

# Hollie Adeola Adejumo

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## EDUCATION

University of Maryland, Baltimore County (UMBC)  
BS in Chemical Engineering

May 2016

## RESEARCH EXPERIENCE

### University of Maryland, Baltimore County

Sept 2015-Present

Undergraduate Research Assistant

Mentor: Lee Blaney, Ph.D.

Project: Antimicrobial activity of fluoroquinolone, sulfonamide, and tetracycline antibiotics and their transformation products against standard microorganisms

- Performing antimicrobial assays using standard microorganisms and three antibiotic classes
- Performing antimicrobial assays with UV-generated transformation products

### University of Maryland, Baltimore County

June 2015-Aug 2015

Research Assistant

Mentor: Lee Blaney, Ph.D.

Project: Fluoroquinolone-Resistant Bacteria and Gene Distribution in a Maryland Wastewater Treatment Plant and Receiving Water

- Investigating the fluoroquinolone antibiotic concentrations in wastewater and surface water samples
- Detecting antibiotic (ciprofloxacin and beta-lactam) resistant bacteria and antibiotic resistance genes
- Conducting biological assays on colony isolates from all water samples

**Skills:** Water sample techniques, biological assay, PCR, electrophoresis

### University of Maryland, Baltimore County

May 2014-April 2015

Undergraduate Research Award Scholar

Mentor: Lee Blaney, Ph.D.

Project: Occurrence and Distribution of Quinolone Resistance Genes in Baltimore Wastewater

- Investigating the prevalence of antimicrobial resistant bacteria in local wastewater
- Determining the relationship between the concentration of the fluoroquinolone detected and the frequency of detection for fluoroquinolone-resistance genes

**Skills:** Water sample techniques, chemical tests, PCR, electrophoresis

### University of Maryland, Baltimore County

Sept 2013-May 2014

Undergraduate Research Assistant

Mentor: Lee Blaney, Ph.D.

Project: Antimicrobial Activity of Fluoroquinolone Antibiotics in Water and Wastewater

- Measured the molar absorptivity of fluoroquinolones in water as a function of pH.
- Grew *Escherichia coli* cells in Mueller-Hinton broth
- Used UV-Vis spectrophotometry to determine the optical density of *E. coli* cells compared to a MacFarland Standard.

- Determined the antimicrobial activity of water and wastewater solutions containing fluoroquinolones using an *E. coli*-based assay.

**Skills:** UV-Vis spectrophotometry, cell culture, bioassay, microplate reader, general laboratory techniques

**Michigan State University**

May 2014-July 2014

Research Intern

Mentors: Seungik Baek, Ph.D., Hailu Getachew

Project: Modeling the Response of Blood Vessels to Blood Flow and Shear Stress

- Conducting an extensive literature review to investigate the chemical and mechanical responses of the blood vessels to normal parameters, such as blood flow, shear stress, and pressure
- Investigating published experimental data to create an accurate computational model of blood vessel behavior

**Skills:** Literature Review, computational modeling, basic C++ coding skills

**University of Maryland, Baltimore County**

May 2013-April 2014

Undergraduate Research Award Scholar

Mentor: Lee Blaney, Ph.D.

Project: Evaluating the Efficiency of Low-Tech Processes in Removing Bacterial Contaminants from Drinking Water Supplies

- Investigating the viability of SODIS, PUR Water Filtration, and Sand Filtration as methods for producing potable water in Kenya

**Skills:** Water sample techniques, chemical tests

**Michigan State University**

May 2013-July 2013

Research Intern

Mentors: Christina Chan, Ph.D., Patrick Walton, Sc.D., Aritro Nath, Betul Bilgin

Project: The Effect of Palmitate Treatment on HepG2 Cytotoxicity

- Investigated the relationship between high dietary consumption of saturated fatty acids and liver disease
- Cultured human hepatocellular carcinoma (HepG2) cells in various concentrations of free fatty acid and control media for different lengths of time
- Performed a cytotoxicity assay to determine the ratio of living to dead cells for each treatment

**Skills:** Human cell culturing, Cell counting with Haemocytometer, Medium Preparation, Western Blot, Acrylamide Gel Electrophoresis, Nuclear Extracts, Cytoplasmic Extracts, Optical Instrumentation, Microscopy

**Medstar Health Clinical Simulation Center**

2010-2013

Research Intern

Mentor: Emily Shaw

Project 2: Improving orthopedic elbow reduction techniques through clinical simulation

- Investigated the mechanics of posterior elbow dislocation through interviews with orthopedic surgeons, observation of dissection and simulated joints
- Presented findings at Applied Physics Lab Student Learning Conference
- Developing a prototype of the dislocation to allow practitioners to practice reduction techniques

**Project 1: Creating better pain management through clinical simulation**

- Performed reviews of relevant literature on the use of opioids in pain management
- Attended seminars on pain management techniques
- Presented findings at Applied Physics Lab Student Learning Conference and on SiTEL website

**FASgen**

2006-2010

Research Intern

Mentor: Susan Medghalchi, PhD

Testing the effect of various pH levels on Escherichia coli growth in Baltimore Harbor

