

A Student-Driven, Technology-Intensive Lab Design for Teaching Neuroscience, Molecular Genetics, and Developmental Biology

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Our current work builds on a four year collaborative effort (2010--2013) at Cedar Crest College that has been previously presented at this conference: students enrolled in a Molecular Genetics course collaborated with students from either Developmental Biology or Diseases of the Nervous System courses to conduct a research-based, multi-week project using microarrays to measure changes in gene expression in chicken embryos or neurons following chemical exposure. The project described here extends this methodology, incorporating current molecular technology (i.e., Quantitative Real Time PCR and PCR-based arrays), and broadening the overall focus to include automated electrophysiology. Overall, this multidimensional laboratory engages students in experimental design of the initial project and follow-up confirmatory studies; models collaborative efforts used in real-world laboratory studies; extends student learning beyond the scope of a single course; and helps students recognize the connections among biology sub disciplines. Students have been involved in the redesign of the lab activities from protocol development to implementation and collaborations with faculty at neighboring institutions have been initiated. The ultimate goal of this NSF grant-funded effort is to disseminate lab protocols to other institutions; present a viable methodology for teaching development, neuroscience, and molecular biology in college lab courses; and to provide access to technologies rarely available to undergraduates.

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<http://www.ableweb.org/volumes/vol-36/poster?art=59>

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