

Four Year University Section Peer Reviewed Research Symposium

Thursday, Nov. 12 • 1:00 pm - 3:45 pm

4Y Strand

Plaza Court 5

Please join the Four Year University Section for the first annual Research Symposium. Selected peer-reviewed Biology Education Research papers will be presented. The recipient of the Four-Year Section Biology Research Award will be featured during this time.

Presentations:

- Thomas Lord, *Comparing inquiry and traditional instruction: Understanding the nature of science in non-science majors*
- Beverly Clendening, *Group problem solving sessions trump lecture: Results of an experiment in teaching*
- Mamta Singh, *Student performance and success in entry-level undergraduate biology courses*
- Leanne J. Bakke and Michele C. Keike, *Undergraduate research driven by learning objectives vs. the research question*
- Anne Houtman and Sean Walker, *Stopping plagiarism in biology writing assignments: What works and what doesn't*
- Ivan Gepner, *A web-based system for practice and testing of image based knowledge*

Special guest:

- Anneke Metz, the 2009 Four-Year Section Research in Teaching Awardee, will be presenting her research on *Building a better biologist: Strengthening understanding of statistics in the undergraduate classroom.*

2 and 4 Year Annual NABT Faculty Development Day

Theme: Advancing Higher Levels of Inquiry in the Biology Classroom

Friday, Nov. 13 • 9:00 am – 5:00 pm

Century

Faculty Development Members: Kim Sadler and Jacqueline McLaughlin (Co-chairs), Tom Lord, Anneke Metz, Kerry Cheesman, TJ Bliss, Robert Loeb

- Sponsor: W.H. Freeman and Company

Morning Moderator: Kim Sadler; 4yr section Faculty Development Committee Co-Chair

9:00 am – 9:40 am Morning Session I – Graduate Student Strategies for Teaching Inquiry in the Classroom, TJ Bliss and Anna Hiatt

9:50 am – 10:30 am Morning Session II - Assessment of Higher-Order Learning, Kerry Cheesman; "We're in the Thinking Business..." Thomas Lord

10:40 am – 11:20 am Morning Session III - The 21st Century Undergraduate Classroom: Multi-media Meets the 3 R's (Rigor, Relevance, and Relationships), Anneke Metz and Jacqueline McLaughlin

11:30 am – 12:30 pm LUNCH

12:30 pm – 2:30 pm Interactive Presentation: Scientific Teaching, authors Jo Handelsman, Sarah Miller, and Christine Pfund

2:30 pm – 3:00 pm Scientific Teaching authors book signing and refreshments

Afternoon Moderator: Matthew Craig, 2yr section Chair

3:00 pm – 3:40 pm Overcoming the Challenges of Inquiry Teaching in Two-Year and Four-Year College Biology Courses, Linda Crow and Donald French

4:10 pm – 5:00 pm Winner: NABT 4-year Teaching Award Winner Presentation (Bill Rogers will present award)

7:15 am - 8:15 am

First Timers Breakfast

Plaza Ballroom E

If this is your first NABT Conference, this is the place to be! We invite you to learn more about the Association and the events of the Conference over a complimentary continental breakfast and learn some helpful Conference “tips” to make the most of your experience. Our thanks to Howard Hughes Medical Institute for making this breakfast possible.

9:30 am - Noon

Bio-Rad GMO Investigator Kit

Director’s Row E • Capacity: 60
Exhibitor Demonstration • Biotechnology • HS 4C

Have your favorite foods been genetically modified (GM)? This hands-on workshop teaches the basics of DNA extraction, PCR, and gel electrophoresis and how these techniques are used to test common grocery store food products for the presence of GM foods. Are GM crops a good thing? Regardless of where you stand in the GM debate, wouldn’t it be interesting to know which foods you eat are GM foods?

- Essy Levy, Bio-Rad, Hercules, CA

10:00 am - 10:30 am

Just-In-Time Teaching for Introductory Biology

Century • Capacity: 40
Paper • General Biology • 2C 4C

Tired of “lecturing” about mitosis, cells, basic biochemistry? Transform your course into a “Just-In-Time Teaching” format. Participants will be provided with example outlines and activities.

- Amy Morris, Hastings College, Hastings, NE

Science Teachers’ Drawings of What Is Inside the Human Body

Denver • Capacity: 100
Paper • Teacher Prep/Professional Development • HS 4C

This study identifies science teachers’ understandings of the internal structures of the human body. Teachers were able to draw organs, but not organ systems.

- Patricia Patrick, Bennett College, Greensboro, NC; Sue Dale Tunnicliffe, School of Science, Technology and Math, Institute of Education, London, UK

An E-Book Experience in Introductory Biology

Director’s Row J • Capacity: 50
Paper • Instr.Strategies & Technologies • 4C GA

ABBREVIATION KEY

- GA = General Audience
- E = Elementary
- JH = Middle School/Jr. High
- HS = High School
- 2C = Two-Year College
- 4C = Four-Year College

Come see how we used a state-of-the-art electronic textbook to teach and get the students to read!

- Donald French, Oklahoma State University, Stillwater, OK; Connie Russell, Angelo State University, San Angelo, TX

Who Am I? A Journey with Mitochondrial DNA

Director’s Row H • Capacity: 75
Paper • Genetics • 2C 4C

Using *The Seven Daughters of Eve* by Bryan Sykes as a guide, students explore scientific discovery and determine their mitochondrial DNA heritage.

- Nickie Cauthen, Sarah Beth Mallory, and Melinga Pomeroy-Black, LaGrange College, LaGrange, GA

Start Your Own Seedbank! Teach Biodiversity and Biocomplexity

Gold • Capacity: 40
Paper • General Biology • GA

Norway’s “Doomsday Vault” seedbank opened in 2008; the news stirred students’ curiosity. Learn how your students can construct a sustainable working model of a seedbank.

- James Wandersee, Louisiana State University, Baton Rouge, LA; Renee Clary, Mississippi State University, Mississippi State, MS

Evolution Across the Biology Curriculum

Governor’s Square 9 • Capacity: 60
Paper • Evolution • HS 4C

Join us to learn how you can contribute to a developing project, *Evolution Across the Biology Curriculum*.

- Paul Beardsley, BSCS, Colorado Springs, CO; Gordon Uno, University of Oklahoma, Norman, OK

General Session • 8:30 am - 9:45 am

Plaza Ballroom F

Brian “Fox” Ellis as Charles Darwin

Charles Darwin and His Revolutionary Idea

Imagine an evening at London’s Royal Geological Society with the affable young Charles Darwin, among friends, telling the stories of his amazing adventure sailing around the world on the *HMS Beagle*. Darwin tells humorous tales of his training as a naturalist, his insights into South American geology, his discovery of strange creatures on the Galapagos Archipelago and, most importantly, the scientific evidence that lead to his revolutionary theory. Storyteller and science teacher, Brian “Fox” Ellis steps into Darwin’s shoes to model the scientific process, engaging listeners in a discussion of the facts so they can draw their own conclusions. Equal parts dramatic storytelling, stand-up comedy, and show and tell, the audience is immersed in the intellectual world of one of history’s greatest scientific minds. He brings a wide array of fossils, insects, plants, and study skins so the audience can experience the discoveries of Darwin with hands-on analysis.



10:00 am - 10:30 am

continued

Learning Biology Out of the School Classroom

Governor's Square 10 • Capacity: 100
Paper • Curr. Development/Supervision • 4C GA

Learning biology is not just in the classroom, but with family and friends after school hours and during the student's everyday observations. Biology learning occurs during organized visits to sites such as science centers and science and natural history museums. This paper will address questions regarding biological science out of school: where, when, for whom, and by whom.

