

# Joshua D. Greenlee

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## EDUCATION

Vanderbilt University, Nashville, TN

Doctor of Philosophy – PhD, Biomedical Engineering

GPA: 3.87

2017 – Present

Ohio University, Athens, OH

Bachelor of Science – BS, Chemical Engineering - *Summa Cum Laude*

Minor in Chemistry

GPA: 3.98

2013 – 2017

## HONORS AND AWARDS

- National Science Foundation Graduate Research Fellowship Awardee 2018
- 2017-18 Thomas R. Harris Graduate Fellowship 2017
- National Science Foundation Graduate Research Fellowship - Honorable Mention 2017
- American Chemical Society (ACS) Society of Chemical Industry (SCI) Scholar 2016
- Chemical and Biomolecular Engineering Keith Russ Outstanding Junior Award 2016
- Appalachian Cohort for Engineering Scholar 2013
- Alexander High School Valedictorian 2013

## RESEARCH EXPERIENCE

Vanderbilt University, Dr. Michael King, Biomedical Research Laboratory, Nashville, TN

2017 – Present

*Graduate Research Fellow*

- Develop novel drug delivery strategies for the liposomal delivery of anti-cancer moieties to metastatic cancers
- Investigate TRAIL applications in oxaliplatin-resistant metastatic colorectal cancer
- Elucidate mechanisms of chemoresistant induced TRAIL sensitivity
- Investigate and develop orthotopic xenograft models of colorectal cancer *in vivo*
- Fabricate *in vitro* microfluidic devices to model lymphatic metastasis
- Employ the use of molecular biology techniques such as immunofluorescent staining, flow cytometry, ELISA and qRT-PCR
- Process metastatic cancer patient blood samples for modeling drug efficacy *ex vivo*
- Process patient RNAseq data to determine molecular targets within intrinsic and extrinsic apoptotic pathways
- Optimize recombinant protein production in *E. coli* and downstream purification using liquid chromatography

Ohio University, Dr. Doug Goetz, Biomedical Research Laboratory, Athens, OH

2015 – 2017

*Undergraduate Research Assistant*

- Study the effects of a methimazole derivative in the modulation of specific cytokine expression in cancer cells
- Investigate and test a new compound in the treatment of ovarian cancer
- Grow and culture cells for testing
- Determine drug efficacy and toxicity through tests such as ELISA and qPCR
- Assist in the publication of graduate student thesis

Ohio University, Institute for Sustainable Energy and the Environment, Athens, OH

2014 –2015

*Undergraduate Research Assistant*

- Design and modify engineering systems for experimentation
- Write experimental reports and protocols such as SOPs and SERs
- Assist graduate students on research projects in fracking wastewater and coal repurposing
- Use analytical instruments such as gas chromatography – mass spectrometry (GC-MS) and inductively coupled plasma (ICP) for sample analysis
- Train new undergraduate and graduate students on using analytical instruments
- Perform data analysis on analytical and chemical testing results

## **PUBLICATIONS**

- Hope, J., **Greenlee, J.** & King, M. Mechanosensitive Ion Channels: TRPV4 and P2X7 in Disseminating Cancer Cells. *The Cancer Journal* **24**, 84–92 (2018).
- **Greenlee J.** & King, M. Engineered Fluidic Systems to Understand Lymphatic Cancer Metastasis. *Biomicrofluidics* (2019). *\*In press\**

## **CONFERENCE PRESENTATIONS**

### **Oral Presentations**

- **Greenlee, J.**, Zhang, Z., Yu, F., Lui, D., King, M. “Trail-Conjugated Liposomes that Kill Colorectal Cancer Metastases in the Lymph Nodes”. Biomedical Engineering Society; October 2018; Atlanta, GA.

