

- Life Science Technology Innovation Fellow
- NSF Graduate Research Fellow Cornell Graduate School IMSD Fellow and Dean's Scholar
- Cornell Sloan UCEM Affiliate

M.S. in Biomedical Engineering

CORNELL UNIVERSITY

B.S. in Chemical Engineering (Cum Laude)

FLORIDA STATE UNIVERSITY

- Cummings Scientific Scholarship for Chemical and Biomedical Engineering
- · Garnet and Gold Scholar

Fellowships

Life Sciences Technology Innovation Fellow	New York, NY
National Science Foundation (NSF) Graduate Research Fellow	
Cornell Graduate School Dean's Scholar	Ithaca, NY
Cornell Sloan University Center of Exemplary Mentoring (UCEM) Affiliate	Ithaca, NY
One of three students across seven departments selected for the Cornell Graduate School Initiative for Maximizing Student Development (IMSD) Fellowship	Ithaca, NY
	Life Sciences Technology Innovation Fellow National Science Foundation (NSF) Graduate Research Fellow Cornell Graduate School Dean's Scholar Cornell Sloan University Center of Exemplary Mentoring (UCEM) Affiliate One of three students across seven departments selected for the Cornell Graduate School Initiative for Maximizing Student Development (IMSD) Fellowship

Experience

Hematology and Oncology Program and Preclinical Models and Drug Screening Laboratory, Weill **Cornell Medicine**

RESEARCH AND CLINICAL ASSISTANT: ENGLANDER INSTITUTE FOR PRECISION MEDICINE

- Attended to patients with lymphoma and leukemia during morning rounds and in the clinic to understand decisions made by Dr. John Leonard and Dr. Christine Garcia and pharmacists for deciding best patient treatment options
- Participated in the decision making process for suggesting patients for allogeneic CAR-T cell therapy clinical trials within the bone marrow transplant and cellular therapy program under Dr. Koen van Besien
- Developed organoid models based on blood cancers from patients treated within the clinic for high-throughput screening assays to predict best course of action ffor supplemental chemotherapy drugs

Cira Laboratory, Cornell University

GRADUATE RESEARCH ASSISTANT: DEPARTMENT OF BIOMEDICAL ENGINEERING

- · Design, build, and characterize high-throughput liquid handling devices for advanced combinatorial assays
- Develop cutting edge clinical and biological assays for exploring areas in diseases that have traditionally been understudied
- · Streamline development of high-throughput microfluidic liquid handling devices for range of multidisciplinary applications and scale-up

Li Laboratory, Florida State University

STEM CELL RESEARCH ASSISTANT: DEPARTMENT OF CHEMICAL AND BIOMEDICAL ENGINEERING

- Facilitated differentiation of several human iPSC cell lines into brain-specific pericytes for future use in an in vitro blood-brain barrier model
- Characterized properties of pericytes and validated through comparison to brain-specific astrocyte and endothelial cells
- Investigated and implement improvements for multiple differentiation protocols based on new findings in literature

Summary.

BIOMEDICAL ENGINEER · DATA SCIENTIST

Biomedical engineer with a strong focus on innovative problem-solving in fast-paced, technology-driven environments. Expertise in the development and utilization of high-throughput liquid handling devices, enabling complex applications beyond the capabilities of traditional pipetting to enhance animal and human health. Proven experience in designing and developing multidisciplinary molecular approaches to address challenges within biological and chemical systems.

Education

CORNELL UNIVERSITY

Ph.D. Candidate in Biomedical Engineering

New York, NY

May. 2021 - Sept. 2021

Tallahassee, FL Aug. 2019 - May 2020

Aug. 2020 - Present

Ithaca, NY

Aug. 2020 - May 2023

Aug. 2020 - May 2025 (expected)

Tallahassee, FL

Ithaca, NY

Ithaca, NY

Aug. 2016 - May 2020

Puig Laboratory, US Department of Agriculture - Agricultural Research Service

PLANT PATHOLOGY RESEARCH ASSISTANT: SUBTROPICAL HORTICULTURAL RESEARCH STATION

- Designed a molecular approach to identify the presence of pathogens on/in over 500 insects isolated from cacao fields in Brazil and Ecuador
- Developed DNA extraction protocols for poorly stored and extremely small specimens (< 3 ng of DNA) suspected to be vectors of cacao diseases
- Evaluated rate and routes of infection of Neofusicoccum and Phytophthora on over 200 pods to determine susceptibility for cacao breeding program

Marshall Laboratory, National High Magnetic Field Laboratory

NANOPARTICLE SYNTHESIS RESEARCH ASSISTANT: ION CYCLOTRON RESONANCE GROUP

- Created magnetic nanoparticles (< 20 nm) to identify and extract compounds in crude oil that are chromatographically inseparable due to volatility
- · Fabricated molecularly imprinted polymers to have a high selectivity for binding, detecting, and separating various contaminants in crude oil

