



#NABT2014

“Bridging the Gap”

2014 NABT Undergraduate Biology Professional Development Summit

Friday, November 14
10:15am – 3:45pm
Room 23

This year’s summit focuses on solutions for the diffusion of innovation and projects that foster stronger connections between faculty across departments, institutions, and the biology education community.

Summit moderated by: **Jacqueline McLaughlin**, The Pennsylvania State University, Center Valley, PA
Anneke M. Metz, Southern Illinois University Carbondale, IL

10:15am – 10:25am **Symposium Introduction: Bridging the Gap** — Anneke M. Metz

10:25am – 11:00am **Keynote: Undergraduate Biology Education: The View from 20,000 Feet**

Erin Dolan, University of Texas at Austin, Austin, TX, Executive Director of the Texas Institute for Discovery Education in Sciences, Editor-in-Chief, *CBE-Life Science Education*

MORNING SESSION — TRAINING AND TRANSITIONS

11:00am – 11:25am **A Cross-Departmental Initiative for Implementing an Active-Learning Curriculum in a Non-Majors Biology Course**

Jeffery W. Bonner and Grant E. Gardner, Middle Tennessee State University, Murfreesboro, TN

Jennifer M. Landin, Miriam Ferzli & Damian Shea, North Carolina State University, Raleigh, NC

11:25am – 11:50am **Engaging Faculty and Students in Informed Design Case Studies that Reinforce Course Content Application**

Brian R. Shmaefsky, Lone Star College – Kingwood, Houston, TX

11:50am – 12:15pm **Let’s BEIn: Building Excellence in Genetics Instruction**

Michael J. Dougherty, American Society of Human Genetics, Bethesda, MD

12:15pm – 1:30pm LUNCH BREAK

AFTERNOON SESSION — INTERCOLLEGE CONNECTIONS

1:30pm – 1:55pm **Bringing an Inquiry-based Research Experience to a General Biology Laboratory Course: A Partnership between a 4-Year University and a 2-Year College**

Christine M. Goedhart, Citrus College, Glendora, CA

Melissa S. Coyle & Jacqueline S. McLaughlin, The Pennsylvania State University, Center Valley, PA

1:55pm – 2:20pm **Using Society Memberships and Vision and Change to Bridge the Gap between 2- and 4-Year Institutions**

Sharon Gusky and Tara Jo Holmberg, Northwestern Connecticut Community College, Winchester, CT

Barbara Nicholson, Central Connecticut State University, New Britain, CT

2:20pm – 2:45pm **The Northwest Biosciences Consortium: Bringing Vision and Change to Introductory Biology in Variable Institutions**

Erin Baumgartner, Western Oregon University, Monmouth, OR

Lori Kayes, Oregon State University, Corvallis, OR

Stacey Kiser, Lane Community College, Eugene, OR

2:45pm – 3:10pm **Wrap up and Future Directions**

Susan Musante, American Institute of Biological Sciences &, Washington State University

STRETCH BREAK

3:15pm – 3:45pm **Nature’s Pharmacy, Foraging for Plants That Can Heal, A Lab for Multi-Level Biology**
2014 NABT Four-Year College & University Section Biology Teaching Award Winner,
Jan Haldeman, Erskine College, Due West, SC

7:00am – 8:15am

Four-Year Section Breakfast Meeting

\$ Room 4 • Special Program
Tickets Required • 4Y GA

Join the Four-Year College & University Section for their annual breakfast and business meeting. This event will include a special presentation of the Four-Year College & University Biology Research in Teaching and Four-Year College & University Biology Teaching Awards. The winners of the *Student Research Award* and *Student Travel Award* will also be recognized.

Two-Year Section Business Meeting

Room 5 • Special Program • 2Y GA

Get your breakfast to-go and head to the Two-Year College Section Meeting. Join other community college instructors to discuss initiatives impacting undergraduate education, challenges unique to teaching at this level, and programs and opportunities that will enhance your practice. All two-year and community college instructors are invited to attend.

NABT BioClub Breakfast

Room 6 • Special Program • MS HS
2Y 4Y GA

The NABT BioClub continues to grow, and boasts clubs from middle schools to community colleges throughout the United States and Canada. Both *current* and *future* BioClub Advisors are invited to share resources, feedback and stories about their chapters. Join the club (BioClub that is)!

Sponsored by **CAROLINA**
www.carolina.com

8:30am – 9:30am

GENERAL SESSION

Briana Pobiner, Ph.D.

See page 8 for biography.

The Real Paleodiet: What Our Ancestors Ate and How We Know

Grand Ballroom A • Special
Speaker

“What was the *real* “paleodiet,” and how do we know? Dr. Briana Pobiner presents facts, fallacies, and fantasies in our understanding of the prehistoric human diet. She outlines the three significant changes in the evolution of human diets with a focus on the increase in meat-eating starting about 2.6 million years ago, discussing what makes human meat-eating unique, followed by the advent of cooking and the domestication of animals and plants. Using a variety of lines of evidence including the morphology, bone chemistry, and tooth microwear of early human fossils, butchered animal bone fossils, microscopic plant fossils left on the teeth of early humans, ancient stone tool technology, and living human hunter-gatherer and chimpanzee diets, she argues that prehistoric human diets most likely varied widely by season, time period, and geography. Finally, she gives examples of more recent human dietary evolution and questions the notion that many modern diseases are a result of us being ‘maladapted’ to our current diets.

