Recent studies of epidemic diseases provide models, both retrospective and prospective, for understanding and predicting disease epidemics, notably those that are vector borne, the best examples of which are malaria, plague, and many viral diseases. Cholera can be predicted by monitoring environmental parameters, including sea surface temperature, salinity, rainfall, and chlorophyll (the latter as a tag for phytoplankton that precede zooplankton in abundance in coastal and river waters. Zooplankton carry cholera bacteria as a component of their natural flora). Recent studies of the cholera epidemic in Haiti provide evidence that an early warning system can be developed for public health, and more importantly, for measuring effects of climate change on human health.

The NABT First Timers’ Breakfast is made possible through the generous support of HHMI.
Inquiry-based Biology with Vernier
Hanover B • Exhibitor Session • Hands-on Workshop (75 min) • General Biology • MS HS 2C 4C
Need to add inquiry labs to your biology course? In this hands-on workshop, you will learn how to conduct inquiry investigations using LabQuest 2, Logger Pro on computers, and Graphical Analysis for iPad®.

Mike Collins (sales@vernier.com), Vernier Software & Technology, Beaverton, OR

Hands-on Workshop (75 min) • General Biology • MS HS 2C 4C

ES2 Inquiry-based Biology with Vernier
Hanover B • Exhibitor Session • Hands-on Workshop (75 min) • General Biology • MS HS 2C 4C
Need to add inquiry labs to your biology course? In this hands-on workshop, you will learn how to conduct inquiry investigations using LabQuest 2, Logger Pro on computers, and Graphical Analysis for iPad®.

Mike Collins (sales@vernier.com), Vernier Software & Technology, Beaverton, OR

#456 LadyBug: Using an Evolutionary Game to Capture Young Students’ Enthusiasm for Evolution-in-Action
Hanover D • Hands-on Workshop (75 min) • Evolution • E MS HS
LadyBug is an online resource that simulates predator-prey relationships between lady beetles and aphids to illustrate mechanisms behind natural selection. Participants will become lady beetles and play out evolutionary scenarios.

Melissa Kjelvik (kjmjlkvem@yahoo.com) and Elizabeth Schultheis (eschultheis@gmail.com), Michigan State University – Kellogg Biological Station, Hickory Corners, MI and Louise Mead (lsmead@msu.edu), BEACON, East Lansing, MI

Visit us to learn about our latest K-12 Outreach Activities!

Visit booth #403 to learn about our latest K-12 Outreach Activities!
The presence of quaiacol, a brown product is a substrate of hydrogen peroxide in the tracted from turnips. When reacted with Hydrogenperoxidase is easily ex-
(75 min) • AP Biology • HS Dunwoody • Hands-on Workshop
#268 Nature in the Classroom: Inquiry and The Nature of Science
Greenbriar • Hands-on Workshop (75 min) • AP Biology • MS HS 2C
The greatest source of wonder and amaze-
ment is not in a textbook. It is the natural world. Learn how to incorporate simple inquiry based activities to inspire curiosity and awareness for the natural world in the context of your course content.
Jim Lane, Mahtomedi High School, Mahtomedi, MN and Isaac Stewart, Fisher Jr/ Sr High School, Fisher, IL

#249 Beyond X and Y: Recent Discoveries about the Mecha-
nisms Governing Sex Determination and Differentiation
Edgewood (Session I) • Paper (30 min) • AP Biology • HS 2C
Sex determination is no longer as simple as XX/XY chromosome identification! This presentation will explain the recent advances in research as well as effective classroom strategies for high school and college biology.
Terry Maksymowych (tmaksymowych@ndapa.org), Academy of Notre Dame de Namur, Villanova, PA

#309 Detecting Epigenetic DNA Methylation in Arabidopsis thaliana
Baker • Demonstration (75 min) • Genetics • 4C
Learn how to teach your students epigenetics by having them measure differences in DNA methylation that affect flowering time in Arabidopsis.
Jermel Watkins (jwatkins@cshl.edu), Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

#359 Practice Makes Perfect! Modeling and NGSS Teaching Practices
Courtland • Hands-on Workshop (75 min) • General Biology • HS MS 2C
We will explore a variety of hands-on physical models of molecular structures – as an approach to make the molecular world “real” for students.
Tim Herman (herman@msoe.edu), MSOE CBM, Milwaukee, WI