- Sue Dale Tunnicliffe, Institute of Education, London University, Bracknell, UK; Catherine Ueckert, Northern Arizona University, Flagstaff, AZ

Writing for The American Biology Teacher

Governor's Square 12 • Capacity: 100
Demonstration • General Biology • GA

Bill Leonard, Editor, and Cheryl Merrill, Managing Editor, of *The American Biology Teacher* will share techniques for writing an article for the *ABT* that will be successfully reviewed and accepted. Included will be: Choosing a timely and relevant topic; crafting an enticing title; knowing and writing to your audience; things to include and avoid; length, style and grammatical guidelines, examples of published articles, types of articles wanted, the *ABT* review process, and publication timeline. There will also be an opportunity to ask questions.

- William Leonard, Clemson University, Clemson, SC; Cheryl Merrill, NABT, Washington, DC

Students' Perception of the Effectiveness of the Use of PowerPoint in Biology Classrooms

Governor's Square 15 • Capacity: 120
Paper • Instr.Strategies & Technologies • 2C 4C

PowerPoint technology is almost a ubiquitous means of instruction in today's biology classrooms. This study evaluates students' perception of its effectiveness given their different learning styles.

- Carla Beeber, Carol Biermann,

and Kumkum Prabhakar, Nassau Community College/SUNY, Garden City, NY

Are We Ready for E-Textbooks?

Governor's Square 16 • Capacity: 120
Paper • Instr.Strategies & Technologies • 2C 4C

The use of digital textbooks in biology has revealed expected and unexpected benefits and challenges. Lessons learned will be shared and others' experiences solicited.

- Jean DeSaix, University of North Carolina, Chapel Hill, NC

4Y Strand

Inquiry Teaching as a Subversive Activity: Helping Faculty and Administrators Understand the Need for Change

Governor's Square 17 • Capacity: 120
Paper • Instr.Strategies & Technologies • HS 4C

Inquiry teaching is seen as heretical by many who have not experienced it. Knowledge of the data and rationale can help you convince colleagues and administrators otherwise.

- Kerry Cheesman, Capital University, Columbus, OH

DCBiotech at the Three-Year Mark: Biotechnology Education in the Nation's Capital

Plaza Court 1 • Capacity: 75
Demonstration • Biotechnology • HS 2C

Learn from DCBiotech's successes and challenges enhancing biotech education in Washington, DC. This is a collaboration between DCPS, Montgomery CC, Carnegie Institution, and research/industry partners.

- Marlena Jones, CASE/Carnegie Institution, Washington, DC; Toby Horn, Carnegie Institution, Washington, DC

ER — A Microbiology Simulation

Plaza Court 2 • Capacity: 75
Demonstration • Botany & Microbiology • HS GA

Turn your classroom into a medical laboratory. Learn how to simulate all the aspects of the microbiology lab setting using the Internet and a dichotomous key.

- Sue Thomson, School of Sciences/AUM, Montgomery, AL; Michael Gilchrist, School of Education/AUM, Montgomery, AL; Kathy Dugan, Jefferson Davis HS, Montgomery, AL

You Can Succeed in Science!

Plaza Court 3 • Capacity: 75
Demonstration • Curr. Development/Supervision • JH HS

In this workshop, we will discuss the skills and habits necessary to start a science-oriented business. We will discuss possible science-related ideas from the classroom that may be applicable to the business world. Science is everywhere; business is everywhere. You will learn how to write, market, and finance a business plan. We will describe some specific examples of how science and business have been successfully merged. A new science-business classroom curriculum will be distributed to those who attend. One participant will win a business opportunity.

- Linda Samuels, The Science of Learning Center, Winthrop, MA

Planktonic Crustaceans and Lipophilic Contaminant

Plaza Court 5 • Capacity: 75
Demonstration • Environment/Ecology • HS

This is a laboratory demonstration of the behavior of lipophilic contaminant in the presence of planktonic grazers.

- Igor Zaitsev, Borough of Manhattan Community College, New York, NY

Designing a Model To Develop Web Media Based on the Subject Characteristics in Biology

Plaza Court 6 • Capacity: 60
Paper • Instr.Strategies & Technologies • 4C

This study will present a possible model needed to develop Web media for students to experience living plants based on the subject characteristics in biology.

- Sang-Keun Yoo, Il Sang Cho, and Sung-Ha Kim, Korea National University of Education, Chungbuk, Korea

Ant and Bee: Linking Science and Literacy for Student Success

Plaza Court 7 • Capacity: 32
Paper • Instr.Strategies & Technologies • E JH

10:00 am - 10:30 am

continued

Results of a fourth-grade classroom project integrating science and literacy through the study of social insects. Ideas for teaching English language learners are addressed.

- Roy Hurst and Jeannine Hurst, The University of Texas of the Permian Basin, Odessa, TX

Women Exemplars: Using Oral History Stories To Promote Science Interest and Literacy in the High School Classroom

Plaza Court 8 • Capacity: 32
Paper • Gender/Multicultural Issues • HS 4C

Data collected from oral histories of seven contemporary women scientists can help students connect their own science learning with successful science experiences and current research.

- Laura Koehl, Notre Dame Academy, Park Hills, KY

Fun with Fermentation and Other Energizing Topics

Tower Court A • Capacity: 50
Paper • Instr.Strategies & Technologies • 2C GA

Are you looking for ideas to energize your students? Come to our presentation to obtain some ideas, activities, and instructional strategies to engage students in learning about fermentation and cellular respiration.

- Pam Tabery, Sharon Lee-Bond and Kathy Kresge, Northampton Community College, Stroudsburg, PA

How To Enhance Student Learning in AP and College Biology Courses Without Impacting Your Workload

Tower Court B • Capacity: 50
Demonstration • General Biology • HS 4C

Learn how mastering biology can improve student learning and comprehension in AP Biology and college courses. Diagnostic tools that support just-in-time teaching will be demonstrated.

- Eileen Gregory, Rollins College, Winter Park, FL

4Y Strand

Biology Video-Podcasts: An Enzyme for Education or a Neutral Addition to Learning?

Tower Court C • Capacity: 75
Paper • Instr.Strategies & Technologies • 4C GA

An exploration of different podcasting formats and their effects on learning and academic performance.

- Nicholas Beermann and Sehoya Cotner, University of Minnesota, Minneapolis, MN

Capstone Project Demonstrating the Role of Science, Technology, and Bioethics in Business Innovation

Tower Court D • Capacity: 75
Paper • Instr.Strategies & Technologies • 4C GA

An integrated capstone project in technology-based courses allows students to create a virtual company, based on their own unique hi-tech invention.

- Shari Laprise and Vikki Rodgers, Babson College, Babson Park, MA

“I just made a new discovery!”

My classroom is changing quickly. I found a program that can keep up—*Miller & Levine Biology*.

Visit **Booth #505** to learn more about *Miller & Levine Biology*.

PEARSON

10:45 am - Noon

Microbial Activities and Food Safety

Century • Capacity: 40
Hands-On Workshop • Botany & Microbiology • JH HS

Microbes: necessary, life on Earth can't survive without them. Competitors: they compete for our food. Pathogens: know our body defenses. Their role in biotechnology.

- John Fedors, Science Activities, Lincoln, CA

Move It or Lose It!

Colorado • Capacity: 32
Hands-On Workshop • Human Health & Public Health • E

In the *Fit Explorer Project* you can involve your students in structured, hands-on science activities that relate physical Earth-based needs to the requirements of exploring space and assist students in gaining additional understanding of the science behind nutrition and physical fitness.

- Lisa Brown and Mike McGlone, NASA-Aerospace Education Services Project, Houston, TX

Tools for Teaching Evolution

Denver • Capacity: 100
Paper • Evolution • HS 4C

Tired of using the same old examples of evolution? Looking for ways to make evolution relevant for your students? Come learn about the many resources available!

- Kristen Jenkins and Jory Weintraub, National Evolutionary Synthesis Center, Durham, NC

Teachers as Researchers in the Biology/Life Science Classroom

Director's Row J • Capacity: 50
Symposium • Teacher Prep/Professional Development • GA

Teachers will present results of action research projects conducted in the biology classroom. They will discuss how interventions have affected both teacher and student performance.