9:30am – 10:15am

Exhibit Hall Coffee Break

Hall A • Special Event

Stop by the Exhibit Hall for a quick “pick me up” before you embark on another great day of NABT conference programs.

Sponsored by **BIO**
CORPORATION

10:15am – 3:45pm

Undergraduate Biology Development Summit: *Bridging the Gap*

Room 23 • Symposium • 2Y 4Y

Building on last year’s summit on *Vision and Change*, the theme of this year’s event will highlight current efforts that are “Bridging the Gap.” The summit will showcase solutions for the diffusion of innovation as well as projects that foster stronger connections between faculty across departments, institutions, and the biology education community.

See the previous page for a full listing of featured presentations.

10:15am – 11:30am

INVITED SPEAKER

Merry Lindsey, Ph.D.

See page 10 for biography.

Cardiac Wound Healing After a Heart Attack

Room 25B • Special Speaker

Following myocardial infarction (MI), the left ventricle (LV) responds by undergoing a series of changes that involve wall thinning, dilation, and infarct expansion; inflammation and necrotic myocyte resorption; and fibroblast accumulation and scar formation. Collectively, these events are referred to as LV remodeling. While LV remodeling is initially a compensatory response, the transition to adverse remodeling frequently culminates in the development of congestive heart failure (CHF), and CHF is a significant contributor to high cardiovascular morbidity and mortality rates for the MI patient. This talk will define LV remodeling, with particular emphasis on the inflammatory cell (macrophage) and enzyme (matrix metalloproteinase) dependent mechanisms that stimulate the extracellular matrix wound healing process.

abbrev.
key

- GA:** General Audience
- E:** Elementary
- JH:** Middle/Jr. High School
- HS:** High School
- 2C:** Two-Year College
- 4C:** Four-Year College
- ES:** Exhibitor Session





10:15am – 11:30am

continued

#ES30 Cellular Respiration, Natural Selection, Experimental Design

Room 3 • Hands-on Workshop (75 min) • General Biology • 2Y 4Y

SimBio Virtual Labs explore biology topics using interactive simulations. Three new modules that let students tinker with the machinery of cellular respiration, investigate the mechanisms of natural selection, and learn how to design good experiments.

Eli Meir (kat@simbio.com), SimBio, Ithaca, NY

#629 Carbon TIME: Free Research-Based Curriculum for Teaching Carbon-Transforming Processes to Develop Environmental Science Literacy

Room 9 (Session A) • Demonstration (30 min) • Environment/Ecology • MS HS GA

Free online Carbon TIME materials are aligned to NGSS and focus on tracing matter & energy through photosynthesis, cellular respiration, digestion, biosynthesis, and combustion to support students in developing scientific accounts of these processes.

Wendy Johnson (john3062@msu.edu), Michigan State University, East Lansing, MI

#672 Implementing Vision and Change: Concept Maps as a Student-Centered Approach for Teaching Photosynthesis to Undergraduate Students

Room 9 (Session B) • Paper (30 min) • Plant Biology • 4Y

Results presented comparing two student groups to demonstrate the value of concept maps as an active-learning tool. Results also permitted identification of common misconceptions prevalent in both groups.

Valerie Haywood (vxh20@case.edu), Case Western Reserve University, Cleveland, OH

#691 BSCS Presents: Build Students' Understanding of Ecology Concepts Through Scientific Argumentation

Room 10 • Hands-on Workshop (75 min) • Environment/Ecology • HS 2Y

Experience an activity to help students learn ecology concepts and build scientific explanation skills. Consider adaptations of the activity for different points in your unit.

April Gardner and Jane Larson, BSCS, Colorado Springs, CO

#572 "Can You Explain That?" Inquiring Minds Want to Know

Room 11 • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • MS HS

Want to experience evidence-based reasoning? Improve your students' science writing skills? Help your students make Evidence-Based Claims? Learn new reading & writing strategies to support the AP Biology Science Practices, NGSS, and Common Core (CCS).

Cheryl Ann Hollinger (biobabe07@hotmail.com), Science Consultant, Portland, OR and Nicole Veltre-Luton, Digital Harbor High School, Baltimore, MD

#649 NABT Teacher Cafe: Connecting Secondary and College Classroom Teachers

Room 12 • Hands-on Workshop (75 min) • Global Perspective • HS 2Y 4Y

Why are you coming to NABT? To collaborate with other great biology teachers? Bring your ideas to this facilitated building session designed to foster a dialogue between high school and college teachers about building bridges for student success.

Bethany Dixon (bdixon@rocklinacademy.org), Western Sierra Collegiate Academy, Rocklin, CA

#684 Joining The American Biology Teacher Team: Writing and Reviewing for the ABT

Room 13 • Demonstration (75 min) • Instructional Strategies/Technologies • E MS HS 2Y 4Y GA

The editors of *The American Biology Teacher (ABT)* will discuss all aspects of the journal from an introduction to the vision for *ABT* to the preparation, submission and review of manuscripts. Potential authors are especially encouraged to bring ideas to be discussed in a lively workshop designed to help focus an idea into a manuscript worthy of submission. So, if you want to offer suggestions on *The American Biology Teacher*, would like to assist with the important task of reviewing, or have an idea for an article, this is the session for you.