#280 Turnips and Guaiacol: Your New Favorite Enzyme Lab
Dunwoody • Hands-on Workshop (75 min) • AP Biology • HS
Hydrogenperoxidase is easily ex-
tracted from turnips. When reacted with a substrate of hydrogen peroxide in the presence of quaiacol, a brown product is formed, perfect for a colorometric assay of enzyme kinetics and factors affecting enzyme activity.
William Anderson (golfanderson@gmail.com), Wilmington Friends School, Wilmington, DE and Sandra Litvin (slitvin@ucfsd.net), Unionville High School, Kennett Square, PA

#311 Undergraduate Genetics: The Need for Backward Design
Edgewood (Session II) • Paper (30 min) • Genetics • 2C 4C
An analysis of undergraduate genetics reveals a mismatch between instructors’ intentions and teaching practices. This suggests the need for greater attention to best practices in instruction, specifically, better use of backward design and validated assessments.
Michael Dougherty (mdougherty@ashg.org), American Society of Human Genetics (ASHG), Bethesda, MD

#241 Teach Marine Biology Instead of Biology to All Standards
Fairlie • Hands-on Workshop (75 min) • Marine Biology • HS, MS
Comprehensive biology course focusing on marine life teaching all required vari-
ous state and national biology standards! Includes lesson plans, labs, activities, games, web inter-actives/web quests. Course components tested, scores phenomenal.
Mark Friedman (Marklewisfriedman@gmail.com), Animo High School, Inglewood, CA

#406 Exploring Rare Disease through Hands-on and Blended Settings
Harris (Session I) • Demonstration (30 min) • AP Biology • HS 2C
Students explore a rare disease (Pompe disease) through face-to-face collabor-
orative learning groups and hands-on activities, as well as through virtual environments. Pilot results and sample lessons will be presented.
Julie Bokor (julie@cpet.ufl.edu), University of Florida Center for Precollege Education and Training and UF College of Education, Gainesville, FL and Houda Darwiche (houdad@cpet.ufl.edu), University of Florida Center for Precollege Education and Training, Gainesville, FL

#267 Nature in the Classroom: Inquiry and The Nature of Science
Greenbriar • Hands-on Workshop (75 min) • AP Biology • MS HS 2C
The greatest source of wonder and amaze-
ment is not in a textbook. It is the natural world. Learn how to incorporate simple inquiry based activities to inspire curiosity and awareness for the natural world in the context of your course content.
Jim Lane, Mahtomedi High School, Mahtomedi, MN and Isaac Stewart, Fisher Jr/ Sr High School, Fisher, IL

#408 No More Mosquito!
Harris (Session II) • Demonstration (30 min) • General Biology • MS HS
Emerging pathogens are terrific interdis-

ciplinary topics. This session highlights a high-school curriculum unit on Dengue fever, developed and classroom-tested by Florida teachers.
Julie Bokor (julie@cpet.ufl.edu), University of Florida Center for Precollege Education and Training and UF College of Education, Gainesville, FL and Houda Darwiche (houdad@cpet.ufl.edu), University of Florida Center for Precollege Education and Training, Gainesville, FL

Committee Meeting: Finance Committee
Heritage Boardroom
Bob Melton (bmelton@putnamcityschools.org), Committee Chair
#271 Defusing Diffusion  
Inman (Session I)  
Demonstration (30 min)  
General Biology  
E MS HS

The ink drop experiment is often used to demonstrate diffusion, but some don’t realize this is a misconception. Come share what you know and discover more about diffusion/convection experiments. (Based on the ABT article, Defusing Diffusion)

Remy Dou (dour@einsteinfellows.org), National Science Foundation, Arlington, VA and Zeke Kossover (kossoverz@einsteinfellows.org), The Jewish Community High School of the Bay, San Francisco, CA

#264 The Immortal Life:  
Science, Race, and Ethics  
Inman (Session II)  
Demonstration (30 min)  
General Biology  
HS MS GA

During this session, teachers will be given ideas and tools to use the book The Immortal Life of Henrietta Lacks in the classroom. Teachers will be provided with a study guide and other activities to explore the issues of science, race and ethics.

