



RONGHAO ZHANG

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EDUCATION

Case Western Reserve University

August 2019 – May 2023 (Expected)

Undergraduate Student

Cleveland, OH

- Dual degree in Systems Biology (B.S.) and Computer Science (B.A.)
- Minor in Chemistry, Mathematics
- GPA: 4.0/4.0

TECHNICAL SKILLS

- | | | | |
|-----------------|---------|---------|----------------------|
| • R Programming | • Java | • LaTeX | • GitHub & Git |
| • MATLAB | • MySQL | • Unity | • Unix Command Lines |

RELEVANT COURSEWORK

- | | |
|--|---|
| • Neurobiology | • MySQL & Database Management System |
| • Mathematical Analysis of Biological Models | • Statistics for Signal Processing (<i>Fall 2022</i>) |
| • Statistical Learning & Data Mining | • Artificial Intelligence (<i>Fall 2022</i>) |
| • Data Structures & Algorithms | • Computational Neuroscience (<i>Spring 2023</i>) |

RESEARCH INTEREST

NeuroEngineering / Computational Neuroscience

- to understand the neural basis and computational foundation of perception and motor systems: interaction with the world
- to enhance the performance of Brain Machine Interfaces or neuroprosthetics: better approaches for rehabilitation and research
- to learn the mechanisms that underlie signal propagation and dynamics in biological neural networks: processing of information in our brain
- to develop neuromodulation and stimulation techniques: coding neuronal behavior and treating neurological diseases

Publication List

1. (Accepted & In Printing) Brostek, A., Hong, N. J., Zhang, R., Forester, B. R., Barmore, L. E., Kaydo, L., Kluge, N., Smith, C., Garvin, J. L., and Gonzalez-Vicente, A. (2022) **Independent Effects of Sex and Stress on Fructose-Induced Salt-Sensitive Hypertension.** *Physiological Reports*.

RESEARCH EXPERIENCE

Bensmaia Lab, Department of Organismal Biology & Anatomy

May 2022 – August 2022

Full Time Undergraduate Research Assistant

University of Chicago, Chicago, IL

- Investigated the contribution of skin biomechanics to tactile perception and its neural basis.
- Worked with tactile data using MATLAB and developed algorithms for image pre-processing and signal analysis.

Garvin Lab, Department of Biophysics and Physiology

November 2019 – Now

Part Time Undergraduate Research Assistant

Case Western Reserve University, Cleveland, OH

Research Purpose

- To understand the role of dietary fructose in the development of salt-sensitive hypertension.
- To understand how dietary salt and fructose alter the effect of angiotensin in proximal tubules of nephrons.

Currently On-going Works

- Constructing a pipeline using Unix Command Line Tools to analyze mRNA Next Generation Sequencing data.

- Utilizing R programming language for data analysis and visualization.

Experiences and Skills

- Worked with rodent models to seek the effect of dietary fructose on the development of salt-sensitive hypertension.
- Practiced Kidney Perfusion Surgeries on rodent models for experimental purposes.
- Collaborated with lab members using biological experiments such as the Western Blot for quantitative studies.

OTHER ACADEMIC EXPERIENCE

Willis Lab, Department of Biology

December 2021 – January 2022

Animal Caring Assistant

Case Western Reserve University

- Maintained the moth (*Manduca sexta*) colony during winter vacation.
- Prepared food and water, and removed waste and dirt to meet the need of individuals at different developing stages.

Operating Rooms, Department of Neurological Surgery

December 2019

Student Observer

University Hospitals Cleveland Medical Center

- Shadowed surgeries performed by medical professionals from the Department of Neurological Surgery for over 40 hours.

WORK EXPERIENCE

Undergraduate Teaching Assistant

August 2022 – December 2022

BIOL373 Introduction to Neurobiology

Case Western Reserve University

- An introductory laboratory course that discusses the biophysical and electrophysiological properties of nerve cells as well as their functions within networks using quantitative simulation tools.
- Held Office Hours; Graded Homework Assignments; Assisted Classroom Activities.

Undergraduate Teaching Assistant

January 2022 – May 2022

BIOL300 Dynamics of Biological Systems: A Quantitative Introduction to Biology

Case Western Reserve University

- An introductory laboratory course that discusses the dynamics of biological systems and the procedures of analyzing and manipulating biological processes using mathematical tools.
- Held Office Hours; Graded Homework Assignments; Assisted Classroom Activities.

Undergraduate Teaching Assistant

August 2021 – December 2021

ENGR131 Elementary Computer Programming: MATLAB

Case Western Reserve University

- An introductory lecture and laboratory course that discusses the fundamental concepts in computer programming including if-else statements, for loops, and Fast-Fourier Transformation. The main programming language used is MATLAB.
- Held Office Hours; Held Laboratory Sessions.

Undergraduate Teaching Assistant

August 2021 – December 2021

BIOL214 Genes, Evolution and Ecology

Case Western Reserve University

- An introductory lecture course that discusses the fundamental biological concepts including cell cycles, gene expression, evolution, and biological diversity.
- Held Office Hours; Assisted Classroom Activities.

VOLUNTEER EXPERIENCE

Center of Emergency Medicine

January 2020 – March 2020

Adult Emergency Volunteer

University Hospitals Cleveland Medical Center

- Cleaned, disinfected, and prepared rooms for incoming patients.

Division of Cardiovascular Medicine

June 2020 – September 2020

Comfort Rounder Volunteer

University Hospitals Cleveland Medical Center

- Provided best care by developing strong and trusting rapport with patients during the pandemic.
- Checked wheelchair and stretcher functionality prior to patient pick up.
- Provided patient transport using various equipment and adhered to safety protocols.

Seidman Cancer Center*Infusion Courier Volunteer***Sep 2020 – December 2020***University Hospitals Cleveland Medical Center*

- Organized the transportation of Humoral specimens to the designated Laboratory.

MedWish International*Student Volunteer***Sep 2019 – November 2019***Cleveland, OH*

- Assisted to fix and pack medical devices for delivery to developing countries.

CERTIFICATES**Dean's High Honor** | *Case Western Reserve University***Latest Award: June 2022**

- For students who attained a GPA of 3.750 or higher in a specific semester.
- Awarded for the following semesters: Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, and Spring 2022.

Outstanding Junior Award | *Case Western Reserve University***April 2022**

- For juniors with the best academic records at the end of five semesters.

Certificate of Completion | *Coursera – Online Course Platform***March 2022**

- For completion of the course: Command Line Tools for Genomic Data Science.

Phi Beta Kappa Prize | *Case Western Reserve University***September 2021**

- For sophomores with the best academic records in a liberal arts curriculum after three semesters.

Heartsaver CPR & AED Certificate | *American Heart Association***January 2020**

- For completion of the training of CPR & AED.

LEADERSHIP & EXTRACURRICULAR ACTIVITIES**Kendo Club****September 2019 – March 2020***Secretary**Case Western Reserve University*

- Practiced Kendo with other members of the club.
- Created agendas, meeting notes and other documents to enhance the collaborative process.

Guqin, pronounced [ku-ch'in]**Year 2014 – Now***Personal Interest – Advanced Level*

- Guqin is a plucked seven-string traditional Chinese musical instrument that has a history of over 3000 years.
- Sounds are produced by plucking strings and harmonics, involving a large number of glissandi and portamenti.

Acrylic Painting & Sketch**Year 2010 – Now***Personal Interest – Advanced Level*

LANGUAGES

- Chinese (Native)
- English (Fluent)
- Spanish (Elementary Level)