William McComas (ABTeditor@nabt.org), University of Arkansas, Fayetteville, AR

#577 Drugs, Drug Targets and You: An NIH-NIDA Project

Room 14 • Hands-on Workshop (75 min) • Neuroscience • HS 2Y 4Y

Let's talk about drugs! Join us for an exploration of the molecular nature of drugs and drug targets using hands-on engaging materials, including a neurosynapse construction kit to model action potentials and synaptic transmission.

Tim Herman (herman@msoe.edu) and Diane Munzenmaier, Milwaukee School of Engineering Center for BioMolecular Modeling, Milwaukee, WI

#ES41 Inquiry-Based Biology with Vernier

Room 15 • Hands-on Workshop (75 min) • AP Biology • HS 2Y 4Y

Need to add inquiry to your Advanced Placement Biology course? In this hands-on workshop, you will perform investigations using LabQuest 2 with our Gas Pressure Sensor and SpectroVis Plus Spectrophotometer to study enzymes.

John Melville (aharr@vernier.com), Vernier Software & Technology, Beaverton, OR

NEW *from* NORTON

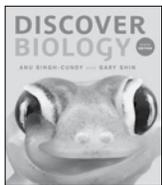


Biology Now

ANNE HOUTMAN, MEGAN SCUDELLARI, CINDY MALONE, ANU SINGH-CUNDY

A balance of science and story, with a focus on the people doing biology now.

• 978-0-393-91892-2

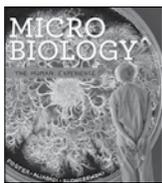


Discover Biology *Sixth Edition*

ANU SINGH-CUNDY, GARY SHIN

Developing scientific literacy through active learning—before, during, and after class.

• 978-0-393-93673-5



Microbiology: The Human Experience *Preliminary Edition*

JOHN W. FOSTER, ZARRINTAJ ALIABADI, JOAN L. SLONCZEWSKI

A case history approach.

• 978-0-393-97858-2

How would you like to assess your students' understanding of core biology concepts?

See how W. W. Norton helps you reach every student, in and out of class: visit Norton Booth 517.

Assessment Resources for Biology Classrooms

- **INQUIZITIVE**, Norton's new formative, adaptive quiz system, helps students build knowledge outside of class through a personalized set of questions. Engaging, gamelike elements and a wide variety of question types motivate students to complete their assignments.
- **SMARTWORK** is a powerful, customizable platform designed to assess where students are, guide them to review core content, and provide instructors with the actionable student performance data they need to do what they do best: teach.
- **THE ULTIMATE GUIDE TO TEACHING BIOLOGY** includes a curated collection of in-class activities from dozens of biology instructors across the country, suggested online videos with discussion questions, clicker questions, sample syllabi, and sample lecture plans.



Facebook.com/NortonScience



Twitter.com/NortonScience

Microbiology, the latest and grossest: yuckfactor.tumblr.com



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Join us for the 2014 NESCent/BEACON Evolution Symposium



Evolution in Action!



Friday November 14th, 2014
Room 25B, Cleveland Convention Center

Evolution in Action draws on the idea that evolutionary change occurs in any system when *replication*, *variation* (mutation) and *differential fitness* (competition) are present. The 2014 Evolution Symposium highlights **BEACON Center** scientists who explore evolutionary processes in experimental systems, apply evolutionary principles of adaptation and resiliency in computer science and engineering design, and use computational systems in tandem with biological experiments to test complex biological hypotheses.

12:15 PM **Welcome/Introduction**

12:30 PM **Digital Darwin: Evolution in Action in Your Computer**

Robert Pennock, Professor, Lyman Briggs College, Dept. of Philosophy, Dept. of Computer Science and Engineering, Ecology and Evolutionary Biology and Behavior Program, Michigan State University.

Evolutionary processes that shape the biological world can also be instantiated in virtual environments in a computer, making possible new sorts of evolutionary experiments and exciting new approaches for inquiry-based learning.

1:15 PM **Examining the Evolution of a Novel Trait in a Long-Term Experiment with *E. coli***

Zachary David Blount, Postdoctoral Research Associate, Michigan State University. Long-term experiments with microorganisms give scientists opportunities to study evolution in action, and to even observe novel traits and reconstruct how they evolve.

2:00 PM **Break**

2:15 PM **Making Scents: How Birds Use Odors to Communicate**

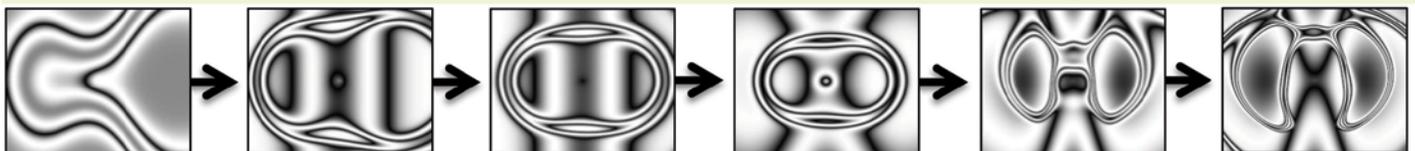
Danielle Whittaker, Managing Director, BEACON Center, Michigan State University. Contrary to long-held beliefs, birds do produce and detect odors, and these new findings have implications for understanding mate choice, speciation, and evolution.