Chris Monsour (chris_monsour@tiffincityschools.org), Tiffin Columbian High School, Tiffin, OH

#468 BSCS Presents:  
Evolution and Medicine  
Kennesaw • Hands-on Workshop (75 min)  
Evolution • HS

Evolution and Medicine is a module for high school that illustrates how an understanding of evolution informs medicine. Participants will engage in an activity that relates natural selection to human health.

Mark Bloom, BSCS, Colorado Springs, CO

#E55 High School Biology:  
Digging Deeper than Dissection  
Lenox • Exhibitor Session  
Hands-on Workshop (75 min)  
Anatomy & Physiology  
HS 2C

Everyone knows about traditional dissection and standard specimens. But this workshop takes you beyond the traditional to exciting new specimens with modern preparations that take today's students, standards, and safety regulations into account.

Janet Holliday (janet.holliday@vwv.com), Ward's Science, Rochester, NY

#245 Infect Your Biology Classroom with Math!  
Spring • Hands-on Workshop (75 min)  
General Biology • MS HS GA

Integrating biology and mathematics shouldn’t just be a good idea – it should be the law! Come and learn how easy, important, and fun it is to collect and analyze data as a part of good, solid, responsible science education.

Jeff Lukens (jeffrey.lukens@k12.sd.us), Roosevelt High School, Sioux Falls, SD

#453 Oh Me! Oh My!  
Meiosis and Mitosis: Strategies to Teach  
Techwood • Hands-on Workshop (75 min)  
General Biology • GA

Conceptual understanding of cell division as a process by which cells can replicate or reduce chromosome number will be explored. Manipulatives and multiple approaches to teaching will engage participants using free or cheap materials.

Kim Sadler (kim.sadler@mtsu.edu), Cindi Smith-Walters (csmithwa@mtsu.edu) and Rachel Lyle (rlyle@mtmail.mtsu.edu), Middle Tennessee State University, Murfreesboro, TN

#ES6 Meeting the New AP® Biology Requirements  
Marietta • Exhibitor Session  
Demonstration (75 min)  
AP Biology • HS

This session reviews the College Board's redesigned Curriculum Framework for the AP Biology course and shows several curricular resources that ideally prepare students for success on the new exam.

Cindi Weiss (cweiss@bfwpub.com), W.H. Freeman, New York, NY
11:45am – 1:00pm

#ES9 Worm and Squirm Your Way into Behavior Labs
Chicago A & B • Exhibitor Session • Hands-on Workshop (75 min) • Biotechnology • HS 2C 4C

Use the model organism, C. elegans in an engaging activity that compares normal and mutant worm behaviors. Explore worm taste preferences in a simple and fast chemotaxis assay. Come see this great alternative AP fruit fly behavior lab!

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, CA

#ES10 What’s in My Sushi?
Unlocking the Power of DNA Barcoding
Chicago C & D • Exhibitor Session • Hands-on Workshop (75 min) • Biotechnology • HS 2C 4C

In 2008 a high school science project uncovered seafood mislabeling; a 2013 Oceana study showed 33% of fish sold in the US is incorrectly labeled. Give your students an opportunity to investigate this trend and other biological issues by using DNA barcoding.

Bruce Nash (nash@cshl.edu), Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

#ES7 Fermentation and Bioprocessing of GFP
Hanover A • Exhibitor Session • Hands-on Workshop (75 min) • Biotechnology • HS 2C 4C

See how you can bring industrial processes to life in your biotechnology lab by expressing GFP protein using Escherichia coli in a small-scale fermentor monitored by PASCO probeware.

Mike Blasberg (sales@pasco.com) and Lucia Dussan, PASCO scientific, Roseville, CA

#ES8 Integrate iPad® and BYOD with Vernier Technology
Hanover B • Exhibitor Session • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • E MS HS 2C 4C

In this hands-on workshop, you will use Vernier’s digital tools, such as probeware, to conduct an investigation with either Graphical Analysis for iPad®, or Vernier Data Share for tablets, Chromebooks, and BYOD environments.

Mike Collins (sales@vernier.com), Vernier Software & Technology, Beaverton, OR

#480 HHMI’s The Making of the Fittest: Got Lactase?
The Co-evolution of Genes and Culture Free Classroom Resources
Hanover C • Hands-on Workshop (75 min) • Evolution • HS

Combining archeological and genetic evidence, this film tells the fascinating story of why only a minority of human adults worldwide can digest milk. Bring this memorable example of human evolution into your classroom with our free resources.

