

NIMBioS Short-Term Visit, October 21-24, 2013

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Modeling the Population Dynamics of the Mammalian Gut Microbiota in
Response to the Toxin Oxalate

Oxalate is a simple organic acid widely consumed by mammals, which can have a significant health impact. Many oxalate-degrading bacteria have been identified from the mammalian gut and the oxalate-degrading function of whole communities fluctuates with oxalate. The population dynamics associated with these functional shifts is unknown. In collaboration with postdoctoral fellow Chris Remien, we developed a mathematical model that can be used to track bacterial populations and changes in oxalate-degrading function with oxalate intake for a single-gut chamber system. Our future plans are to a) refine model parameters, b) add additional groups of bacteria, c) fit data associated with targeted diet trials, and d) prepare a paper describing our findings.

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