CLAY SWACKHAMER

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Education

The University of California **Davis, CA**
The College of Engineering *2016-present*
Ph.D. Student in Department of Biological Systems Engineering

The Pennsylvania State University **University Park, PA**
Schreyer Honors College, The College of Engineering *Class of 2015*
B.S. in Biological Engineering, Food and Biological Process Option GPA: 3.92
Passed Fundamentals of Engineering Exam, Certified Engineer in Training
Minor in Spanish

The University of Alicante **Alicante, Spain**
Completed 15 credit semester of courses taught in Spanish *August 2014-December 2014*
GPA:4.00

Experience

LignoLink, INC. **Innovation Park, PA**
Engineering Intern *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 potential business partners
- Created the first logo and website for a small business

McCormick & Company INC, Materials Process Engineering Group **Baltimore, MD**
Engineering Intern *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 **University Park, PA**
Team Leader *January 2015-May 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

Salis Laboratory for Synthetic Biology **University Park, PA**
Team Leader *May 2014-October 2014*
- Led iGEM research team; won gold medal from independent panel of judges at iGEM international research conference
- Redesigned gene for fluorescent protein at codon level using original MATLAB scripts
- Awarded the synthetic biology certificate for undergraduates by the Synthetic Biology Engineering Research Center

Penn State Department of Agricultural and Biological Engineering **University Park, PA**
Undergraduate Team Leader-Biomass Densification Project *August 2012-May 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-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).

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, LaTeX, Adobe Illustrator
- Laboratory safety, certification through Penn State Environmental Health and Safety