

# Chicks and Their Genes: A Collaborative Method for Teaching Upper Division Laboratory Courses at a Small Women's College

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Upper-division college biology courses are often taught separately, with information compartmentalized under course titles such as “Animal Behavior” or “Genetics.” The consequence of dividing the biological sciences this way ultimately produces students who may have gained depth in two or more distinct sub-disciplines, but who are unable to connect related concepts – the “bigger picture” so often missed by the typical student. To purposefully illustrate and facilitate student understanding of the connections between sub-disciplines, a crossover lab was de-signed between the Developmental Biology (BIO 332) and Molecular Genetics II (BIO 336) courses at Cedar Crest College during the Spring 2010 semester. While this lab served as only one of several exercises covered in each laboratory course, it allowed students of both populations to experience a segment of a class in which they were not currently enrolled and to meet the project goal of forging a connection between two biology sub-disciplines. Implementation of the crossover lab began with the developmental biology students qualitatively examining the effects of teratogens on chick embryo development. The project was continued in the molecular biology lab where students conducted a microarray-based experiment comparing gene expression in control versus treated embryos; arrays were obtained through the HHMI-funded GCAT program. The goal was for students from both labs to utilize the data generated by the microarrays to draw quantitative conclusions regarding the effects of the teratogens. Students from both classes collaboratively created research posters detailing the entire experiment. Finally, students were required to present their results to the entire class as well as at a local college conference, which meant they needed to understand the entire project, even the parts that they were not personally responsible for conducting. The project was assessed through an evaluation of the students’ poster presentations and the use of pre- and post-tests containing both developmental and molecular questions. The results of the assessments, lessons learned by the faculty involved, and implications for future course collaborations will be presented. Sample data from the project and examples of the student posters will also be available for review.

**Link to Original Poster:** [www.ableweb.org/volumes/vol-32/v32poster?art=58](http://www.ableweb.org/volumes/vol-32/v32poster?art=58)

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