

# Andrés E. Martínez - Muñiz

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## EDUCATION

**University of Puerto Rico - Mayagüez Campus**, Mayagüez, PR  
Bachelor of Science in Industrial Microbiology

Expected June 2020

GPA: 3.73

## RESEARCH EXPERIENCE

**Columbia University, New York New York, June 2019 – August 2019**

**Visiting Undergraduate Summer Researcher, Chao Lu, Ph.D.**

- Studied the possible therapeutic results of altered histone modifications in NSD1-mutated Head and Neck Squamous Cell Carcinoma (HNSCC).
- Quantified cell viability via spectrophotometry following varying dosage treatments with acetyltransferase inhibitors.
- Analyzed histone methylation and acetylation levels via western blot in order to determine changes in expression levels due to use of inhibitors.

**Massachusetts Institute of Technology, Cambridge, Massachusetts, June 2018 – August 2018**

**Visiting Undergraduate Summer Researcher, Matthew Vander Heiden, M.D., Ph.D.**

- Studied the proliferative and metastatic effects of increased oxidation of NADH in models for Pancreatic Ductal Adenocarcinoma (PDAC).
- Quantified cell proliferation rates via total cell counts under varying levels of pyruvate and duroquinone availability.
- Epithelial-Mesenchymal Transition (EMT) was analyzed under similar conditions by measuring E-cadherin levels as well as transcription factors regulating E-cadherin expression.

**Brown University, Providence, Rhode Island, June 2017 – May 2018**

**Visiting Undergraduate Researcher, Jonathan Kurtis, M.D., Ph.D.**

- Modified T7 bacteriophages by introducing short DNA fragments from *P. falciparum* and transduced *E. coli* in order to perform a plaque assay.
- Sequenced DNA samples lifted from the resulting bacterial lysates and analyzed them with online bioinformatics tools to determine protein stability.
- Worked on the expression of functional PfGARP, a malaria resistance-inducing antigen, in order to purify and characterize as a viable vaccine candidate.
- Analyzed expression vector genome via PCR to determine genetic changes following transformation with *PfGARP*.
- Performed western blot assays in order to analyze expression of the functional protein.

**University of Puerto Rico – Mayagüez Campus, Mayaguez, PR, June 2016 – May 2017**

**Undergraduate Researcher, Maribella Domenech, Ph.D.**

- Studied the influence of active Hedge Hog signaling in mesenchymal cells and their contribution to Triple Negative Breast Cancer (TNBC) cells via paracrine interactions in 2D and 3D cultures.
- Determined proliferation rates of TNBC cells when cultured in combination with different mesenchymal components via fluorescent labeling.
- Determined the stemness of mesenchymal components through quantification of ALDH activity via Flow Cytometry.

## RESEARCH SKILLS

### Molecular Biology and Biochemistry

Bacterial transformation and transduction, nucleic acid and protein isolation, PCR and western blot analyses, ELISA assay, cell proliferation and viability assays, fluorescent labeling, flow cytometry, fluorescent microscopy and Fluorescence Assisted Cell Sorting (FACS).

### Bioinformatics

Data analysis with R, Python and Excel VBA. NCBI databases and its corresponding analytical tools. Data quantification with Image J.

### Tissue Culture

Maintenance and culture of cell lines from breast, liver, lung and pancreatic tissue. Generation of new cell lines from isolated mice tumors.

### Microbiology

Culture media and plate preparation, plaque assays and absorption spectrophotometry.

## CONFERENCE PRESENTATIONS

**Martínez-Muñiz, A.;** Li, Y. and Lu, C. Evaluating CBP/p300 Inhibition as a Possible Therapy for NSD1-mutated Head and Neck Cancer. Oral presentation delivered at (1) the Columbia University Summer Research Symposium, New York, NY and (2) the Leadership Alliance National Symposium (LANS), Hartford, CT, July 2019.

**Martínez-Muñiz, A.;** Sivanand, S. and Vander Heiden, M. Characterization of Primary and Metastatic Pancreatic Tumors in Pancreatic Ductal Adenocarcinoma (PDAC). Poster Presentation delivered at (1) the MIT Amgen Scholars Research Symposium, Cambridge, MA, August 2018, at (2) the Annual Biomedical Research Conference for Minority Students (ABRCMS) meeting\*\*\*, Indianapolis, IN, November 2018 and at (3) the American Association for Cancer Research (AACR) meeting, Atlanta, GA, April 2019.

**Martínez-Muñiz, A.** and Kurtis, J. Expression of Plasmodium falciparum Glutamic Acid-Rich Protein (PfGARP) in Recombinant Pichia pastoris for Malaria Vaccine Development. Oral presentation delivered at (1) the Leadership Alliance National Symposium (LANS), Hartford, CT, July 2017 and at (2) the Annual Biomedical Research Conference for Minority Students (ABRCMS), Phoenix, AZ, October 2017. Poster presentation delivered at (3) the Brown University Summer Research Symposium, Providence, RI, August 2017 and at (4) the Experimental Biology (EB) meeting, San Diego, CA, April 2018.

\*\*\* = Selected as award-winning poster presentation

## ACTIVITIES AND LEADERSHIP ROLES

**Engineering in Biology and Medicine Student Society, Vice-president** Aug. 2018 – Present

Coordinate activities for academic and research development within Biomedical Engineering.

**Center for Learning and Success at UPRM, Tutor** Aug. 2018 – Present

Tutor students in General and Organic Chemistry, Biology and Genetics.

**Industrial Biotechnology Student Society, Research and Academic Manager** Aug. 2016 – May 2017

Coordinated activities to expose students to research opportunities within Biomedical Sciences.