

CLAY SWACKHAMER

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EDUCATION

The University of California

The College of Engineering

Ph.D. Student in Department of Biological Systems Engineering

Davis, CA

2016-present

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

August 2014-December 2014

GPA:4.00

EXPERIENCE

LignoLink, INC.

Engineering Intern

Innovation Park, PA

January 2016-August 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 business partners
- Created the first logo and website for a small business

McCormick & Company INC, Materials Process Engineering Group

Engineering Intern

Baltimore, MD

May 2015-August 2015

- Benchmarked physical properties of products using 5 instruments in food powder technology platform
- Conducted over 300 experiments; processed data using descriptive statistical techniques and modeling
- Quantified link between blend time and product bulk density
- Created plan to realize \$160,000 annual cost savings by eliminating overblending and reducing overfill losses
- Collaborated with McCormick engineers in 3 countries to apply global knowledge base to Baltimore area plants

Microbiological Engineering, Course Biological Engineering 468

Team Member

University Park, PA

January 2015-May 2015

- Team 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

International Genetically Engineered Machines (iGEM) Competition

Undergraduate researcher-Penn State team

University Park, PA

May 2014-October 2014

- Redesigned gene for fluorescent protein at codon level using original MATLAB scripts
- Team won gold medal from independent panel of judges at iGEM international research conference
- Awarded the synthetic biology certificate for undergraduates by the Synthetic Biology Engineering Research Center

Penn State Department of Agricultural and Biological Engineering

Undergraduate Researcher-Biomass Densification Project

University Park, PA

August 2012-May 2013

- 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, basic fluorometer assays, HPLC
- MATLAB, Excel, L^AT_EX, Adobe Illustrator
- Laboratory safety fundamentals, certification through UC Davis Safety Services, 2016