Paul Strode, Fairview High School, Boulder, CO

#420 The EvoDevoCI: A New Measure of Evolutionary Understanding
Hanover D (Session I) • Paper (30 min) • Evolution • 4C

A recently developed concept inventory in evolutionary developmental biology (EvoDevoCI) can be used to improve evo-devo instruction. The EvoDevoCI targets six core evo-devo concepts you can incorporate into undergraduate biology courses.

Anna Hiatt (anna.hiatt@okstate.edu) and Donald French (dfrench@okstate.edu), Oklahoma State University, Stillwater, OK; Kathryn Perez (kperez@uwfaxes.edu), University of Wisconsin – La Crosse, La Crosse, WI; Becca Price
In a biochemistry class, students watched 8 short (~17 min) introductory videos. Nearly all surveyed students had very positive feelings about the introductory biology course, students watched 7 short (~17 min) online videos for a digestion phenomenon of vanishing amphibians, from molecules to ecosystems. The other track was given a “content-free” course that focused for the entire year on the investigation of the biology major. There was a significant difference in self-efficacy from the pretest to posttest on two questions. The students’ self-efficacy significantly decreased on questions “I expect to do well in this biology class” (p=.06) and “Considering the difficulty of this biology course, the teacher, and my skills, I think I will do well in this class” (p=.033). Moreover, even though the differences in the other six questions were not significant, they showed a downward trend between the beginning of the course and the end of the course in regard to student self-efficacy. We found a statistically significant difference in biology course grade and overall GPA, t(.70) = -1.17, p=.082, indicating that overall GPA was higher than the students’ grade in their biology course. It appears that students have an inflated perception of their skill level in college level classes. Helping students develop metacognitive skills might help them transition from a high school setting to a competitive college environment and will help retain valuable students in STEM majors.

Lessons Learned from the First Year Implementation of a Two-Track, Reformed Introductory Biology Course

Dina L. Newman, Gary R. Skuse, Dawn Carter, F. Harvey Pough, and L. Kate Wright, Gosnell School of Life Sciences, Rochester Institute of Technology, Rochester, NY

The design, implementation and assessment of a novel, two-track, reformed introductory biology sequence are described in this paper. Course reform was based on recommendations from the 2009 Vision and Change report from AAAS. Both tracks were based on guided inquiry, with an emphasis on constructivist pedagogy. One track included only students who entered with Advanced Placement Biology credit (N=24), who were given a “content-free” course that focused for the entire year on the investigation of the phenomenon of vanishing amphibians, from molecules to ecosystems. The other track included the remaining students (N=68), who received more direct content instruction but through the use of numerous student-centered, active learning methods. Students in the “AP Scholars” section had higher and more consistent levels of prior knowledge, but both sections made identical normalized learning gains and expressed satisfaction with the course, particularly the reformed aspects. The “AP Scholars” identified strongly as scientists and enjoyed the investigative nature of the course. The two-track course is now in its second year, and changes are being made in accordance with the lessons learned from the first year. This two-track system could serve as a model for other institutions looking to change their introductory biology sequence.

Access Patterns and Learning Outcomes of Online Videos in Two Biology Courses

Anneke M. Metz, Southern Illinois University, Carbondale, IL

This study investigates the impacts of assigned online videos on student learning. In an introductory biology course, students watched 7 short (~17 min) online videos for a digestion unit, combined with active learning in class. By tracking access, one-third of students were found to be avid watchers, viewing each video twice, while two-thirds of students were poor video watchers, watching ~ 30% of video content. Test performance in this “flipped classroom” was only marginally better than in a previous cohort taught traditionally, and poor video watchers did not significantly perform worse than avid watchers (they appear to have used other resources). Nearly all surveyed students had very positive feelings about the flipped classroom. In a biochemistry class, students watched 8 short (~17 min) introductory videos followed by a quiz, over one semester. Video watching was consistently ~ 100%, and, on a final exam, students performed equally well on pre-lecture video questions and questions on basic material taught in class. These data suggest videos work well to teach introductory material and free up class precious time, are generally well-received, but only utilized by about 1/3 of students if viewing burden is heavy or students are not incentivized.

