



FRIDAY
NOVEMBER 13

ABBREVIATION KEY
E: Elementary School
MS: Middle School
HS: High School
2Y: Two-Year College
4Y: Four-Year College
GA: General Audience
AP® is a registered trademark.

7:00AM – 8:15AM NABT BioClub Breakfast

Ballroom D • Meal Function
(Tickets Required) • GA

The NABT BioClub keeps adding new 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)!

The BioClub Breakfast is made possible through the generous support of

CAROLINA
www.carolina.com

7:30AM – 8:15AM Two-Year Section Bring Your Own Breakfast (BYOB) Meeting

Narragansett Ballroom C • Committee Meeting (45 min) • 2Y

Get your breakfast to-go and head to this meeting with the Two-Year College Section. Discuss programs and opportunities that support teachers at this level. All two-year, junior, and community college instructors are invited to attend.

Sharon Lee-Bond, Northampton Community College, Bethlehem, PA

8:30AM – 9:30AM

GENERAL SESSION SPEAKER

Hopi E. Hoekstra

See page 9 for biography.

Digging for Genes that Affect Behavior

Ballroom A • Special Speaker • General Audience

Understanding which genes affect important behaviors, and how they work in the brain, remains a major challenge in biology. To address this goal, Dr. Hoekstra and her team are capitalizing on natural variation in behavior within and between species of deer mice (genus *Peromyscus*). In this talk, Dr. Hoekstra will focus on an innate behavior – burrowing, which produces an intriguing and complex animal architecture – to explore the genetics and neurobiology of behavioral evolution. She will then reflect on how studying natural variation in mice can shed light onto the genetics of human behavior.

9:30AM – 11:30AM AP Biology Academy Debrief

Ballroom D • Invitation Only

10:15AM – 11:30AM #921 How To Use Tree Thinking To Teach Plant Diversity and Evolution

550A & 550B • Evolution • Hands-on Workshop (75 min) • MS, HS, 2Y, 4Y

This workshop presents Huxley Award-winning activities for using phylogenetic tree thinking to teach plant evolution and diversity to students from middle school to college levels.

This session is a special presentation by the recipient of the 2015 Huxley Award presented by the Society for the Study of Evolution (SSE).

Phil Gibson, University of Oklahoma, Norman, OK

#840 Introducing IBIS: Integrating Biology with Inquiry Skills

551A • General Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Join us for an overview of our inquiry-based, mixed major introductory biology curriculum, and a sampling of lecture and lab investigations. We will also share learning objectives and assessments, and ways to promote an inquiry-learning environment.

Suann Yang, Troy Nash, Rachel Pigg, Presbyterian College, Clinton, SC and Tarren Shaw, University of Oklahoma, Norman, OK

#809 Genetics, Ethics, and Murder!

552A • General Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

How are modern DNA profiles generated? Are new collection, storage, and searching norms okay? Explore modern DNA forensic analysis by cracking a fictional double homicide and examining ethical issues raised by real court cases.

Dana Waring, Harvard Medical School, Boston, MA and Katherine Lontok, American Society of Human Genetics, Bethesda, MD

#757 Let's Get Helical: Exploring DNA Structure and Function with Physical Models

552B • General Biology • Hands-on Workshop (75 min) • MS, HS, 4Y

DNA is both a structure and a source of information. Explore both features with interactive DNA models and a paper bioinformatics exercise focusing on the beta subunit of hemoglobin, including the point mutation that leads to sickle cell disease.

Margaret Franzen and Diane Munzenmaier, MSOE, Milwaukee, WI

10:15AM – 11:30AM *continued*
**#ES19 Accelerate Learning:
 Demystifying Biology NGSS with
 STEMscopes**

554A • General Biology • Hands-on Workshop
 (75 min) • MS, HS

Use the 5E with us as we investigate a Biology lesson in STEMscopes. This engaging, hands-on investigation will model collaboration techniques, vocabulary integration, facilitating questions, and formative assessments for student achievement gains.

Terry Talley, Accelerate Learning – STEMscopes,
 Houston, TX

**#ES20 miniPCR PTC Taster Lab: from
 Genotype to Phenotype**

554B • Genetics • Hands-on Workshop
 (75 min) • MS, HS, 2Y, 4Y, GA

Explore the molecular genetics of sensory perception. DNA changes in taste receptor genes can alter our ability to taste. Take a cheek swab, use PCR and gel electrophoresis to study your own taste receptor genes. See how taste is encoded in your DNA!

Sebastian Kraves, miniPCR, Cambridge, MA

**#716 A True and Proven Successful
 Pre AP and AP Curriculum Ladder
 from Middle School to AP**

555A • Curriculum Development • Demonstration
 (75 min) • MS, HS, GA

Is your school or feeder system looking for a proven successful, easy to implement, teacher- and student-friendly free set of science curriculums? If so, then this is your session. Come see what A+ College Ready in Alabama has developed.

Robert Summers, A+ College Ready, Birmingham, AL

**#720 Incorporating the National
 Climate Assessment into your
 Biology Curriculum using NGSS**

555B • Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS, 2Y, 4Y

An acidifying ocean? Plants flowering earlier? We'll be discussing the many opportunities to

incorporate the impacts of climate change on organisms into the biology classroom using the new National Climate Assessment and aligning with NGSS.

Minda Berbeco, National Center for Science Education, Oakland, CA and Dana Haine, UNC Institute for the Environment, Chapel Hill, NC

**#874 Do You See What I See? –
 Making Student Thinking Visible**

556A • General Biology • Hands-on Workshop
 (75 min) • MS, HS

Come see modeling in action! Participants will engage in several modeling activities. All participants will leave with a “grab bag”, lesson plans, and strategies that can be implemented in your classroom as soon as you return from the conference.

