

Suellen Dragon

Ithaca NY, 13864

Phone: (607)339-8807

salmeida83@gmail.com

Education:

M.S., Biotechnology (2014)

University of Saarland

Advisor: Dr. Elmer Heinzle

Thesis: Morphological and Metabolic Characterization of 2D-Collagen Monolayer and 3D-Alvetex® Scaffold for the Test of Hepatotoxic Drugs.

M.S., Organismic and Evolutionary Biology (2010)

University of Massachusetts-Amherst

Advisor: Dr. Duncan Irschick

Thesis: The Effects of Environmental Temperature on Locomotor Performance and Growth Patterns in Spotted Salamanders.

B. A., Biological Sciences (2008)

University of Massachusetts-Amherst

Honor: Commonwealth College Scholar

Advisor: Dr. Patricia Gorman

Honors Thesis: Gender Politics of Representation

Teaching Experience:

Adjunct Faculty at Ithaca College

BIOL 11400 - Exploring the World Through Evolutionary Biology – Fall 2019 and Fall 2023

In this course, we delve into the intricate mechanisms responsible for the remarkable diversity of life on Earth. I place particular emphasis on illustrating how evolutionary biology is intricately linked to pressing contemporary issues that directly impact students' lives, including global climate change, human health and medicine, and human evolution and behavior. Despite the course not being tailored for biology majors, we explore a broad spectrum of topics, spanning the fossil record, biodiversity, mass extinctions, human evolution, infectious diseases, and antibiotic resistance. I firmly believe that, irrespective of their major, each student can derive immeasurable value from understanding the fundamental mechanisms that govern our lives and the intricacies of the world around us.

Adjunct Faculty at Ithaca College

BIOL 10700 - Human Genetics (On-Line Course) – Summer 2020

In this course, we explore real-world issues in human genetics, placing a strong emphasis on human health, human evolution, and emerging ethical considerations. Our focus extends to understanding the intricate interplay between genes and the environment, shaping our identities. While the class is not specifically tailored for biology majors, we cover a diverse array of topics, including the genetic foundations of both typical and atypical development, as well as the genetic underpinnings of diseases such as cancer. Additionally, we examine the advancements in biotechnology and the ethical dilemmas they introduce.

Adjunct Faculty at Ithaca College

Fundamental Biology I /II LAB – Spring 2015, Spring 2017, and Spring 2020

In my role as the instructor for Fun. Bio. I and II LAB, I assumed the responsibility of delivering clear lab instructions and overseeing students' experiments. Moreover, I utilized lab sessions to provide concise lectures on the weekly topics aligned with the main course curriculum. This approach fosters a cohesive link between the hands-on experiments in the lab and the broader content covered in Fun. Bio. It enables students to connect their daily explorations and learning in the lab to the overarching concepts of the Fun. Bio. course, even when the material is not directly presented by the main professor.

Adjunct Faculty at Onondaga Community College

Introduction to Biology with a Lab Component (BIO 121) – Fall 2015

In this introductory course, I presented themes that are of central importance to an understanding of contemporary biology, covering topics from fundamental building blocks to human development. I viewed this course as a great tool to help incoming students into our major to become responsible, knowledgeable citizens. I covered topics that are essential for their future careers (most of the students were pursuing a health-related profession) but I also presented lessons/activities that use their new-found knowledge in settings beyond the classroom, such as group discussions on criminal cases that use DNA evidence, medical incidents that could cause an antibiotic resistance, etc. Therefore, demonstrating to the student that the skills gained in the course go beyond the classroom and is also relevant in their daily lives.

Adjunct Faculty at Onondaga Community College
General Biology II with a Lab Component (BIO 152) – Fall 2015

Within this course, I facilitated students in delving into the intricate workings of cells collaborating within tissues and organs, with a particular focus on examining the anatomy and physiology of organisms within Kingdom Animalia. Employing a comparative and phylogenetic approach, I guided students through both lecture and lab sessions, emphasizing hands-on dissection of animals and collaborative research endeavors. To enrich their learning experience, I introduced group projects, empowering students to explore topics aligned with their individual interests and present their findings to their peers. This multifaceted approach aimed to foster a deeper understanding of the subject matter and encourage active engagement in the learning process.

