CODY GEOFFROY

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EDUCATION……………………………………………………………………………………..

Biotechnology, M.S. (incomplete)
University of Central Florida – Orlando, FL   August 2024 to May 2025

Biomedical Sciences, B.S.
Minors: Genomics and Bioinformatics | Anthropology
University of Central Florida – Orlando, FL   June 2019 to May 2023

Relevant Coursework:

- Applied Industrial Microbiology
- Biomedical Sciences
- Experimental Molecular Cell Biology
- Genetics
- Genomics Lab: Methods in Data Collection and Analysis
- Medical Biochemistry
- Methods in Biotechnology
- Microbiology
- Molecular Biology
- Molecular Immunology
- Neurobiology
- Organic Chemistry
- Peer Instruction and Laboratory Occupational Training
- Physics
- Plant Genomics and Biochemistry
- Programming for Biologists
- Quantitative Biological Methods
- Statistical Methods

WORK EXPERIENCE……………………………………………………………......................

AI Trainer
DataAnnotation – Remote   September 2025 – Present

- I train all types of AI in various tasks by providing feedback on responses to created prompts, creating guides for the AI to ideally follow step-by-step, checking for correctness particularly with an expertise in biology, as well as comparing new and established AI models for various companies on a freelance basis.

Graduate Teaching Assistant
University of Central Florida – Orlando, FL   August 2024 – May 2025

- I instructed four sections of the lab component for an undergraduate course called Quantitative Biological Methods guiding the students through the lab, answering any questions they may have, and grading lab reports.

Math Instruction
Valencia College – Orlando, FL   September 2023 – August 2024

- I instructed predominantly college algebra and under at Valencia College's West Campus Math Center. Instruction was through an open lab setting wherein students can sit and complete assignments until they have questions. I would also proctor exams/quizzes and grade worksheets as well as conduct review sessions. Moreover, the number of students was highly dependent on time, day, and semester as well as the age range was typically 18+ with some high school dual enrollment students present.

Mathnasium of Oviedo – Oviedo, FL   March 2018 – July 2018

- I instructed primarily elementary and middle school children, however, I also instructed high schoolers. The goal was to promote Mathnasium ways of teaching to strengthen their mathematical skills learned from school: algebra, geometry, trigonometry, and precalculus.

Peer Mentor

University of Central Florida – Orlando, FL   July 2022 – August 2022

- I led a group of eight students through the 2022 Summer Research Academy through the Office of Undergraduate Research at UCF as a peer mentor. Obligations included answering any questions related to research at the university, grading their assignments with feedback as well as guiding them through the 3-day academy (e.g., lab tours, summer research showcase, etc.).

Tumbling Coach

UKnight Training Center – Winter Park, FL   May 2019 – December 2020

- I oversaw teaching tumbling classes, working clinics, doing open-gyms, and taking clients for privates. I primarily brought the technical aspect of tumbling to the sport of cheerleading at this gym.

Always In Motion – Chuluota, FL   September 2019 – March 2020

- I drove to elementary schools and taught tumbling classes from beginner to advanced levels. The lesson plans were completely at my discretion for the group that I was assigned.

Gymnastics Coach

O2B Kids – Oviedo, FL   December 2018 – November 2019

- I oversaw six of their recreational gymnastics classes and assisted in the rest of them. Lesson plans, recitals, and preparation for events were all done by me for those respective classes. The age range is from 3-13 years old, and the class size can range from 3-14 children.

Liberty County/Armed Services YMCA – Hinesville, GA   May 2017 – October 2017

- I oversaw four classes to coordinate and plan myself. I went to ten meets with the gymnasts as their designated coach - this included national, state, and regional meets. When training, the lesson plans were made completely by me and tailored to each gymnast's level and ability. The skill of gymnasts coached ranged from compulsory level 1-5 as well as Xcel bronze through gold.

RESEARCH EXPERIENCE……………………………………………………………………………………………..

Major Research Experiences:

- **Digitization, tracing, and quantification of CGRP-IR axons in the cardiac nervous system in a mouse model**
  - June 2022 to May 2023 – Research Hours: **340**
  - This study used C57BL/6J mice which were sacrificed and perfused through the left ventricle with 4°C Zamboni's fixative, the heart was then harvested and dissected into the right and left atria and ventricles. The samples were immunohistochemically (IHC) stained for calcitonin gene-related peptide (CGRP). The tissues were then prepared as flat-mounts and scanned using automated color fluorescence and confocal microscopy. The samples that were scanned for CGRP-IR axons – at 488 nm – were digitized and traced using a 3D neuron reconstruction software and finally quantified using ImageJ2 (Fiji). Within CGRP-IR axons, 2D and 3D digitalized axonal tracings have not been reported in the whole mouse heart, as a result, this data expanded that very limited dataset.
- **Mutant U1A-RNA binding kinetics with surface plasmon resonance**
  - August 2022 to May 2023 – Research Hours: **120**
  - This study involved the use of U1A which is a protein subunit that is part of the U1 snRNP and binds to U1 hairpin II (U1hpII) of the snRNA that associates with the U1 snRNP. The U1A wildtype is compared to point mutations incorporated into the mutated protein to find amino acids residues that have significance in binding. The binding efficacy is measured through kinetic data produced via surface plasmon resonance (SPR) which flows U1hpII over a NTA chip that has a ligand (i.e., U1A wildtype or mutants) immobilized to it via a His-tag. The produced binding curves will show the association and disassociation phases in which a mathematical model was applied to obtain the relevant kinetic constants (i.e., k_a, k_d, $k_D{}^a$). Furthermore, a proteomic analysis was done comparing the RNA recognition motifs (RRMs) of both U1A mutants and another critical subunit in the U1 snRNP.

- **Bacterial transformation/expression then purification of U1A and efficacy testing with surface plasmon resonance using a nitrilotriacetic acid sensor for ligand immobilization**
  - January 2022 to May 2022 – Research Hours: **150**
  - This study transformed a pET-17b vector with the U1A sequence incorporated so to subsequently induce expression. Purifying U1A consisted of using immobilized metal ion affinity chromatography (IMAC) via cobalt beads. The subunit's spliceosomal binding partner is U1 hairpin II (U1hpII) isolated from the full snRNA that naturally interacts with the whole U1 snRNP but, more specifically, the U1A subunit. Using surface plasmon resonance (SPR), preliminary binding kinetics between U1A and U1hpII via a nitrilotriacetic acid (NTA) sensor was gathered. The literature on the binding kinetics of U1A and U1hpII has been done using a Biotin-Streptavidin sensor to immobilize U1A whereas we sought to reuse the His-tag used for purification also for SPR via the NTA sensor instead of chemically adding Biotin to U1A.

Minor Research Experiences:
- **Powdery mildew resistance in frost exposed sunflowers**
  - August 2022 to December 2022 – Research Hours: **80**
  - This study sought to establish a possible correlation between powdery mildew fungi disease progression within sunflowers in frost-inducing environments. R programming and Excel were used to combine and visualize three environmental and fungal datasets focusing on various species of sunflowers. Moreover, the species were also separated by whether they are annuals or perennials, and six variables were analyzed: mean annual temperature, fungal disease progression for each species, monoterpene, diterpene, sesquiterpene, and total terpene compositions. Principal component analysis (PCA) was also done on the variables to provide more insights into the variance of the dataset.
- **Microbiome gDNA analysis of non-infected and infected zombie ants using Illumina sequencing**
  - January 2022 to May 2022 – Research Hours: **70**
  - This study consisted of extracting and analyzing gDNA from the inside of ant gut microbiomes. The ants of interest are known as "Zombie Ants" because of a unique disease they contract from a pathogenic fungus called Ophiocordyceps that causes them to change their behavior and commit suicide so to promote more growth of the fungi. The objective was to find if there are any differences between the gut microbiome of ants infected with Ophiocordyceps (a fungus that manipulates then kills), Beauveria (a fungus that simply kills) or a normal ant that was treated with a placebo. The gDNA was extracted from the ants using a Microprep Kit then ran through a two-step PCR protocol to amplify the extracted gDNA. Next, a SpeedBead cleanup protocol was run to separate the loose primers/small fragments from the amplified gDNA to increase sequencing data quality. Finally, sequencing was performed using an in-house Illumina platform and the data was analyzed using QIIME 2 to cross-reference with BLAST in order to determine the genetic diversity present.
- **16S ribosomal RNA primer efficacy testing as well as biofilm beer line cleaning reagent testing**
  - August 2021 to December 2021 – Research Hours: **90**
  - This study sought to preliminarily determine whether 16S ribosomal RNA primers need to be degenerate or can there be limited degeneracy to limit the number of varying primer options present in the solution. Also, preliminary research was done into reagents that may be used to clean beer lines in, for example, bars to limit the biofilms present in the tubing which can alter the taste and contaminate beer on tap.