Samantha Johnson and Jim Clark, San Lorenzo Unified School District, San Lorenzo, CA

**#879 The Alignment of
 Undergraduate Courses,
 Curriculum, and Assessment
 of Learning and Teaching with
 Recommendations of Vision &
 Change**

556B • Curriculum Development • Hands-on Workshop (75 min) • 2Y, 4Y

Participants will examine strategies for heightening alignment of courses, curricula, and assessment with the life sciences' core concepts and competencies, as elaborated in Vision & Change. PULSE resources to assist in this process will be shared.

Sharon Gusky, Northwestern Connecticut Community College, Winsted, CT; Taylor Allen, Oberlin College, Oberlin, OH; Richard Cardullo, University of California Riverside, Riverside, CA; Karen Klyczek, University of Wisconsin – River Falls, River Falls, WI; David Marcey, California Lutheran University, Thousand Oaks, CA; Dustin Vale-Cruz, Springfield College, Springfield, MA

**#860 Round Holes and Square Pegs
 2.0: How Do Traditional Biology
 Activities Fit into the NGSS?**

557 • General Biology • Hands-on Workshop
 (75 min) • MS, HS

Join us as we explore evaluating traditional biology activities in light of the NGSS. We'll cover modifying existing activities to support the NGSS. At what point do you say, this doesn't fit – I need a new peg?

Jennifer Carden and Dasi Price, HudsonAlpha Institute for Biotechnology, Huntsville, AL

**#913 Human Evolution in Living
 Color**

Ballroom B • Evolution • Hands-on Workshop
 (75 min) • HS, 2Y, 4Y

Explore free resources on human evolution, including hands-on activities, videos, and interactives. Learn about the traits that distinguish us from our primate relatives and more recent adaptations, like skin color, that vary among human populations.

David Knuffke, Deer Park High School, Deer Park, NY; Helen Snodgrass, YES Prep Public Schools, Houston, TX; Laura Bonetta, HHMI BioInteractive, Chevy Chase, MD

**#813 Smithsonian's Teaching
 Evolution through Human Examples
 (TEtHE) Project: Four Free AP
 Biology Curriculum Units Based on
 Human Evolution Case Studies**

Providence Ballroom I & IV • AP Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Four free curriculum units to teach evolution in AP Biology will be described: *Adaptation to Altitude*, *Evolution of Human Skin Color*, *What Does It Mean to be Human?*, and *Malaria*. Participants will engage in two of the activities in the units.

Paul Beardsley, Cal Poly Pomona, Pomona, CA and Briana Pobiner, Smithsonian Institution, Washington, D.C.

10:15AM – 11:30AM

INVITED SPEAKER**Donald C. Jackson**

See page 10 for biography.

Living Without Oxygen: Lessons from Animal Physiology

South Country • Special Speaker • GA

Inadequate oxygen is a major clinical issue for humans largely because of the low tolerance of our heart and central nervous system to this condition. In striking contrast to our vulnerability to even brief periods of hypoxia is the ability of certain animals to survive for weeks or months at low temperature with little or no oxygen. The premier examples of this exceptional tolerance are freshwater turtles, such as the painted turtle, and the crucian carp, a close relative of the goldfish. Both species can maintain viable body fluid homeostasis for long periods under anaerobic conditions, but with strikingly different metabolic strategies. This talk will compare these strategies that concern dealing with anaerobic metabolic end-products, conserving metabolic substrates, and protecting the heart and brain from irreversible damage.

Sponsored by



10:15AM – 11:30AM

NABT GPC Poster Session: Citizen Science – Teaching Conservation

Exhibit Hall • Special Program • Poster Session • GA

The 3rd Annual GPC Poster Session will include the work of select programs that are organizing citizen science studies and teachers who utilize citizen science projects in the classroom.

See page 51 for a full listing of posters.

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

Providence Ballroom II & III • AP Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Ecology is all about energy and relationships. In this encore workshop, participants will actively model concepts of logistic and exponential growth, carrying capacity, survivorship curves and Batsian mimicry.

Pam Close, D. H. Hickman High School, Columbia, MO;
Jessica Williams, Grand View University, Des Moines, IA;
Lee Ferguson, Allen High School, Plano, TX

#925 Graduate Student CV Review, Networking and Mentoring Workshop

Washington • Special Program • Hands-on Workshop (75 min) • GA

The NABT Graduate Student Committee presents opportunities for students to interact one-on-one with expert faculty mentors to review their CV's, network, and explore different mentoring approaches.

#ES40 Increasing Environmental Behaviors Using SeaWorld myActions

Newport • Instructional Strategies & Technologies • Demonstration (75 min) • E, MS, HS

Learn how SeaWorld has combined natural history, environmental science and biology with an interactive social media platform to create myActions, a free tool for educators that encourages increases in student behaviors that benefit the environment.

Bill Street, SeaWorld Parks and Entertainment,
Orlando, FL

NABT Committee Meeting: Long Range Planning Committee

Executive Boardroom • Committee (75 min) • GA

Todd Carter, Seward County Community College,
Liberal, KS

NABT Committee Meeting: Retired Members

Blackstone • Committee (75 min) • GA

Dennis Gathmann, Retired, Mattoon, IL

11:45AM – 12:45PM

AP Biology Section Luncheon

Narragansett Ballroom A • Meal Function (Tickets Required) • HS, 4Y

You have the big ideas and enduring understandings covered. But what about the science practices and the labs? And that exam? Meet other AP Biology teachers in a friendly informal setting to share questions and insight. You may even finally get to meet some of your favorite fellow AP teachers in person.

