science with Cornelia Dean, Sheridan Center, Brown University</i>	February 2014
<i>Learning and the Brain, Engaging Students in the Classroom, Boston</i>	November 2013
<i>Online Courses at Brown, Sheridan Center, Brown University</i>	October 2013
<i>Interactive Classrooms, Sheridan Center, Brown University</i>	September 2013
<i>Developing Graduate Scientific Communication Skills, Sheridan Center, Brown University</i>	April 2013
<i>Junior Faculty Roundtable Discussions, Brown University</i>	2012-2013
<i>Canvas Orientation & Training, Brown University</i>	April 2012

10. Memberships & Societies

<i>FaB (Find a Biophysicist) Network, Biophysical Society</i>	2018-present
<ul style="list-style-type: none"> • Respond to inquiries regarding biophysical research and career development in biophysics • Respond to requests to speak at local events/schools as a representative of the field of biophysics • Mentor students/young scientists 	
<i>Biophysical Society</i>	2003-2006, 2011-2014, 2016-present
<i>National Science Teaching Association (NSTA)</i>	2007-2015, 2016-2022
<i>Society for College Science Teaching (SCST)</i>	2009-2015, 2016-2022

11. Completed Publications

ONLINE TUTORIALS

Horrigan DM, Makino CL, How do we see? An Introduction to the Biophysics of Visual Transduction. *Biophysical Society webpage* (<https://www.biophysics.org/education-careers/education-resources/selected-topics-in-biophysics/biophysical-mechanisms>; 4781 views of this webpage as of Oct 20, 2023). January 2023
Direct link:
https://www.biophysics.org/Portals/0/BPSAssets/Articles/An_introduction_to_the_biophysics_of_visual_transductionv5_1.pdf

REFEREED PUBLICATIONS

Contributing Author, Top Hat online textbook, Anatomy and Physiology in Context, Chapter 13: Specialized Senses, 2016.
Demo: <https://app.tophat.com/e/350597/assigned>

Bruder JM, Pfeiffer ZA, Ciriello JM, **Horrigan DM**, Wicks NL, Flaherty B, Oancea E. Melanosomal Dynamics Assessed with a Live-cell Fluorescent Melanosomal Marker. *PLoS One*. 2012; 7(8).

Tetreault ML, **Horrigan DM**, Kim JA, Zimmerman AL. Retinoids restore normal cGMP sensitivity of mutant ion channels associated with cone dystrophy. *Mol Vis*. 2006 Dec 29;12:1699-705.

Tetreault ML, Henry D, **Horrigan DM**, Matthews G, Zimmerman AL. Characterization of novel cyclic nucleotide-gated channel from zebrafish brain: CNGA5. *Biochem Biophys Res Commun*. 2006 Sep 22;348(2): 441-449.

Horrigan DM, Tetreault ML, Tsomaia N, Vasileiou C, Borhan B, Mierke DF, Crouch RK, Zimmerman AL. Defining the retinoid binding site in the rod cyclic nucleotide-gated channel. *J Gen Physiol*. 2005 Nov; 126(5): 453-460.

McCabe SL, ***Pelosi DM**, Tetreault M, Miri A, Nguitragool W, Kovithvathanaphong P, Mahajan R, Zimmerman AL. All-trans-retinal is a closed state inhibitor of rod cyclic nucleotide-gated ion channels. *J Gen Physiol*. 2004 May; 123(5): 521-531.

ABSTRACT PUBLICATIONS

Biophysical Society Annual Meeting, Salt Lake City, UT February 2006
Horrigan, DM, Tetreault, ML, Tsomaia, N, Vasileiou, C, Borhan, B, Mierke, DF, Crouch, RK and Zimmerman, AL. Defining the retinoid binding site in the rod CNG (CNGA1) channel. *Biophysical Journal* 90: 1214A.

Biophysical Society Annual Meeting, Baltimore, MD February 2004
***Pelosi, DM**, Tetreault, ML, McCabe, SL., Zimmerman, AL. All-trans-retinal is a closed-state inhibitor of rod cyclic nucleotide-gated (CNG) channels. *Biophysical Journal* 86: 292a.

Biophysical Society Annual Meeting, San Antonio, TX March 2003
McCabe, SL, ***Pelosi, DM**, Miri, A, Nguitragool, W, Kovithvathanaphong, P, Mahajan, R, Zimmerman, AL. Inhibition of cyclic nucleotide-gated (CNG) channels by all-trans-retinal. *Biophysical Journal* 84: 400a.

*Published under maiden name, Pelosi
Contributions to published work correspond to order of authorship, with first author contributing the most to the work and other contributions following in sequential order. By convention, the last author is the Principal Investigator.

CURRICULUM PUBLICATIONS

Lab Larceny: A Biotechnology Curriculum Intended for 9th through 12th grade Classroom Use. Bridgewater State College CityLab, August 2008.

Pipetting 101: A Biotechnology Curriculum Intended for 5th through 12th grade Classroom Use. Bridgewater State College CityLab, August 2008.

Whale of a Mystery: A Biotechnology Curriculum Intended for Middle School Classroom Use. Bridgewater State College CityLab, August 2008.

INVITED SEMINARS AND PRESENTATIONS

Characterization of a novel cyclic nucleotide-gated channel from zebrafish brain: CNGA5. Gordon Summer Research Conference on Ion Channels, Tilton, NH, July 2006 (Poster)

Lipophilic channel modulators. Brown University, Cellular Physiology & Biophysics Course, Providence, RI, April 2006 (Invited class lecture)

The truth about carrots: A novel role for Vitamin A in vision. Assumption College, Worcester, MA, March 2006 (Seminar)

Structural characteristics of retinoids necessary for inhibition of rod cyclic nucleotide-gated (CNG) channels. FASEB Summer Research Conference on the Biology & Chemistry of Vision, Tucson, AZ, June 2005 (Poster)

All-*trans*-retinal is a closed state inhibitor of rod cyclic nucleotide-gated (CNG) channels. Gordon Summer Research Conference on Ion Channels, Tilton, NH, July 2004 (Poster)

All-*trans*-retinal is a closed state inhibitor of rod cyclic nucleotide-gated (CNG) channels. Biophysical Society Annual Meeting, Baltimore, MD, February 2004 (Poster)

Inhibition of cyclic nucleotide-gated ion channels by all-*trans*-retinal. Biophysical Society Annual Meeting, San Antonio, TX, March 2003 (Poster)

12. Research

Sabbatical, January 2018-June 2018

Research in Lab of Elena Oancea (Brown University)

Project: The goal of the project was to understand the molecular signaling pathways in cell lines derived from uveal melanoma, a rare form of melanoma originating from cells (melanocytes) in the uveal tract of the eye which include cells in the iris, the choroid, and the ciliary body which sits behind the retina. I was able to obtain the first known current recordings from uveal melanoma cells and pave the way for long-range studies. I was also responsible for training a new graduate student in this technique and advising her on all aspects of the project so that she could take over the project once my sabbatical ended. The results of this project are expected to generate publications and preliminary data for NIH grant applications for the Oancea lab.

13. Grants & Funding

Wrote competing continuation grant proposal: “Predoctoral Training Program in Trans-Disciplinary Pharmacological Sciences” for consideration under the NIH Ruth L. Kirschstein National Research Service Award (NRSA) Institutional Research Training Grant (Parent T32), in response to PA-14-015.

PI: Julie Kauer, PhD

Collaborated with Anita Zimmerman and Julie Kauer on the final draft, which was submitted on May 29, 2014; funded by NIH/NIGMS in July 2016 after one revision.