

***PROCEEDINGS***  
*of the*  
***Annual Meeting***  
*of the*  
***AAAS, PACIFIC DIVISION***

*Volume 28, Part I*

*14 August 2009*

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***WORKSHOPS***

**90<sup>th</sup> Annual Meeting of the Pacific Division of the  
American Association for the Advancement of Science**

*San Francisco State University*  
*and the*  
*California Academy of Sciences*  
*San Francisco, CA*  
*14 – 19 August 2009*

*Contents accurate as of 22 July 2009.*  
*Times and/or locations of events may change.*  
*Please refer to the “Changes” flyer for updated information.*

## II. WORKSHOPS

**Monday, 17 August 2009**

***Hands-on with Bio-Rad  
Molecular Biology Kits for Teachers  
Sessions 1 – 3***

HENSILL HALL 530 and 667

*Monday*

*9:00 AM – 4:00 PM*

Bio-Rad Corporation of Hercules, CA, presents the following lecture/discussions and hands-on workshops in order to give middle school, high school and university instructors the opportunity to train in molecular techniques and also to try out some of the molecular biology kits they offer to educators. There is no additional charge for these workshops. However, participants must be registered for the meeting. A special “Bio-Rad Workshop Only” meeting registration for those only wishing to attend this portion of the meeting is available at the reduced fee of \$10.00. Be sure to wear your meeting badge to each session. Space is on an “as available” basis; preregistration was requested but is not required. Upon request, Bio-Rad representatives will provide certificates of attendance for those desiring to utilize these workshops for professional development credits.

**9:00 AM – 10:00 AM in HENSILL HALL 667**

***Using Bio-Rad Kits to Start a Biotech Program.*** Biotechnology impacts multiple subject areas and engages students in the rapidly changing scientific landscape. Looking for inquiry-based lab activities that are easy to set up, guaranteed to work, and come with complete curriculum? Join us for an overview of the Biotechnology Explorer program and learn how our kits and research-quality equipment combine to bring relevant real-world lab experiences to your students. The kits can be used individually to enhance your life science, agricultural or health science courses or in series as a complete biotechnology course.

**10:30 AM – 11:30 AM in HENSILL HALL 667**

***Cloning and Sequencing Explorer Series.*** In this unique modular lab series, students are guided through an innovative research workflow identical to those performed in genomics labs worldwide. Learn about this multiple-week lab course, where students combine traditional and cutting edge molecular biology techniques and bioinformatics to clone, sequence, and analyze a housekeeping gene from a plant of your choice ensuring each class produces unique and novel data.

**1:30 PM – 4:00 PM in HENSILL HALL 530**

***Characterize a Novel Gene with GAPDH PCR.*** How do you clone a gene when you don’t know the DNA sequence?

Glyceraldehyde 3-phosphate dehydrogenase (GAPDH) is a vital metabolic enzyme involved in one of the most basic of biological processes – glycolysis in respiration. In this workshop you will use degenerate and nested PCR primers from this highly conserved gene to amplify GAPDH genes from uncharacterized organisms as the first step towards cloning.

Note: This program continues on Tuesday.

***Discovering Darwin***

HENSILL HALL 439

*Monday*

*1:00 PM – 4:30 PM*

Organized by *Leó Laporte* (Professor Emeritus, Department of Earth and Planetary Sciences, University of California, Santa Cruz, CA).

The purpose of this workshop is to provide college instructors a basis for offering their own course on Charles Darwin. The presentation will use as a model a web-based course (<http://campus.digitization.com/darwin/Home/>) that examines the life and chief work of Darwin. This course was designed and offered by Dr. Laporte for many years for non-majors, both at Brown and at the University of California, Santa Cruz. The web site will be reviewed page by page to describe the content, purpose, and logic of each page/topic, and answer questions on the way. The presentation will not be a reading of each page, line by line, but will instead be a kind of “voice over” as we go through it together. There will be enough time for the presenter’s explication, participants sharing their own possible experiences about teaching some aspect of Darwin, questions about pedagogy, and what in fact happens in the classroom, etc. The overall goal is to enable others to develop their own course. A CD copy of the web site will be made available to all participants at no charge.