Teaching Assistant at University of Massachusetts –Amherst
Introduction to Biology Laboratory - Spring 2010

In this introductory biology lab, I covered a very broad range of topics including physiology of humans and other vertebrates on a system-by-system basis, evolutionary biology, where we investigate the process of evolution and ecology, and how organisms interact with their abiotic and biotic environment. I developed and implemented lessons that are guided towards helping students understand basic scientific methods and research. I implemented goals that are tailored to the student's individual needs and abilities when possible. In addition, I used various service providers around campus for students with academic and learning difficulties, and I employed diverse techniques to promote active learning including individualized instruction during office hours, problem-solving assignments, and small group projects.

Academic Tutor at Springfield Technical Community College (STCC)
Organic Chemistry - Fall 2008

The Introductory Chemistry course at STCC covers many topics including atomic, molecular, and electronic structure, stoichiometry solubility, and redox reactions. During my work with STCC, I actively involved students on problem-solving tasks to stimulate students' understanding of the material. I developed small group-based lessons and additional homework to improve student's understanding of the material. In addition, I helped some students to create efficient study-plans and techniques to help manage their time.

Peer Mentor Program at University of Massachusetts – Amherst

Fall 2007- Spring 2008

The peer mentor program is a live-in student staff position that has a visible, active, and positive presence in first year residence halls. As a peer mentor, I worked individually and collaboratively to help first year students experience a positive transition to UMass-Amherst, and assisted in the creation of inclusive, academically focused communities. I was responsible for tutoring first year students in several topics including calculus, introductory biology, genetics, and inorganic chemistry. In addition, I designed and implemented weekend events for the first-year students, which included educational field trips and educational programs for the residential hall. My responsibilities as a peer mentor also included educating students on several aspects of research such as library and scientific journal research methods, data generating, and effective report writing.

Research Experience:

Researcher at University of Saarland

Supervisor: Fozia Noor and Elmer Heinzle

Fall 2012 – Summer 2013

Notox is a European-funded project, dedicated to advancing systems biological tools for effective toxicity prediction. These include experimental and computational methods for the development of organotypic human cell cultures suitable for long-term toxicity testing and the identification and analysis of pathways of toxicological relevance. My role in the project centered on the analysis of metabolic fluxes, utilizing isotope labeling techniques across diverse mammalian cell culture systems. This encompassed a detailed exploration of both 2D and 3D cultures, with a particular emphasis on HepaRG and HepG2 cells. Throughout this experience, my primary interest was characterizing 3D-cell culture methodologies for mammalian cell lines. as a viable alternative for toxicity screening, presenting an ethical and scientifically sound solution that can potentially reduce dependence on animal testing.

Research Assistant at University of Massachusetts -Amherst
Fall 2009 – Spring 2010

While pursuing my graduate studies at UMass-Amherst, my focus revolved around exploring the impact of temperature variation on amphibian development. Recognizing the profound influence of temperature on various facets of an animal's physiology, behavior, and performance capacities, I engaged in a comprehensive investigation during this employment opportunity. The primary thrust of my research encompassed two key areas: Firstly, I delved into the effects of temperature on amphibian embryonic development. Specifically, I analyzed how an elevation in water temperature during the early incubation period of spotted salamanders would impact both egg and larval development. Secondly, I probed into the consequences of temperature on amphibian swimming performance. This aspect of the research aimed to decipher how an increase in water temperature during the initial hatching days of spotted salamanders would influence their swimming capabilities—a crucial element of their escape strategy from predators. Simultaneously, I embraced a mentoring role by supervising an undergraduate student in her Honor thesis. This multifaceted experience not only enriched my understanding of temperature-related influences on amphibians but also afforded me the opportunity to contribute to the academic and professional development of a fellow student.

Assistant Researcher at University of Massachusetts-Amherst
Fall 2008 - Summer 2009

In the course of this employment opportunity, I led a research project focusing on human locomotor performance. The primary objective was to scrutinize potential distinctions in locomotor performance, encompassing aspects such as accuracy and force, between male and female individuals engaged in straightforward manual tasks. The valuable insights gained from this research endeavor not only deepened my understanding of gender-related differences in locomotor abilities but also provided an enriching platform to present my findings at the prestigious Society for Integrative and Comparative Biology.

