Artury Ramirez

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Education

Bachelor of Science in Bioengineering **Fall 2019-May 2023**
University of California, Merced GPA:3.46

Master of Science and Doctor of Philosophy in Chemical and Biomolecular Engineering **Fall 2023-Present**
University of California, Irvine

Research Experience

Graduate Student Researcher
University of California, Irvine | Gorodetsky Research Group **Fall 2023-Present**

- Conducting work on mammalian cell culturing, live cell imaging, fabrication, and electrical characterization of bioelectronic devices.

Diverse Educational Community and Doctoral Experience Competitive Edge Scholar
University of California, Irvine | Gorodetsky Research Group **Summer 2023**
Diverse Educational Community and Doctoral Experience Competitive Edge

- Engaged in various professional development workshops and sessions geared towards preparing for upcoming graduate school work. Furthermore, I had the opportunity to present the work I conducted over the summer within the Gorodetsky group at the Competitive Edge Research Symposium.

Learning Aligned Employment Research Assistant
University of California, Merced | Subramaniam Research Group **Fall 2022-May 2023**
Undergraduate Research Opportunity Center

- Conducting research over quantifying the yield of polymersomes formation from poly(butadiene)-b-poly(ethylene oxide) (PBD46PEO30) polymers on nanocellulose paper and glass substrates. Obtaining optimal polymersome surface deposition amount and utilizing Zeiss LSM 700 and 880 confocal laser scanning microscopes for tile scans then compiled and labeled images with ImageJ. Performing image analysis through MATLAB to determine percent yield.

C-SIP Undergraduate Research Fellowship
University of California, Merced | Subramaniam Research Group **Summer 2022**
Center for Cellular and Biomolecular Machines

- Presented research at the Undergraduate Research Opportunity Center Summer Research Symposium.

NSF-CREST Scholar **Fall 2021 – Spring 2022**
University of California, Merced | Subramaniam Research Group
Center for Cellular and Biomolecular Machines

- Presented research at the Center for Cellular and Biomolecular Machines symposium.

Undergraduate Student Researcher **November 2020-September 2021**
University of California, Merced | Pat. Li Wang Research Group

- Analyzed protein structures and binding sites and presented various research papers during group meetings. Gained a deeper understanding of chemokine inhibitors and their role in preventing inflammation.

Project Experience

Engineering Capstone Design
University of California Merced | Munoz Lab **Fall 2022-Present**

- Implementing nanoscale position scanning capabilities into a fluorescence confocal microscope for visualization of single protein molecules. Assembling a nano-stage positioning scanner into an existing inverted fluorescence microscope Integrating the scanner with the other electronic components of the microscope (photon counting module) into a software control module based on LabVIEW for the integral dynamic control of the instrument. Designing and implementing several control routines into the software to perform the required measurements.

Conferences

BIC 2022 Symposium Poster Presenter **Summer 2022**
Biomedical Engineering Society 2021 Conference Attendant **Fall 2021**

Biomedical Engineering Society 2020 Conference Attendant **Fall 2020**

Awards and Fellowships

Diversity Recruitment Fellowship **Summer 2022**
University of California, Irvine
Samueli School of Engineering
- Supplement financial support packages of exception and promising admitted doctoral and M.F.A. diversity students.

BIC 2022 Symposium Poster Presentation Undergraduate Winner **Summer 2022**
University of California, Santa Barbara
Bioengineering and Biotechnology Industry Showcase
- Presented a poster over "Determining if the Curvature of Nanocellulose Paper can Enhance the Yield of Giant Polymersomes"

Honors Chancellor's list **2020 Academic Year**
Recognition for achieving Dean's List for an entire academic year

Honors Dean' List Fall **2019- spring 2021**
Recognition for obtaining above a 3.5 GPA for that semester

Wet Laboratory Skills

Spectrophotometer (Novice)	tRNA design through RNAfold (Novice)	Confocal Microscopy (Adept)	Mammalian Cell Culturing (novice)	Polymerase chain reaction (novice)
Oscilloscope and function generator (Novice)	Gel Electrophoresis (novice)	Angstrom Engineering EvoVac Evaporator for metal surface deposition (Novice)	Nexar™ Membrane Fabrication (Novice)	Flow Cytometry (Novice)
Trotec Speedy 360 (ET 449) Laser cutting (Novice)	Chronocoulometry (Novice)	Electrochemical Impedance Spectroscopy (novice)	Mitutoyo high-precision measuring table (Novice)	Phase Contrast Imaging (Novice)