Sponsored by

PEARSON

Four-Year Section Luncheon

Narragansett Ballroom B • Meal Function (Tickets Required) • 4Y

Join faculty, education researchers, graduate students, and others who make four-year colleges and universities their professional home. Network with colleagues and friends (and make new ones) at this event. The lunch will include a special presentation of the Four-Year College and University Section Awards. Winners of the Student Poster and Student Travel awards will also be recognized.

9:30AM – 3:45PM

#ES18 Special Programming Presented by Vernier Software & Technology

All sessions are in Room 553A

9:30AM – 10:00AM

Imaging and Microscopy with Vernier

General Biology • Demonstration (30 min) • HS, 2Y, 4Y

In this demonstration, learn to use our USB Digital Microscope and the Celestron Digital Microscope Imager, a drop-in digital microscope camera, with the new Camera App on LabQuest® 2, with Chromebooks™, and with Logger Pro software on computers.

Mike Collins, Vernier Software & Technology, Beaverton, OR

10:15AM – 11:30AM

Biology with Vernier

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

In this hands-on workshop, you will conduct experiments such as Enzyme Action and Spectra of Plant Pigments from our popular biology lab books. Use our SpectroVis Plus spectrophotometer and learn about our new wireless products.

Mike Collins, Vernier Software & Technology, Beaverton, OR

1:00PM – 2:15PM

Environmental Science with Vernier

Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS

Learn how to use Vernier technology to study environmental science. Water quality, renewable energy, mapping field data, and other topics from our lab books will be performed using LabQuest® 2 and our Go Wireless products in this hands-on workshop.

Colleen McDaniel, Vernier Software & Technology, Beaverton, OR

2:30PM – 3:45PM

Human Physiology with Vernier

Anatomy & Physiology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

In this hands-on workshop, you will conduct activities from our Human Physiology with Vernier lab book. Use a variety of our sensors including our EKG Sensor, Spirometer and our new Go Wireless® Heart Rate. EMGs and GSR will also be demonstrated.

John Melville, Vernier Software & Technology, Beaverton, OR

11:45AM – 12:45PM *continued*

Two-Year Section Luncheon

Narragansett Ballroom C • Meal Function (Tickets Required) • 2Y

Students at two-year colleges are only as diverse as their instructors. Share your challenges, epiphanies, and best practices with other two-year and community college educators who “get it.” The winner of the Two-Year College Biology Teaching and Prof. Chan Teaching Award will also be announced.

Sponsored by



1:00PM – 2:15PM

#916 Biosafety in the Classroom

551A • Microbiology & Cell Biology • Hands-on Workshop (74 min) • GA

This lively and interactive presentation (targeted for high school or undergraduate instructors) addresses best practices for biosafety when working with microbes in the lab or sampling from natural communities. Examples and alternatives for different techniques will be presented.

Ruth Gyure, Western Connecticut State University, Danbury, CT

#802 RB, CF, and BMI: Finding the Genetic Basis of Diseases and Traits

552A • Biotechnology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Twin studies combined with genomics can reveal the causes of rare diseases and the genetic and environmental contributions to common traits such as diabetes and BMI. Teach these concepts using a lesson from the American Society of Human Genetics.

Michael Dougherty, American Society of Human Genetics (ASHG), Bethesda, MD

ASM PRESENTS

A Constructive Approach to Biology

Kristala L. J. Prather and Natalie Kuldell
Massachusetts Institute of Technology

Thursday, November 12, 1:45 PM - 3:45 PM

Location: Providence Ballroom I & IV

Learn more about synthetic biology and the BioBuilder curriculum for teaching synthetic biology in your classroom.

Lab Safety

Ruth Gyure
Western Connecticut State University

Friday, November 13, 1:00 PM - 2:15 PM

Location: Room 551A

Learn more about best practices in biosafety when working with microbes in the lab through a lively and interactive presentation.

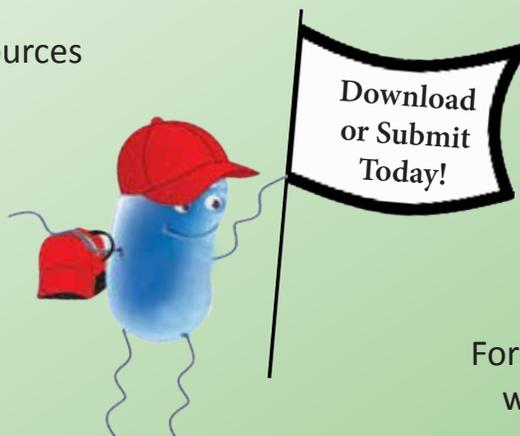
Visit ASM at Booth #516 to Learn about K-12 Outreach Activities!

Peer-reviewed collection of K-12 activities that include:

- teacher and student handouts
- practical tips to complete the activity
- preparation and learning times
- materials needed and sources to obtain them
- safety requirements
- Ideas for assessment



**AMERICAN
SOCIETY FOR
MICROBIOLOGY**



**Latest
Activity!**

*Putting
Disinfectants
to the Test*

For more information visit:
www.asm.org/educators

9:45AM – 4:00PM

#ES21 Special Programming Presented by Pearson

All sessions are in Room 553B

9:45AM – 10:15AM, 12:45PM – 2:15PM, 3:45PM – 4:00PM

Pearson “Genius Bar” One-to-One Customer Support

General Biology • Hands-on Workshop • HS, 2Y, 4Y

Stop by RICC Room 553B for one-to-one training and support with MasteringBiology, ExamView, and other Pearson technology products. Learning Technology Specialists will be available to assist you!