3:00 PM **Ladybugs and Robots: Using Evolutionary Computation to Evolve Complex Behaviors**

Terrence Soule, Professor of Computer Science, University of Idaho. Evolution isn't just biological. Applying the same processes of variation, competition, and replication, in a computational environment, can evolve complex behaviors in robots, and develop learning tools for students.

3:45 **Wrap-up** and book giveaway.

4:15 **End**



Evolution in Action Teacher Workshop; Saturday November 15th 10am-12pm
Room 17, Cleveland Convention Center

10:15am – 11:30am

continued

#ES32 Capturing Student Interest with Digital Interactivity

Room 16 • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • 2Y 4Y

Join an exploration of digital activities in biology courses by viewing interactives created by biology educators and designing your own interactive within a small group. Interactives will be shared prior to a brief conclusion and parting message.

Hannah Robus (hannah.robust@saplinglearning.com), Sapling Learning, Austin TX

#ES33 Oceans of Fun with Water Quality and PASCO Probeware

Room 17 • Hands-on Workshop (75 min) • Environment/Ecology • GA

Have a field day with innovative activities from PASCO's biology lab manuals and water quality sensors including the Optical Dissolved Oxygen Sensor. You'll be blown out of the water when you see how we make field sampling easier than ever before.

Ryan Reardon (droofner@pasco.com), PASCO scientific, Roseville, CA

#ES34 Pipelines, Partnerships, and Finding Funding

Room 18 • Hands-on Workshop (75 min) • General Biology • GA

The purpose of this workshop is to help teachers and other grant-seekers position themselves and their classrooms to find and become maximally competitive for grants and funding for their science projects.

Rusti Berent (rusti_berent@vwr.com), Ward's Science, Rochester, NY

#535 Student Choice AND Standards! A Reflective Portfolio Aligned to the AP Biology Framework

Room 19 • Hands-on Workshop (75 min) • AP Biology • HS

AP Biology requires students to do a large volume of rigorous work. Come see how a standards-based portfolio can collect students' best work, provide opportunities for metacognition, and simplify your grading all at once!

Stephen Traphagen (stephen@mrtraphagen.com), Rolling Meadows High School, Rolling Meadows, IL

#666 Biology's Best from Michigan!

Room 20 • Hands-on Workshop (75 min) • General Biology • MS HS 2Y

Award winning biology teachers from Michigan will present inquiry based lesson plans and units. We will also share engagement strategies and technology we use with our students to keep them actively involved in lessons and driving the curriculum.

Heather Peterson (hpeterso@hpsk12.net), Holt High School, Holt, MI

#542 Peer-Led Team Learning: Deepening the College Introductory Biology Experience

Room 21 • Paper (30 min) • General Biology • 2Y 4Y

Hear about Peer-Led Team Learning (PLTL) and how introductory biology students develop learning skills as they collaboratively solve real-world problems in challenging workshops. We present a study comparing student success with and without PLTL.

Judith Ridgway (ridgway.14@osu.edu), Sara Faust (Faust.60@osu.edu), Amy Kulesza (kulesza.5@osu.edu), Jonathan Horn (Horn.179@osu.edu), and Caroline Breitenberger (breitenberger.1@osu.edu), The Ohio State University, Columbus, OH

#610 What DNA Says About Our Human Family

Room 22 • Demonstration (75 min) • General Biology • HS 2Y 4Y

Come up to the minute with DNA research on human origins and learn simple methods to continue the exploration of this unfolding story in your classroom, including isolating student DNA and performing online analysis of DNA sequences.

Bruce Nash, CSHL- DNA Learning Center, Cold Spring Harbor, NY

#662 Investigating Animal Behavior with *C. elegans*

Room 24 • Hands-on Workshop (75 min) • AP Biology • HS 2Y 4Y

In this hands-on session, use the model organism *C. elegans* to investigate animal behavior and learning. In addition to studying behavior, students can observe developmental stages of the first multicellular organism to have its genome sequenced.

Cindy Gay (cgay@sssd.k12.co.us), Steamboat Springs High School, Steamboat Springs, CO

#645 Tiny Bubbles, Popcorn and More: Modeling Population Demographics

Room 25A • Hands-on Workshop (75 min) • AP Biology • HS

Ecology is all about energy and relationships. Participants will model student learning activities which explore the concepts of logistic and exponential growth, carrying capacity, survivorship curves, and Batsian mimicry.

Pam Close (pclose@columbia.k12.mo.us), Hickman High School, Columbia, MO

#698 HHMI Presents: Transcription and Gene Regulation

Room 26B • Hands-on Workshop (75 min) • Genetics • 2Y 4Y

Explore how HHMI's multimedia resources can be used to demonstrate different mechanisms for regulation of gene expression from molecular, cellular,





10:15am – 11:30am

continued

and evolutionary perspectives. Particular emphasis will be placed on transcriptional regulation.

Elizabeth Rice (ricee@hhmi.org),
Howard Hughes Medical Institute,
Chevy Chase, MD

#531 American Association of Immunologists Presents: High School Teachers Research Program – Immunology Lessons for the Classroom

Room 26C • Symposium • AP Biology • HS

Join our teacher researchers from the *AAI High School Teachers Summer Research Program in Immunology* as they show you units that they developed which bring the excitement of immunology research to students in the classroom.