**Skills:** Lab Skills (Centrifuge, Pipette, Water Quality), Water sample techniques**HONORS**

1 <sup>st</sup> Place Award in Biological Sciences (Undergraduate Research Symposium in the Chemical and Biological Sciences)	2015
UNCF/Merck Undergraduate Research Fellow	2015-2016
UMBC Meyerhoff Scholar	2012-Present
UMBC Honors College	2012-Present
National Institute of Biomedical Imaging and Bioengineering Scholar	2012-Present
CWIT Affiliate	2012-Present
Undergraduate Research Award Scholar	2015-Present
Undergraduate Research Award Scholar	2014-2015
Undergraduate Research Award Scholar	2013-2014
AIChE Minority Affairs Committee Scholarship	2012-2013
James Patterson College Book Bucks Award	2012-2013

**PUBLICATIONS**

He K, Soares A D, Adejumo H, McDiarmid M A, Squibb K S, Blaney L. Detection of a wide variety of human and veterinary fluoroquinolone antibiotics in municipal wastewater and wastewater-impacted surface water. *Journal of Pharmaceutical and Biomedical Analysis*. doi: 10.1016/j.jpba.2014.11.020

Hughes D, Adejumo H, Bondoc M. Evaluating the Efficiency of Low-Tech Processes in Removing Bacterial Contaminants from Drinking Water Supplies. *UMBC Review*.

Hollie Adejumo. *Creating Better Pain Management through Clinical Simulation*. 2011 Dec 05. Retrieved from <http://www.sitel.org/2011/12/15/helping-patients-learn-manage-pain/>

**CONFERENCES/MEETINGS**

Undergraduate Research Symposium in the Chemical and Biological Sciences  
*Antimicrobial Properties of Fluoroquinolone and Non-resistant Bacteria in the Baltimore Wastewater and Surface Water*  
Poster presentation  
Baltimore, Maryland  
October 2015

Summer Undergraduate Research Fest (SURF)  
*Fluoroquinolone-Resistant Bacteria and Gene Distribution in a Maryland Wastewater Treatment Plant and Receiving Water*  
August 2015

Poster presentation  
Baltimore, Maryland

BEACON Seminar presentation July 2015  
*Occurrence and Distribution of Quinolone Resistance in Baltimore Wastewater*  
Oral presentation  
Webinar aired in Baltimore, Maryland

Undergraduate Research and Creative Achievement Day (URCAD) April 2015  
*Occurrence and Distribution of Quinolone Resistance in Baltimore Wastewater*  
Oral presentation  
Baltimore, Maryland

Center for Women in Technology (CWIT) Showcase April 2015  
*Engineers Without Borders at UMBC: Helping Underprivileged Communities Through Service and Education*  
Oral Presentation (with Michael Brown)  
Baltimore, Maryland

Mid-Michigan Summer Undergraduate Research Experience Symposium July 2014  
*Modeling the Response of Blood Vessels to Blood Flow and Shear Stress*  
Poster presentation  
East Lansing, Michigan

Undergraduate Research and Creative Achievement Day (URCAD) April 2014  
*Evaluating the Efficiency of Low-Tech Processes in Removing Bacterial Contaminants from Drinking Water Supplies*  
Oral presentation  
Baltimore, Maryland

Undergraduate Research and Creative Achievement Day (URCAD) April 2014  
*Antimicrobial Activity of Fluoroquinolone Antibiotics in Water and Wastewater*  
Poster presentation  
Baltimore, Maryland

Annual Biomedical Research Conference for Minority Students (ABRCMS) November 2013  
*The Effect of Palmitate Treatment on HepG2 Cytotoxicity*  
Poster presentation  
Nashville, Tennessee

Mid-Michigan Summer Undergraduate Research Experience Symposium July 2013  
*The Effect of Palmitate Treatment on HepG2 Cytotoxicity*  
Poster presentation  
East Lansing, Michigan

Annual Student Learning Conference April 2011, 2012  
*Improving orthopedic elbow reduction techniques through clinical simulation*  
Oral presentation

Laurel, Maryland

### **LEADERSHIP EXPERIENCE**

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|--|-------------------|
| Engineers Without Borders Chapter President  | May 2013-Present  |
| - Lead the chapter to gain approval from the national organization; Plans for chapter to implement a borehole for Isongo, Kenya in Winter 2014 |                   |
| Engineers Without Borders Research Committee Chair   | Feb 2013-May 2013 |
| - Lead the research committee to select the best solution to improve water quality for a community in Isongo, Kenya                            |                   |

### **EXTRACURRICULAR ACTIVITIES**

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|---------------------------------|---------------------|
| Engineers Without Borders       | Jan 2013-Present    |
| Master's Swimming               | Aug 2012-Present    |
| Cycling Club                    | Sept 2012 - Present |
| UMBC Society of Women Engineers | Aug 2012-Present    |

### **SERVICE ACTIVITIES**

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|---|---------------------|
| Engineers Without Borders Implementation trip | January 2015        |
| Conversation Partners                         | Sept 2012-May 2013  |
| Medstar Harbor Hospital (volunteer)           | Aug 2010 - Aug 2012 |