Lauren Harp, Pearson, San Francisco, CA

10:15AM – 11:30AM

Teaching Evolution and Climate Change

General Biology • Symposium (75 min) • MS, HS

Teaching Evolution and Climate Change in a Climate of Science Denial: Even with NGSS, the Battles Continue.

Ken Miller and Joe Levine, Pearson, Boston, MA

11:30AM – 11:45AM

Miller & Levine Biology Book Signing

General Biology • Symposium (75 min) • HS

Join Pearson Biology authors Ken Miller & Joe Levine for a meet and greet, and receive a complimentary Teachers' Edition signed by both of the authors!

Ken Miller and Joe Levine, Pearson, Boston, MA

2:30PM – 3:45PM

MasteringBiology “Sneak Preview” & User Feedback Session

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

Whether you are new to MasteringBiology or a long-time user of Pearson's widely-used online assessment and tutorial program, this session offers something for everyone! Join us for a “sneak preview” of new assignment options and share your feedback.

Joshua Frost, Pearson, San Francisco, CA

1:00PM – 2:15PM *continued***#850 Structured Academic Controversy: A Discussion Strategy for Complex Socio-Scientific Issues**

552B • Instructional Strategies & Technologies • Hands-on Workshop (75 min) • MS, HS, 2Y

This structured discussion technique promotes student engagement and respectful dialogue while exploring the topic of the role of government in implementing school policies that address obesity and nutrition. A background in bioethics is included.

Joan Griswold and Maureen Munn, University of Washington, Seattle, WA

#ES27 Flinn Favorite Biology Lab Activities and Games

554A • General Biology • Demonstration (75 min) • MS, HS

Students learn faster and better when involved in fun, hands-on activities that create learning opportunities. Join Flinn as we share biology-based inquiry labs, demonstrations and games you can use to motivate your students.

Meg Griffith, Flinn Scientific, Batavia, IL

#ES24 Biotechnologies: Protein Assays in STEM Education

554B • Biotechnology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

How can scientists know they have a protein, know it is active and determine how much protein they have? Using G-Biosciences kits, participants will conduct three assays to show the presence and relative activity of a protein enzyme, amylase.

Simon Holdaway, G-Biosciences, St. Louis, MO

NABT GLOBAL PERSPECTIVES COMMITTEE'S 3rd ANNUAL 2015 POSTER SESSION AND WORKSHOP

"Citizen Science – Teaching Conservation"

FRIDAY, NOVEMBER 13

Poster Session

Exhibit Hall

10:15AM – 11:30AM

Posters will include both the work of select programs that are organizing citizen science studies and teachers who utilize citizen science projects in the classroom.

Poster Presentations

Using Citizen Science Data to Investigate Marine Biodiversity

LaRoy Brandt, Truman State University, Kirksville, MO

Monarch Watch: Education, Conservation, and Research

Ann Ryan and Jim Lovett, University of Kansas, Lawrence, KS

Tipitini Biodiversity Station: Weaving Together a Tapestry of Conservation, Education, and Research

Kerry Cheesman and Alan Stam, Capital University, Columbus, OH

Determining the Willingness to Pay for Ecosystem Service Restoration in a Degraded Coastal Watershed: A Ninth Grade Citizen Science Investigation

Kristina Nicosia, et. al., West-Windsor Plainsboro North High School, Plainsboro, NJ

Driven to Discover with Citizen Science

Robert Blair, Karen Oberhauser, Andrea Lorek Strauss and Nathan Meyer, University of Minnesota, St. Paul, MN

Excellence in the Field: Conservation and Scientific Literacy

Micah Sewell and Simon Buzzard, Ecology Project International, Missoula, MT

The Power of Long-term Observation: Using Long-term Participation in Phenology Monitoring to Teach Observation and Perseverance

LoriAnne Barnett, University of Arizona, Tucson, AZ

Season Spotter: Keep an Eye on Changing Seasons

Margaret C. Kosmala, Harvard University Herbaria & Libraries, Cambridge, MA

Using Citizen Science to Monitor Ecosystem Responses to Habitat Restoration

Chelle King, Museum Volunteers for the Environment (MUVE) at the Patricia and Phillip Frost Museum of Science, Miami, FL

What's in your backyard? Citizen Science Camera Trapping as a Lens to Study Mammal Diversity in Classrooms

Stephanie Schuttler, North Carolina Museum of Natural Sciences, Raleigh, NC

Using *Nature's Notebook* to Examine Organismal Interactions in an Undergraduate Ecology Curriculum

Karen Kackley, Eileen Grodziak, and Pamela Borowski, Penn State University Lehigh Valley, Center Valley, PA

Citizen Science at the Cornell Lab of Ornithology

Emma Greig, Cornell Lab of Ornithology, Ithaca, NY

SATURDAY, NOVEMBER 14

Workshop

Room: 557

8:30AM – 10:30AM

Presenters:

Emma Greig, Project Leader of Project Feeder Watch, Cornell Lab of Ornithology, Ithaca, NY
www.feederwatch.org

Chelle King, Exhibit Developer/MUVE Coordinator, Museum Volunteers for the Environment (MUVE) at the Patricia and Phillip Frost Museum of Science, Miami, FL
www.miamisci.org/muve

Robert Blair, Professor of Fisheries, Wildlife and Conservation Biology, University of Minnesota, St. Paul, MN

Moderator:

Jacqueline McLaughlin, The Pennsylvania State University – Lehigh Valley, *Global Perspectives Committee Chair*

1:00PM – 2:15PM *continued*
**#747 Building a Case for NGSS and
 CCSS Connections: Environmental
 Education Leading the Way**

555A • Ecology / Environmental Science /
 Sustainability • Demonstration (75 min) •
 E, MS, HS

We will share case studies and other sources for best practices connecting school yards, school gardens and the resources the schools use to classroom lessons. Learn to use place-based education to move your K-12 classroom to the next level.

