

MARK POLITZ

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EDUCATION

B.S. Chemical and Biomolecular Engineering, 06/2011
The Ohio State University
GPA 3.94/4.0

Ph.D. Chemical and Biological Engineering, Expected 06/2016
University of Wisconsin-Madison
GPA 3.82/4.0

Selected Graduate Coursework

Biochemistry 612: Prokaryotic Molecular Biology
Biochemistry 601: Protein and Enzyme Structure and Function
Microbiology 625: Advanced Microbial Physiology
Chemical Engineering 710: Advanced Chemical Engineering Thermodynamics
Chemical Engineering 735: Kinetics and Catalysis

RESEARCH EXPERIENCE

The Ohio State University, Columbus, Ohio
Undergraduate Research Assistant, 06/2009 - 06/2011
Advisor: Prof. Andre Palmer

- Overexpressed and purified recombinant oxygen carrying proteins (hemoglobins, myoglobins) in *Escherichia coli* to analyze their properties relevant to oxygen transport.
- Gained proficiency in basic molecular biology techniques including restriction enzyme cloning.

University of Wisconsin-Madison, Madison, Wisconsin
Graduate Student, 09/2011 – Present
Advisor: Prof. Brian Pfleger

- Demonstrated the use of Transcription Activator-Like Effectors (TALEs) as *trans*-acting regulatory elements in *E. coli*, enabling the repression of target genes without modifying their DNA sequence.
- Characterized physiology of free fatty acid overproducing *E. coli* by performing viability assays.
- Conducted genetic experiments and analytical assays to identify strains of *E. coli* with improved free fatty acid and alcohol production.
- Successfully developed a strategy for scarless genomic engineering in *E. coli*.
- Implemented Ligase Cycling Reaction for DNA assembly.
- Experience operating benchtop bioreactors (3 L) for recombinant protein production in *E. coli*.

TEACHING EXPERIENCE

University of Wisconsin-Madison, Madison, Wisconsin
Teaching Assistant, CBE 324 – Transport Phenomena Laboratory, Fall 2012 and Spring 2014

- Lectured students on theoretical concepts relating to laboratory experiments.
- Assisted students having technical problems in laboratory.
- Graded all lab reports and assigned final grades for all students.

SKILLS

<i>Computer Programs</i>	Microsoft Excel, MATLAB, JMP, SeqBuilder, SeqMan
<i>Analytical Techniques</i>	qPCR, Fluorescence Assays, Small Scale Protein Purification, Gas Chromatography
<i>Cloning Techniques</i>	Restriction enzyme cloning, Gibson Assembly, Ligase Cycling Reaction
<i>Genetic Engineering Techniques</i>	Phage transductions, Lambda Red Recombineering

AWARDS AND ACTIVITIES

Former President of Chemical Engineering Graduate Student Society at UW-Madison
Poster Award Winner at 2014 Metabolic Engineering X Conference
Biotechnology Training Program Awardee (NIH Funded from Fall 2011-Spring 2014)

PUBLICATIONS

Lennen, R. M., **Politz, M. C.**, Kruziki, M. A., & Pflieger, B. F. (2012). Identification of Transport Proteins Involved in Free Fatty Acid Efflux in *Escherichia coli*. *Journal of Bacteriology*. doi: 10.1128/jb.01477-12

Politz, M. C.*, Copeland, M. F.*, & Pflieger, B. F. (2012). Artificial Repressors for Controlling Gene Expression in Bacteria. *Chemical Communications*. doi: 10.1039/c2cc37107c

*Authors contributed equally

Youngquist J. T., Schumacher M. H., Rose J. P., Raines T. C., **Politz M. C.**, Copeland M. F., & Pflieger B. F. (2013). Production of medium chain length fatty alcohols from glucose in *Escherichia coli*. *Metabolic Engineering*. doi: 10.1016/j.ymben.2013.10.006

Politz, M.C.*, Copeland, M. F.*, & Pflieger B. F. (2014). Application of TALEs, CRISPR/Cas and sRNAs as trans-acting regulators in prokaryotes. *Current Opinion in Biotechnology*. doi: 10.1016/j.copbio.2014.02.010

*Authors contributed equally

PRESENTATIONS

Politz, M.C. *Trans*-Regulatory Elements as Tools for Metabolic Engineering. Poster Presentation at Metabolic Engineering X Conference. June 15-19, 2014.