How do Biology Majors Conceptualize the Concept of Animals?

Andrea M.K. Bierema and Renee’ S. Schwartz, Western Michigan University, Kalamazoo, MI

Several terms commonly used in science have separate scientific and everyday meanings, such as ‘animal’. Although by the third year in program, biology majors should have a scientific concept of animals, they may also still have an everyday concept. The everyday concept typically refers to vertebrates, whereas the scientific concept includes vertebrates and invertebrates. In biology classrooms, upper-level biology majors were asked to list five types of animals. Then, students were given explicit direction to reflect on the diversity of the entire animal kingdom as they provided another list of animals. Immediately afterward, students were shown a series of photographs and terms and asked to identify each as an animal or non-animal. On their first list, students typically used an everyday concept of animal and listed mostly vertebrates, especially mammals. After explicit instruction, their lists became more diverse and commonly included invertebrates as well. When asked to identify examples as animals or non-animals, students also typically used a scientific concept. This study serves as an excellent example of the need to use explicit instruction in the science classroom. Although students knew the scientific concept, they still initially used their everyday concept, even though they were in a biology classroom.

Special Guest Presenter:


Sally G. Hoskins, Professor, Biology Dept. City College of the City University of New York, New York, NY

Recipient of the 2013 Four-Year College & University Section Research in Biology Education Award

Journal articles are a key method used by working biologists to communicate their findings, and undergraduates are capable of reading and gaining much from analysis of primary and other scientific literature. With collaborators Leslie Stevens (University of Texas—Austin) and Kristy Kenyon (Colleges of Hobart and William Smith), I have developed and tested a new learning/teaching strategy called C.R.E.A.T.E. (Consider, Read, Elucidate hypotheses, Analyze and interpret data, Think of the next Experiment), that uses scientific literature as the focus for understanding science. C.R.E.A.T.E. provides novel and adapted pedagogical tools (concept mapping, cartooning, figure annotation, sentence translation, data analysis templates, experimental design and grant panel activities) for students to use in decoding primary or popular-press scientific literature. Classes run lab-meeting-style with active discussions about what data mean, how conclusions were reached, possible alternative interpretations, and considerations of how a given study could be followed up. Late in the semester, classes develop single surveys of questions about “life as a scientist” that are emailed to all authors of papers analyzed in class. The varying responses of PIs, postdocs, and graduate student authors to the same questions provide students unique insight into the diversity of the lives and motivations of “the people behind the papers”. Both in courses for first-year students and in upper-level capstone courses, C.R.E.A.T.E. produces (1) significant gains in students’ ability to “think like scientists” (critical thinking, content integration, experimental design ability gains) and, equally important, (2) significant gains in students’ understanding of what scientists do, why they do it, and “who” can become a scientist. I will discuss why I believe this approach is optimal for 21st century biology students, and outline ways to extend the C.R.E.A.T.E. strategy to high school students of biology.
process involved in creating a microarray.

The session will involve a computer driven virtual version, as well as a paper model that simplifies the microarray.

Leah McRae, James Clemens High School, Madison, AL

**442 Using Systems Thinking to Understand Ocean Acidification**

Courtland • Hands-on Workshop (75 min) • Marine Biology • MS HS 2C

Explore an NSF developed, systems biology, hands-on, and inquiry-based curriculum module. Students build STEM and systems thinking skills while learning about ocean acidification and its complex, interdisciplinary effects on ocean systems.

Claudia Ludwig (cludwig@systemsbiology.org), Institute for Systems Biology, Seattle, WA and Mari Knutson Herbert (KnutsonM@lynden.wednet.edu), Lynden High School, Lynden, WA

**#289 Human Ecology Activities for Global Citizenship**

Fairlie • Hands-on Workshop (75 min) • Environment/Ecology • MS HS

Discover interdisciplinary, hands-on activities to help students think critically and creatively about global challenges to the planet and human well-being, such as population growth, food and water availability, climate change and biodiversity.