Laurel Kohl and Elizabeth Cowles, Eastern Connecticut State University, Willimantic, CT

**#775 High Five: Five Ways to Make
 Teaching Biotechnology Easier and
 Faster**

555B • Biotechnology • Hands-on Workshop
 (75 min) • HS, 2Y, 4Y

Make biotechnology more hands-on and manageable. From reagent prep to running gels and PCR, you and your students will love these innovative ideas and solutions.

Whitney Hagins, Massachusetts Biotechnology Foundation, Cambridge, MA and Liss O'Connell, Diman Regional Vocational Technical High School, Fall River, MA

**#822 Improving Course Coherence,
 Assessment, and Student
 Engagement using Understanding
 by Design Planning**

556A • Curriculum Development • Hands-on
 Workshop (75 min) • 2Y, 4Y

Ever feel like your course goals and your exams don't quite match? Want to increase student engagement in your classes? Come see how a planning protocol from the K-12 world can improve your course and help your students access rigorous material.

Julie Minbiole, Columbia College, Chicago, IL and Stephen Traphagen, Rolling Meadows High School, Rolling Meadows, IL

1:00PM – 3:45PM

BEACON Evolution Symposium

Providence Ballroom I & IV • Special Program • Symposium (165 min) • GA

Join us for this talk featuring new research in evolutionary biology and a workshop on using authentic data from this new research in your classroom!

No Pain, Big Gain: Coevolution Between Bark Scorpion Pain-Inducing Neurotoxins and Grasshopper Mouse Pain Receptors

Bark scorpions produce venom that causes burning pain and hypersensitivity to touch. However, grasshopper mice prey on bark scorpions, grooming only briefly when stung. Come hear how grasshopper mice have solved the predator-pain problem by evolving structural modifications to their pain receptors that, paradoxically, convert toxin-induced pain into the sensation of analgesia.

Ashlee Rowe, Michigan State University, East Lansing, MI

Data Nugget Workshop: The Tale of Two Scorpions

Data Nuggets are hands-on activities designed to improve the scientific and quantitative skills of students by having them graph and interpret scientific data gathered by practicing scientists, with the added benefit of connecting students to interesting study systems, as yet unanswered questions, and the real people who are trying to solve nature's mysteries. This *Data Nugget* features observations of the anti-predator defenses of scorpions, and the behavior of grasshopper mice who prey on them, while providing all the materials necessary to bring these resources back to your classroom.

Matthew Rowe, Elizabeth Schultheis, and Melissa Kjelvik, Michigan State University, East Lansing, MI

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

**#746 Some of the Above: Writing
 High Quality Standards-Based
 Multiple-Choice Questions**

556B • Instructional Strategies & Technologies •
 Hands-on Workshop (75 min) • MS, HS, GA

The challenge of developing multiple-choice assessments for the NGSS and AP Biology Framework are addressed by test developers from ETS. Techniques for writing good questions that clearly assess these standards will be shared.

Israel Solon, Nancy Olds, and Mitch Price, Education Testing Service, Princeton, NJ

**#889 Humans vs. Mosquitoes: A
 Deadly Serious Game at the Yale
 Peabody Museum**

557 • Ecology / Environmental Science /
 Sustainability • Hands-on Workshop (75 min) •
 MS, HS

A real-world disease transmission game used by the Red Cross teaches how climate change affects dengue fever expansion around the world. Explore this and other activities from a modular curriculum on emerging insect-borne diseases. SEPA-NIH funded.

Christine Lawlor-King, East Hartford Public Schools, East Hartford, CT



NABT 2015 EVOLUTION SYMPOSIUM

Emerging Research in Evolutionary Biology

Join us to hear about new research in evolutionary biology and a workshop on using authentic data in your classroom.

No Pain, Big Gain: Coevolution Between Bark Scorpion Pain-Inducing Neurotoxins and Grasshopper Mouse Pain Receptors

Dr. Ashlee Rowe

NEUROSCIENCE PROGRAM AND DEPARTMENT OF INTEGRATIVE BIOLOGY
MICHIGAN STATE UNIVERSITY

Pain serves an important adaptive function because it signals tissue damage. Some animals have capitalized on the pain pathway by evolving toxins that they use to deter predators. While pain may induce strong selection on predators, counter adaptation to evolve resistance to pain is likely constrained because of the cost associated with reduced response to tissue damage. Bark scorpions produce venom that causes burning pain and hypersensitivity to touch. However, grasshopper mice prey on bark scorpions, grooming only briefly when stung. Come hear how grasshopper mice have solved the predator-pain problem by evolving structural modifications to their pain receptors that, paradoxically, convert toxin-induced pain into the sensation of analgesia.



Data Nugget Workshop: A Tail of Two Scorpions

Dr. Matthew Rowe, Dr. Elizabeth Schultheis, and Melissa Kjellvik

DEPARTMENT OF INTEGRATIVE BIOLOGY AND
BEACON CENTER FOR THE STUDY OF EVOLUTION IN ACTION,
MICHIGAN STATE UNIVERSITY

Data Nuggets are hands-on activities designed to improve the scientific and quantitative skills of students by having them graph and interpret scientific data gathered by practicing scientists, with the added benefit of connecting students to interesting study systems, as yet unanswered questions, and the real people who are trying to solve nature's mysteries. We will present a Data Nugget that features data on the anti-predator defenses of scorpions, and the behavior of grasshopper mice who prey on these toxic prey and provide all materials necessary to bring these resources back to your classroom.



