



BIOINFORMATICS 2014 FALL SEMINAR SERIES

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Department of Computer and Information Sciences, &
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<http://bioinformatics.udel.edu/seminars>

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3:30pm
DBI Room 102

Model-Based Engineering of Microorganisms

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<http://crab.rutgers.edu/~dslun/index.html>

ABSTRACT: Rapid advances in genomic technologies, particularly DNA synthesis technology, are making it ever easier to manipulate the genomes of living organisms for human purposes such as sustainable biofuel production. Unfortunately, determining how the genome of an organism should be manipulated to achieve a certain desired outcome is a significant challenge. In this talk, we discuss how computational modeling of microorganisms at a cellular and molecular level can be used to address this challenge. Specifically, we discuss mathematical and computational methods we have developed for estimating metabolic phenotype from transcriptomic data and for determining genetic manipulations resulting in desired metabolic phenotypes from computational models. We describe our application of these methods to the engineering of *E. coli* and cyanobacteria for the production of “drop in” biofuels that directly replace petroleum-derived liquid fuels.