Independent Study Research at University of Massachusetts-Amherst

Fall 2007 – Spring 2008

Fluctuating asymmetry, often considered a manifestation of genetic and environmental stress during development, serves as a valuable indicator of individual quality in the realms of natural and sexual selection studies. In the course of this research, I delved into the relationship between fluctuating asymmetry in green anole lizards and their overall fitness. Beyond individual exploration, I took the initiative to facilitate several discussion groups on this topic, fostering meaningful exchanges among fellow undergraduate students and contributing to a deeper understanding of the subject.

Internship at Rutgers Medical School - Biomedical Career Program Intern

Summer 2007

During my internship in the Biomedical Career Program, I actively engaged in clinical responsibilities at the Robert Wood Johnson Hospital. These encompassed diverse roles, such as shadowing residents, providing translation services (proficient in Spanish and Portuguese), and assisting doctors with minor procedures. Simultaneously, I contributed to research initiatives centered around juvenile diabetes at Rutgers Medical School. Beyond hands-on experience, I broadened my knowledge through participation in workshops addressing various facets of the American health system and other pertinent issues within the medical community. This multifaceted experience not only honed my clinical skills but also provided me with a comprehensive understanding of broader healthcare dynamics.

Internship at Campanario Reservation, Costa Rica

Summer 2004

The research conducted at Campanario centers around the critical issue of deforestation and its profound impacts on both local ecological diversity and the surrounding communities. My specific focus involved investigating the significance of mangrove ecosystem structure as a crucial buffer against tsunamis, cyclones, and other storms. Beyond research, I actively contributed to the community by volunteering as a teacher at a local middle school and engaging in conservation efforts in nearby areas. Additionally, I enriched my understanding through participation in various workshops covering diverse topics, including the identification of different habitats in the rainforest, eco-tourism, and the role and impact of national park systems on both animal and plant biodiversity, as well as on the local human population. This immersive experience not only broadened my knowledge but also provided a holistic perspective on the intricate interplay between environmental conservation and community well-being.

Abstracts and Presentations:

- The effects of different cultivation techniques on the metabolome of human liver cells. 2013. EASL (European Association for the Study of the Liver) Monothematic Conference: Systems Biology of the Liver. (Poster).
- Evaluating the effects of climate change on larval locomotor performance in *Ambystoma maculatum*. 2010. Society of Integrative and Comparative Biology. (Presentation).
- The kinetics and kinematics of human performance: Trade-offs between force and accuracy. 2009. Society for Integrative and Comparative Biology. (Presentation).

Refereed Conference Publication

- **Who Needs Help? Automating Student Assessment Within Exploratory Learning Environments.** Floryan, M., Dragon, T., Basit, N., **Dragon, S.,** & Woolf, B. (2015, June). Artificial Intelligence in Education (pp. 125-134). Springer International Publishing.

Previous Professional Memberships:

Society for Integrative and Comparative Biology (SICB).
European Association for the Study of the Liver (EASL).

Awards

- EASL Travel-Grant for “EASL Monothematic Conference: Systems Biology of the Liver: Systems Biology and Clinics Face-à-Face” 2013.

Skills:**Languages:**

- English.
- Portuguese.

Lab Procedures:

- Flux Balance Analysis.
 - 2D- and 3D-Cell Culture Techniques, including spheroids, using Mammalian Cell lines. (HepG2, HepaRG and Primary Human Hepatocytes).
 - Isotope Labeling Techniques.
 - High Performance Liquid Chromatography (HPLC).
 - Fluorescence Microscopy.
 - Molecular Cloning and screening using Polymerase Chain Reaction (PCR).
 - Dissection procedures.
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References:**Dr. Duncan Irschick**

Associate Professor
Department of Biology
University of Massachusetts-Amherst
irschick@bio.umass.edu
Phone: (413) 545-1696

Dr. Rebecca Brady

Assistant Professor
Department of Biology
Ithaca College
rbrady@ithaca.edu
(607) 274-3584

Dr. Gwen Wehbe

Faculty
Department of Biology
Onondaga Community College
wehbeg@sunyocc.edu
Phone: (315) 498- 2424