Dry Laboratory Skills

Python (intermediate)	Pymol (intermediate)	ImageJ (intermediate)	MATLAB (intermediate)	Gamry Framework (novice)
tRNA design through RNAfold (Novice)	LABVIEW (novice)	Multiple Sequence Comparison by Log-Expectation (MUSCLE) (novice)	Basic Local Alignment Search Tool (BLAST) (Novice)	Vector design and analysis through Benchling (novice)
primer design (novice)	PSpice circuit modeling (novice)	Microsoft Office (adept),	SOLIDWORKS (intermediate)	Android Studio (novice)

General Skills

Bilingual (English & Spanish)	Arduino Uno (Novice),	Microsoft Office (adept),	Fused Deposition 3D printing (adept)	Photoshop and Canva (intermediate)

PROFESSIONAL EXPERIENCE

NSF-CREST Scientific Center Project Student Success Internship **Fall 2022**
University of California, Merced

- Focusing on center research, education, service/outreach, broadening participation, & administration; engaging in readings & conducting interviews; attending & assisting in research meetings; participating in journal clubs, CCBM scientific workshops, & CCBM Open House. Developing multimedia educational materials; developing/delivering activities for local K-12 students & UC Merced undergraduates

Microbiology Lab Assistant Internship
Turlock, CA **Sumer 2021**
Certified Laboratories

- Performed sample preparation for varying food samples for food safety testing against varying antigens. Performed digestions and extractions in a timely fashion maintaining a high level of quality and prepared extracts for further analysis.

PROFESSIONAL TRAINING

C-SIP Cytometry Module
University of California, Merced **Summer 2022**
Center for Cellular and Biomolecular Machines

- Introduced to flow cytometry Learned Cell culture aseptic technique and cellular manipulation performed cytometry of in vitro and ex vivo derived samples utilized cell sorting basics and advanced applications.

C- SIP Cleanroom and Nanofabrication Module
University of California, Merced **Summer 2022**
Center for Cellular and Biomolecular Machines

- Performed Nano and Micro-fabrication using Photolithography utilized thin Film Deposition using Atomic Layer Deposition and RF Sputtering and utilized Focused Ion Beam (FIB) for site-specific imaging analysis, material deposition and etching. Utilized profilometer and Atomic Force Microscopy for device surface analysis

PROFESSIONAL ORGANIZATIONS

American Chemical Society **Fall 2022**

- General Member

Theta Tau Professional Engineering Fraternity
University of California, Merced

- **Professional Development Chair** **August 2021- May 2022**
  - Organized, hosted, and highlighted professional development workshops, events, and opportunities for members of Theta Tau and the Merced community. Secured a thousand dollars of funding from the Associated Students of the University Merced to send members of the Merced community to the 2021 Great Mind in Stem conference.

- **Risk Manager** **Spring 2021**
  - Organized chapter participation in each of the following areas: alcohol and drug awareness program to educate its members on the responsibilities and consequences of alcohol consumption and drug use. Assisted members in recognizing, preventing, and reporting discrimination, sexual harassment, and hazing. Formed mental health recognition program (such as suicide or depression) to help members in the recognition of warning signs, identification of referral resources, and skills to respond to members at risk.

- **Scholarship Chair** **September 2022-Present**
  - Encouraged academic excellence among members by organizing study hours and sharing academic opportunities. Created social events centered around the academic aspects of the various majors within the organization.

- **Public Relations Committee** **Fall 2021**
  - Tasked with creating Instagram posts to promote engineering-related events to the Merced community by designing posters with Canva.

Biomedical Engineering Society
University of California, Merced

- **Vice President** **Fall 2021**
  - Assisted in leading, managing, and organizing the Biomedical Engineering Society at UC Merced.

- **Research and Development Chair** **October 2019- March 2021**
    - Facilitated Collaboration between the Biomedical Engineering Society and Theta Tau to work on a biosensor. Utilized Android Studio to develop a mobile app to identify uric acid levels of individuals.

Robotics Society **Fall 2019**

- Participated in the vex robotics team and assisted in the assembly process.

Relevant Coursework

Bachelor of Science in Bioengineering **Fall 2019- May 2023**

University of California, Merced

- *Genetic Engineering*
    - Explored the molecular methods and applications of recombinant DNA technology and the issues regarding their use through case studies on the effect of genetic engineering on medicine, agriculture, biology, forensics, and other areas of technology.

- *Biomolecular Engineering*
    - Covered fundamental concepts of biomolecular structure and function and the experimental and computational tools such as pymol, MATLAB and various protein and sequence analysis software. Learned approaches for engineering biomolecules and how to apply these new technologies to solve pressing problems in biotechnology, medicine and bioengineering. The covered approaches range from DNA technology, recombinant protein production, protein engineering, design and biophysical characterization, whereas the target products span customized enzymes, molecular switches and actuators, recombinant biosensors, therapeutic antibodies, and protein and DNA assemblies.

