

Toward More Widespread Use of DNA Arrays in Undergraduate Education

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The Genome Consortium for Active Teaching (GCAT) is a four-year old national consortium of undergraduate faculty which has helped introduce over 800 undergraduate students to DNA microarray technology. Exposure to DNA array technology is an exceptional way for students to learn and practice a wide variety of cell- and molecular biology concepts in a research-oriented classroom environment. Even more valuable is the understanding students gain about the complex and diverse nature of gene expression changes.

Greater hands-on use of DNA arrays in undergraduate education depends on at least two factors. The availability of affordable DNA arrays and cDNA labeling technologies is important, but the training and mentoring of faculty interested in sharing the technology with their students is essential. These two needs reflect the primary barriers to adoption of DNA arrays in undergraduate education: cost and faculty expertise.

In preparation for the upcoming Summer 2004 NSF-GCAT Best Practices Faculty Workshop on undergraduate DNA array use, eleven GCAT members attended an NSF-sponsored workshop at the Institute for Systems Biology (ISB) in Seattle, WA. Instructional faculty for the 2004 workshop will be drawn from the attendees at this August, 2003 workshop; these faculty also have extensive experience in using DNA arrays hands-on with undergraduate students.

The ISB workshop demonstrated that current cDNA labeling protocols are robust and simple enough for undergraduates to use successfully. Thus training and mentoring of faculty interested in adopting the technology is the primary barrier to widespread use of DNA arrays in college courses.



An NSF-GCAT Faculty Best Practices Workshop Georgetown University, Washington, DC 6-9 July 2004

Two Workshop Tracks



DNA Array Data Analysis

6-7 July or 8-9 July 2004

Attendees will be introduced to DNA array technology, and will learn to use the freeware array analysis application Microarray Genome Clustering and Imaging Tool (MAGIC Tool), along with other free array analysis applications. Thousands of datasets are available online, including many at the GCAT website, and there are significant potential learning opportunities simply from student participation in data analysis.



DNA Array Wet Lab Techniques and Data Analysis

6-9 July 2004

This workshop will provide an introduction and practice in using different cDNA labeling techniques, probing DNA arrays with labeled cDNA, and scanning of DNA arrays for data collection. cDNA labeling techniques are robust and simple to use, and DNA arrays are available at cost through GCAT. GCAT also maintains an array scanner for no-cost use by participating faculty and students. **Participation in the Data Analysis Workshop is a prerequisite for participation in the Lab Techniques Workshop.**

Both workshops will take place at Georgetown University in Washington, DC.

Costs to participants: \$45 for room and board at the Data Analysis Workshop, and \$175 for room and board for the Data Analysis + Lab Techniques Workshop. Washington, DC-area faculty may of course attend the workshop at no cost. NSF support is supporting all course materials and supplies, but participants are responsible for their own travel expenses.

Additional NSF support is available to defray costs for faculty attendance. Faculty who serve many minority and underrepresented students are especially encouraged to apply for additional support.

Contact for more information or registration:

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Also see <http://www.bio.davidson.edu/Biology/GCAT/workshop2.html> for application form and more information.