

# Karla Alejandra Montejo

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## Education

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### Florida International University Honors College

B.S. Biomedical Engineering  
Minor in Chemistry

August 2013 – July 2018

3.6/4.0 GPA

## Research Experience

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### Post-baccalaureate Scholar Mayo Clinic Graduate School of Biomedical Sciences

PI: J. Luis Lujan, Ph.D. Department of Physiology and Biomedical Engineering August 2018 - Present

- Modeling the stochastic calcium dynamics of astrocytes in electrical brain stimulation

### Research Assistant Center for Brains, Minds, and Machines, Massachusetts Institute of Technology

PI: Gabriel Kreiman, Ph.D. Department of Neurology, Harvard Medical School Summer 2018

- Integrating scene “gist” into convolutional neural networks to improve occluded object recognition

### MARC U\*STAR Fellow Florida International University College of Engineering and Computing

PI: Jessica Ramella Roman, Ph.D. Department of Biomedical Engineering Spring 2015 – Spring 2018

- A low-cost, portable polarized interferometer for the low-resource setting
- Handheld SFDI/polarimetric imaging device for objective evaluations of scars
- Mueller matrix colposcope for in-vivo cervical collagen imaging of the uterine cervix

### Research Assistant Janelia Research Campus

PI: Nelson Spruston, Ph.D. Howard Hughes Medical Institute EXROP Summer 2017

- Morphological characterization of non-spiny hippocampal pyramidal cell type in the CA3 region

### Research Assistant Yale University Department of Chemical Engineering

PI: Chinedum Osuji, Ph.D. Sackler/NSF REU in Physical Engineering Biology Summer 2016

- One-step generation of biocompatible graphene oxide/silicone polymer microcapsules for targeted drug delivery

### Research Assistant The Scripps Research Institute, Jupiter FL

PI: Brian Paegel, Ph.D. Summer Undergraduate Research Fellowship Summer 2015

- Design of high-throughput microfluidic incubators for automated biochemical assays to aid in low-cost drug discovery

### NIGMS RISE Fellow Florida International University College of Arts and Sciences

PI: Lidia Kos, Ph.D. Department of Biological Sciences Summer 2011 – Fall 2015

Examining role of endothelial transcription factors on neural crest cell lineages present in the cardiovascular system

- The role of Sox10 expression in embryonic heart development and homozygous lethality
- Effects of endothelin signaling on heart morphology

## Publications

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Kaufman G.\*; Montejo K. A.\*; Michaut A.; Majewsk P.W.; Osuji C.O. Photoresponsive and Magneto-responsive Graphene Oxide Microcapsules Fabricated by Droplet Microfluidics. ACS Appl. Mater. Interfaces 9, 50, 44192-44198

\* Indicates authors contributed equally to the work

Montejo K.A.; Chue-Sang J; Bai Y.; Stoff S.; Holness N.; Gonzalez M.; Gomes J.; Gandjbakhche A.; Chernomordik V.V.; Ramella-Roman J.C. Use of Mueller Matrix colposcopy in the characterization of cervical collagen anisotropy. Proc. SPIE 10043, Diagnosis and Treatment of Diseases in the Breast and Reproductive System, 1004303 (2 March 2017);

doi: 10.1117/12.2250987

Gonzalez M.C., **Montejo K.A.**, Krupp K., Srinivas V., DeHoog E., Chue-Sang J., Madhivanan P., Ramella-Roman J.C., Calibration of low-cost, portable Mueller matrix polarimeter, Biophotonics Congress: Biomedical Optics Congress 2018 (Microscopy/Translational/Brain/OTS), OSA Technical Digest (Optical Society of America, 2018), paper JTu3A.6.

**Montejo K.A.**; A low-cost, portable polarized interferometer for the determination of cervical cancer risk in low-resource settings. Undergraduate Thesis. Submitted May 2018.

Zhang, M., Feng, J., **Montejo, K.**, Kwon, J., Lim, J. H., & Kreiman, G. (2019). Lift-the-Flap: Context Reasoning Using Object-Centered Graphs. <http://arxiv.org/abs/1902.00163>

## **Presentations and Conferences**

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Montejo K.A., Balachandar L., Moshkforoush A., De Souza S.B., Asp A.J., Wang S., Hillan S.G., Riera J.J., Lujan J.L.; [Poster] Oct. 2019. Society for Neuroscience Annual Meeting, Chicago, IL.

Montejo K.A., Krup K., Srinivas V., DeHoog E., Chue-Sang J., Sevilla N., Madhivanan P., Ramella-Roman J.C.; A low-cost portable Mueller Matrix polarimeter for low resource settings.

[Poster] Sep. 2017. Undergraduate Research Day. FIU BME, Miami, FL.

**Awarded second place presentation**

[Oral] Oct. 2017. MARC U\*STAR/MBRS RISE Symposium, FIU. Miami, FL.

**Awarded first place undergraduate presentation**

[Oral] Mar. 2018. QBIC Symposium, Conference for Undergraduate Research, FIU.

**Awarded first place presentation**

Montejo K.A., Stoff S., Chue-Sang J., Holness N.A., Gandjbakhche A., Chernomordik V.V, Kennedy E., Ramella-Roman J., Mueller matrix colposcope for in-vivo cervical collagen imaging of the uterine cervix

[Oral] Jan. 2017. SPIE Photonics West BIOS, San Francisco CA. International Conference

[Poster] Sep. 2016. Undergraduate Research Day. FIU BME, Miami, FL.

**Awarded first place presentation**

Montejo K.A., Kaufman G., Osuji C., Graphene oxide coated microcapsules formed via interfacial complexation

[Oral] Oct. 2016. MARC U\*STAR/MBRS RISE Symposium, FIU. Miami, FL.