Bonita Flournoy (bfourmoy@atlm.edu), Atlanta Metropolitan College, Atlanta, GA

**#252 Exploring Bias and Data Analysis with Wisconsin Fast Plants**

Greenbriar • Hands-on Workshop (75 min) • General Biology • MS HS 2C

In this hands-on workshop, participants will engage in and unpack a data analysis lesson using Wisconsin Fast Plants. This lesson can be used and modified for teaching introductory to advanced ecological, genetics, or growth and development concepts.

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

**#331 Flipping the Classroom Without Getting Disoriented**

Harris • Demonstration (75 min) • General Biology • HS 2C 4C

The flipped classroom is a new strategy that helps teachers focus on students, not content. Learn about resources and techniques for moving content delivery out of the classroom, as well as ideas for moving deeper learning activities into the classroom.

Steven Christenson (christensons@byui.edu) and Abigail Blades (bladesa@byui.edu), Brigham Young University – Idaho, Rexburg, ID

**Committee Meeting:**

**Awards Committee**

Heritage Boardroom

Priya DasSarma (PDasSarma@som.umd.edu), Committee Chair
#403 Hands-on Exposure: Authentic Research in the K-5 Classroom
Inman • Hands-on Workshop (75 min) • General Biology • E
Teachers will leave this workshop with materials and resources for lessons on genetics and communication in nature. The ShowMe Nature GK12 program will demonstrate lessons that exemplify the integration of authentic research into the K-5 classroom.

Clayton Coffman (clayton.coffman@gmail.com), Logan Decker (Lmd0a2@mail.missouri.edu), Jessica Merricks (Jawfz2@mail.missouri.edu) and Stephanie Schuttler (schuttlers@missouri.edu), University of Missouri, Columbia, MO

#276 Simulating Science: “A Cholera Epidemic” and “Stem Cells”
Kennesaw • Symposium (75 min) • General Biology • HS
Use inexpensive “wet lab” simulations and models to enhance students’ understanding of the molecular evolution of Cholera and of stem cells and their potential to treat diseases. Teacher information and student handouts are available from http://lifesciences.envmed.rochester.edu/

Susan Holt (sholtbmn@aol.com) and Dina Markowitz (dina_markowitz@urmc.rochester.edu), University of Rochester Life Sciences Learning Center, Rochester, NY

#ES11 Environmental Science: Exploring Ecosystems and Interdependent Relationships
Lenox • Exhibitor Session • Hands-on Workshop (75 min) • Environment/Ecology • HS
Examine a real-life example of pollution’s effect on an organism and its habitat with this interactive workshop. You’ll investigate water pollution using digital data collection, analyze the impact of pollution, and suggest a solution.

Jana Penders (jana.penders@vwr.com), Ward’s Science, Rochester, NY

#299 Literacy in the Biology Classroom
Piedmont • Hands-on Workshop (75 min) • General Biology • HS
Challenged to integrate Common Core Standards into your classes? Come learn about several ways to merge literacy and inquiry into biology in order to engage and deepen learning. Many examples, resources, and assessment ideas will be provided.

George Sellers, Ware Shoals High School, Ware Shoals, SC and Judy Jones (jjonesae@gmail.com), Chapel Hill Carrboro Schools (retired), Chapel Hill, NC

#381 Next Generation Science Standards “Do It Yourself!”
Rosewell • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • E HS
The NGSS implementation process requires educators to change how we teach (our pedagogy) rather than what we teach. Enabling students to construct and demonstrate science understanding will require major shifts in how we frame and scaffold instruction.

Robby Cramer (robbby.cramer@vai.org), Van Andel Education Institute, Grand Rapids, MI and Cheryl Hach (cherylhach@hotmail.com), Kalamazoo Area Math and Science Center, Kalamazoo, MI

#263 Using the “5 Practices Framework” to Facilitate Productive Classroom Discussions
Spring • Hands-on Workshop (75 min) • General Biology • HS
The “5 Practices Framework” allows teachers to prepare for and orchestrate rich learning and discussions around cognitively demanding tasks. Participants will explore and engage in the 5 practices using examples from high school classes across the United States.