Clinton Mathias, Western New England University, Springfield, MA; Catherine Dollard, Northampton High School, Northampton, MA; Lori Fretta, Otter Valley Union High School, Brandon, VT; Edwina C. Kinchington, Pittsburgh Science & Technology Academy, Pittsburgh, PA; Beth R. Krauss, Manlius Pebble Hill School, DeWitt, NY; Amy Loewen, Hinkley High School, Aurora, CO; John Seifert, Conrad Weiser High School, Robeson, PA; and Kindra M. Zuberbueller, Middle Creek High School, Apex, NC

11:30am – 12:45pm

Undergraduate Biology Task Force Meeting

Room 5 • Invitation Only

11:45am – 12:45pm

Lunch Break

It's time to take a break and "digest" what you've learned while you digest some food. Don't forget to stop by the Exhibit Hall during this free time.

12:15pm – 4:15pm

2014 NESCent & BEACON Evolution Symposium: Evolution in Action

Room 25B • Symposium • Evolution • GA

Evolution in Action draws on the idea that evolutionary change occurs in any system when replication, variation (mutation) and differential fitness (competition) are present. The 2014 Evolution Symposium highlights BEACON Center scientists who explore evolutionary processes in experimental systems, apply evolutionary principles of adaptation and resiliency in computer science and engineering design, and use computational systems in tandem with biological experiments to test complex biological hypotheses.

See page 50 for a full listing of featured presentations.

1:00pm – 3:45pm

NABT Graduate Student Panel: CV Workshop

Room 13 • Symposium • Instructional Strategies/Technologies • 4Y

How will your CV stack up to the competition? What are your strengths and weaknesses when it comes to getting that first job? Come join a panel of faculty experts to review and critique your CV. You will be able to sit down one on one with a faculty member and have your questions answered! Don't forget to bring an electronic or paper copy of your CV.

Presented by the NABT Graduate Student Committee

#637 Wisconsin Fast Plants Presents: Student-Centered Inquiry

Room 26C • Hands-on Workshop • Instructional Strategies/Technologies • GA

Genetic Variation and the Flowering Plant Life Cycle with Wisconsin Fast Plants (1:00pm – 2:15pm)

Join us in this highly interactive session to learn four short activities

that use Wisconsin Fast Plants to teach about structures and their functions in flowering plants and the genetic and phenotypic variation that occurs through sexual reproduction.

Hedi Baxter Lauffer (hfbaxter@wisc.edu), University of Wisconsin-Madison, Madison, WI

Teaching Quantitative Skills with Wisconsin Fast Plants (2:30pm – 3:45pm)

Bring your computer. Using data from genotypic and phenotypic variation in Fast Plant activities, we will explore the essential role that computers play to help students develop quantitative skills from data exploration to hypothesis testing.

Brad Williamson, University of Kansas, Lawrence, KS

1:00pm – 2:15pm

#ES35 Increase Student Engagement Using Learning Catalytics™

Room 3 • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • HS 2Y 4Y

Bring your web-enabled laptop, smartphone, or tablet to try the *Learning Catalytics* student engagement, assessment, & classroom intelligence system. Biologist Rebecca Orr of Collin College will share active learning examples & results from her class.

Rebecca Orr (rorrr@collin.edu), Pearson / Collin College, Plano, TX

Committee Meeting: Professional Development Committee

Room 7

Catherine Ambos (msambos@gmail.com), Committee Chair

#678 Ecology Meets Molecular Biology:

Let's Hear it for the Frogs

Room 9 • Paper (75 min) • Environment/Ecology • HS 2Y 4Y

This project would be a wonderful interface between high school students

1:00pm – 2:15pm

continued

and a local university. It involves both ecology and molecular biology. Students can enjoy the best of both worlds: outdoors and at the lab bench.

Sandra Latourelle (latours@plattsburgh.edu) and Nancy Elwess (elwessnl@plattsburgh.edu), SUNY Plattsburgh, Plattsburgh, NY

#688 BSCS Presents: Using Evidence-Based Medicine to Teach NGSS Science Practices

Room 10 • Hands-on Workshop (75 min) • General Biology • HS 2Y 4Y

EvidenceWorks is a video case-based module aimed at advanced high school and early college students. Participants will engage in a portion of the evidence-based medicine process to consider a medical question of therapy.

Jody Bintz (jbintz@bscs.org), BSCS, Colorado Springs, CO

#539 Modeling Using Digital Simulations

Room 11 • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • HS

Attend this session to learn how to use and revise digital simulations to model biological concepts. All simulations are available for free, and they are created with free modeling software called NetLogo.

Robert Wallon (rwallon2@illinois.edu), Hillary Lauren (hgzg.lauren@gmail.com), and Barbara Hug (bhug@illinois.edu), University of Illinois at Urbana-Champaign, Champaign, IL

#492 Standards-Based Learning in the Biology Classroom

Room 12 • Symposium (75 min) • Instructional Strategies/Technologies • MS HS GA

This session will discuss standards-based learning/standards-based grading approaches to assessment and instruction in the biology classroom. Participants will be exposed to the "how" and the "why" of the standards-based grading approach.

David Knuffke, Deer Park High School, Deer Park, NY and Robert Kuhn, Centennial High School, Roswell, GA

#579 Genomics and Personalized Medicine: An NIH-SEPA Project

Room 14 • Hands-on Workshop (75 min) • Genetics • HS 2Y 4Y

Come and experience new instructional tools that will expand your teaching of the Central Dogma



The Plus is Us!

