



## Gregory Hecht

Associate Professor  
Biological Sciences

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### Education:

BS (Molecular Genetics), University of Rochester  
MA (Molecular Biology), Princeton University  
PhD (Molecular Biology), Princeton University

### Research Expertise:

Microbial genetics | Applied microbiology | Biology education

My laboratory research interests focus on the use of both modern and “classical” genetic methods to address questions in applied microbiology. The primary project is the development and analysis of bacterial strains with the ability to immobilize soluble lead. We are using the freshwater oligotroph *Caulobacter crescentus* as a model organism to identify the genes and cellular components that are responsible for the biosorption of lead via a biologically mediated precipitation. We are using so-called classical genetic techniques coupled with whole genome sequence analysis. Our work has demonstrated that cysteine metabolism and enzymatic phosphatase activity are two of the key players in the biosorption of lead.

We also conduct biofuels research. To make biofuel fermentations economical, the biocatalyst must have significant tolerance to the biofuel product. We have isolated ethanol-tolerant mutants of *Escherichia coli* FBR5 and carried out physiological and genomic analyses of these strains, demonstrating that the iron import gene *fecA* is important in determining the ethanol tolerance of the organism. Other previous applied microbiology projects in my laboratory have included industrial partnerships to study the enhancement of microbial activity in commercial grease traps and an analysis of microbial contamination of rice flour.

Recent Academic Projects: My other area of interest is in the retention and education outcomes of students in the biology curriculum. I am currently involved in the Cumberland College Bridges to Rowan University, which focuses on improving the degree completion success rate of minority and disadvantaged students from Cumberland County College who transfer to Rowan University. In particular, I am developing primary research activities for students at Cumberland County College that focus on the discovery and analysis of novel *Caulobacter* bacteriophages in a project modeled after the SEA-PHAGES initiative (<https://seaphages.org>).

### Honors and Awards:

Rowan University Faculty Center Wall of Fame Award (1999, 2001, 2003, 2017)

### Member of:

American Society for Microbiology (<http://www.asm.org>)

American Association for the Advancement of Sciences (<http://aaas.org>)

New Jersey Water Environment Association (<http://www.njwea.org>)

### Recent Publications:

Mosto P, Savelski MJ, Farrell SH, Hecht GB (2007) Future of Chemical Engineering: Integrating Biology into the Undergraduate Curriculum. *Chemical Engineering Education*. 41:43-50.

Mire CE, Tourjee JA, O'Brien WF, Ramanujachary KV, Hecht GB (2004) Lead precipitation by *Vibrio harveyi*: Evidence for novel quorum sensing interactions. *Applied & Environmental Microbiology*. 70:855-864.