them reading skills and presentation exercises designed to teach critical thinking skills. Initial assessments of the course have indicated an increase in critical thinking skills, an improved ability to read the primary literature, and a greater understanding of experimental methods, design and developmental concepts.

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Program/Abstract # 80
Eukaryon: The use of an undergraduate scholarship journal to strengthen inquiry-based pedagogy and a community of undergraduate scholars
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Undergraduate research and inquiry-based pedagogy are becoming increasingly crucial components in colleges and university curricula in the United States. Providing undergraduates the opportunity to publish their scholarship serves as a pedagogical tool to increase scientific literacy and motivation for scientific careers. Spurred by an NSF-CCLI grant in 2004, the Lake Forest College Biology Department accordingly developed a peer-reviewed undergraduate research journal of life science scholarship, Eukaryon (http://www.lakeforest.edu/eukaryon). In each annual issue, Eukaryon publishes scholarship in any sub-discipline of the life sciences that students have produced within the department's research-rich undergraduate classrooms and faculty labs. Here, we detail three aspects of the journal's development: 1) how it is exclusively governed, published, and financed by undergraduates; 2) how the journal establishes and improves on its content and format; and 3) specific strategies that maintain publication selectivity and integrate the journal with student course work and facultystudent collaborative scholarship. Finally, we will discuss how assessment of our journal's initial impact on a department's curriculum and its community of student scholars is shaping future directions for journal growth and curricular outcome. We encourage the adaptation and implementation of such journals at undergraduate institutions that seek to further strengthen their community of students as scholars and their inquiry-based pedagogy.

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Program/Abstract # 81
A semester-long project related to the evolution of developmental mechanisms: Exploring the benefits for undergraduate students at a small liberal arts institution
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It is important to provide undergraduate students with research experiences so that they obtain a deeper understanding of material as well as acquire problem-solving skills that are essential for any career. However, this can be difficult to achieve at a small liberal arts institution where time and resources are limited. One option is to design a course with a lab component in which students conduct a semester-long project with the potential to share their results with the scientific community. I designed an interdisciplinary course titled Evolutionary Developmental Biology in which students cloned genes from the white urchin, *Lytechinus variegatus*. All of the assigned genes are known to be essential for development of the larval skeleton in the purple urchin, *Strongylocentrotus purpuratus*. It remains to be seen if their functions are conserved in other species of echinoderms. The project involved a variety of computer and lab-based skills. It culminated with the students incorporating their DNA sequences into phylogenetic trees that they prepared at the beginning of the semester. Students also wrote review articles about their assigned genes to gain a better appreciation for the significance of the project. Statistical analysis of results obtained from pre and post-tests revealed that the students had a better understanding of basic biological concepts by the end of the semester. Moreover, the students gained confidence in a variety of skills that are essential for conducting research in the field of developmental biology.

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Program/Abstract # 82
Assaying for goosecoid gene expression in LiCl-treated zebrafish embryos in an undergraduate laboratory
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Differential gene expression can be a difficult concept for many undergraduates to understand and master. In order to facilitate an understanding of this concept, a laboratory experiment was designed to allow students to observe how gene expression of *goosecoid* (*gsc*) can change based on the activity of intracellular signaling proteins. *Gsc* is a gene expressed in the organizer during gastrulation of zebrafish and aids in specifying the dorsal axis. It has also previously been shown that LiCl treatment expands the expression region of *gsc* and dorsalizes the embryo by inhibiting glycogen synthase kinase-3 (GSK-3), an important inhibitor of b-catenin signaling. Zebrafish embryos were treated with 0.3M LiCl for 10min at 3hpf and later fixed at 8hpf (gastrulation stage). Students then performed an *in situ* hybridization for *gsc* on untreated and LiCl-treated zebrafish embryos at 8hpf. Students observed a greatly-expanded area of *gsc* gene expression in the LiCl-treated embryos compared to untreated embryos. Simultaneously with the laboratory experiments, students were also learning about the role of b-catenin signaling and its transcriptional activation of dorsal-specific genes, such as *siamois* which ultimately upregulates *gsc* expression. The laboratory experiment examining the expression of *gsc* in untreated and LiCl-treated embryos allowed for the students to observe, first-hand, a very important principle in developmental biology, differential gene expression. They were able to successfully understand WHY the expression of *gsc* could change based on the activity of GSK-3 (and ultimately b-catenin).

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Program/Abstract # 83
Teaching research skills through collaborative research projects in developmental biology
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Students learn many scientific research skills in undergraduate biology courses, especially those with laboratory components. Although elements of experimental design, data collection and analysis are possible with short experimental projects during the course of a semester, the responsibility for all aspects of the project and independent thought on the part of the students are often lacking. An upper level elective course that allows student groups to design and carry out projects over a greater time span promotes application of multiple skill sets and independent original research. Introduction to multiple model organisms, experimental design, microscopy and imaging, data collection, and lab notebook maintenance are integrated early in the curriculum through single week