### **Posters**

- **Greenlee, J.**, King, M. “TRAILing a Chemoresistant Phenotype: TRAIL Applications as an Adjuvant for Oxaliplatin-Resistant Colorectal Cancer”. Vanderbilt-Ingram Cancer Center 20th Annual Scientific Retreat; May 2019; Nashville, TN. *\*Awarded 3rd Place\**
- **Greenlee, J.**, Zhang, Z., Yu, F., Lui, D., King, M. “TRAIL-Conjugated Liposomes to Kill Chemoresistant Cancer Cells in the Lymph Nodes”. Society For Biomaterials; April 2018; Atlanta, GA. *\*Awarded 2nd Place Immune Engineering SIG\**
- Champ, a Z., **Greenlee, J.**, Whalen, D., Goetz, D., Bergmeier, S., McCall, K. “Inhibition of IL-6 and IL-8 Expression in Ovarian Cancer by a Phenylmethimazole Derivative”. Ohio University Student Research Exposition; April 2016; Athens, OH. *\*Awarded 1<sup>st</sup> Place in Chemical and Biomolecular Engineering Category\**

## **TEACHING EXPERIENCE**

The SyBBURE Searle Undergraduate Research Program, Vanderbilt University, Nashville, TN      2018 – Present  
*SyBBURE Searle Student Scientific Advisor*

- Incubate and inspire the next generation of innovators through research, design, and community
- Lead weekly subgroup meetings with undergraduate students to provide insights and advice on research topics
- Advise students in weekly ThinkTank meetings on invention designs
- Teach students about topics such as market analysis, commercialization strategy and prototyping

Vanderbilt University, Nashville, TN

2017 – 2018

*Teaching Assistant*

- TA for two undergraduate biomedical Engineering courses: “Medical Device Innovation” and “Introduction to Biomedical Engineering”
- Prepare and present lectures on engineering and design related subjects
- Grade and provide feedback on student assignments

## **CORPORATE EXPERIENCE**

Eastman Chemical Company, Corporate Innovation and Technology, Kingsport, TN 2016  
*Chemical Engineering Intern*

- Research cellulose ester applications in electronics and printability
- Compare cellulose ester properties with other polymers
- Propose new products from polymer property data
- Assess marketing potential of proposed products
- Present innovative approaches for new applications of cellulose esters to Eastman marketers
- Coordinate and lead cross continental meetings with branches in Shanghai and Singapore
- Work 40 hours per week in the summer

## **OTHER WORK EXPERIENCE**

Ohio University, Golf and Tennis Center, Athens, OH 2013 – 2014  
*Grounds RA*

- Maintain the Ohio University Golf Course including greens, fairways and bunkers
- Responsible for specialized lawn mowing equipment
- Work 10 hours per week in the Fall, Spring and Summer

Self-Employed, Athens OH 2009 – 2014  
*Lawn Care and Landscaping*

- Mow and landscape lawns in Athens County
- Demonstrate care for equipment and property

## **TECHNICAL SKILLS AND QUALIFICATIONS**

- Extensive course load in chemical and biomolecular engineering
- Proficient using Microsoft Office, MATLAB, ChemCAD, and R
- Advanced molecular biology techniques including Flow cytometry, FACS, siRNA knockdown, lentiviral transfection, ELISA and RT-PCR
- Device microfabrication techniques such as photolithography, chemical and ion etching
- Experience designing and conducting research as an undergraduate and PhD student
- Experience teaching, tutoring and mentoring undergraduate students in academics and research
- Extensive experience public speaking at national conferences and in a classroom setting

## **ACTIVITIES, ORGANIZATION AN VOLUNTEER WORK**

- Vanderbilt Biomedical Engineering GSA Social Chair 2017 – 2019
- Glenclyff High School Volunteer Mentor 2017 – 2018
- Tau Beta Pi National Engineering Honor Society – Activities Chair Officer 2015 – 2017
- Russ College of Engineering Ambassador 2016 – 2017
- WERC Environmental National Design Competition 2016 – 2017
- Biomedical Engineering Society 2016 – present
- Athens County Young Life Leader 2013 – 2017
- National Society of Collegiate Scholars 2013 – 2017
- Landscaping Volunteer at Albany Baptist Church 2009 – 2017
- Appalachian Cohort for Engineering 2013 – 2017
- American Institute of Chemical Engineers 2014 – present