- Peggy Taylor, Montana State University, Bozeman, MT

Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens

Director's Row H • Capacity: 75
Exhibitor Demonstration • General Biology • JH HS

Experience a far superior and safer alternative to formaldehyde with Carolina's Perfect Solution® specimens. Participants dissect a sheep brain, cow eye, pig heart, and pig kidney and observe major internal and external structures to gain a better understanding of these mammalian organs. An excellent comparative dissection with Carolina's best specimens!

- Carolina Biological Supply Company, Burlington, NC

Teaching Evolution in Challenging Times

Gold • Capacity: 40
Hands-On Workshop • Evolution • HS

Explore activities from our unit on evolution. Student labs and activities investigate "fitness," reproductive success, adaptation, and the development of the theory.

- Cheryl Fentress, Gary Layman, Erica Derryberry, and Lori White, Bartlesville Mid-High School, Bartlesville, OK

Computational Thinking in Biology for All Students

Governor's Square 9 • Capacity: 60
Symposium • General Biology • HS 4C

Biology involves data at multiple hierarchical levels, the analysis of which requires diverse computational and quantitative skills that students can readily master.

- Louis Gross and Sarah Duncan, NIMBioS - University of Tennessee, Knoxville, TN; Martha Narro and Lisa Howells, iPlant Collaborative-University of Arizona, Tucson, AZ

Modeling Ecosystems

Governor's Square 11 • Capacity: 100
Exhibitor Demonstration • Instr.Strategies & Technologies • HS 2C

Increase student understanding of difficult concepts like biogeochemical cycles, cellular respiration, and photosynthesis by using PASCO's new EcoZone System. Participants will create model ecosystems and learn how to monitor changes with data collection technology.

Invited Speaker • 10:45 am - Noon

Plaza Ballroom F

Michael Dyer, M.D.

St. Jude Children's Research Hospital, Memphis, TN

*NABT is pleased to announce that Michael Dyer, M.D. has been selected as the **Seventh Annual Christine Chantry Memorial Speaker**. Chris, NABT's Director of Publications and Marketing for many years, died of cancer in February 2003. A Memorial Fund was established to honor this remarkable woman who touched so many lives.*

From Bench to Bedside: Improving Translational Research Through Multidisciplinary Teams

Dr. Michael Dyer conducts research that bridges the fields of developmental neurobiology, evolutionary biology, and cancer genetics. In this seminar, Dr. Dyer will present results from two recent projects that highlight how multidisciplinary research can lead to unexpected discoveries. First, Dr. Dyer will discuss how his laboratory's investigation of the role of tumor suppressor genes in the developing retina led to the first report that mature neurons can divide while maintaining all of their differentiated features including neurites and synapses. This discovery has fundamentally changed one of the central dogmas in neurobiology that differentiated neurons cannot divide once they are formed. This discovery may someday lead to new approaches to regenerating neurons without the use of stem cells. Dr. Dyer will also present how his group resolved a 12-year-old paradox in the retinoblastoma field and generated the first knockout mouse model of retinoblastoma.



10:45 am - Noon

continued

- Nassim Lewis, PASCO scientific, Roseville, CA; Ryan Reardon, Alabama School of Fine Arts, Birmingham, AL; Michelle Spigner, Spring Valley HS, Columbia, SC

Bioethics: The Basics and Beyond

Governor's Square 12 • Capacity: 100
Hands-On Workshop • Bioethics • HS 4C

Engage students in thinking about ethical dimensions of scientific research using engaging and practical lessons developed by experienced teachers. Receive extensive bioethics resources.

- Jeanne Chowning, Northwest Association for Biomedical Research, Seattle, WA

Help Your Students Succeed in AP Biology

Governor's Square 14 • Capacity: 120
Exhibitor Demonstration • General Biology • GA

Join two experienced AP teachers for a "Hints and Strategies" session. We will give you ideas to help students improve their organization, write better essays, and get more from the required labs. Participants will learn strategies to prepare their students for the AP Biology exam through a discussion of review ideas and introduction to a new exam review guide. We will present a framework for using the laboratory experiences for review of important content, and other ideas that will contribute to student access.

- Fred Hotzclaw, Pearson, Upper Saddle River, NJ

Teaching Cells, Viruses, Disease and Immunology with Free Resources from the Howard Hughes Medical Institute

Governor's Square 15 • Capacity: 120
Hands-On Workshop • Molecular & Cell Biology • HS 2C

Free classroom resources (including HHMI DVDs, Web site information, and teacher-generated, classroom-ready activities) will be provided to enhance the teaching of cells, immunology, disease, and viruses.

- Ann Brokaw, Rocky River HS, Rocky River, OH

Bringing Your Human Anatomy and Physiology Class To Life

Governor's Square 16 • Capacity: 120
Hands-On Workshop • Physiology • HS

Demos, labs, role plays and more that you can do with your Anatomy and Physiology classes to help your kinesthetic learners. A guaranteed happy session!

- Holly Crochetiere, West Windsor-Plainsboro HS North, Robbinsville, NJ

Insulin: A Molecular Story about the Gene, the Protein, the Physiology, and Diabetes

Governor's Square 17 • Capacity: 120
Hands-On Workshop • Biotechnology • HS 2C

This presentation will demonstrate how physical models and other visualizations can be used to tell a molecular story focused on insulin and glucose uptake.

- Tim Herman and Margarey Franzen, MSOE Center for BioMolecular Modeling, Milwaukee, WI

Biotechnilights Bioluminescence—How Bacteria Talk to Each Other

Plaza Court 1 • Capacity: 75
Demonstration • Biotechnology • HS 2C

Learn how *Vibrio harveyi* bacteria use a type of bacterial chemical conversation known as quorum sensing. *Vibrio harveyi* release diffusible chemical signals called autoinducers to coordinate group behaviors. Participate in a hands-on demonstration of autoinducer-coordinated bioluminescence using three strains of *Vibrio harveyi*.

- Diana Brandner, Madison Area Technical College, Madison, WI; Jonathan Morris, Manchester Community College, Manchester, CT

WACed Out Biology

Plaza Court 2 • Capacity: 75
Symposium • General Biology • HS 4C

All teachers are English teachers. If true, this is a very intimidating statement to biology teachers. It need not be so. Writing Across the Curriculum (WAC) is a concept and program that has been around for many years. But it has not always gained much traction among traditional teachers. This program offers some teaching strategies that marry the writing skills instruction within biology curriculum.

- Michael Battaglia, Greenville Technical College, Greenville, SC

Create Student-Centered, Interactive Curricula with Free Online Resources

Plaza Court 3 • Capacity: 75
Demonstration • Physiology • HS 4C

Bring a drab, dated lesson back to "life" with free resources from the APS Archive, BiosciEd Net (BEN), and NSDL.

- Melinda Lowy, Marsha Lakes Matyas and Amy Feuerstein, American Physiological Society, Bethesda, MD

AP Biology Content Update: What's New in Biology?

Plaza Court 4 • Capacity: 75
Paper • General Biology • HS

This session is for busy teachers who want a quick update on recent biological discoveries that impact the teaching of AP Biology.

- Franklin Bell, Mercersburg Academy, Mercersburg; Domenic Castignetti, Loyola University-Chicago, Chicago, IL

Probing Minds and Probeware: How To Turn Our Students on to Experiments in Biology

Plaza Court 5 • Capacity: 75
Demonstration • Instr.Strategies & Technologies • JH HS

Delve into the use of probeware to stimulate the probing minds of our students, helping them to develop strategies for designing and performing original experiments in biology. Creative applications of probeware can help students pursue investigations that were historically beyond the scope of traditional high school biology courses.