**Tuesday, 18 August 2009**

***Hands-on with Bio-Rad  
Molecular Biology Kits for Teachers***

***Sessions 4 – 6***  
HENSILL HALL 530  
Tuesday  
9:00 AM – 3:30 PM

This is a continuation of the Bio-Rad workshops from Monday. Please refer to the introductory comments on page 2.

**9:00 AM – 10:00 AM**

***Genes in a Bottle™ Kit.*** Can I see your DNA? Introduce your students to molecular biology with their own DNA. In this hands-on workshop you will extract the DNA from your own cheek cells then watch it precipitate. Bring only your imagination and take home your own DNA — in a necklace!

**10:30 AM – 11:30 AM**

***pGLO™ Bacterial Transformation Kit.*** Genetic engineering has led to a phenomenal explosion of new health treatments, agricultural applications, and environmental solutions. In this hands-on workshop, you will create your own genetically modified organisms and designer proteins and explore the mechanisms of gene expression and genetic selection. You will transform bacteria with a bioluminescent jellyfish gene that codes for Green Fluorescent Protein (GFP)! AP Biology Lab 6. *All participants will receive a free UV lamp and lab prep DVD!*

**1:30 PM – 3:30 PM**

***What's Next after pGLO™ Bacterial Transformation?*** Don't stop at cloning the gene — identify the protein responsible for the green fluorescence! Take white and green colonies from your transformed plates, prepare sample lysates and identify the pGLO protein using polyacrylamide gel electrophoresis. The bacterial proteome contains thousands of proteins, but only the cloned GFP protein glows! Use the phenotypic trait of this protein to quickly identify the protein within the complex mix. DNA > RNA > PROTEIN > TRAIT — Green Fluorescence!

***Science Education for New Civic Engagements  
and Responsibilities (SENCER)***

HENSILL HALL 439  
Tuesday  
1:30 PM – 5:00 PM

Organized by *Amy Shachter* (Associate Provost, Office of Research Initiatives, Santa Clara University, Santa Clara, CA) and co-organized by *Steve Bachofer* (Department of

Chemistry, Saint Mary's College).

Initiated in 2001, Science Education for New Civic Engagements and Responsibilities (SENCER) is a national dissemination project funded by the National Science Foundation. SENCER has established and supported an ever-growing community of faculty, students, academic leaders, and others to improve undergraduate STEM (science, technology, engineering and mathematics) education for non-science majors by connecting learning to critical civic questions. In 2007, the SENCER project established five regional SENCER Centers of Innovation (SCI). The SCIs expand the work of SENCER by organizing regional workshops designed to foster a multi- and interdisciplinary approach to science education with a focus on civic engagement. SCI-West is organizing this workshop to provide opportunities for AAAS members to engage SENCER faculty, discuss SENCER approaches, and consider developing regional collaborations. The AAAS Pacific Division SENCER workshop will have four one-hour segments:

- *SENCER Overview and Model Courses* (Amy Shachter, Santa Clara University) A dynamic introduction to the SENCER project including an overview of an interdisciplinary set of SENCER Model courses.
- *Designing a SENCER course* (Amy Shachter, Santa Clara University) An interactive workshop that takes participants through a nine step program to design a SENCER science course.
- *SCI-West Watershed Research Project* (Steve Bachofer, Saint Mary's College) An overview of the watershed research project model being developed by SCI-West including a discussion of ways to become involved.
- *Assessment using the SENCER Self-Assessment of Learning Gains Instrument* (Stephen Carroll, Santa Clara University) An introduction to the SALG instrument and how it can be used to understand perceptions of student learning gains.