- *Biochemistry for Engineers*
    - Learned the fundamental concepts of biomolecular structures and their functions. Chemical and structural properties of proteins, nucleic acids, lipids, and carbohydrates, as well as the mechanisms for their assembly and function, and the tools/approaches used in their isolation and characterization.

- *Cell Biology for Engineers*
    - Focused on the fundamental concepts of modern cell biology and their biomedical and bioengineering applications, such as gene expression, signal transduction, cell signaling and diffusion, cells and their environment, cancer, and stem cells. Highlighted fundamental tools and techniques used in cell biology as well such as culturing and visualizing cells, advanced microscopy, integrating Cells Into Tissues/Cell Homing/Tissue Engineering, Stem Cell Engineering, and Stem Cell Ethics.

- *Intro to Biomaterials*
    - Dived into the basic synthesis, analysis and design of biomaterials used for bioengineering, including biotechnology, tissue engineering, medical imaging and clinical applications. Topics include interactions between bio- and synthetic molecules and surfaces; design, synthesis, and processing approaches for materials that control cell functions; and application of state-of-the-art biomaterial approaches to problems in tissue engineering, drug delivery, vaccines, functionalized surfaces, toxicity and host responses.

- *Biothermodynamics*
    - Explored how thermal motion is constrained in biological systems. Understand the thermodynamic background for diffusion, chemical reactions and chemical kinetics in biological systems. apply the mathematical framework of thermodynamics to understand the basic processes of self-assembly, binding and recognition for biological systems.

- *Computing for Bioengineers*
    - Covered fundamentals of computer programming in python including loops and lists, functions and branching, input data and error handling, array and matrix computing, data plotting, files and strings, classes, object-oriented programming, debugging, and migration in conjunction with general scientific and engineering applications including random number generation, sequences, discrete calculus, and differential equations and image analysis, tailored to specific problems in bioengineering.

- *Signals and Systems for Bioengineers*
    - Introduced to basic concepts and theory of analog and digital signal processing in bioengineering. Covered basic concepts of digital imaging processing.

- *Biocircuits Theory*

- Introduced to concepts such as voltage, current, resistance, impedance, Ohm's and Kirchoff's law applied to biological circuits. Basic electric circuit analysis techniques and their application to obtain biophysical and physiological parameters.

- *Bioelectronics*
  - Learned concepts of analog electronics such as op-amps, diodes, transistors and their application to bioengineering. Designed and analyzed circuits initially in Pspice and then formed said circuits in the lab utilizing tools such as an oscilloscope and a wave function generator.

Volunteer Experience

CREST STEM Camp **Summer 2022**
University of California, Merced
- Assisted in leading a STEM workshop where students were able to work to perform analysis of onion cells on the LSM 700 confocal microscope and Zeiss LSM 880 confocal laser scanning microscope.

Collegiate Challenge **March 2022**
Ventura County | Habitat for Humanity
- Built housing for low-income families in the Ventura area.

Society of Women Engineers **Spring 2021**
Expanding your Horizons Workshop Lead
- Presented STEM-related topics to middle school girls to inspire them to pursue a career in STEM. Lead an online workshop demonstrating the application of biotechnology and genetic engineering.

References

Alon Gorodetsky
University of California, Irvine | Gorodetsky Research Group
Associate Professor
alon.gorodetsky@uci.edu| (949) 824-7159
- Principle Investigator within the Gorodetsky Laboratory.

Celina Mojica
University of California, Irvine | Director of Academic Initiatives
cmojica@uci.edu| (949)-824-5409
- Lead the Competitive Edge Program.

Carrie Kouadio
University of California, Merced | NSF-CREST CCBM Executive Director
ckouadio@ucmerced.edu | (209) 228-3608
- Supervisor for my CCBM Student Success Internship as well as my other CCBM-related Opportunities.

Jorge Arroyo
University of California, Merced | Director, Undergraduate Research Opportunities Center (UROC)
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- Supervisor for my time as a learning aligned employment research assistant in the Subramaniam Laboratory.

Anand Bala Subramaniam
University of California, Merced | Subramaniam Research Group
Associate Professor
asubramaniam@ucmerced.edu
- Principle Investigator for my research project within the Subramaniam Laboratory.

Alex Acuna
Turlock California | Certified labs
Microbiology Supervisor
aAcuna@Certified-Laboratories.com
- Supervisor during my time working as a microbiology lab assistant at Certified Labs.