1:00PM – 2:15PM *continued* **#911 Climate Change Effects on Marine Ecosystems**

Ballroom B • Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Discover free interactives, animations, and activities to teach the effects of global climate change on marine ecosystems. Be among the first to see our new interactive, and learn why some coral species may help preserve other coral reef ecosystems.

Ann Brokaw, Rocky River High School, Rocky River, OH; Bob Kuhn, Centennial High School, Roswell, GA; Sandra Blumenrath, HHMI BioInteractive, Chevy Chase, MD

#795 Help Your Students Succeed in AP Biology

Providence Ballroom II & III • AP Biology • Hands-on Workshop (75 min) • HS

Join two experienced AP teachers for a lively session designed to help students incorporate Science Practices and learn more biology. We'll use modeling, mathematics and inquiry techniques, and share hints for resources, assessments, and test prep.

Theresa Holtzclaw and Fred Holtzclaw, Webb School of Knoxville, Knoxville, TN

#ES41 Black & White: Guiding Students In Complex Science Issues

Newport • Global Education • Symposium (75 min) • E, MS, HS, 2Y, 4Y, GA

Instantaneous access to volumes of information has changed how students and teachers approach complex scientific issues. Using recent media stories regarding SeaWorld, this panel will discuss approaches to encouraging scientific debate and accuracy.

Bill Street, SeaWorld Parks and Entertainment, Orlando, FL

Join *The American Biology Teacher* Team: Writing and Reviewing for the ABT

Kent • Hands-on Workshop (75 min) • GA

The editors of *The American Biology Teacher* will discuss aspects of the journal from an introduction to the vision of the ABT to the preparation, submission, and review of manuscripts. Prospective authors are especially encouraged to bring ideas to this lively discussion designed to help focus an idea into a publishable manuscript.

William McComas, ABT Editor, University of Arkansas, Fayetteville, AR

NABT Committee Meeting: Awards Committee and OBTA Directors

Blackstone • Committee (75 min) • GA

Priya DasSarma, University of Maryland School of Medicine, Baltimore, MD and Mark Little, Broomfield High School, Broomfield, CO

#915 A How To For K-12 Outreach in an Undergraduate Setting

South Country • Science Practices • Hands-on Workshop (75 min) • 2Y, 4Y, GA

This session will be a primer for undergraduate educators on how to establish K-12 outreach programs for both personal and institutional benefit. Three programs will be discussed followed by a hands-on demo and a question and answer session.

Patricia Halpin, University of New Hampshire Manchester, Manchester, NH and Margaret Shain-Stieben, American Physiological Society (APS), Bethesda, MD

1:00PM – 3:45PM **#812 Planting Inquiry in Science Classrooms**

550A & 550B • Plant Biology • Hands-on Workshop (165 min) • HS, 2Y, 4Y

We share simple, effective techniques to help students develop skills ranging from generating questions based on observations of the usual and unusual to exploring alternative explanations. Leave with handouts and examples for use in your classroom.

Gordon Uno, University of Oklahoma, Norman, OK; Marshall Sundberg, Emporia State University, Emporia, KS; Catrina Adams, Botanical Society of America, St. Louis, MO

Undergraduate Biology Summit: SENCER – Connecting Biology Teaching to Community and Global Issues

Washington • Special Program • Symposium (165 min) • 2Y, 4Y

Join us for an interactive workshop to learn about Science Education for Civic Engagements and Responsibilities (SENCER). National SENCER program leaders will present ready-to-use resources for your classroom and lead round-table workshops to help you engage your students by integrating meaningful civic issues into biology.

See page 56 for more details.

2:30PM – 3:45PM **#774 SMART (Students Modeling A Research Topic) Teams: Take Teaching Protein Structure And Function to the Next Level**

551A • Science Practices • Hands-on Workshop (75 min) • HS

SMART Teams utilize physical 3D models to investigate current research topics in collaboration with a research mentor by using computer-based visualization and rapid prototyping. Learn more about how you can bring this to your school.

Kevin Crowthers, Worcester Academy, Worcester, MA and Diane Munzenmaier, Center for BioMolecular Modeling, MSOE, Milwaukee, WI

#788 Introduction to Epigenetics552A • General Biology • Demonstration
(75 min) • HS, 2Y, 4Y

Experience an activity that promotes student learning about epigenetics and the role of diet, lifestyle and the environment in influencing gene expression within an individual and in some cases across generations.

Dana Haine, UNC-Chapel Hill Superfund Research Program, Chapel Hill, NC

#819 Our Real BFF! Dogs as a Model Organism for Genetics, Evolution and Human Health552B • General Biology • Hands-on Workshop
(75 min) • MS, HS, 2Y

This session will show how our new understanding of dog genomics can be used to teach some of the big ideas in life science. NGSS-aligned activities will be presented.

Cheryl Hach, Kalamazoo Area Mathematics and Science Center, Kalamazoo, MI and Robby Cramer, Michigan Science Teachers Association, Grand Haven, MI

#ES29 Advanced Inquiry Labs for AP Biology from Flinn Scientific

554A • AP Biology • Demonstration (75 min) • HS

Join Flinn Scientific as we model the inquiry process and demonstrate activities from our new guided-inquiry labs for AP Biology that integrates scientific inquiry and reasoning through a series of student-directed, inquiry-based investigations.

Meg Griffith, Flinn Scientific, Batavia, IL

#ES30 Biotechnologies: Restriction Digestion in STEM Education554B • Biotechnology • Hands-on Workshop
(75 min) • HS, 2Y, 4Y

New advances make it possible to perform restriction enzyme digestions and analysis in half the time. Participants will use G-Biosciences lab kits to perform fast restriction digestions and run 15 minute agarose gels to analyze the digestions.