- Bob Goodman, SAR High School, Bronx, NY

Using Clickers To Improve Classroom Instruction

Plaza Court 6 • Capacity: 60
Demonstration • Instr.Strategies & Technologies • JH HS

This presentation will introduce teachers to Clickers (Classroom Performance Systems) and provide examples of how to use this technology to make learning interactive and fun while using data to improve teaching practices.

- Erin Hinkle and Kelly Ksiazek, Fairview HS, Boulder, CO

Is it Science or Not?

Plaza Court 7 • Capacity: 32
Paper • General Biology • GA

Students often have difficulty distinguishing between valid and invalid science in everyday life. This paper addresses criteria to help students make those distinctions.

– Kathy Gallucci, Elon University, Elon, NC

Learning from Patients: Developing Models and Searching for Answers

Plaza Court 8 • Capacity: 32
Hands-On Workshop • Genetics • HS 2C

Through a guided inquiry activity that utilizes segments of the HHMI DVD “*Learning From Patients*,” participants will develop and test models to explain a particular nervous system disorder. While developing these models, participants assume the role of medical researchers searching for the cause of ataxia. Attendees will receive the HHMI Evolution DVD and a CD-ROM with the classroom-ready activity and PowerPoint appropriate for high school, honors, AP, and introductory college biology students.

– Mary Colvard, HHMI, Bethesda, MD

Paper Microarrays: A Classroom Activity Exploring Lung Cancer and Smoking

Silver • Capacity: 100
Hands-On Workshop • Genetics • HS 2C

Teachers often lack the class time, equipment, and reagents to do microarray experiments in their classroom. This paper activity overcomes these obstacles and allows teachers to stay at the forefront of teaching biology and biotechnology.

– Rose Seltzer, FOTODYNE, Inc., Hartland, WI

Searching for a Cause of Alzheimer’s Disease—The Story of a Good Protein Gone Bad: Applying Research Inquiry to the Biology Classroom

Spruce • Capacity: 90
Exhibitor Demonstration • Human Health & Public Health • GA

A controversial question about Alzheimer’s disease is: What causes selected neurons to die, leading to memory loss? Amyloid precursor protein (APP) appears to play a key role in this neurodegeneration; however, APP also helps the brain recover from injury. What happens to turn this neurotrophic protein into a neurotoxic one? These two opposite biological activities appear to be due to the processing of APP at the plasma membrane. Enzymatic digestion at one site on APP produces a neurotrophic growth factor while diges-

tion at another site produces a neurotoxin that kills neurons through apoptosis. This dichotomy may explain the role of APP in Alzheimer’s disease pathology. The same professional research skills used in this research can be taught in the high school biology class if students are given open-ended scientific questions.

– William Wallace, Georgetown Day School, Washington, DC

Anatomy and Physiology Mile High Style

Tower Court A • Capacity: 50
Hands-On Workshop • Physiology • JH HS

In this session, participants will receive demonstrations and activities about levels of organization, digestion physiology, homeostasis and diabetes, muscle, nephron and nervous physiology. Handouts provided.

– Mark Little, Broomfield HS, Broomfield, CO

Vlogs, Blogs, and Pod-Casts: Providing Vocabulary and Content Support at Home To Increase Student Retention

Tower Court B • Capacity: 50
Hands-On Workshop • Instr.Strategies & Technologies • HS GA

Do your students need additional vocabulary and concept support at home? Learn how the use of video-logs (vlogs), blogs, and pod-casts can help your students succeed in science. Come with your laptop, Web-cam and/or camera and leave with your first completed vlog to begin using with your students!

– Michelle Halvorsen, Texas School for the Deaf, Austin, TX

Life: Here? There? Elsewhere? For Grades 7-8

Tower Court C • Capacity: 75
Hands-On Workshop • General Biology • JH

Investigate the phenomena of life through introductory exobiology and planetology activities. Explore life detection methods in simulated extrasolar conditions that lead to a spacecraft design.

– Pamela Harman, SETI Institute, Mountain View, CA

Can We Use Case Studies To Teach Evolution to a Diverse Student Population?

Tower Court D • Capacity: 75
Hands-On Workshop • Evolution • HS GA

Two teachers share their instructional and assessment strategies, evaluation

results, and personal insights from their experiences teaching three highly different student groups about evolution through case studies.

– Jared Larson and Kelly Shipley, McMinnville HS, McMinnville, OR

Noon - 1:00 pm

Using Bio-Rad Kits To Start a Biotech Program

Director’s Row E • Capacity: 60
Exhibitor Demonstration • Biotechnology • HS 4C

Bring your lunch and 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. Biotechnology impacts multiple subject areas and engages students in the rapidly changing scientific landscape. Join us to learn about our complete series of inquiry-based lab activities that are easy to set up, guaranteed to work, and come with complete curriculum. The kits can be used individually to enhance your biology, agriculture, or health science courses or in a series as a complete biotechnology course.

– Essy Levy, Bio-Rad, Hercules, CA

§ R.S.W.B.E. Section Luncheon

North Convention Lobby • Capacity: 25

Are you interested in the role of women in science? Do you have suggestions on how females can impact the scientific community? Come share your ideas and network with other women scientists as the Role & Status of Woman and Minorities in Biology Education Committee discusses its 2010 goals.

Noon - 2:00 pm

§ Coordinators/State and Province Representatives/OBTA Directors Luncheon and Business Meeting

Windows • Capacity: 50

This is your opportunity to meet with other NABT volunteer leadership to share your experiences. Who better knows your challenges and concerns than other Coordinators, State & Province Representatives, and OBTA Directors? Meet these colleagues over lunch and then brainstorm for 2010 in small groups.

1:00 pm - 2:15 pm

Integrating Sustainability Issues into a Biology Classroom

Century • Capacity: 40
Hands-On Workshop • Environment/
Ecology • HS

Come learn how to spark student interest in biology content by integrating sustainability issues such as fisheries management into standards-based lessons using hands-on activities.

- Maia Willcox, UC Berkeley, Berkeley, CA; Laura Lenz, SEPUP UC Berkeley, Berkeley, CA

AstroTots

Colorado • Capacity: 32
Hands-On Workshop • Physiology • E

Find out how to get your youngest students to train like astronauts. Discover NASA's hands-on activities that will introduce your students to living and working in space

- Lisa Brown and Mike McGlone, NASA-Aerospace Education Services Project, Houston, TX

Demonstration of a New SimBio Virtual Lab for Teaching Evolution

Denver • Capacity: 100
Exhibitor Demonstration • Evolution • HS
4C

"Evolutionary Evidence" is the latest addition to our SVL EvoBeaker® Lab Suite. Interactive simulations involving lizards on islands engage advanced HS or introductory college level students in explorations of whether patterns of morphological variation in extant and fossil populations support the idea that life on Earth evolved from common ancestry.

- Kat Barry and Simon Bird, SimBiotic Software, Ithaca, NY

Mapping Migration Routes Using Ancient DNA

Director's Row J • Capacity: 50
Paper • Genetics • 4C GA

What can ancient Mayan skeletons reveal? Please join novice "molecular anthropologists" to find out what DNA extraction, amplification, and analysis have disclosed about ancient Mayan remains.

- Nancy Elwess and Sandra Latourelle, Plattsburgh State University, Plattsburgh, NY

Amplify Your Genetics Teaching Skills with Carolina's New Inquiries in Science Biology Units

Director's Row H • Capacity: 75
Exhibitor Demonstration • Genetics • HS

Want to crack the mystery of genetics for your students? Increase student achievement on difficult concepts such as nucleic acids, genetic inheritance, and biotechnology by using a guided-inquiry approach. Carolina's Inquiries in Science™ Biology Units provide hands-on activities to make teaching challenging topics effortless. Free teacher materials and door prizes!

