

# CLAY D. SWACKHAMER

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## EDUCATION

### The Pennsylvania State University

*Schreyer Honors College, The College of Engineering*

Bachelor of Science in Biological Engineering | Food and Biological Process Option

Minor in Spanish

University Park, PA

*Class of 2015*

GPA: 3.91

### University of Alicante

Completed a 15 credit semester of classes taught in Spanish, including a technical microbiology course with laboratory

Alicante, Spain

*Fall 2014*

GPA: 4.00

## EXPERIENCE

### Penn State Department of Agricultural and Biological Engineering

*Teaching Intern*

University Park, PA

*Fall 2015*

- Assisted students and instructors in course BE 301: Mathematical Modeling of Biological and Physical Systems
- Facilitated course objectives by holding weekly office hours, teaching exam review sessions, and troubleshooting student work

### McCormick & Company INC, Materials Process Engineering Group

*Engineering Intern*

Baltimore, MD

*Summer 2015*

- Benchmarked physical properties of principal products using five instruments in food powder technology platform
- Conducted over 300 experiments; processed data using descriptive statistical techniques and modeling
- Applied insights from benchmarking to opportunities for reducing visual fill waste, with yearly cost savings objective of \$160,000
- Identified data-driven opportunities for raising production output in blending department by 20%
- Collaborated with McCormick engineers in three countries to apply global knowledge base to Hunt Valley Plant

### Salis Laboratory for Synthetic Biology

*Undergraduate Team Leader*

University Park, PA

*Spring 2013-Present*

- Led iGEM research team on codon optimization project with objective of maximizing protein expression in prokaryotes
- Received gold medal from independent panel of judges at iGEM international research conference
- Wrote original MATLAB scripts to redesign genes for fluorescent protein at codon level
- Carried out practical, bench level microbial cloning and PCR processes
- Awarded the synthetic biology certificate for undergraduates by the Synthetic Biology Engineering Research Center (SYNBERC)

### Penn State Department of Biological Engineering, Biomass Densification Project

*Undergraduate Research Team Leader*

University Park, PA

*Fall 2012-Spring 2013*

- Managed team of four undergraduates, designed and executed over 50 experiments
- Presented research poster at Penn State undergraduate research exposition, won third place in engineering division
- Co-Authored, "Farm-Scale Biomass Pelletizer Performance for Switchgrass Pellet Production." 2015. Applied Engineering in Agriculture. 31(4): 559-567 (doi: 10.13031/aea.31.10803).

## ACCOMPLISHMENTS

### Biological Engineering 468 – Microbiological Engineering

*Team Leader*

University Park, PA

*Spring 2015*

- Received "Best in Class" award for design of industrial amino acid production system by fermentation
- Presented at Northeast Agricultural and Biological Engineering Conference, won first place in undergraduate paper competition

### Engineering Design 100

*PSU Engineering Student*

University Park, PA

*Fall 2012*

- Received "Best in Class" award for design of human powered portable radio charging device

## ACTIVITIES

Treasurer, Alpha Epsilon, Omicron chapter. National Honors Society of Biological Engineering, 2015-present

Alumni Relations Chair, Alpha Gamma Rho, National Agricultural Sciences Fraternity, 2013-2014

Active Member, American Society of Agricultural and Biological Engineers (ASABE), 2013-present

## SKILLS

PCR, molecular cloning, enzymatic digestion and ligation, DNA sequencing analysis, gel electrophoresis, DNA extraction, fluorometer assays (TECAN)

Laboratory and Workplace Safety, certified through Penn State Environmental Health and Safety

Excel, MATLAB, Minitab, R, SAP Production Management Platform, Adobe Illustrator, APE Plasmid Editor