We're here to connect you to superior science supplies, plus personalized support.

Connect with Ward's Science at NABT

Attend Hands-on Workshops, Win Science Prizes, and More!

Workshops on November 13th and 14th in Room 18.

Stop by booth #501 to see live product demos and enter to win science prizes!

ward's science+



1:00pm – 2:15pm

continued

of molecular biology to include new developments in genomics. Learn about how genome sequencing impacts health care and precision medicine.

Tim Herman (herman@msoe.edu) and Diane Munzenmaier, Milwaukee School of Engineering Center for BioMolecular Modeling, Milwaukee, WI

#ES36 Field Biology with Vernier

Room 15 • Hands-on Workshop (75 min) • Environment/Ecology • HS 2Y 4Y

Engage students by collecting field data in your Advanced Placement, field biology, and ecology courses. Use Data Matrix mode and internal GPS on LabQuest 2 to get the most out of your long-term field studies.

John Melville (jmelville@vernier.com), Vernier Software & Technology, Beaverton, OR

#ES37 Capturing Student Interest with Digital Interactivity

Room 16 • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • 2Y 4Y

Join an exploration of digital activities in biology courses by viewing interactives created by biology educators and designing your own interactive within a small group. Interactives will be shared prior to a brief conclusion and parting message.

Hannah Robus (hannah.robust@saplinglearning.com), Sapling Learning, Austin, TX

#ES38 Liven Up Your Lab: Sensors for Inquiry in AP® Biology

Room 17 • Hands-on Workshop (75 min) • AP Biology • HS GA

Migrate over to explore how PASCO sensors can help deliver content and inquiry in the new AP® Biology labs. And

you'll breathe easy knowing our free SPARKvue software is easy to use to help grow your students' critical thinking and analysis skills.

Mark Little, PASCO scientific, Roseville, CA

#ES39 Designing For Dollars

Room 18 • Hands-on Workshop (75 min) • General Biology • GA

The purpose of this workshop is to help teachers turn their science education ideas into well designed projects that will engage and excite funders.

Rusti Berent (rusti.berent@vwr.com), Ward's Science, Rochester, NY

#643 From Surviving to Thriving: Making Strides Toward an Amazing AP Biology Career Part II

Room 19 • Symposium (75 min) • AP Biology • HS GA

What's the difference between teaching AP Biology and being a Rock Star AP Biology teacher? How can early-career teachers transition from surviving to innovating in the profession? What keeps great AP Biology teachers in the profession and how can we keep them there? Two novices and a panel of veteran special guests share stories of survival and success in this dialogue. Bring your questions and strategies for enjoying the ride.

Bethany Dixon (bdixon@rocklinacademy.org), Western Sierra Collegiate Academy, Rocklin, CA, Jenny Sarna (jennysarna@gmail.com), Farragut Career Center, Chicago, IL, and Valerie May (vmay@woodstockacademy.org), Woodstock Academy, Woodstock, CT

#651 Digital Biology

Room 20 • Demonstration (75 min) • General Biology • MS HS

Are your students technologically ahead of you? Come learn how to excite and engage them by turning your classroom into a digital classroom using iPads, digital microscopes, wireless cameras, and computers.

Whitney Hagins, Massachusetts Biotechnology Foundation, Cambridge, MA

#670 Gene-Environment Interactions in the Nematode *Caenorhabditis elegans*

Room 21 • Hands-on Workshop • General Biology • HS 2Y

Participants will compare the activity of two nematode strains - wild type and an OSM mutant - at two salt concentrations. Based on analysis of their own and published data, they will describe how gene-environment interactions determine traits.

Maureen Munn (mmunn@u.washington.edu) and Joan Griswold (jcgri@uw.edu), University of Washington, Seattle, WA

#520 Small World Initiative: Crowdsourcing Antibiotic Discovery in the Lab

Room 22 • Demonstration (75 min) • Microbiology & Cell Biology • 2Y 4Y

We have developed an undergraduate independent research lab course in antibiotic discovery from soil bacteria obtained locally. We will demonstrate how you can implement this in your lab, and share your results online with students nationwide.

Todd Kelson, Brigham Young Univ-Idaho, Rexburg, ID and Barb Murdoch, Eastern Connecticut State Univ, Willimantic, CT

#600 Understanding Genomics Through Complex Traits

Room 24 • Hands-on Workshop (75 min) • Genetics • HS 2Y 4Y

Genomics increasingly focuses on complex traits such as autism and height, which expand our understanding of the genetics of "single-gene" traits. Help your students learn the concept of polygenic inheritance using an inquiry-based activity.

Michael Dougherty (mdougherty@ashg.org), American Society of Human Genetics, Bethesda, MD

1:00pm – 2:15pm

continued

#647 Challenging Students (and Us) to Listen, Evaluate, and Think Creatively

Room 25A • Symposium (75 min)
• Instructional Strategies/Technologies • 2Y 4Y

This session will address ways to develop students' abilities to listen empathetically, generate ideas, and evaluate their work. Examples from introductory biology and advanced physiology courses will be demonstrated.