- Carolina Biological Supply Company, Burlington, NC

Invited Speaker

1:00 pm - 2:15 pm

Plaza Ballroom F

Shane Kanatous

Colorado State University, Fort Collins, CO

Lessons Learned from Marine Mammals

Marine mammals have evolved to live in an aquatic environment and to successfully deal with its unique physiological challenges. One of their major challenges is their ability to forage, feed, sleep, and even exercise while holding their breath during diving. Under these conditions, oxygen is arguably the most limiting factor in their lives. The amount of stored oxygen in their bodies and the rate at which they utilize that oxygen dictates the length and depth of their dives and thus the size and type of prey they can forage for; which ultimately determines their success and viability. In our earlier studies, we found that the skeletal muscles of marine mammals appear to adapt to the hypoxic conditions of diving in different manners that reflect their diving behavior. Short duration, active swimmers such as harbor seals have enhanced aerobic capacities similar to athletic terrestrial mammals in order to maintain high levels of aerobic output during diving. Conversely, deep divers such as Weddell seals have an aerobic capacity similar to sedentary terrestrial mammals to maintain low levels of aerobic metabolism which, in combination with a number of energy-conserving modes of locomotion, reduce the overall energetic costs of diving. The objective of this talk will be to discuss the adaptations in the skeletal muscles of seals that allow the muscles of an air-breathing mammal to continue to exercise without breathing.



4Y Strand

Guiding Early-Career Scientists To Interactively Present Their Research

Gold • Capacity: 40
Hands-On Workshop • Instr.Strategies & Technologies • 4C GA

In this session, participants will learn how early-career research scientists are prepared to present their research in an interactive seminar to teachers and students.

- Ben Koo, Andrew Grillo-Hill and Patricia Caldera, UCSF/SEP, San Francisco, CA

The Mathematics of Population Growth

Gold • Capacity: 40
Hands-On Workshop • Environment/
Ecology • HS

Participants assume the roles of five hypothetical families each with very different reproductive strategies. The total population after 100 years is presented with amazing differences.

- William Leonard, Clemson University, Clemson, SC; John Penick, North Carolina State University, Raleigh, NC

Biology @ Your Library

Governor's Square 9 • Capacity: 60
Demonstration • Instr.Strategies & Technologies • GA

Make the most of library and online resources including: best online and database resources, fiction and nonfiction

books for biology assignments, and technology for student presentations

- Mary Morgan and Evelyn Scott, Cherry Creek HS, Greenwood Village, CO

**Using the World’s Resources—
Common Resources, Shared
Consequences**

Governor’s Square 10 • Capacity: 100
Hands-On Workshop • Environment/
Ecology • HS 4C

Experience activities designed to help students evaluate issues of population growth, resource consumption, and resource management, and consider the consequences associated with peoples’ decisions.

- Paul Numedahl and Anne Westbrook, BSCS, Colorado Springs, CO

Exploring Diffusion and Osmosis

Governor’s Square 11 • Capacity: 100
Exhibitor Demonstration • Instr.Strategies
& Technologies • HS 2C

Explore PASCO’s state-of-the-art science teaching solutions to one of the toughest aspects of biological investigations: diffusion and osmosis. In this hands-on workshop, you will participate in standards-based probeware lab activities from PASCO’s new biology curriculum.

- Nassim Lewis, PASCO scientific, Roseville, CA; Ryan Reardon, Alabama School of Fine Arts, Birmingham, AL; Michelle Spigner, Spring Valley HS, Columbia, SC

4Y Strand

**The Fertility Game: Negotiating
Assisted Reproductive Technology**

Governor’s Square 12 • Capacity: 100
Hands-On Workshop • Bioethics • HS 4C

Participants will receive materials to make their own board game that introduces ethical dilemmas of assisted reproductive technologies.

- William Beachly, Hastings College, Hastings, NE; Amy Morris, Hastings College, Hastings, NE

**Explore the Next Generation of
Instructional Technology on Biology.com**

Governor’s Square 14 • Capacity: 120
Exhibitor Demonstration • Instr.Strategies
& Technologies • HS

Join Pearson presenter Susan Cory as she explores the dynamic digital components

of the Miller & Levine Biology collection: Biology.com. This robust digital support includes a wealth of assets, such as complete online Student and Teacher’s Editions with audio and editable worksheets, interactive multimedia, games, and online assessments with remediation—a sophisticated classroom management system that offers a seamless transition from the textbook.

- Susan Cory, Pearson, Upper Saddle River, NJ

Marine Science Mania III

Governor’s Square 15 • Capacity: 120
Hands-On Workshop • Oceanography/
Marine Biology • HS

Are you or will you be teaching a marine biology or oceanography course? Are you interested in activities devoted to physical, geological, biological, or chemical oceanography? If either answer is yes, then attend Marine Science ManiaIII!

- Thomas Froats, Prospect HS, Mount Prospect, IL

Funatomy & Easyology

Governor’s Square 16 • Capacity: 120
Hands-On Workshop • Physiology • JH HS

Funatomy and Easyology is a kinesthetic approach to teaching the 11 major human body systems with activities that actively engage students in learning.

- Brenda Royal, MLK Magnet HS for Science & Engineering, Nashville, TN

**Ready-To-Go Problems and Activities
for Group Problem Solving in
Chemistry, Biology, and Math**

Governor’s Square 17 • Capacity: 120
Hands-On Workshop • Instr.Strategies &
Technologies • HS 4C

Attendees will walk away with a packet of proven activities for engaging groups of students in problem solving and improving conceptual understanding. Door prizes!!

- Tracey Hickox, School of Integrative Biology/University of Illinois, Urbana, IL; Gretchen Adams and Jennifer McNeilly, University of Illinois, Urbana, IL

Teaching AP Biology with Toys

Plaza Court 1 Capacity: 75
Hands-On Workshop Instr.Strategies &
Technologies HS 2C

Two former AP teachers who currently work with an AP incentive grant serving

a large spectrum of students will use toys to teach advanced biological concepts. Teachers will be given the opportunity to see toys and handmade manipulatives used to teach AP biology.

- Susan Ramsey, Virginia Advanced Study Strategies, South Boston, VA; Robert Summers, A+ College Ready, Montgomery, AL

4Y Strand

**Understanding Cardiovascular
Disease**

Plaza Court 2 Capacity: 75
Paper Human Health & Public Health 2C
4C

This workshop takes a closer look at some of the factors that contribute to the development of cardiovascular disease.

- Jeff Simpson, Metropolitan State College of Denver, Denver, CO

**Developing a Successful GK-12
Program: Creating a Learning
Environment in which Graduate
Fellows, High School Teachers, and
High School Students Thrive**

Plaza Court 3 Capacity: 75
Symposium Teacher Prep/Professional
Development HS 4C

The University of Delaware and the New Castle County Vo-Tech School District collaborated through an NSF GK-12 grant. School district teachers were paired with graduate science students in their classrooms to provide richer instruction for the high school students. This grant provided professional development, materials, and support for the teachers involved and helped graduate fellows learn to communicate their research to a broader audience.

- Amelia Quillen, New Castle County Vo-Tech HS, Wilmington, DE; Kate Scantlebury, University of Delaware, Newark, DE; Brian Gross, Delcastle HS, Wilmington, DE; Mike Kittel, St. George’s HS, Middleton, DE; Brian Heeney, Delcastle Technical HS, Wilmington, DE

AP Biology Teachers’ Open Forum

Plaza Court 4 • Capacity: 75
Paper • General Biology • HS

Join other AP Biology teachers and the AP Biology Development Committee for a discussion of teaching strategies, the

1:00 pm - 2:15 pm

continued

2009 Exam, and other issues and concerns.

- Franklin Bell, Mercersburg Academy, Mercersburg, PA; Domenic Castignetti, Loyola University-Chicago, Chicago, IL

Beyond Marshmallows: Using Molecular Models To Teach Biochemical Concepts

Plaza Court 6 • Capacity: 60
Hands-On Workshop • Instr.Strategies & Technologies • JH HS

In this hands-on workshop, participants will use a variety of different molecular model kits to: study biologically important properties of water, learn essential biochemical functional groups, demonstrate four levels of protein structure, and complete step-by-step modification and conversion of intermediates in the Krebs and Calvin cycles. Assessment strategies will be included.