Simon Holdaway, G-Biosciences, St. Louis, MO

Don't Miss These Pearson Events on Friday!

9:45–10:15 a.m. RICC Room 553B

“Genius Bar” One-to-one Customer Support for MasteringBiology™, ExamView®, and more

10:15–11:30 a.m. RICC Room 553B

Pearson authors Ken Miller and Joe Levine discuss “*Teaching Evolution and Climate Change in a Climate of Science Denial: Even with NGSS, the Battles Continue*”

11:30–11:45 a.m. RICC Room 553B

Book signing with Ken Miller and Joe Levine

12:45–2:15 p.m. RICC Room 553B

“Genius Bar” One-to-one Customer Support for MasteringBiology, ExamView, and more

1:00–2:15 p.m. Providence Ballroom II & III

Fred and Theresa Holtzclaw discuss ideas to “*Help Your Students Succeed in AP® Biology*”

2:30–3:45 p.m. RICC Room 553B

MasteringBiology Greatest Hits and New Releases: Join us for a preview of new assignment options in development, and share your feedback.

3:45–4:00 p.m. RICC Room 553B

“Genius Bar” One-to-one Customer Support for MasteringBiology, ExamView, and more

STOP BY BOOTH 506 to explore the new **Second Edition of *Campbell Biology in Focus***, browse through the Miller & Levine High School Biology program, discover new assignment options in MasteringBiology, and more.

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PEARSON

UNDERGRADUATE BIOLOGY SUMMIT

SENCER: Connecting Biology Teaching to Community and Global Issues

FRIDAY, NOVEMBER 13, 1:00PM – 3:45PM

Join us for an interactive workshop to learn about Science Education for Civic Engagements and Responsibilities (SENCER).

The SENCER Mission:

SENCER courses and programs strengthen student learning and interest in the sciences by connecting course topics to issues of critical local, national, and global importance.

- | | |
|-----------------|---|
| 1:00pm | <p>Welcome and Introduction
Eliza Reilly, Deputy Executive Director of Programs, SENCER, Washington, D.C.</p> |
| 1:15pm – 2:00pm | <p>Real-world Examples: SENCER Projects at Work in the Classroom
Presented by a panel of experts including:</p> <ul style="list-style-type: none"> • Danielle Kraus Tarka, SENCER Deputy Executive Director for Operations, Community Outreach, and Engagement, Washington, D.C. • Eliza Reilly, SENCER Deputy Executive Director for Programs, Washington, D.C. • Steve Christenson, Chair, NABT 4-Year Section, BYU–Idaho, Rexburg, ID • Ellen Faszewski, Co-Chair and Professor of Math and Science, Wheelock College, Boston, MA • Katharine York, Assistant Professor of Biology, Southern New Hampshire University, Hooksett, NH • Tara Mann, Director of Operations for the Dean of Arts & Sciences, Worcester Polytechnic Institute, Worcester, MA • Frederick Rogers, Chair of Natural Sciences, Franklin Pierce University, Rindge, NH • Kyle Trenshaw, STEM Education Postdoctoral Research Associate, Brown University, Providence, RI |
| 2:00pm – 3:00pm | <p>Round Table Breakouts
Work with SENCER staff and experienced NABT faculty to plan a SENCER project in your own classroom.</p> |
| 3:00pm – 3:15pm | <p>Table Reports</p> |
| 3:15pm – 3:45pm | <p>Panel Discussion and Wrap-Up by Summit Moderators</p> <ul style="list-style-type: none"> • Jacqueline McLaughlin, The Pennsylvania State University, Center Valley, PA • Anneke Metz, Southern Illinois University, Carbondale, IL |

2:30PM – 3:45PM *continued*
**#854 Electronic Biology Notebooks
 for Instilling STEM Skills**

555A • General Biology • Demonstration
 (75 min) • HS, 2Y, 4Y

A growing aspect of biology teaching is instilling science and technology career workforce skills. This presentation will demonstrate how student-made electronic notebooks using spreadsheet and document software teach students to be self-learners.

Brian Shmaefsky, Lone Star College - Kingwood,
 Kingwood, TX

#776 20 in 20: The Next Chapter

555B • General Biology • Hands-on Workshop
 (75 min) • MS, HS

Make your Biology course more inquiry based and student centered! Here are new, exciting 20-minute activities to engage students in hands-on learning.

Whitney Hagins and Maggie Keeler, Massachusetts
 Biotechnology Foundation, Cambridge, MA, and Liss
 O'Connell, Diman Regional Technical High School,
 Fall River, MA

**#839 Engaging Students through
 Digital Assessment**

556A • Instructional Strategies & Technologies • Hands-on Workshop (75 min) • MS, HS

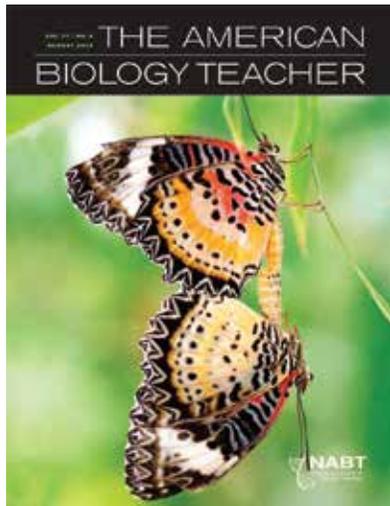
A dynamic and interactive session that will share a range of digital assessments that have proven successful. You will walk away with a variety of easy to implement digital tools that can be adapted for the specific needs of your students.

