

TAMMY A. MALDONADO, Ph.D.
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EDUCATION

B.A.	Major – Department of Environmental, Population and Organismic Bio (EPOB)	University of Colorado, Boulder
M.A.	Physiology and Neuroendocrinology, Department of EPOB	University of Colorado, Boulder
Ph.D.	Neurobiology of Aging, Department of EPOB	University of Colorado, Boulder
	Certificate in Neuroscience, Dept. of Psychology and Neuroscience	University of Colorado, Boulder
Postdoctoral Fellow,	Reproductive Endocrinology, Department of EPOB	University of Colorado, Boulder

PROFESSIONAL SUMMARY

Respected and dedicated professional, passionate about teaching, improving educational experiences and promoting research opportunities for all levels. Sixteen years of experience in science education and outreach, successfully managing multiple projects at the University of Colorado at Boulder (UCB). Ability to design and implement strategic plans that further educational, research and outreach goals at UCB. Skilled at establishing rapport and working effectively with individuals from various backgrounds. Proven track record in building partnerships among individuals, departments, administrators, and K-12 communities. Through my many roles as a Science Educator, I developed excellent leadership skills and became an effective communicator responsible for preparing correspondence, documents, presentations, curriculum, publications, grant proposals and budgets.

RECENT PROFESSIONAL/TEACHING EXPERIENCES

University of Colorado Boulder

Instructor/Lecturer (August 2002 - Present)

- **Instructor: IPHY 3700 - Scientific Writing** - (Spring 2019-).
- **Instructor: IPHY 4470 - Biology of Human Reproduction** - (Spring 2019) Continuing Education, Online Credit Program.
- **Instructor: ARSC 1450/MCDB 1450 - Intro to STEM Methods** - (Spring 2015 - Fall 2017) Developed, designed and taught this innovative STEM program course/lab for first-generation freshman. Course content was based on CU faculty research projects and provided students a view of science in action and opportunities to network with research community.
- **Instructor: MCDB 2115 Biology - Live Science of the Earth System** – (Fall 2003 - Fall 2005) Developed and taught a life science education course modeling inquiry-based, active-learning pedagogy to Pre-Service K-12 science teachers.

Additional Professional Experience (2002 - 2018)

- **Professional Development**
 - **K-12 Teachers** - Designed and developed science curriculum for K-12 teachers. Co-taught workshops with STEM faculty.
 - **Science Squad** (*Team of graduate students*) - Trained post-docs and graduate students to develop and present research-based, student-centered science curriculum for K-12 students in the Denver Metro area.
- **Undergraduate Education and Research Programs**
 - **Biosciences Undergraduate Research Skills and Training Program** - (2002 - 2018) Designed, coordinated and taught biosciences training program for entry-level undergraduate researchers. Topics: scientific methods, EH&S training, science writing, oral and poster presentation.
- **Graduate Student Projects and Programs**
 - **STEM Education Team** - Developed the concept of a STEM Exploration course to serve first-generation and minority high school seniors participating in the PCDP Summer Program. Coordinated all aspects of this project.

- **Faculty Projects and Collaborations**
 - **Broader Impacts Program** – Advised and assisted faculty in developing and delivering programs to meet their Broader Impact obligations for NSF grants.
 - **Undergraduate Course Unit Development** – Collaborated with and trained STEM faculty to develop research-based lessons to incorporate into undergraduate STEM courses.
- **Outreach and Other Collaborations**
 - **PCDP Summer STEM Track** – Developed a STEM Exploration course for first-generation and minority high school seniors participating in the PCDP Summer STEM program.
 - **CU Museum and Bees' Need Citizen Science Projects** – Developed, workshop to train teacher to utilize the Bees' Needs Citizen Science Project in K-12 classrooms.
 - **Forensic Science Educational Conferences (FSEC)** – Managed collaboration between CU and the FSEC to provide a multi-day professional workshop experience for K-12 science teacher.
 - **ScienceLIVE K-12 Curriculum Website:** Developed research-based curriculum with accompanying education videos for dissemination the ScienceLIVE website.
- **Science Education Research**
 - **Action Research** – Evaluation of **ARSC 1450 - Intro to STEM Research Methods**, validated instruments (BioCLASS and SALG), and self-report to determine the effectiveness of course design.