Taylor Allen (tallen@oberlin.edu), Oberlin College, Oberlin, OH, Sharon Gusky (sgusky@nwcc.edu), Northwestern Connecticut Community College, Canton, CT and Karen Klyczek (karen.k.klyczek@uwrf.edu), University of Wisconsin-River Falls, River Falls, WI

#584 Rethinking the Role of Engineering in the Biology Classroom: Designing a Cell to Do Anything You Want!

Room 25C • Hands-on Workshop (75 min) • Microbiology & Cell Biology • MS HS 2Y

Synthetic biology provides a unique opportunity to blend different fields and approaches to spark engagement and learning in a single learning experience. Synthetic Biology is part science, part engineering, part imagination and design.

Lynne Williams, Coronado High School, Colorado Springs, CO, Vyjayanti Joshi, Lake View High School, Chicago, IL and Sherry Annee, Brebeuf Jesuit Preparatory School, Indianapolis, IN

#697 HHMI Presents: Resources for Exploring DNA-Based Phylogenies

Room 26B • Hands-on Workshop (75 min) • Evolution • 2Y 4Y

Discover how to introduce students to basic bioinformatics concepts, explore sequence alignment and tree-building tools, and guide interpretation of align-

ments and phylogenetic trees with free multimedia resources from HHMI.

Satoshi Amagai (amagais@hhmi.org), Howard Hughes Medical Institute, Chevy Chase, MD

2:30pm – 3:45pm

#ES40 MasteringBiology™ Greatest Hits and New Releases

Room 3 • Demonstration • General Biology • HS 2Y 4Y

Whether you're new to *MasteringBiology* or a long-time user of Pearson's widely-used online assessment & tutorial program, this session is for you! Join us for refreshments & share your feedback on existing assignments & new items in development.

Joshua Frost (josh.frost@pearson.com), Pearson Education, San Francisco, CA

Committee Meeting: Membership Committee

Room 7

Sherry Annee (sannee@brebeuf.org) and Sue Trammel (suetrammel@jalc.edu), Committee Co-chairs

Committee Meeting: Retired Members Committee

Room 7

Dennis Gathmann (mpidig@yahoo.com), Committee Chair

#560 Using Simulations in the Environmental Science Classroom

Room 9 • Hands-on Workshop (75 min) • Environment/Ecology • HS 2Y 4Y

Participate in two simulations on environmental issues. *NIMBY*, a landfill-siting scenario, examines the difficulties in dealing with solid waste.



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November 14

2:30pm – 3:45pm

continued

Kildare, an environmental health scenario, investigates a strange disease outbreak in a lakeside town.

Linda Sigismondi (lindas@rio.edu),
University of Rio Grande, Rio Grande, OH

#605 Achieving Success and Motivation with the Common Core and Next Gen Standards in Urban Schools

Room 10 • Hands-on Workshop (75 min) • General Biology • HS

We'll demonstrate and share proven brain research-based differentiation strategies to improve motivation, retention and success for all students.

Gerard Vargas (gvargas@greendot.org), Green Dot Public Schools, Los Angeles, CA and Mark Friedman (mfriedman@animo.org), Animo Leadership Charter High School, Inglewood, CA

#627 Games as Models: Engaging Students in the NGSS Practices

Room 11 • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • MS HS 2Y

Explore how the same learning goals and skills (collecting data, making predictions) utilized in the practice "Developing and Using Models" can be addressed through engaging role-playing games. Join us to play and discuss! Free NIH SEPA materials.

Hillary Lauren (hillary@strangeloop-games.com), Strange Loop Games, Seattle, WA and Barbara Hug (bhug@illinois.edu), University of Illinois at Urbana-Champaign, Champaign, IL

#541 Unpacking Protein Synthesis: A High School Biology Lesson Study

Room 12 (Session B) • Paper (30 min) • General Biology • MS HS

Learn how eight Chicago science teachers tackled the hard-to-teach topic

of Protein Synthesis. In this session, hear takeaways from our collaborative process, receive NGSS-aligned materials, and consider how lesson study can transform your teaching.

Jenny Sarna (jasarna@cps.edu), Chicago Public Schools, Chicago, IL

#589 Using Scientific Data to Promote Student Learning About Epigenetic Inheritance

Room 14 • Hands-on Workshop (75 min) • Genetics • HS 2Y 4Y

Receive and conduct two classroom activities that invite students to interact with data emerging from two epigenetic research projects pertaining to environmental health at University of North Carolina's Gillings School of Public Health.

Dana Haine (dhaine@unc.edu), UNC-Chapel Hill, Chapel Hill, NC

#ES31 Introduction to Biofuels with Vernier and Bio-Rad Laboratories

Room 15 • Hands-on Workshop (75 min) • Biotechnology • HS 2Y 4Y

In this workshop, use LabQuest 2 with a SpectroVis Plus Spectrophotometer and the Biofuel Enzyme Kit from Bio-Rad. Learn how to use our CO₂ Gas Pressure, and Ethanol Sensors in activities developed by the Great Lakes Bioenergy Research Consortium.

John Melville (jmelville@vernier.com), Vernier Software & Technology, Beaverton, OR

#ES42 Increasing Student Engagement with an Online Learning System

Room 16 • Demonstration (75 min) • Instructional Strategies/Technologies • 2Y 4Y

Created by and for educators, Sapling Learning online homework combines freedom of choice, passionately crafted content, targeted feedback, and a personal relationship with a dedicated

Technology TA to engage students and empower educators.

