Elena Grajales

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EDUCATION

University of Pennsylvania | Philadelphia, PA
Bachelor of Science in Engineering Graduation: May 2024
Major: Bioengineering | *Minor:* Computer Science, Fine Arts GPA: 3.57
Relevant Coursework: Bioengineering Modeling, Analysis, and Design Laboratory; Machine Learning; Brain Computer Interfaces

RESEARCH EXPERIENCE

Children's Hospital of Philadelphia, Goldberg Lab | Philadelphia, PA – *Lab Technician* September 2024 – Present
- Uncovered how striatal circuits contribute to autism-related behaviors in Dravet Syndrome utilizing MoSeq: a 3D depth video and machine learning platform, to identify novel patterns shaped by genetic and pharmacological interventions
- Performed stereotaxic injections with high accuracy to target neural circuits, driving pivotal studies on brain-behavior relationships

University of Pennsylvania, Meaney Lab | Philadelphia, PA – *Research Assistant* November 2021 – May 2024
- Investigated the role of extracellular vesicle communication to gain insight in the role of microglia following repetitive head injury
- Conducted behavioral and cognitive experiments to define changes following concussive impacts in mouse models
- Co-authored a research article published in Journal of Neurotrauma*: Subconcussive preconditioning prevents microglial morphology changes and improves cognitive outcomes in mice*

Bristol Myers Squibb | Lawrenceville, NJ – *Nonclinical R&D Intern* June 2023 – August 2023
- Tested the feasibility of using vacuum compression molding as a novel technology for the development of controlled release implants
- Characterized and investigated the dissolution profiles of amorphous solid dispersions of BCS Class II drugs
- Presented completed project to senior R&D team members demonstrating expertise in preclinical optimization

Memorial Sloan Kettering Engineering Summer Program | New York, NY June 2022 – August 2022
- Collaborated with members of the Jin Lab at Weill Cornell Medicine during a ten-week period to develop novel CAR T cell therapeutics
- Spearheaded a project to engineer ICAM-1 specific CAR T cells secreting Bispecific T-Cell Engagers against solid tumor gastric cancer

Skirball Institute of Biomolecular Medicine | New York, NY – *Research Assistant* June 2018 – September 2019
- Co-authored a research article published in Journal of Molecular and Cellular Neuroscience: *Regulation of BACE1 expression after injury is linked to the p75 neurotrophin receptor*
- Executed molecular biological techniques (western blot, IHC, and ELISA) to elucidate the role of BDNF in neurodegenerative diseases

WORK EXPERIENCE

University of Pennsylvania | Philadelphia, PA – *Bio-MakerSpace Lab Assistant* August 2024 – December 2024
- Supported development of cutting-edge bioengineering experiments, optimized lab operations by maintaining advanced equipment, and provided hands-on technical guidance to students, ensuring efficient operation of laboratory resources and student learning

University of Pennsylvania | Philadelphia, PA – *Innovation & Entrepreneurship Operations Assistant* August 2023 – May 2024
- Managed marketing for the Engineering Entrepreneurship Fellows Program, successfully inaugurating its first cohort with 12 students

University of Pennsylvania | Philadelphia, PA – *Teaching Assistant* August 2023 – December 2023
- Facilitated interactive group problem solving session for 70 second year students in introductory biomechanics

PROJECTS

- *Epilog:* Dedicated an academic year to develop a Bluetooth-enabled EEG headband for the rapid detection of non-convulsive status epilepticus; Collaborated with clinical mentors at CHOP to create balanced random forest model for accurate seizure detection (spec = 0.88, sens = 0.95); Winner of the Technology & Innovation Prize for the Penn Senior Design Project Competition (Team of 5)
- *Human Cockroach Machine Interface:* Developed a system to precisely control a cockroach motor prosthetic using real-time human physiological and multiple sensor inputs (Team of 4)
- *Flexi-Sketch:* Designed and implemented a user-centric device aimed at enhancing writing ability in individuals with motor disabilities; Integrated a prosthetic system which wirelessly receives EMG data and controls motors using Raspberry Pi technology (Team of 4)
- *Western Blot App:* Created a western blot analysis graphical user interface in MATLAB with the objective of analyzing images of western blots and generating publication-ready graphs, accompanied by p-values to assess statistical significance of results (Solo)
- *Minigames:* Sudoku (Java), Snake (Java), Paint (OCaml) (Solo)

SKILLS AND INTERESTS

Technical Skills: Histology, TENPO, PCR, ELISA, IHC, X-ray Diffraction, Scanning Electron Microscopy, Confocal Microscopy, HPLC-UV Analysis, Cryoslicing, Flow Cytometry, Mouse Behavioral Analysis, Rapid-Prototyping, Solidworks, Circuit Design
Programming Languages: Python, MATLAB, Java, OCaml, Arduino
Languages: English (Fluent), Portuguese (Fluent), Spanish (Proficient)
Interests: Drawing, Film, Backpacking, Ceramics