ADDITIONAL TEACHING AND PROFESSIONAL EXPERIENCE

2001-2002	Instructor and Lab Coordinator (Anatomy and Physiology) - Red Rocks Community College
2001-2002	Prosector (Department of Integrative Physiology) - University of Colorado, Boulder
2000-2001	Research Associate (Department of Integrative Physiology) - University of Colorado, Boulder
1995-2000	Research Assistant (Colorado Division of Wildlife) - University of Colorado, Boulder
1993-1998	Instructor (Pre-collegiate Development Program) - University of Colorado, Boulder
1993-1995	Research Assistant (Department of Environmental, Population and Organismic Biology, Developmental Biology) - University of Colorado, Boulder
1990-1998	Teaching Assistant (Department of Environmental, Population, and Organismic Biology, Anatomy, Physiology, Biology, Stream Ecology, Vertebrate Anatomy) - University of Colorado, Boulder
1983-1985	Instructor (Writing and Computer Learning Lab) - Front Range Community College, Westminster, CO

HONORS AND AWARDS

2014	Chancellor's Committee on Race and Ethnicity (CCORE) Award – Diversity Service Award
2014	Sigma Xi Chapter Leader Program Excellence Award
2007	Sigma Xi Chapter Leader Program Excellence Award
2000	Journal of Brain Research – Young Investigator's Award
2000	Journal of Brain Research – Journal Cover Award
1999	Teaching Award - University of Colorado, Boulder
1999	Equity and Excellence Award - University of Colorado, Boulder

SCIENCE EDUCATION AND OURTEACH

2014-Present	Discipline-Based Education Research (DBER)
2014-2017	Poster Presentation - Annual Symposium on STEM Education
2016	Outreach and Engagement Workshop
2011-2016	Colorado Learning and Teaching with Technology Conference (COLTT) - University of Colorado, Boulder
2014-Present	Diversity and Inclusion Summit - University of Colorado, Boulder
2014-Present	Outreach Steering Committee - University of Colorado, Boulder
2013	Howard Hughes - Summer Institute Learning Course for Educators - University of Colorado, Boulder
2013	CU Women Succeeding - University of Colorado, Boulder
2009	Service Learning Workshop - University of Colorado, Boulder

SCIENCE RESEARCH INTERESTS

Ph.D. Dissertation

The distribution of the amyloid precursor protein, β -amyloid peptide and neurodegeneration in the brain of kokanee salmon (*Oncorhynchus nerka kennerlyi*): a model for brain aging.

M.A. Thesis

The salmon as a model for aging: β -amyloid plaques in the brain of senescent salmon (*Oncorhynchus nerka kennerlyi*).

Postdoctoral Fellowship

Evolution of the neuroendocrine control of reproduction in an invertebrate mollusc, *Aplysia californica*. (P.I. Dr. Pei-San Tsai)
Research appointments involved the use of laboratory techniques which included: traditional histology, immunohistochemistry, whole-mount immunohistochemistry, radioimmunoassays, radioactive iodination, image analysis, flow cytometry, polymerase chain reaction (PCR), running gels, dot blots, high performance liquid chromatography (HPLC), axonal labeling (antero- and retro-grade labeling), tissue and cell cultures, protein extractions, surgeries, dissections and tissue processing, laboratory management (supplies and hazardous waste) and organizing/scheduling collecting trips.