- William Anderson and Sandra Litvin, Unionville HS, Kennett Square, PA

Doing DNA Electrophoresis Simply – with E-Gels®!

Plaza Court 7 • Capacity: 60
Exhibitor Demonstration • Genetics • GA

See how fast and simple it is to load, run, and analyze DNA using E-Gels®. Participants are introduced to our new Inquiry Investigations™ biotechnology series; will learn about DNA forensic technology; and solve a murder mystery by imaging and analyzing DNA. Participants will receive a program resource CD and correlations.

- Doug Welles, Frey Scientific, Nashua, NH

BIO@GBS: Q1

Plaza Court 8 • Capacity: 32
Hands-On Workshop • General Biology • HS 4C

Attendees receive Web access to more than 100 labs, activities, and resources (original and adapted) taught by the biology team at Glenbrook South HS from the first day of school until the end of the first quarter.

- Christopher Hilvert, Glenbrook South HS, Glenview, IL

Enhance Your AP Biology Presentations Using Teacher-Generated and Free Resources from the Howard Hughes Medical Institute.

Spruce • Capacity: 90
Symposium • General Biology • HS GA

Animations, video clips, and virtual labs that include meiosis, sex determination, X-inactivation, tool kit genes, chemical switches, obesity, stem cells, cancer, aging, cell communication, and HIV will be provided.

- Anthony Bertino, University Albany, Scotia, NY; Patricia Nolan Bertino, Scotia-Glenville HS, Scotia, NY

Evolution Instruction Has Never Been More Important ...

Tower Court A • Capacity: 50
Hands-On Workshop • Evolution • GA

Learn a variety of inquiry-oriented, activity-based lessons that address critical theoretical approaches to evolution in the context of various aspects of biological science.

- Leslie Jones and Marguerite McCartney, Valdosta State University, Valdosta, GA

30+ Activities in 75 Minutes! Engaging At Risk Students in Introductory Biology Classes

Tower Court B • Capacity: 50
Hands-On Workshop • General Biology • HS

A compilation of classroom strategies, labs, hands-on activities, reading strategies, review strategies, media, and assessments used to enhance student performance of at-risk students in the introductory-level biology classroom.

- Marianne Gudmundsson and Mary Ann Ericksen, Glenbrook South HS, Glenbrook, IL

Telling Science Stories: Digital Storytelling

Tower Court C • Capacity: 75
Hands-On Workshop • Instr.Strategies & Technologies • JH GA

Is there a story that helped you learn or remember an idea or concept? How do you, or could you, use storytelling to teach science?

- Patricia Patrick, Bennett College, Greensboro, NC

Kidney Crisis

Tower Court D • Capacity: 75
Hands-On Workshop • General Biology • HS 2C

Follow the case of a young woman whose diabetes leads to kidney failure, dialysis, and the need for an organ transplant. Experience two hands-on activities: *Diagnosing Diabetes* and *Kidney Problems*. Take home a “lab in a bag” kit.

- Dina Markowitz and Susan Holt, University of Rochester, Rochester, NY

BSCS Biology: A Human Approach

Silver • Capacity: 100
Exhibitor Demonstration • General Biology • HS

BSCS Biology: A Human Approach is an NSF-funded, research-based program that introduces students to fundamental concepts in biology and uses inquiry as the overall instructional approach. Participants will explore an engaging activity from the program and in the process, learn about the key features of *BSCS Biology: A Human Approach*.

- Paul Beardsley, BSCS, Colorado Springs, CO

1:00 pm - 3:45 pm

4Y Strand

Four Year University Section Peer-Reviewed Research Symposium

Plaza Court 5 • Capacity: 75
Symposium • Bioethics • 4C GA

Please join the Four-Year University Section for the First Annual Research Symposium. Selected peer-reviewed biology education research papers will be presented. The recipient of the Four-Year Section Biology Research Award will be featured during this time.

Presentations include:

- Thomas Lord, *Comparing Inquiry and Traditional Instruction: Understanding the Nature of Science in Non-Science Majors*
- Beverly Clendening, *Group Problem Solving Sessions Trump Lecture: Results of an Experiment in Teaching*
- Mamta Singh, *Student Performance and Success in Entry-Level Undergraduate Biology Courses*

- Leanne J. Bakke and Michele C. Keike, *Undergraduate Research Driven by Learning Objectives Vs. the Research Question*
- Anne Houtman and Sean Walker, *Stopping Plagiarisms in Biology Writing Assignments: What Works and What Doesn't*
- Ivan Gepner, *A Web-Based System for Practice and Testing of Image Based Knowledge*

Special guest:

- Anneke Metz, the 2009 Four-Year Section Research in Teaching Awardee, will be presenting her research on *Building a Better Biologist: Strengthening Understanding of Statistics in the Undergraduate Classroom*.

1:30 pm - 3:30 pm

Changing the Way We Talk About Science in Introductory Biology Courses

Plaza Ballroom E • Capacity: 70
Hands-On Workshop • Instr.Strategies & Technologies • 2C 4C

Join us as we explore the introductory biology course as a gateway to a life-long appreciation and understanding of biology. In this session we will share resources and models that enhance the learning experiences for the diverse student audience enrolled in introductory courses – resources that incorporate the process of science, showcase the dynamic and creative nature of science, and engage students in real-world issues relevant to their lives. The session will be an active dialogue among the attendees about achieving the optimal intro course, the challenges we face in getting there, and the resources that will make the journey easier. We hope you will join this session, connect with others who share common goals, and add your voice to the national discourse on the direction of introductory biology education.

- Susan Musante, AIBS, Washington, DC

1:30 pm - 4:00 pm

Bio-Rad. Forensic DNA Fingerprinting

Director's Row E • Capacity: 60
Exhibitor Demonstration • Genetics • HS 4C

Use restriction enzyme digestion and DNA gel electrophoresis (popularly known as DNA Fingerprinting) to determine which of a number of suspects could have committed the crime - based on DNA evidence. Extend this kit with a plasmid mapping activity using the plasmid DNA restriction patterns from the experiment. AP Biology Lab 6.

- Essy Levy, Bio-Rad, Hercules, CA

2:30 pm - 3:45 pm

Integrating Biodiversity Issues into an Evolution Classroom

Century • Capacity: 40
Hands-On Workshop • Evolution • HS

Participate in activities that integrate issues related to biodiversity into a standards-based evolution unit at the high school level. Take home classroom-tested strategies to use in your biology class.

- Laura Lenz, UC Berkeley, Berkeley, CA; Maia Willcox, SEPUP UC Berkeley, Berkeley, CA

Life on the Edge: Exploring the Physiological Effects of Space

Colorado • Capacity: 32
Hands-On Workshop • Physiology • JH HS

Discover NASA's hands-on activities that will introduce your students to living and working in space. Experience what it feels like to be an astronaut by learning the physiological effects on the human body during long-duration spaceflight.

- Lisa Brown and Mike McGlone, NASA-Aerospace Education Services Project, Houston, TX

BIOZONE Showcases its Biology Workbooks and Presentation Media (Grades 10-12)

Denver • Capacity: 100
Exhibitor Demonstration • General Biology • HS 2C

BIOZONE's critically acclaimed biology workbooks and presentation media provide cutting-edge, current, and state-of-the-art content. Ideal supplemental resources, the workbooks' highly visual content and write-on format make a winning formula to engage students, facilitating differential learning. Free samples of 2009 editions will be provided to each attendee. See us at Booth # 201.

- Richard Allan, Biozone, Hamilton, NZ

4Y Strand

Give Us Your Finger; Well, Actually We Need Two!

