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Guiding Education through Novel Investigation (GENI): Facilitating Authentic Research in the Teaching Lab

Jenny Tenlen[1] and Kimberly Murphy[2]

[1]Seattle Pacific University, Department of Biology, 3307 3rd Ave. W., Ste. 205, Seattle WA 98119 USA
[2]Augustana College, Department of Biology, Rock Island IL USA
(tenlenj@spu.edu; kimberlymurphy@augustana.edu)

Student participation in authentic, original research has been demonstrated to enhance their engagement in biology courses, and to improve their processing and critical thinking skills. The GENI-ACT program (http://www.geni-science.org/) facilitates learning in undergraduate science classrooms through shared authentic research projects focused on molecular, cellular and developmental biology, genetics, genomics and biochemistry. The results generated in this program are intended for publication in peer reviewed literature or scientific databases. The program has two components. First, the Guided Education through Novel Investigation (GENI) tool supports collaborative research projects by providing objectives, protocols, data collection, and physical resources. Users may join existing projects, or create a new project. Second, the Annotation Collaboration Tool (ACT) provides bioinformatics tools and access to hundreds of bacterial genomes to facilitate diverse computational investigations. In this session, we will introduce the GENI-ACT program and provide examples of research projects that are applicable to diverse levels of students and disciplines. We will share our assessment results that show significant gains in student learning, engagement, scientific literacy, scientific process and broad-based problem solving across multiple institutions. During the session, participants will discuss the benefits and challenges of adding authentic research to the classroom, and methods of assessing the value.

Mission, Review Process & Disclaimer

The Association for Biology Laboratory Education (ABLE) was founded in 1979 to promote information exchange among university and college educators actively concerned with teaching biology in a laboratory setting. The focus of ABLE is to improve the undergraduate biology laboratory experience by promoting the development and dissemination of interesting, innovative, and reliable laboratory exercises. For more information about ABLE, please visit **http://www.ableweb.org/.**

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