

CLAY SWACKHAMER

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EDUCATION

The Pennsylvania State University

Schreyer Honors College, The College of Engineering

B.S. in Biological Engineering | Food and Biological Process Option

Passed Fundamentals of Engineering Exam | Certified Engineer in Training

Minor in Spanish

University Park, PA

Class of 2015

GPA: 3.92

The University of Alicante

Completed 15 credit semester of courses taught in Spanish

Alicante, Spain

Fall 2014

GPA: 4.00

EXPERIENCE

LignoLink, INC.

Engineering Intern

Innovation Park, PA

Winter 2016-Fall 2016

- Conducted aqueous ammonia pretreatment and enzymatic hydrolysis reactions on 98 biomass samples
- Designed, constructed and validated custom HPLC assay for content of 5 sugar monomers in hydrolyzed samples, including equipment purchase, installation, calibration, and development of original, automated data analysis routine using MATLAB
- Demonstrated sugar release increases up to 55 percent over wild type; presented results to potential business partners
- Created the first logo and website for a small business

Penn State Department of Agricultural and Biological Engineering

Teaching Intern

University Park, PA

Fall 2015

- Facilitated instruction of 35 students in course BE 301: Mathematical Modeling of Biological and Physical Systems

McCormick & Company INC, Materials Process Engineering Group

Engineering Intern

Baltimore, MD

Summer 2015

- Benchmarked physical properties of principal products using 5 instruments in food powder technology platform
- Conducted over 300 experiments; processed data using descriptive statistical techniques and modeling
- Applied insights from benchmarking to reduce visual fill waste, with yearly cost savings objective of \$160,000
- Identified data-driven opportunities for raising production output in blending department
- Collaborated with McCormick engineers in 3 countries to apply global knowledge base to Hunt Valley Plant

Salis Laboratory for Synthetic Biology

Undergraduate Team Leader

University Park, PA

Spring 2013-Fall 2015

- Led iGEM research team; won 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
- Awarded the synthetic biology certificate for undergraduates by the Synthetic Biology Engineering Research Center

Microbiological Engineering | Biological Engineering 468

Team Leader

University Park, PA

Summer 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 undergraduate paper competition

Penn State Department of Agricultural and Biological Engineering

Undergraduate Team Leader-Biomass Densification Project

University Park, PA

Fall 2012-Spring 2013

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

ACTIVITIES

- *Treasurer*, Alpha Epsilon, Omicron chapter. National Honors Society of Biological Engineering, 2015
- *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), HPLC
- MATLAB, Excel, L^AT_EX, Adobe Illustrator
- Laboratory safety, certification through Penn State Environmental Health and Safety