**Wednesday, 19 August 2009**

***Forging California's Path to Zero Net Energy***

HENSILL HALL 201  
Wednesday  
10:00 AM – 3:00 PM

Organized by *Karina Garbesi* (Professor, Department of Geography and Environmental Studies, California State University East Bay, Hayward, CA) and co-organized by *Len Pettis* (Chief of Plant, Energy and Utilities, California State University, Office of the Chancellor), *Matthew St. Clair* (Sustainability Manager, University of California, Office of the President, Oakland, CA), and *Daniel Press* (Professor, Department of Environmental Studies, University of California, Santa Cruz, CA).

The California Public Utilities Commission's Long-Term Energy Efficiency Strategic Plan establishes an ambitious goal: by 2030 all new commercial buildings will be zero net energy and 50% of existing buildings will be retrofit thereto. Achieving this will require (1) rapid learning and adaptation from early implementation projects and (2) rapid development of the state's professional workforce capacity. The UC/CSU systems are ideally placed to serve both roles, indeed the task is unachievable without our intensive focus thereon. Through phased implementation at campuses distributed throughout the state's climate zones, the two systems will identify and address policy and technical barriers, and highlight planned beta test models to implement zero energy building networks. Requiring intensive collaboration between research, management, and capital planning, the universities will become laboratories of practice, integrating undergraduate and graduate research into the process. While the near-term costs of these investments will be admittedly large, the near-term pay off will be as well, in the civic engagement of our universities and the vital enrichment of the learning environment. The long-term payoffs will be very substantial in terms of cost savings and the environmental legacy we pass on to our children. This workshop seeks to develop a commitment to this process, a common vision for implementation and policy, and to identify critical research needs, key participants, their roles, and the next steps.

**Workshop Goal:** To determine how California's two public university systems, the University of California (UC), and the California State University (CSU), can best support California's Zero Net Energy Buildings (ZNEB) goals and achieve the greatest benefits for higher education by testing and setting the model for carbon neutrality while developing the necessary workforce.

**Preliminary\* Workshop Schedule:**

**I. Introductions and Context**

**10:00 – 10:30** *The Current Status of UC/CSU Efforts Related to ZNEB*, **KARINA GARBESI** (California State University East Bay), **LEN PETTIS** (Office of the Chancellor, California State University System), **MATTHEW ST. CLAIR** (Office of the President, University of California System), and **DANIEL PRESS** (University of California, Santa Cruz).

**II. ZNEB Experts Panel and Q&A**

**10:30 – 11:45** Panelists present on key issues, strategies, research and training needs for optimal development of a UC/CSU ZNEB Initiative.

- **STEPHEN SELKOWITZ** (Head, Building Technologies Department, Lawrence Berkeley National Laboratory, Berkeley, CA)
- **KURT YAEGER** (Executive Director, Galvin Electricity Initiative, Retired President and Chief Executive Officer of the Electric Power Research Institute)
- Others to be confirmed

**11:45 – 12:15 LUNCH**

**III. Presidents and Chancellors  
Strategy Dialog**

**12:30 – 1:45** How can our universities best realize the current enormous economic and workforce development opportunity, lead the transition to carbon neutrality, and train the workforce needed to achieve the State's building energy goals?

How can the positions of the two university systems be leveraged through collaboration to achieve these goals?

- President **MO QAYOUMI** (California State University East Bay)
- President **DIANNE HARRISON** (California State University Monterey Bay)
- Chancellor **GEORGE BLUMENTHAL** (University of California, Santa Cruz)
- Others to be confirmed

**IV. Participant Breakout Sessions**

**2:00 – 3:00**

Based on sessions II and III: Should UC and CSU develop a ZNEB Initiative? If so, should the systems collaborate thereon? Sketch out scope. Identify key participants, expertise, and next steps.

- Reports and commitments developed there from to be sent to all workshop participants and other relevant actors.

\*A more complete schedule is available at the conference Registration Center.