Christopher P. Long

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EDUCATION

University of Delaware, Newark, DE 2012-2017 (expected)
Ph.D. Candidate: Chemical & Biomolecular Engineering
GPA: 3.96

Cornell University, Ithaca, NY 2008-2012
B.S., Chemical Engineering, *Magna Cum Laude*
GPA: 3.92

RESEARCH & PROFESSIONAL EXPERIENCE

Doctoral Research, University of Delaware 2013-present
Chemical & Biomolecular Engineering: Metabolic Engineering & Systems Biology Laboratory
Advisor: Maciek R. Antoniewicz
Thesis: *"A comprehensive study of metabolic flux rewiring in* E. coli *knockout strains"*

- Developed new methods for the physiological characterization of cells, including GC/MS based biomass composition quantification and use of RNA and glycogen for ^{13}C metabolic flux analysis
- Performed comprehensive physiological and fluxomic characterizations of ~50 *E. coli* central carbon metabolism knockout mutants, identifying novel reactions and patterns of metabolic responses
- This large data set will be applied for the development of advanced kinetic metabolic models and strain design tools

Chemistry-Biology Interface Training Program, University of Delaware 2013

- Dr. Eleftherios Papoutsakis: Chromosomal insertion of a heterologous sigma factor in *E. coli*
- Dr. Thomas Hanson: Toward Tn-Seq Analysis of *Chlorobium tepidum*

Co-op, **Chemical Process Design & Commercialization,** Merck & Co, Rahway, NJ 2010, 2011

- Performed evaluation, optimization, and modeling of high pressure homogenization as a particle size reduction technique
- Developed a process for continuous crystallization of an active pharmaceutical ingredient (API)

Undergraduate Research Assistant, Cornell University, Dept. of Chemical Engineering 2010
Advisor: Jeff Varner

- Modeling breast cancer proliferation: literature review, cell signal mapping, simple programming

SKILLS

Experimental

• Bacterial cell culture • ^{13}C metabolic flux analysis (^{13}C-MFA) • Gas chromatography/mass spectrometry (GC/MS) analysis and method development • Basic microbiology and cloning techniques

Data Analysis and Computation

• Metabolic modeling (FBA and other constraint-based techniques) • Multivariate statistics with large data sets (eg. PCA, clustering) • Matlab (including COBRA Toolbox), OriginLab, Minitab, Cytoscape, MS Office