RELEVANT SKILLS…………………………………………………………………………………………………

- Scientific writing, presentation and communication
  - MS Word/PowerPoint, BioRender
- Raster graphics editor
  - Adobe Photoshop and GIMP
- Vector graphics editor
  - Adobe Illustrator and Inkscape
- Programming languages
  - R and Python
- Data wrangling, analysis, and visualization
  - R packages, Python packages, MS Excel, GraphPad Prism, TraceDrawer
- Bioinformatics tools and software
  - ApE, Jalview, QIIME 2, PyMOL, ExPASy
- Image processing and 3D modeling software
  - ImageJ2 (Fiji), Neurolucida 360
- Use of general lab equipment (e.g., pipettes, analytical balances, centrifuges, autoclaves, biosafety cabinets, etc.)
- Mammalian/bacterial cell culture
- Agarose/polyacrylamide gel electrophoresis
- Analytical Instrumentation
  - Affinity chromatography (AC)
  - Ion exchange chromatography (IEX)
  - Capillary electrophoresis (CE)
  - Quantitative polymerase chain reaction (qPCR)
  - Surface plasmon resonance (SPR)
  - Spectrofluorometry
  - Brightfield microscopy
  - Fluorescence microscopy
  - Confocal microscopy

PRESENTATIONS…………………………………………………………………………………......................

- **Digitization, tracing, and quantification of CGRP-IR axons in the cardiac nervous system in a mouse model**
  - Cody Geoffroy, Kohlton Bendowski, Yuanyuan Zhang, Ariege Bizanti, Maci Heal, Richard Christie, Peter Hunter, Jin Chen, Zixi (Jack) Cheng
  - Student Scholar Symposium; March 28th, 2023; University of Central Florida
- **Mutant U1A-RNA binding kinetics with surface plasmon resonance**
  - Cody Geoffroy, Daniel Park*, Nicole Verity, Robert Borgon, Hajeung Park
  - Amy Zeh High Impact Practice Student Showcase; April 19th, 2023; University of Central Florida

LICENSES, CERTIFICATIONS, AND TRAININGS……………………………………………………………

Biomedical Responsible Conduct of Research	CITI Program
Lab Animal Researcher/Technicians/Students	CITI Program
Laboratory Safety	Environmental Health and Safety
Biological Safety	Environmental Health and Safety
Radiation Safety	Environmental Health and Safety
Bloodborne Pathogens for Healthcare and Laboratories	Environmental Health and Safety
Basic Life Support for Healthcare Providers	American Red Cross
QPR (Question, Persuade, Refer) Suicide Prevention Training	QPR Institute
45 Hour Introductory Child Care Training	Florida Department of Children and Families
Open Water Diver	Professional Association for Diving Instructors
Enriched Air Nitrox	Scuba Schools International

AWARDS AND HONORS…………………………………………………………………………………………..

- AP Scholar
- Burnett School of Biomedical Sciences Dean's List
- Florida Bright Futures Medallion Scholar
- President's Honor Roll
- UCF Scholars Award

SCHOLARSHIPS…………………………………………………………………………………….

- UCF College of Medicine Founders Scholarship in Biomedical Sciences · Spring 2023
- Miami Foundation Scholarship · Fall 2019 – Fall 2022
- Winter Park Alumni Chapter Scholarship · Fall 2019
- Bright Futures Medallion Scholarship · Summer 2019 – Spring 2023
- Rotary Club Scholarship · Summer 2019 – Spring 2023
- Oviedo High School Scholarship · Summer 2019

VOLUNTEERING…………………………………………………………………………………..

- Global Medical Bridges, UCF Chapter – Orlando, FL
  - Hours: **30**
    - UCF football stadium and Orlando City soccer stadium concessions
- Islands Family Georgia YMCA – Savannah, GA
  - Hours: **20**
    - Volunteer at gymnastics meets by helping judges, concessions, setup/teardown of equipment
- Liberty County/Armed Services YMCA – Hinesville, GA
  - Hours: **100**
    - Volunteer gymnastics coach
  - Hours: **20**
    - Volunteer at gymnastics meets by helping judges, concessions, setup/teardown of equipment

COMMUNITY INVOLVEMENT…………………………………………………………………….

Community Advisory Board Member

The Florida LEADS Project (UCF/USF) – Orlando & Tampa, FL · January 2023 to December 2023

- This committee meets periodically throughout the year to discuss various approaches (e.g., free training, social media outreach, focus groups, etc.) to enhance the Zero Suicide Model. Moreover, the council creates a collaborative atmosphere to bring professional, non-profit, academic, military, government, and student point of views together to create an interdisciplinary and multifaceted approach to suicide outreach as well as understanding.

CAMPUS INVOLVEMENT…………………………………………………………………………...

- Quantitative Biological Methods, Teaching Assistant (**1** semester)
- Cognitive Sciences Club, Member (**1** semesters)
- Global Medical Brigades, Member (**4** semesters)
- Neuroscience Alliance, Member (**3** semesters)