RESEARCH COLLABORATIONS

University of Colorado

Western blot analysis of salmon amyloid precursor protein and β -amyloid peptide – Dr. David Norris
 β -amyloid in brain-lesioned rats – Dr. Theresa Hernandez
Metal contamination and stress response in brown trout – Dr. John Woodling
Lizard Project, Brain Asymmetry – Dr. Richard Jones
Alligator Project, Mullerian Duct Regression - Dr. Harriet Austin
GnRH distribution in salmon – Dr. Laura Carruth

University of Colorado, Denver – Laboratory of Dr. Alan Vajda

*Reproductive disruption and intersex in white suckers (*Catostomus commersoni*)*

University of Denver – Laboratory of Dr. Robert Dores

Radioimmunoassay of salmon cortisol cycle

Colorado Division of Wildlife – Laboratory of Dr. John Woodling

Morphology of southern and northern redbelly dace and Parthenogenesis and Chromosome Analysis
Brown Trout Immune Stress Response,

University of Colorado Health Science Center

Visible Human Dissector Project

PUBLICATIONS:

Jones, R.E.; Lopez, K.H.; **Maldonado, T.A.**; Summers, T.R.; Summers, C.H.; Propper, C.R.; and Woodling, J.D. Unilateral ovariectomy influences hypothalamic monoamine asymmetries in lizard (*Anolis carolinensis*). Gen. Comp. Endocrinol., 108 (1997), 306-315.

Norris, D.O.; Donahue, S.; Dores, R.M.; Lee, J.K.; **Maldonado, T.A.**; Ruth, T.; and Woodling, J.D. Impaired adrenocortical response to stress by brown trout, *Salmo trutta*, living in metal-contaminated waters of the eagle river, Colorado. Gen. Comp. Endocrinol., 113 (1998), 1-8.

Maldonado, T.A.; Jones, R.E.; and Norris, D.O. Distribution of β -amyloid precursor protein in the brain of spawning (senescent) salmon: a natural, brain-aging model. Brain Research 858 (2000), 237-251.

Norris, D.O.; Camp, J.; **Maldonado, T.A.**; and Woodling, J.D. Some aspects of hepatic function in feral brown trout, *Salmo trutta*, living in metal contaminated water. Comp. Biochem. Physiol. Part C 127 (2000) 71-78.

Carruth, L.L.; Dores, R.A.; **Maldonado, T.A.**; Norris, D.O.; Ruth, T.; and Jones, R.E. Elevation of plasma cortisol during the spawning migration of a landlocked Pacific salmon (*Oncorhynchus nerka kennerlyi*). Comp. Biochem. Physiol. Part C 127 (2000), 123-131.

Kreiser, B.R.; Woodling, J.D.; and **Maldonado, T.A.** The redbelly dace (*Phoxinus*) of Colorado. Copeia, (2001).

Maldonado, T.A.; Jones, R.E.; and Norris, D.O. Intraneuronal amyloid precursor protein (app) and appearance of extracellular β -amyloid peptide (A β) in the brain of aging kokanee salmon. *J. Neurobiol.* 53, (2002) 11-20.

Maldonado, T.A.; Norris, D.O.; and Jones, R.E. Timing of neurodegeneration and β -amyloid (A β) peptide deposition in the brain of aging kokanee salmon. *J. Neurobiol.* 53, (2002) 21-35.

Tsai, P.-S.; **Maldonado, T.A.;** and Lunden, J.B. Localization of gonadotropin-releasing hormone in the central nervous system and a peripheral chemosensory organ of *Aplysia Californica*. *Gen. Comp. Endo.* (2003) 130, 20-28

Vajda, A.M.; Lopez, E.M.; **Maldonado, T.A.;** Woodling, J.D.; Norris, D.O. Reproductive disruption and intersex in white suckers *Catostomus commersoni* downstream of a Colorado wastewater treatment plant. *Integr. Comp. Biol.* 44, (2004) 655.

John, D. Woodling; Elena M. Lopez; **Tammy A. Maldonado;** David O. Norris; Alan M. Vajda. Intersex and other reproductive distribution of fish in wastewater effluent dominated Colorado streams. *Comp. Biochem and Physiol.* Part C 144 (2006) 10-15.