Director's Row J • Capacity: 50
Paper • Genetics • 4C GA

What can two fingers tell us about ourselves? How about propensity for sports, aggressive tendencies, or perhaps the ability to play the stock market? Join us for interesting data on correlations between finger lengths androgen receptors and behaviors.

- Sandra Latourelle and Nancy Elwess, Plattsburgh State University, Plattsburgh, NY

Forensics for the Biology Laboratory

Director's Row H • Capacity: 75
Exhibitor Demonstration • Biotechnology • HS

Invited Speaker • 2:30 pm - 3:45 pm

Plaza Ballroom F

Thomas Cech

University of Colorado, Boulder, CO



Learning To Teach, Teaching To Learn

Dr. Thomas Cech will share stories of his early experiences with balancing research and undergraduate teaching at the University of Colorado. He will then turn to his tenure as President of the Howard Hughes Medical Institute (2000 – 2009), where he established new programs to empower more hands-on, inquiry-based learning at the K-12 and undergraduate levels. Finally, he will describe his return to the University of Colorado, where he is teaching General Chemistry to 160 freshmen this fall and working with the University's Science Education Initiative.

2:30 pm - 3:45 pm

continued

Take a new approach with traditional biology labs—use forensics! Participants perform sample activities from the innovative *Forensics for the Biology Laboratory Manual* and associated kits. The inquiry-based, cooperative learning activities offer real-world applications as students collect forensic evidence and perform experiments to yield results for the courtroom.

- Carolina Biological Supply Company, Burlington, NC

Something New in High School Biology: What's Happening in the Lab?

Governor's Square 9 • Capacity: 60
Demonstration • Instr.Strategies & Technologies • HS

Students are excited about lab activities that connect to “real-world” research/lab methods. These teacher-friendly lab activities help today's learners experience current biology practice/research techniques.

- Dawn Norton, Minnetonka HS, Minnetonka, MN; Brad Ward and Bruce Leventhal, Forest Lake Area HS, Forest Lake, MN

A Climate of Change

Governor's Square 10 • Capacity: 100
Hands-On Workshop • Environment/Ecology • HS GA

Explore data related to climate change for environmental science students and engage in the use of current scientific data to build explanations related to climate change.

- Steve Getty, BSCS, Colorado Springs, CO

Exploring Photosynthesis

Governor's Square 11 • Capacity: 100
Exhibitor Demonstration • Instr.Strategies & Technologies • HS 2C

Explore PASCO's state-of-the-art science teaching solutions to one of the toughest aspects of biological investigations: photosynthesis. In this hands-on workshop, you will participate in standards-based probeware lab activities from PASCO's new biology curriculum.

- Nassim Lewis, PASCO scientific, Roseville, CA; Ryan Reardon, Alabama School of Fine Arts, Birmingham, AL; Michelle Spigner, Spring Valley HS, Columbia, SC

Best Practices in Molecular Biology: Better Transformations, Faster Gels, Stronger Science

Governor's Square 12 • Capacity: 100
Hands-On Workshop • Biotechnology • HS 2C

A method to link three molecular biology labs (transformations, restriction digests, gel electrophoresis) into a single cohesive unit using new and faster reagents and techniques.

- Scott MacClintic and Simon Holdaway, Loomis Chaffee, Windsor, CT

Teaching Cellular Respiration and Meeting the Science Standards with “Biology: Exploring Life”

Governor's Square 14 • Capacity: 120
Exhibitor Demonstration • General Biology • GA

Program co-authors Brad Williamson and Robin Heyden will lead a lab workshop designed to help your students better understand cellular respiration—often considered to be the toughest topic in Introductory Biology. Teachers will receive materials to do this lab with their classes, and other resources from the “Biology: Exploring Life” program will be used.

- Brad Williamson and Robin Heyden, Pearson, Upper Saddle River, NJ

Colorado Spider Survey: A Model Biotic Survey Using Citizen Scientists

Governor's Square 15 • Capacity: 120
Hands-On Workshop • General Biology • GA

The Colorado Spider Survey is a model for biodiversity projects that can be implemented in the classroom to involve students in meaningful scientific research projects.

- Paula Cushing, Denver Museum of Nature & Science, Denver, CO

Investigating and Improving High School Biology Teachers' Understanding of Evolution

Governor's Square 16 • Capacity: 120
Hands-On Workshop • Evolution • HS GA

How well do high school biology teachers understand evolution? Discover the results of a comprehensive survey and experience activities designed to address popular evolutionary misconceptions.

- Patricia Palko and James Platt, University of Denver, Denver, CO

Doing Science While Keeping Your Sanity: Lab Logistics and Experiment Design

Governor's Square 17 • Capacity: 120
Hands-On Workshop • Biotechnology • JH HS

Run your classroom like a real research lab! Teach science through team and individual student work doing science, managing lab classroom activities and keeping costs down.

- Toby Horn and Julie Edmonds, Carnegie Institution, Washington, DC; John Solano and Monique Petersen, Ballou HS, Washington, DC

Extreme Animals and Human Health/Medicine

Plaza Court 1 • Capacity: 75
Exhibitor Demonstration • Physiology • JH HS

Relate the effects of exercise on heart and breathing rates in humans to that in extreme animal models to understand the broader relevance on clinical health. Take home lessons, free audio/visual materials, and assessment tools. A follow up to the earlier session, “Lessons Learned from Marine Mammals.”

- Shane Kanatous, Colorado State University, Fort Collins, CO; Mel Limson, American Physiological Society, Bethesda, MD

Blogs and Podcasts, Wiki Sites and Streamed Video, Oh My! (Continued . . .)

Plaza Court 2 • Capacity: 75
Demonstration • Instr.Strategies & Technologies • GA

Explore the newest tools, techniques, and technologies that will enhance your science classroom. Do you blog? Do you wiki? Do you vodcast? You should! Your students do!! This workshop will help all of the participants “geek-up” just a little bit. This is a continuation and a new improved version !!!

- Richard Benz, Lake County Educational Service Center, Concord, OH

EDVOTEK Biotechnology™—Biotechnology on a Budget

Plaza Court 3 • Capacity: 75
Exhibitor Demonstration • Biotechnology • HS

Bring DNA, genetics, and biotechnology to life in your classroom with exciting,

affordable, and ready-to-use activities including genetics games, DNA extraction, spooling, and DNA electrophoresis using fluorescent dyes. Participants are automatically entered into a raffle for a free classroom electrophoresis setup (a \$500 value)!

- Jack Chirikjian, Edvotek, Bethesda, MD

The Future of Advanced Placement Biology

Plaza Court 4 • Capacity: 75
Paper • Teacher Prep/Professional Development • HS 4C

An overview of the content and scientific practices which define the new AP Biology course, and the new instructional materials which support it.

- Sharon Radford, Paideia School, Atlanta, GA; Spencer Benson, University of Maryland, College Park, MD

Quickie Tips for Running a Smooth Biology Class

Plaza Court 6 • Capacity: 60
Demonstration • Instr.Strategies & Technologies • JH HS

Four biology teachers with nearly 100 collective years of experience will share tested strategies you'll be able to take back to your classes.

- Jenn Romano, Jen Albanese, Dave Szaroleta and Phil Vavala, Salesianum School, Wilmington, DE

Pattern Recognition: Bacteriophage Bioinformatics

Plaza Court 7 • Capacity: 32
Paper • Genetics • GA

Bacteriophages are the most numerous organisms on Earth. Learn how your students can isolate novel bacteriophages from the environment and use the latest bioinformatic tools to characterize and analyze their genomes.

- Deborah Jacobs-Sera, University of Pittsburgh, Pittsburgh, PA; Susan Offner, Lexington HS, Lexington, MA

Breeding *Drosophila* To Teach Homeobox Genetics and the History and Importance of Model Organisms in Research

Plaza Court 8 • Capacity: 32
Demonstration • Genetics • HS 4C

Discussion of the importance of model organisms, history of great Fly People

and their research, and homeobox function in embryological development. View *Drosophila* through dissecting scopes and see demonstrations of how to establish stock cultures in your classroom.