**Awarded first place undergraduate presentation**

[Poster] Aug. 2016. Sackler/NSF REU Symposium, Yale University. New Haven, CT.

**Awarded outstanding presentation**

Montejo K.A., DeLuca J., Chaparro D., Teltumbade D.; NEXTflo: variable flow resistor for passive infusion systems  
Poster and group Oral presentation, FIU College of Engineering Expo

Montejo K.A., Cochrane W., Price A., Paegel B., Microfluidic incubators for picoliter-scale biochemical assays

[Oral] Apr. 2016. Life Sciences of South Florida Research Symposium, Broward College. FL

[Poster] Nov. 2015. Annual Biomedical Research Conference for Minority Students, Washington State Convention Center. Seattle WA.

**Awarded outstanding presentation by American Society for Cell Biology**

[Oral] Oct. 2015. MARC U\*STAR/MBRS RISE Symposium, FIU. Miami, FL.

**Awarded honorable mention**

[Poster] Aug. 2015. Scripps Summer Research Symposium. Jupiter, FL.

Montejo K.A, Fernandez N., Kos L., Effects of endothelin signaling on heart morphology

[Oral] Apr. 2015. National Undergraduate Research Conference, Eastern Washington University. Spokane, WA

[Poster] Feb. 2014. Florida Undergraduate Research Conference, FIU. Miami, FL.

## **Awards and Achievements**

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- NIH NINDS Diversity Supplement Awardee Aug 2019-2020
- Mayo Clinic Postbaccalaureate Research Education Program (PREP) Aug 2018-2019  
NIGMS funded R25 towards research experience and coursework
- MARC U\*STAR Fellowship 2016-2018  
NIH funded T24 grant. One of 580 fellows nation-wide
- HHMI EXROP Fellowship Summer 2017
- NIGMS RISE Fellowship 2015-2016  
NIH funded R25 grant.
- Major League Hacking 2<sup>nd</sup> Place, Mangohacks 2017 Miami, FL. February 2017  
Created Night Watch, a mobile application with Arduino-controlled wireless wearable sensors to detect and track epileptic seizures or episodes of apnea and alert housemates.
- NCUR travel award, FIU Honors College 2015
- Florida Academic Scholars Award 2013-2017  
Merit based Florida Bright Futures 4-year college tuition aid
- FIU Ambassadors Scholarship 2013-2017  
Merit based FIU full tuition and fees scholarship
- Office of Naval Research Bridge to Success Fellowship Summer 2013

### **Leadership and Outreach**

**Team Leader, senior design project in collaboration with PAVmed Inc. October 2017 – May 2018**  
Lead diverse team in research, regulatory compliance (ISO, FDA), design, manufacture, and verification testing of flow limiting device for intravenous infusions

**Vice President, Alpha Eta Mu Beta Honors Society, FIU April 2017 – June 2018**  
Managed outreach projects such as Engineers on Wheels to demo technology to high school students. Led two workshops to AEMB members and other BME students on the Python programming language, and use of microcontrollers in DIY medical projects.

**Treasurer, Association for Computing Machinery, FIU April 2017 – February 2018**  
Handled a budget of \$6K used in workshop materials. Led a workshop for university members on use of microcontrollers in hardware projects. Helped in organizing the Mangohacks signature FIU hackathon, undertaking a budget of over \$14K.

**Brainwaves Neuroscience Outreach September – May 2019**  
Led groups through interactive learning activities using the Backyard Brains Human to Human Interface kit, and the EMG kit to educate primary and middle school students.

**Peer Instructor, Honors College September 2015 – April 2016**  
Lectured a year-long class of 30 students, and led small Socratic circles on proof and the scientific method as it pertains to the arts and humanities.

**Teaching Assistant, College of Engineering and Computing September 2014 – April 2015**  
BME 1008 Introduction to Biomedical Engineering. Delivered lectures and prepared/performed active learning exercises for a class of 90+ students on data acquisition with Matlab. Built finger pulse oximeters and hand grip sensors for class data collection labs.

**FIU Cook-off Campaign for United Way December 2016**  
Fundraised over \$350 towards United Way to compete in a university-wide cook-off

### **Professional Development and Certificates**

**Patient-Specific Tractography and Neural Simulation Workshop July 2019**

Two-day tutorial on how to simulate electrical stimulation on model axons employing Camino, Matlab, NEURON, and COMSOL in patient morphologies based on MRI and DWI imaging atlases. Led by Brian Howell at the Mayo Clinic in Rochester, MN.

**NEURON Short Course**

**November 2018**

One-day satellite course for Society of Neuroscience Meeting 2018, introduction to using NEURON with Python.

**MIT / FIU Quantitative Biology Workshop**

**January 2016**

Awarded \$1.3K to attend week long workshop on programming in neuroscience and biology at Massachusetts Institute of Technology. Shared experience with FIU students as coordinator and facilitator to Saturday coding sessions. Helped foster relationships between MIT and FIU faculty and administrators to increase FIU student access to QBW.

**MITx Quantitative Biology Workshop Signed Certificate (edX)**

**May 2016**

Completed online coursework in machine learning in neuroscience, genomics data analysis, and modeling in biochemistry utilizing Matlab and Python, including ImageJ to extract neural fluorescence data

**Society Affiliations**

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- Alpha Eta Mu Beta Biomedical Engineering Honors Society **2016-present**
- National Biomedical Engineering Society **2016-present**
- FIU Honors College **2013-present**
- Association for Computing Machinery **2016-present**