Rao Laboratory, Florida State University

FOOD SAFETY AND QUALITY RESEARCH ASSISTANT: DEPARTMENT OF NUTRITION, FOOD, AND EXERCISE SCIENCES

- Synthesized molecularly imprinted polymers using iron (II, III) oxide particles to extricate porcine hemoglobin and pesticides in tainted foods
- · Constructed an indirect non-competitive ELISA to investigate epitopes of two monoclonal antibodies for use in anti-porcine hemoglobin assay

Awards & Honors

2021, 2022	Diversity Programs in Engineering Sloan Grad Scholar Award, Cornell University	Ithaca, NY
2021	CU Empower Outstanding Peer Mentor Award, Cornell University	Ithaca, NY
2021	Honorable Mention for Ephrahim Garcia Graduate Excellence in Mentoring, Cornell University	Ithaca, NY
2020	Fischell Graduate Scholarship in Bioengineering, Cornell University	Ithaca, NY
2020	Cornell Graduate School Dean's Excellence Fellowship	Ithaca, NY
2020	Garnet and Gold Scholar, Florida State University	Tallahassee, FL
2019	Recognized as one of the top student employees by USDA-ARS Southeast Area in PEDAL, 2(3) 9	Miami, FL
2019	Certificate of Research Excellence, Florida State University	Tallahassee, FL
2019	3rd place, Toxicology & Safety Evaluation Division, Institute of Food Technologists	New Orleans, LA
2019	Finalist, College of Human Sciences Research Showcase, Florida State University	Tallahassee, FL
2018-2020	Cummings Scientific Scholarship for Chemical and Biomedical Engineering	Tallahassee, FL
2018	1st place, Toxicology & Safety Evaluation Division, Institute of Food Technologists	Chicago, IL
2018	Garnet and Gold Scholar Society IDEA Grant, Florida State University	Tallahassee, FL
2018	2nd place, College of Human Sciences Research Showcase, Florida State University	Tallahassee, FL
2016-2018	Merit Scholarship, Florida State University	Tallahassee, FL
2016-2020	President's List: three semesters; Dean's List: three semesters, Florida State University	Tallahassee, FL
2016-2020	Bright Futures Florida Academic Scholarship, State of Florida	Tallahassee, FL

Publications

Non-Specific Binding and Cross-Reaction of ELISA: A Case Study of Porcine Hemoglobin Detection

X.Y. Jiang, M. Wu, J.E. Albo , Q.C. Rao	2 (1) 10 2200/foods100.8170.8	
Foods, 10(8) 1708	6 (10.5590/1004310081108	
 Identified conditions leading to false immunodetection results caused by non-specific binding (NSB) and cro for antibody and assay validation to minimize false-positive/negative immunodetection results 	oss-reaction and discussed the necessity	
Engineering Brain-Specific Pericytes from Human Pluripotent Stem Cells	2020	
R. Jeske*, J.E. Albo *, M. Marzano*, J. Bejoy, Y. Li (*denotes equal contribution)	@10.1089/ten.TEB.2020.0091	
Tissue Engineering Part B: Reviews, 26(4) 367-382		
• Reviewed techniques, improvements, and future directions for differentiating brain-specific pericytes and the	neir roles in neurodegenerative diseases	
Rapid Molecular Identification of Scolytinae (Coleoptera: Curculionidae)	2019	
J.E. Albo, J.P. Marelli, A.S. Puig	∂ @ 10.3390/ijms20235944	
International Journal of Molecular Sciences, 20(23) 5944		
• Developed a molecular approach to yield results in less than 36 hours for identification of field insect samp of being vectors of disease in <i>Theobroma cacao</i> at low concentrations from degraded DNA	oles from Brazil and Ecuador suspected	
Challenges in SERS-based Pesticide Detection and Plausible Solutions	2019	
A.S. Bernat*, M. Samiwala*, J.E. Albo , X.Y. Jiang, Q.C. Rao (*denotes equal contribution)	@ 10.1001/	
	₩10.1021/acs.jatc.9b05077	

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, 67(45) 12341-12347

• Reviewed challenges associated with surface-enhanced Raman spectroscopy (SERS) based assays for detection of pesticides in food samples and suggested improvements for common drawbacks of selectivity, reproducibility, and nonspecific binding

