

# Jonah Riley Huggins

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## Education

**Doctor of Philosophy in Biomedical Data Science & Informatics** (In Progress) 08/2022-Present  
**Clemson University** - Clemson, SC

**Bachelor of Science in Microbiology**, Minor in Chemistry & Biological Sciences. May 2019  
**Clemson University** - Clemson, SC

**Associate in Science** May 2018  
**York Technical College** - Rock Hill, SC

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## Research Experience

**Co-Founder & Chief Scientific Officer** 04/2021 – Present  
**Blotting Innovations, LLC.** – Central, SC

- Started a laboratory from the ground up
- Conduct rapid prototyping and product development, creating novel western blotting equipment
- Use FreeCAD to design and implement prototypes in the lab, utilizing various additive manufacturing techniques
- Manufacture all alpha- and beta-stage products
- Communicate with global vendors to secure raw materials for prototypes
- Oversee the deliverable expectations of collaborating laboratories at Clemson University

**Research & Development Microbiologist** 07/2021 – 08/2022  
**Diversey Holdings LLC.** – Fort Mill, SC

- Test log reduction efficacy of developmental formulations against Biosafety Level 2 pathogens
- Analyze experimental data, communicating pathogen reduction results to investors
- Support both innovations and customer welfare divisions on 11 experimental projects
- Perform a variety of chemical titrations and formulations chemistry

**Research Assistant** 05/2019 – 08/2022  
**Clemson University Chemical Engineering Department** – Clemson, SC

- Quantitatively optimize western blotting to allow high-throughput analysis of molecular proteomics
- Utilize 3D modeling software to design and print devices and materials used in developing the HiT-Western Array
- Design, build, and prototype custom technology to achieve desired scientific results
- Perform a variety of molecular biological tests such as ELISA, RPPA, and BCA protein assays

**Laboratory Assistant / Creative Inquiry Researcher** 08/2018 – 05/2019  
**Clemson University Chemical Engineering Department** – Clemson, SC

- Performed routine lab procedures and chemical solution preparation
- Generated and maintained tissue cultures for experimental design
- Collaborated with researchers to develop a novel technique for the Mesowestern Array
- Fabricated custom technologies and equipment to functionally change modern concepts of western blotting
- Managed laboratory biohazard and chemical waste disposal

**Intern Research** 12/2018 – 05/2019  
**Clemson University Biology Department, Microbiology Division** – Clemson, SC

- Conducted bioinformatic analysis of operational taxonomic units and phylotype data from Mothur
- Utilized R programming language to analyze, compare, and visualize microbiota data

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## Academic Experience

**Extern Student** 05/2018 – 08/2018  
**University Of North Carolina Charlotte, Bioinformatics Department** – Charlotte, NC

- Studied under researchers on the Urban Environmental Genome Project
- Practiced generating heatmaps from FastQ file formats in Python
- Evaluated coursework at UNCC related to bioinformatics
- Conducted basic computational techniques of Shotgun Metagenomics in Python

**Laboratory Assistant** 09/2017 – 05/2018

## **Clemson University Biology Department, Microbiology Division – Clemson, SC**

- Assisted in routine preparation of experimental control parameters and sample maintenance
  - Managed and maintained hundreds of microbial cultures
  - Consolidated hundreds of miscellaneous cultures down to approximately 70 viable cultures
  - Cryopreserved and cataloged all viable cultures
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## **Professional Experience**

### **Associate Biochemist**

10/2019 – 07/2021

**Nutra Manufacturing Inc. | Upstate Staffing Agency – Clemson, SC**

- Conducted antibody-based immunoassay testing such as ELISA, Lateral Flow Assay, and Radial Immunodiffusion to detect antigens present in health supplements
- Tested health supplements by RT-PCR for both contaminant and non-contaminant DNA material in products
- Provided lateral flow based environmental allergen testing for all productions facilities

### **Microbiology Laboratory Technician**

07/2019 – 11/2019

**Lonza | Capsugel – Greenwood, SC**

- Formulated tailored microbial growth promotion serums to direct request of Microbiologists
  - Conducted bioburden and sterility monitoring of prepared media formulations
  - Performed routine laboratory cleaning and calibrations of all equipment necessary.
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## **Teaching & Mentoring**

### **COVID-19 Summer Research Challenge Mentor (Clemson University)**

04/2021 – 08/2021

**Clemson University – Clemson, SC**

- Mentored a team of 4 students on experimental design and setup of project for COVID-19 summer research challenge
- Aided in acquisitions of materials required for experimental parameters
- Oversaw experimentation, validating procedural guidelines were followed correctly

### **Adjunct Laboratory Instructor**

**Tri-County Technical College – Pendleton, SC**

08/2020 – 05/2021

- Effectively taught Biology 101 lab techniques to college students engaging in maintaining interest in laboratory lecture
- Facilitated laboratory lectures through a blended hybrid online and in-person class session managing both teaching and student-teacher discussions on laboratory materials
- Assigned and corrected educational learning materials for up to 48 students
- Provided timely feedback and guidance on materials presented during laboratory sessions

### **First Generation Student Mentor**

01/2019 – 05/2019

- Counseled 11 first generation students on the “how-to’s” of college life at Clemson University
  - Helped organize social fundraisers
  - Tutored first generation students in general chemistry and biology
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## **Conferences & Programs**

- National Institutes of Health IDeA (2023)  
Regional Entrepreneurship Development (I-RED)
  - National Science Foundation I-Corp Southeast Regional Program (University of Tennessee Knoxville) (2021)
  - Mid-Atlantic Undergraduate Research Conference (2019)  
(Virginia Polytechnic Institute and State University)
  - Focus On Creative Inquiry (2019)  
(Clemson University)
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## **Publications**

### **Computational speed-up of large-scale, single-cell model simulations via a fully integrated SBML-based format.**

Mutsuddy A, Erdem C, Huggins JR, Salim M, Cook D, Hobbs N, Feltus FA, Birtwistle MR. (Published in Bioinform. Adv. On Mar. 23<sup>rd</sup>, 2023)

### **Mesowestern Blot: Simultaneous Analysis of Hundreds of Sub-Microliter Lysates**

Zadeh CO, Huggins JR, Sarmah D, Westbury BC, Interiano WR, Jordan MC, Phillips SA, Dodd WB, Meredith WO, Harold NJ, Erdem C, Birtwistle MR. (Published in ACS Omega on Aug. 11th, 2022)

## **Patents**

*Birtwistle, Marc., Huggins, Jonah., Zadeh, Cameron. 2021. High-Throughput Multiplexing Western Blotting Apparatus and Related Methods. U.S. Provisional Patent Application No. 63/270,436, filed October 21, 2021. Patent Pending*

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## **Technical Skills**

- Programming Languages: Python, R, HTML5, CSS3, Javascript
  - cGMP/GDP/GLP Trained
  - Computer Aided Design/Engineering: FreeCAD, Solidworks
  - “Weigh the Right Way” Certified – Mettler Toledo
  - Design for Six Sigma Yellow Belt Certified
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## **References**

### **Marc R. Birtwistle, Ph. D. Associate Professor**

Department of Chemical and Biomolecular Engineering  
Clemson University  
(864)-656-4557, mbirtwi@clemson.edu

### **Shelby Duffy, Ph. D. Department Head**

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TriCounty Technical College  
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