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EDUCATION:

University of Notre Dame Notre Dame, IN
M.S. Applied Computational Mathematics and Statistics May 2021
M.S. Bioengineering May 2021
Ph.D. Bioengineering May 2023

University of Notre Dame Notre Dame, IN
B.S. Chemical and Biomolecular Engineering **Minor:** Bioengineering May 2018
B.S. Applied Computational Mathematics and Statistics **Concentration:** Biology May 2018
Thesis: Regulation and relevance of intercellular calcium signaling in *Drosophila* wing development

RESEARCH:

University of Notre Dame, Graduate Research Notre Dame, IN
Advisor: Dr. Jeremiah Zartman Jul 2018 – Present

- Transfected *Drosophila* cells with a fluorescent calcium reporter
- Performed quantitative reverse transcription PCR for identification of low abundance GPCRs
- Aided in identifying novel neural receptors that regulate epithelial morphogenesis
- Developed cloning vectors for creating transgenic *Drosophila* lines
- Utilized confocal microscopy to image developing *Drosophila* brains and wing discs
- Utilized tissue immunostaining to evaluate protein localization in developing tissues
- Aided in development of a rapid *in vivo* *Drosophila* drug screening assay
- Currently developing humanized, transgenic *Drosophila* to optimize the drug screening assay

University of Notre Dame, Undergraduate Research Notre Dame, IN
Advisor: Dr. Jeremiah Zartman Jan 2017 – May 2018

- Utilized the GAL4/UAS system to study *in vivo* gene expression of *Drosophila* with fluorescent microscopy
- Instructed and supervised new undergraduate students
- Developed a more efficient coverslip plating protocol for *in vivo* calcium signaling imaging
- Created a pipeline data analysis program for classification of *in vivo* imaging data using MATLAB
- Performed statistical analysis using R to create graphs for manuscripts
- Identified a power-law relationship in calcium signaling during development of *Drosophila*
- Improved a genetic screening project to identify key regulatory genes of calcium
- Completed a thesis detailing significance of calcium signaling in developing tissue

PUBLICATIONS:

Wu, Q., Brodskiy, P.A., Soundarrajan, D.K., **Huizar, F.J.**, Chen, J., Liang, P., Narciso, C., Levis, M., Arredondo-Walsh, N., Chen, D., Zartman, J.J. (2019). Decoding calcium signaling dynamics during *Drosophila* wing disc development. *Biophysical Journal*. <https://doi.org/10.1016/j.bpj.2019.01.007>

Brodskiy, P.A., Wu, Q., Kumar, N. Velagala, V. Snyder, K. **Huizar, F.J.**, Tautges, S., Snyder, M, Zartman J.J. (2018). Mapping the calcium signalsome during *Drosophila* wing development. *IFAC-PapersOnLine*. <https://doi.org/10.1016/j.ifacol.2018.09.019>

Wu, Q., Brodskiy, P. A., **Huizar, F. J.**, Jangula, J. J., Narciso, C., Levis, M. K., ... Zartman, J. J. (2017). In vivo relevance of intercellular calcium signaling in *Drosophila* wing development. *bioRxiv*, 187401. *Pre-print*. <https://doi.org/10.1101/187401>

Brodskiy, P. A., Wu, Q., **Huizar, F. J.**, Soundarrajan, D. K., Narciso, C., Levis, M., ... Zartman, J. J. (2017). Intercellular calcium signaling is regulated by morphogens during *Drosophila* wing development. *bioRxiv*, 104745. *Pre-print*. <https://doi.org/10.1101/104745>

Kumar, N., Wu, Q., **Huizar, F.J.**, Velagala V., Zartman, J.J.; *Manuscript in preparation*. MAPPER: an integrative high-content screening pipeline identifies new neurotransmitter receptors involved in morphogenesis and patterning of the *Drosophila* wing disc.

Huizar, F.J., Soundarrajan D. K., Paravitorghabeh R., Zartman J.J.; *Manuscript in preparation*. Interplay between morphogen-directed positional information systems and physiological signaling.

SEMINAR AND CONFERENCE PRESENTATIONS:

Huizar F.J., Wu, Q., Tautges, S., Eckert, K., Bacher, E., Ashfeld, B., Zartman, J.J., Toward a high-throughput *in vivo* screening pipeline for testing new therapeutics using *Drosophila melanogaster* as a disease-model. Eli Lilly and Company HCRI Notre Dame Alumni Panel. Poster. Eli Lilly and Company Headquarters, Indianapolis, IN. May 17, 2019.

Huizar F.J., *Drosophila melanogaster* as a high-throughput model for drug screening and decoding G-protein coupled receptor interactions Bioengineering Seminar. Main speaker. Multidisciplinary Research Building, Notre Dame, IN. Apr 12, 2019.

