

# CLAY SWACKHAMER

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## EDUCATION

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### The University of California, Davis

*The College of Engineering*

Ph.D. Student in Department of Biological Systems Engineering

Davis, CA

2016-present

### Penn 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: 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

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### LignoLink, INC.

*Engineering Intern*

Innovation Park, PA

January 2016-August 2016

- Demonstrated sugar release increases in LignoLink crops up to 55 percent over wild type varieties
- Presented findings to business partners and potential corporate investors
- 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
- Created the company's first logo and website

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

*Engineering Intern*

Baltimore, MD

May 2015-August 2015

- Helped create plan to realize \$160,000 annual cost savings by eliminating overblending and reducing overfill losses
- 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
- 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
- Presented at iGEM international research conference; team won gold medal from independent panel of judges
- 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

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- *Alumni Relations Co-Chair*, Biological Engineering Graduate Student Association, UC Davis, 2017
- *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

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- HPLC, Spectroscopic assays, Texture analysis, Arduino, Process control, Statistical analysis, Quantitative imaging, Multivariate linear models
- MATLAB, Excel, L<sup>A</sup>T<sub>E</sub>X, Adobe Illustrator
- Laboratory safety fundamentals, certification through UC Davis Safety Services, 2016