Caroline Milne, Sarah Danilkowicz, Vanessa Fenig,
 and Laura Turngren, Barrington High School,
 Barrington, IL



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University of California Press is proud to publish the official journal of the National Association of Biology Teachers.

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2:30PM – 3:45PM *continued***#730 Let's Talk About Your AP Story!**

556B • AP Biology • Hands-on Workshop (75 min) • HS, 2Y

Struggling with creating a connected, focused storyline for your AP biology students? Join AP biology teachers in rich conversation around considerations in developing a coherent curriculum sequence that deepens student understanding.

Robin Walters, Sand Creek High School, Colorado Springs, CO; Tamara Pennington, Windsor High School, Windsor, CO; Cindy Gay, Steamboat Springs High School, Steamboat Springs, CO

#756 Genes, Genomes and Personalized Medicine: An NIH-SEPA Project

557 • Instructional Strategies & Technologies • Hands-on Workshop (75 min) • HS, 2Y

Explore new instructional tools that will take your students beyond understanding DNA as a double helix – to understanding bioinformatics and its importance in genomics and personalized medicine.

Diane Munzenmaier and Margaret Franzen, MSOE, Milwaukee, WI

#912 Coupling Multimedia Resources and Primary Literature in Introductory Biology

Ballroom B • Instructional Strategies & Technologies • Hands-on Workshop (75 min) • 2Y, 4Y

Discover engaging ways to teach biological core concepts away from the textbook by combining primary research articles with free multimedia resources from BioInteractive.org. We will focus on the evolutionary mechanisms leading to speciation.

Ellie Rice, Franklin and Marshall College, Lancaster, PA; Fred Wasserman, Boston University, Boston, MA; Sandra Blumenrath, HHMI BioInteractive, Chevy Chase, MD

#738 AAI Teachers Research Program – Immunology Lessons for the Classroom

Providence Ballroom II & III • AP Biology • Hands-on Workshop (75 min) • HS

Join our teacher researchers from the American Association of Immunologists (AAI) High School Teachers Summer Research Program as they share with you their research experiences and newly developed units which bring the excitement of immunology research to students in the classroom.

Gina Castellanos Ellsworth, Haverhill High School, Haverhill, MA; Antonio Gamboa, Pomona Unified School District, Pomona, CA; Aaron Mathieu, Acton – Boxborough Regional High School, Acton, MA; Sarah Peterson, Denver Public Schools, Denver CO; Jeremy M. Resmann, Soldan International Studies High School, St. Louis, MA; Gregory Shenk, CREC – Academy of Aerospace & Engineering, Hartford, CT; Patricia Weethee, Grove City High School, Grove City, OH; Michele Witkowski, Edison High School, Edison, NJ; Mary Litzinger, The American Association of Immunologists, Bethesda, MD; Clinton Mathias, Western New England University, Springfield, MO

NABT Committee Meeting: ABT Advisory Committee

Blackstone • Committee (75 min) • GA

William McComas, ABT Editor, Fayetteville, AR

NABT Committee Meeting: Membership Committee

Executive Boardroom • Committee (75 min) • GA

Sherry Annee, Brebeuf Jesuit Preparatory School, Indianapolis, IN and Sue Trammell, John A. Logan College, Carterville, IL

#835 Integrating Math Across the Biology Curriculum: Opportunities for Quantitative Skills in Biology

South Country • Curriculum Development • Demonstration (75 min) • HS

Whether you and your students are math wizards or math-phobic, it's easier than you think to infuse quantitative skills into your life science classroom. Learn about resources and a summer workshop opportunity with us!

Kristin Jenkins, BioQUEST, Madison, WI; Karen Lucci, Hopewell Valley High School, Pennington, NJ; Kelly Sturner, National Institute for Mathematical & Biological Synthesis, Knoxville, TN

**4:00PM – 5:00PM
Horizontal Transfer:
Live Recording**

Exhibit Hall • Special Program • GA

Put on your best Vector-hat, and join everyone's favorite science teacher podcast for an opportunity to participate in a live recording and get a chance to talk to some of your favorite biology teachers from across the country. Share your Teacher Hacks, and tell us what you've learned at the conference this year. This session promises to be a fun and unique experience for anyone and everyone who is interested in talking about what it means to be a modern science teacher.

Paul Andersen, Bozeman Science, Bozeman, MT and David Knuffke, Deer Park High School, Deer Park, NY

**4:00PM – 5:30PM
Exhibit Hall Closing Reception**

Exhibit Hall • Special Program • GA

It's last call in the Exhibit Hall. This is your last chance to talk with exhibitors and get those freebies for the classroom! Join us for a podcast, poster session, and prize drawings as we close the 2015 Exhibit Hall.

7:00PM – 9:00PM

**BELS Benefit Dinner Featuring
Carl Zimmer**

Ballroom A • Special Event (Tickets Required) •
GA

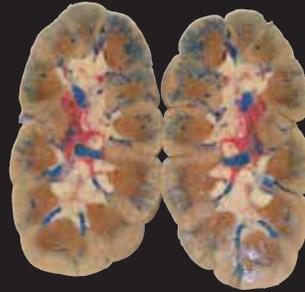
See page 10 for biography.

NABT is proud to honor Carl Zimmer with the 2015 Distinguished Service Award during a special dinner benefitting the NABT Biology Educator Leadership Scholarship (BELS). Reporting from the frontiers of biology, Zimmer is an award-winning journalist whose articles, essays, books, and blog posts have become required reading for the biology educator community.

Zimmer will be our guest of honor and featured speaker, where he will talk about his experiences as a science writer, documenter of tattoos, and other topics raised by the audience. Bring your questions and books for the private signing to follow.



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