BOOK CHAPTER REVIEW

BSCS Biology: A Human Approach 4th Edition Chapter 4

PRESENTED SCIENCE CURRICULUM AT CONFERENCES

Symposium on STEM Education
National Association for Biology Teachers
National Science Teachers Association
Colorado Science Conference
Colorado Biology Teachers Association

INVITED SPEAKER/GUEST LECTURES

University of Colorado, Boulder

Comparative Vertebrate Anatomy, Stream Biology, Introduction to Neurophysiology
Sigma Xi Scientific, The Scientific Research Honor Society

University of Colorado Health Science Center, Denver

Pathology Grand Rounds Seminar Series – 1/18/2001

GRANTS AND FELLOWSHIPS

Education

2006-2017 HHMI – Part of a team that wrote grants to secure funding and implement Course-based Undergraduate Research Experiences (CUREs), apprentice-based undergraduate research experiences and UCB Outreach.
2017 CU Outreach Grant – Teacher Professional Development Workshop - Plant Forensics. Grant funding supported purchase of “Plant Forensic” textbooks, forensic media and forensic activity supplies.
2014 CU Outreach Grant – Teacher Professional Development Workshop and Bee’s Needs Citizen Science project. Grant supported equipment and supplies for construction of Bee Boxes, and display boxes.
2009 CU Outreach Council Grant – Teacher Professional Development Workshop – Forensic Science (multi-day program). Grant funding supported graduate student participants, forensic science classroom supplies.
2009 American Academy of Forensic Scientists (AAFS) Grant – Collaboration between CU and the AAFS to develop and host a multi-day conference that brought local and nationally recognized forensic experts to the University of Colorado.
2007-Present NSF – Worked with CU faculty to write and implement the Broader Impacts component of their NSF grants.
2007 NIH – Worked with Dr. Shelley Copley and implement Broader Impact component of research grant.

Research

2000-2001 NSF Postdoctoral Fellowship - University of Colorado, Boulder
1997-1999 NIH/National Institute of Aging Pre-Doctoral Fellowship
1991-1993 Environmental, Population and Organismic Biology Departmental Grant - University of Colorado, Boulder

1991- 1993 Howard Hughes Medical Institute Undergraduate Research Grant - University of Colorado, Boulder
1993-1997 Howard Hughes Medical Initiative - Wrote multiple training grant awarded on behalf of undergraduate Mentees – 33 University of Colorado, Boulder

ADDITIONAL OUTREACH EXPERIENCE

1993-1998 **Pre-collegiate Development Program** – Summer enrichment and CU recruitment program. Designed and taught various biological science courses to first-generation and under-represented minority high school students from the Denver, Colorado area.
2002 - 2009 **La Raza** – Designed and delivered science presentation for an enrichment program for Hispanic and Native American middle school students.
2018 **Denver March For Science** – Raised funds and recruited presenters for a public teaching table.
2008 – Present **Boulder Café Scientifique** – Organized all aspects of a scientific research lecture series for the public.
2008 – Present **Grants in Aid of Research** – Recruited CU graduate and undergraduate applicants for grant awards.
2008 – Present **Science Field Trips** – Recruited CU scientist to lead field trips (e.g., geology, museum) for the public.

ELECTED POSTIONS

2007-2012 President of the University of Colorado Chapter of Sigma Xi (The Scientific Research Honor Society).
2012-2015 Vice President of the University of Colorado Chapter of Sigma Xi (The Scientific Research Honor Society).
2015-Present President of the University of Colorado Chapter of Sigma Xi (The Scientific Research Honor Society).

NATIONAL ELECTED POSTIONS

2016-2018 Chair of the Sigma Xi President Nominating Committee.
2018-Present Director of the Sigma Xi Research & Doctoral Constituency.
2018-Present Board of Directors - Sigma Xi.
2018-Present Chair of the International Awards Committee, Sigma Xi.

PROFESSIONAL MEMBERSHIPS

2000-Present Sigma Xi - The Scientific Research Honor Society President Nominating Committee 2016.
2002-Present National Science Teacher Association.
2002-Present Colorado Biology Teachers Association.
2002-Present National Association of Biology Teachers.
2011-2014 Human Anatomy and Physiology Society.

COMPUTER SKILLS

Software: Microsoft Word, Excel, PowerPoint, Camtasia, Outlook, D2L, Canvas, Qualtrics and Google Docs.
Assisted faculty training for K-12 teachers to use various software programs (Cn3D and 3D Electron Microscopy Cell Modeling software).