May 2019 - Aug. 2019

Miami, FL

May 2018 - Aug. 2018

Tallahassee, FL

Tallahassee, FL Aug. 2017 - May 2019

2021

Presentations	
A scalable liquid handling platform for high-throughput manipulation of live cell-based assays	Feb. 2024
J.E. ALBO, S. TAN, S. SHIRI, J. DENIS, R. FRANKLIN-GUILD, K. SANDOZ, N.J. CIRA	
Poster: SLAS2024	Boston, MA
A single colony-based natural product screening platform	May 2023
S. Tan, J.E. Albo , N.J. Cira	Ithaca NV
Poster: Nature's Metabolites Symposium	itilded, Nr
Patient-derived tumor organoids for high-throughput drug screening	Aug. 2021
J.E. Albo, J.P. Leonard, O. Elemento	Ithaca NV
Poster: Cornell BME Research Clinical Immersion Symposium	ππαεά, ΝΥ
Characterization of Silica-coated Iron (II, III) Oxide Magnetic Nanoparticles for Pesticide Detection	Oct. 2019; Jul. 2019
A.S. Bernat, J.E. Albo , X.Y. Jiang, Q.C. Rao	San Angelo, TX: New Orleans, I A
Oral: USDA Program Director Meeting; Poster: IFT19 Feed Your Future	can agero, and real of carlo, 21
Preparation of Glyphosate-specific Molecularly Imprinted Polymers with Silica-coated Iron (II, III) Oxide Magnetic Particles for Glyphosate Detection	May 2019
A.S. Bernat, J.E. Albo , X.Y. Jiang, Q.C. Rao	Fort Lauderdale, FL
Poster: Florida Association of Food Protection Annual Educational Conference	ron Eulardanc, r E
Co-precipitation Synthesis of Iron (II, III) Oxide Magnetic Nanoparticles	Feb. 2019
A.S. Bernat, J.E. Albo , X.Y. Jiang, Q.C. Rao	Tallahassee Fl
Oral: College of Human Sciences Research Showcase, Florida State University	rununussee, r E
Development of Magnetic Iron (II, III) Oxide Particles for the Detection of Food Contaminants	Nov. 2018
J.E. Albo, Q.C. Rao	Tallahassee Fl
Oral: Fall Research Day, Florida State University	iuliuliussee, i L
Molecularly Imprinted Polymer-Based Sensor for the Detection of Porcine Hemoglobin in Foods	Oct. 2018
J.E. Albo, Q.C. Rao	Tallahassee Fl
Poster: President's Showcase of Undergraduate Research Excellence, Florida State University	iuliuliussee, i L
Characterization of Two Anti-Hemoglobin Monoclonal Antibodies to Fight Food Fraud	Jul. 2018
X.Y. Jiang, J.E. Albo , W. Dong, Q.C. Rao	Chicago II
Poster: IFT18 A Matter of Science + Food	Chicago, iz
Effect of Coating and Blocking Agents on Sandwich ELISA Development for Porcine Blood	Eab 2019
Detection	ren. 2018
X.Y. Jiang, J.E. Albo , Q.C. Rao	Tallahassaa Fl
Oral: College of Human Sciences Research Showcase, Florida State University	rananassee, r E

• Designed and executed cereal-based iron extraction project to stimulate interest of students in local title 1 high schools in STEM-based careers

FSU Professional Clothing Closet

CO-FOUNDER AND EXECUTIVE COMMITTEE MEMBER

- · Initiated collaboration between FSU, JCPenney, and Kohl's to provide free professional attire and narrow opportunity gap for less fortunate students
- Coordinated and delegated tasks between the student team and committee members to further advance the success of the organization

Cornell University (CURIE Academy) and (CATALYST Academy)

BIOMEDICAL ENGINEERING ACTIVITY LEAD

- · Led interactive sessions on biomedical engineering, introducing high school students to cutting-edge research and technologies, and sparking their interest in pursuing STEM careers.
- Developed and facilitated hands-on activities that engaged students in practical applications of biomedical engineering concepts, enhancing their understanding and enthusiasm for science.
- Mentored and supported students from traditionally excluded populations in STEM, providing guidance and encouragement to help them navigate potential career and academic pathways in engineering.

Cornell University EMPower (CU EMPower)

Selected Leadership Positions

GRADUATE STUDENT MENTOR

- Mentored fifteen first-year URM or first-generation undergraduate engineering students, fostering their academic and personal growth, and facilitating a smooth transition into college life
- Guided students in developing effective study habits and strategic time management skills, helping them balance research responsibilities and internship opportunities for better career development.

FAMU-FSU Engineering Peer Mentor Program & FSU Student Council for Undergraduate Research

CHEMICAL ENGINEERING MENTOR

 Advised first and second year engineering students in establishing research opportunities and maintained weekly meetings to address progress and future career directions

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2023, 2024 Ithaca, NY

2020-2024

Ithaca, NY

2018-2020 Tallahassee, FL

2017-2020

Tallahassee, FL