

Poster presentation

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## Modeling the arsenic biosensor system

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This paper reports the modeling part of an arsenic biosensor system, which was the iGEM project accomplished in the University of Edinburgh 2006. The arsenic biosensor system sought to address the fatal water pollution problem occurring in many poor countries/areas like Bangladesh by producing calibratable pH changes in response to a range of arsenic concentrations. An ODE based computational model which contains 3 operons, 19 reactions and 17 species has been constructed in order to shed light on the wet-lab experimental design. The model showed good induction of *urease* and repression of *lacZ* in the absence of arsenate, and repression of *urease* and induction of *lacZ* at high arsenate levels. By analyzing the sensitivity of each parameter/species, we identified their relative importance in the system which gives the theoretical guide when measuring the variable in wet-lab.