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## Education

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### **Vanderbilt University**, Nashville, TN, May 2018

- Bachelor of Engineering: double major in Chemical & Biomolecular Engineering and Biomedical Engineering
- Minor: Chemistry
- GPA: 3.2/4.0
- Honors: Summer Research Fellow, Dean's List, Intramural Tennis champion
- Leadership Positions: Certified instructor and event coordinator for Wilderness-skills outdoors club

### **National University of Singapore**, Singapore, Fall 2016 (Study Abroad)

- Computationally produced and presented 3 novel ParE inhibiting antibiotics
- 16 credit hours in Chemical Engineering Department

### **Athens High School**, Athens, AL, May 2014

- GPA: 4.0/4.0
- Class Rank: 1 of 214
- Honors: Mayor's Youth Council, Wendy's Heisman, AP Scholar, 3 years Superior rating in National Piano Guild
- Leadership Positions: Scholars Bowl Captain, Varsity Boys Tennis Captain, Cross Country Captain, Speech Club Founder and Treasurer

## Work Experience

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### **Vanderbilt Vaccine Center**, *Research Assistant*

April 2016 – August 2017

- Developed classification process able to predict antibody specificity for a viral envelope epitope at greater than 95% accuracy
  - Accepted into Vanderbilt Summer Science Academy program and presented results to over 200 individuals at VSSA Summer Research Symposium
  - Distinguished an extractable nonlinear antigen recognition site within the primary sequence of B-Cell receptors. Calculating properties for only these residues vastly improved classification accuracy.
- Produced a Python Package interfacing with PyMOL
  - Scanned through over 50 potential protein particle candidates for the multimerization of HIV envelope proteins using self-developed geometric algorithms
  - Generated biomolecular simulations of self-assembling antigen nanoparticle vaccines; images produced were further used as figures for both a successful R01 and R21 grant application
- Yielded on average 35 mg/L of protein per antibody purification and 24 mg/L of protein for antigen purification  
Managed protein production pipeline for antibodies, antigens, and virus like particles from transformation into DH5α bacterial cells onwards, with assistance using FPLC and TEM machinery

### **Vanderbilt University Institute of Imaging Science**, *Research Assistant*

Summer 2015

- Validated and produced an inhalable nanoparticle-encapsulated cancer drug
- Received a certificate of achievement from the Vanderbilt Dean of Engineering for a research presentation
- Maintained and administered cancer cell cultures for in-vivo tumor monitoring
- Planned and optimized western blot and ELISA experiments
  - Resolved that the affinity and specificity of a lectin were greater than that of the corresponding monoclonal antibody in regards to a biomarker for pancreatic tissue malignancy using Excel and ImageJ analysis.

### **Intel STS National Science Fair**, *Principal Investigator*

May 2013 – November 2013

- Authored paper titled "Effect of Common Substances on Bacterial Growth of Escherichia Coli"
- Created a multi-month project layout including lab procedures
- Determined that garlic, Germ-X, and honey are effective inhibitors of E. coli growth, but only at high volume and with frequent application.

### **Emory University Department of Microbiology and Immunology**, *Research Assistant*

Summer 2012

- Identified genes involved in cell-to-cell signaling in *Acinetobacter baumannii*
- Detected efflux pump encoding genes within *Klebsiella pneumoniae*

## Technical Skills

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**Programming Languages:** Python, Java, MATLAB, Mathematica

**Creative Applications:** Adobe Illustrator, ImageJ, Adobe Photoshop, SketchUp Make

**Biological and Chemical Applications:** PyMOL, Aspen, Maestro, ChemDraw, ImageJ

**Productivity Applications:** Microsoft Office, Google Docs