Huizar F.J., Bacher, E., Wu, Q., Tautges, S., Kumar, N., Ashfeld, B., Zartman, J.J., A high-throughput *in vivo* screening pipeline for testing novel DYRK1A inhibitors against triple negative breast cancer using *Drosophila melanogaster* as a disease model. 8th Annual HCRI Cancer Research Day. Selected Presenter. Harper Cancer Research Institute, South Bend, IN. Apr. 8, 2019.

Huizar F.J., Wu, Q., Tautges, S., Eckert, K., Bacher, E., Ashfeld, B., Zartman, J.J., Toward a high-throughput *in vivo* screening pipeline for testing new therapeutics using *Drosophila melanogaster* as a disease-model. 8th Annual HCRI Cancer Research Day. Poster. Harper Cancer Research Institute, South Bend, IN. Apr 8, 2019.

Huizar F.J., Mechanisms of serotonin (5-HT) signaling in development. Harper Cancer Research Institute Seminar. Main speaker. Harper Cancer Research Institute, South Bend, IN. Feb 4, 2019.

Huizar F.J., Wu, Q., Brodskiy, P.A., Zartman, J.J., Regulation and relevance of intercellular calcium signaling. Poster. College of Science Joint Annual Meeting, Notre Dame, IN. May 4, 2018.

Huizar F.J., Levis, M., Zartman J.J., *In vivo* analysis of spontaneous intercellular Ca²⁺ waves in *Drosophila* wing discs. Poster. 5th Midwest Quantitative Biology Symposium, Notre Dame, IN. April 8, 2017.

TEACHING EXPERIENCE:

University of Notre Dame

Introduction to Bioengineering, Guest Lecturer

Notre Dame, IN
Mar 2019

- Developed lecture slides to present to students on cell line engineering
- Presented on methods, applications, and future direction of cell line engineering
- Lectured on practical use of cell line engineering in my research
- Composed homework and exam problems based on lecture material

Independence High School

College Preparation Mentor

Bakersfield, CA
Oct 2013 – Current

- Lectured students on the college application process and college navigation
- Aided students in drafting of resumes and personal statements
- Provided teachers with ACT, SAT, and AP exam study materials for student-use
- Provided contact information to teachers and students for consistent availability

Independence High School

Calculus Tutor

Bakersfield, CA
Aug 2012 – May 2016

- Assisted the teacher in preparation and explanation of lecture material
- Aided students in preparation for the Advanced Placement exam
- Maintained an online help page for students to ask questions

OTHER EXPERIENCE:**University of Notre Dame***Summer Residence Hall Manager*

- Supervised and evaluated resident assistants and other hall staff
- Kept in close contact with the Office of Housing to discuss staff-related issues
- Oversaw use and care of master keys for hall and maintained room key inventories
- Planned and conducted weekly meetings for staff assigned to the hall
- Supported, enforced, and abided by all University and Office of Housing policies
- Referred residents, when necessary, to appropriate services within the University
- Responsible for the safety and security of the residents in the residence hall
- Planned and organized community events to promote positive resident relations

Notre Dame, IN
Summer 2015 & 2016

HONORS:

Notre Dame Annual Building Bridges Reception Keynote Speaker

Sep 2019

Harper Cancer Research Institute Research Day Oral Presentation Award

Apr 2019

Stem Cells & Regenerative Medicine Research Fellowship

May 2017 – Aug 2017

Notre Dame CBE Early Start Fellowship

Jul 2018 – Aug 2018

Provost Scholarship for academic achievement

Aug 2013 – May 2017

Kaneb-Gillen Hispanic Scholar for academic achievement

Aug 2015 – May 2017

AFFILIATIONS:

Notre Dame MSPS Building Bridges Mentoring Program

Notre Dame Diversity and Career Exploration Program

Chemical and Biomolecular Engineering Graduate Student Organization

Notre Dame Hispanic Scientists and Engineers

American Institute of Chemical Engineers

Notre Dame Wrestling Club

RESEARCH INTERESTS:

Regenerative Medicine & Tissue Engineering

Stem Cell Engineering

Genetic Engineering & Proteomics

Drug Delivery and Nanomedicine

Drug Development, Pharmacodynamics, & Pharmacokinetics

SKILLS:

Techniques: Cell culture, cell transfection, ELISA assay, SDS-PAGE, immunohistochemistry of cells and tissues, *Drosophila* culture, confocal microscopy, quantitative reverse transcription PCR

Coding: Proficient in C++, R statistical language, SAS statistical language, MATLAB, LaTeX, Unix, and Python

Software: Proficient in ASPEN chemical processes software, Inkscape SVG editing software, ImageJ

Language: Conversational, reading, and writing proficiency in Spanish