- Robin Cochran-Dirksen, Lead-Deadwood HS, Lead, SD

Amazing Things Cells Can Do

Silver • Capacity: 100
Hands-On Workshop • Genetics • JH HS

Bring your cell unit alive with a 3-D movie and interactive animations! Online and classroom activities explore organelles, cell communication, size, and scale. Free at <http://learn.genetics.utah.edu>.

- Louisa Stark, University of Utah Genetic Science Learning Center, Salt Lake City, UT

Teacher-Generated and Free Resources from the Howard Hughes Medical Institute To Enrich Lessons on the Brain: Organization, Development, Memory Storage, and Behavioral Control

Spruce • Capacity: 90
Symposium • General Biology • HS GA

View highlights from the Holiday Lecture Series on the Brain *Making Your Mind: Molecules, Motion and Memory*, including animations, video clips, and a virtual lab. Review the latest research and obtain free teacher-generated resources.

- Anthony Bertino, University Albany, Scotia, NY; Patricia Nolan Bertino, Scotia-Glenville HS, Scotia, NY

Why We Should Teach Hominin Evolution: Opportunities To Investigate Hypotheses

Tower Court A • Capacity: 50
Hands-On Workshop • Evolution • GA

Enjoy a workshop used with students focused on teaching and understanding hominin evolution integrating hypoth-

eses, replica skulls, and phylogenetic analyses.

- Norman Thomson, University of Georgia, Athens, GA

A Starfish Can Grow a New Arm; Why Can't I? Classroom Tissue Engineering

Tower Court B • Capacity: 50
Hands-On Workshop • Biotechnology • JH HS

Revolutionize your science courses by using a tissue engineering (TE) education manual and additional enhancements to nationally disseminated curricula (e.g FOSS, SEPUP, and Diversity of Life) to enrich the minds of teachers and to greatly enhance student interest and science process skills providing a unique opportunity to relate the science of life to the experience of living by infusing cutting-edge TE and stem cell concepts into the classroom.

- Mark Krotec, Pittsburgh Central Catholic HS, Pittsburgh, PA; Joan Schanck, Pittsburgh Tissue Engineering, Pittsburgh, PA

Connecting Biology Students to the Nature and Process of Science

Tower Court C • Capacity: 75
Hands-On Workshop • Instr.Strategies & Technologies • JH HS

Engage in activities to teach the nature and process of science within mandated biology content. Explore a new Web resource that makes it easy!

- Anna Thanukos and Judy Scotchmoor, University of California Museum of Paleontology, Berkeley, CA

Enhancing Molecular Reasoning Using Guided Inquiry and Molecular Simulations

Tower Court D • Capacity: 75
Hands-On Workshop • General Biology • HS 2C

Exhibit Hall Grand Opening • 4:00 pm - 7:00 pm

Plaza Ballroom ABC

Plan to arrive early and watch the Exhibit Hall come to life. You are the guest of honor and the exhibitors want you to know it. View state-of-the-art equipment and demonstrations that will inspire you. Develop relationships with companies that can help you be a better teacher. Take away free samples for your classroom and colleagues back home.

2:30 pm - 3:45 pm

continued

Explore inquiry-based activities that use dynamic models and simulations to guide students from the phenomena of their everyday lives to the molecular basis of life.

- Frieda Reichsman, The Concord Consortium, Concord, MA

7:00 pm - 9:00 pm

NABT BioClub Reception

Governor's Square 10

The NABT BioClub had a great year, with more than 40 clubs launched at high schools and community colleges in both the United States and Canada. Help make 2010 even better by joining other BioClub advisors for this special evening reception and celebration. Everyone is welcome, so come meet your colleagues and learn how to start a BioClub Chapter at your school.

- Sponsored by Carolina Biological Supply Company

Two-Year Section Reception

Governor's Square 17

All Two-Year/ Community College Educators are invited to meet and greet their colleagues at this informal reception. Share stories, learn what's happening in undergraduate education, and join one of the fastest growing sections at NABT!

- Sponsored by LabPaq

Four-Year Reception & Poster Session

Plaza Ballroom E • Capacity: 75

Come join the Four-Year College/ University Section for this popular reception. In addition to the social event, the Section will be hosting a peer-reviewed poster session featuring 20 entries. The reception and poster session are the perfect complement to the Professional Development Summit and Research Symposium also hosted by the Four-Year College/University Section.

- Sponsored by John Wiley & Sons
Presentations will include:

#1. 2D:4D Finger Ratios

- Thomas Breslin, SUNY Plattsburgh, Plattsburgh, NY

#2. Sry and Its Presence in *Paramecium tetraurelia*

- Nathaniel Johnson, SUNY Plattsburgh, Rochester, NY

#3. Teaching the Invertebrate Phyla in One Laboratory Session

- Elizabeth Davis-Berg, Columbia College, Chicago, IL

#4. Student Literacy and Attitudes About Eugenics, Genetics, and Evolution

- Fred Schnee, Loras College, Dubuque, IA; Andrea Bixler, Clarke College, Dubuque, IA

#5. Inquiry-Based Web Curricula in Development, Microscopy, Physiology, and Environmental Science

- Jason Hodin, Stanford University - Hopkins Marine Station, Pacific Grove, CA

#6. Survey Design and Tracking "Hot" Issues in Biology

- Cindy Gerstner and Nellie Khalil, Columbia College Chicago, Chicago, IL

#7. Y Chromosomal Mapping of Ancient Tipu Mayan Skeletons

- Natasha Mead, SUNY Plattsburgh, Plattsburgh, NY

#8. Using Computational Resources To Support Undergraduate Student Research in Courses: Mining, Pooling, and Analyzing Data Collaboratively

- Sam Donovan, University of Pittsburgh, Pittsburgh, PA

#9. Use of an Improved Isolated Chicken Embryonic Heart *In Vitro* System To Study Vertebrate Heart Development and Physiology

- Dave Foram and Jacqueline McLaughlin, The Pennsylvania State University, Fogelsville, PA

#10. Genetically-Modified Commercial Corn Products: How Do Students Know What They Are Eating?

- Katherine O'Shaughnessy, Capital University, Columbus, OH

**#11. Group Problem-Solving Sessions
Trump Lecture: Results of an Experiment in Teaching**

- Beverly Clendening, Hofstra University, Hempsted, NY

#12. A Follow-Up Study of Undergraduate Research Program Alumni: Career Pathways

- Ashley Campbell, West Texas A&M University, Canyon, TX

#13. Inquiry-2-Insight: An International Environmental Science Collaboration

- Pam Miller, G. Fauville, Jason Hodin, J. Haws, and David Epel, Stanford University, Pacific Grove, CA

#14. Case Studies on Local Land Use Change

- William Kroen, Wesley College, Dover, DE

#15. Making Natural Connections: An Authentic Field Research Collaboration

- Susan Flowers, Washington University in St. Louis, St. Louis, MO

#16. Avoiding Plagiarism: Using Student-Facilitated, In-Class Workshops

- Erica Kipp, Pace University, New York, NY

#17. Collaboration Works: A Science Pipeline for South Carolina

- Robert Ballard, Clemson University, Clemson, SC

#18. Watershed Assessment Lab: Monitoring Westhampton Lake

- Maren Reiner, University of Richmond, Richmond, VA

#19. A Project-Based Laboratory Course Using Microarrays as an Effective Tool To Develop Students' Scientific Skills

- Michelle Borrero, University of Puerto Rico

#20. Using Two-Week Learning Cycle Blocks (LCBs) in General Studies Biology: Pros and Cons

- J. Rushin, D. Ashley, C. Chevalier, J. Baker, M. Daggett, T. Eckdahl, K. Hartman, K. Koy and K. Walton Missouri Western State University, St. Joseph, MO