Mickey Scherrer, OpenStax College, Houston, TX

#ES43 How To Turn Your iPad® into a Mobile Science Lab

Room 17 • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • GA

Turn the tables on your tablet in (or out of) your lab with PASCO sensors and SPARKvue HD software. Transform lessons with this practical session using a SPARKlab to show how easy it is to integrate technology into hands-on, inquiry investigations.

Ryan Reardon, PASCO scientific, Roseville, CA

#ES44 Cellular Respiration, Natural Selection, Experimental Design

Room 18 • Hands-on Workshop (75 min) • General Biology • 2Y 4Y

SimBio Virtual Labs explore biology topics using interactive simulations. Three new modules that let students tinker with the machinery of cellular respiration, investigate the mechanisms of natural selection, and learn how to design good experiments.

Eli Meir (kat@simbio.com), SimBio, Ithaca, NY

#544 How Do You Know What They Know?

Room 19 • Hands-on Workshop (75 min) • AP Biology • HS 2Y

This workshop will introduce participants to one of the new AP Biology inquiry labs. We will provide data and then use several formative assessment strategies to enable teachers to quickly check for understanding and guide their instruction.

Cindy Gay (cindyjgay@gmail.com), Steamboat Springs High School, Steamboat Springs, CO and Tamara Pennington (tamara.pennington@weldre4.k12.co.us), Windsor High School, Windsor, CO

2:30pm – 3:45pm

continued

#562 Round Holes and Square Pegs: How do Traditional Biology Activities fit into NGSS?

Room 20 • Hands-on Workshop (75 min) • General Biology • MS HS

Join us as we explore an Expanded DNA Extraction Lab as a model for evaluating traditional biology activities in light of NGSS. Discussion will include: Approaching alignment and modifying existing activities with NGSS. When do I need a new peg?

Jennifer Carden and Madelene Loftin, HudsonAlpha Institute for Biotechnology, Huntsville, AL

#496 The Human Microbiome

Room 21 • Hands-on Workshop (75 min) • General Biology • HS

Explore the ecosystem of the human body. Learn what we're discovering about the body's microbes and how they influence our health. Free materials at <http://learn.genetics.utah.edu>

Louisa Stark, Genetic Science Learning Center, Salt Lake City, UT

#609 Analyzing DNA Sequences to Understand Evolutionary Relationships

Room 22 • Demonstration (75 min) • General Biology • HS 2Y 4Y

Engage students in student-driven research by identifying plants, animals, and food sources through unique DNA barcodes. Use online bioinformatics tools to analyze DNA sequences and create phylogenetic trees.

Bruce Nash, CSHL-DNA Learning Center, Cold Spring Harbor, NY

#532 Anatomy & Physiology - Activities & Strategies

Room 24 • Hands-on Workshop (75 min) • Anatomy & Physiology • MS HS

This presentation demonstrates techniques that make learning human

anatomy and physiology both vivid and memorable. The presentation will highlight modeling, activities, games, and projects that appeal to a variety of learning styles and abilities.

Sylvia Tufts, Dominican University, River Forest, IL

#657 You Can Test the New Skills and Standards with Multiple Choice Questions

Room 25A • Symposium (75 min) • Instructional Strategies/Technologies • MS HS GA

Well-written multiple-choice questions can assess the higher-level skills found in the AP Biology learning objectives and the NGSS. Test developers from Educational Testing Service will share the techniques you can use to write these questions.

Israel Solon (isolon@ets.org) and Mitch Price (mprice@ets.org), Educational Testing Service, Princeton, NJ

#575 How Do I Use the New Next Generation Science Standards in My High School Classroom?

Room 25C • Hands-on Workshop (75 min) • Curriculum Development • MS HS

Experience active learning as you work to familiarize yourself with the newly released NGSS and sample some of the many free resources available in the *Archive of Teaching Resources* that can help. Engage in two hands-on activities from teacher-developed lessons designed to inspire participants to have their students move beyond normal textbook learning into actively engaging students in higher level thinking. Hand-outs of the activities will be provided.

Margaret Shain (mshain@the-aps.org) and Miranda Byse (mbyse@the-aps.org), American Physiological Society (APS), Bethesda, MD

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6:45pm – 11:00pm

HHMI Night at the Movies with Sean Carroll

T Rock & Roll Hall of Fame • Tickets Required

Join us at the 4th Annual *Night at the Movies with Sean Carroll* at the Rock & Roll Hall of Fame.

This year's event will feature a special guest, University of Chicago paleontologist and award-winning author of *Your Inner Fish*, Dr. Neil Shubin. He is joining Dr. Carroll for a screening of the film *Great Transitions: The Origin of Tetrapods*. Starring Dr. Shubin, the film provides a first-hand account of the painstaking search for *Tiktaalik*, a fossil creature with a mix of features common to fish and four-legged animals. The film will be followed by Q&A with Drs. Carroll and Shubin.

There are two showings of the film (7:30pm and 8:30pm), free food and drink, and full admission to the Rock Hall's museum—with plenty of time to tour the venue.

Shuttles will depart from both the Cleveland Marriott Downtown at Key Center and Westin Cleveland Convention Center **starting at 6:45pm.**

Return shuttles will be departing the Rock & Roll Hall of Fame **until 11:00pm.**

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