Brittney Barickman (brittney.barickman@kstf.org), Cherry Creek High School, Greenwood Village, CO, Rachel Packer (rachelpacker@kstf.org), Lee High School, Springfield, VA and Helen Snodgrass (helen.snodgrass@kstf.org), YES Prep North Forest, Houston, TX

#394 Herbarium in a Snap!
Techwood • Hands-on Workshop (75 min) • General Biology • MS, HS
Herbarium in a Snap is an engaging hands-on workshop that pairs technology with life science as a powerful vehicle in teaching students in grades 7-12 to investigate, model, and explain the organization of Kingdom Plantae while allowing its participants to enjoy the beauty and wonder of plants.

Sarah Lowman (Sarah.Lowman@lcsk12.org), Tanner High School, Tanner, AL

#ES12 AP® Environmental Science Resources
Marietta • Exhibitor Session • Demonstration (75 min) • Environment/Ecology • HS
This session will inform participants of available resources, both print and digital, to ideally address the requirements of College Board’s AP Environmental Science course. Complimentary copies and supporting documentation are available.

Cindi Weiss (cweiss@bfwpub.com), W.H. Freeman, New York, NY

11:45am – 1:00pm
continued

1:15pm – 4:00pm

NABT Biology Education Research Symposium
Learning Center • Special Program
You are invited to the 5th Annual Biology Education Research Symposium. Presentations were accepted through a double blind peer review process that was open to biology educators and researchers at all levels.

Please refer to page 30 for abstracts.

NABT Global Perspectives Committee Poster Session
Hanover E • Special Program
The NABT Global Perspectives Committee is proud to present its inaugural conference session entitled Connecting Students to Planet Earth through the Study of Global Biological Knowledge. This interactive
poster session highlights innovative learning environments to enhance biology education internationally.
Please see the following column for details.

1:15pm – 2:30pm

Continued: NABT AP Biology Symposium
Regency V • Special Program • AP Biology • HS 2C 4C

#ES15 Ecology to Enzymes to Industry (AP Big Idea 4)
Chicago A & B • Exhibitor Session
• Hands-on Workshop (75 min) • AP Biology • HS 2C 4C
Use ecological knowledge and mushroom to find and characterize novel cellulose enzymes for application in cellulosic biofuel production. The enzyme is easy to extract from mushrooms and a colorimetric system will be used for assaying enzyme activity.
Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, CA

#ES16 Labs that Fit: Making Inquiry Work in your AP Biology Classroom
Chicago C & D • Exhibitor Session
• Hands-on Workshop (75 min) • AP Biology • HS 2C 4C
Need an easier way to introduce inquiry? This hands-on workshop introduces you to resources designed for the AP Biology curriculum and gives you an opportunity to discuss success stories with your peers.
Bobbie Hinson (bobbie.hinson@providenceday.org), Providence Day School, Charlotte, NC, Theresa Holtzclaw and Fred Holtzclaw, Webb School of Knoxville, Knoxville, TN
Presented in partnership with Carolina Biological Supply Company.

NABT Global Perspectives Committee
2013 INAUGURAL POSTER SESSION:
“Connecting Students to Planet Earth through the Study of Global Biological Knowledge”

1:15pm – 4:00pm
1:15pm – 2:00pm: Persuasive Poster Introductions
(3 minute presentations)
2:00pm – 3:30pm: A Tour of Posters
3:30pm – 4:00pm: Wrap-up: Thinking Out of the Box
Poster Session moderated by Dr. Jacqueline McLaughlin,
The Pennsylvania State University, Global Perspectives Committee Chair

Poster Presentations:

An Interdisciplinary Immersion Course about the Hawaiian Islands
Melinda Pomeroy-Black, Nicki Cauthen & Sarah Beth Mallory, LaGrange College, LaGrange, GA

Biotechnology to Bioentrepreneurship
M. Quinto, B. Bolo, C. Mintu, B. Lansang, A. Alvarez, A. Pag-ong & B. Laza, Far Eastern University, Manila, Philippines

CHANCE: Promoting Environmental Education in China through Research
Jacqueline McLaughlin, The Pennsylvania State University, Center Valley, PA; Xiaoying Cheng & He Liu, Jiangnan University, Wuxi, Jiangsu Province, China

Connecting The Dots: Penn State University and University of Guanajuato Students Collaborate to Investigate the Effects of Agriculture on the Ecology of Guanajuato, Mexico
Karen Kackley-Dutt & Mary Hutchinson, The Pennsylvania State University, Center Valley, PA

Evolution of a Program of Faculty-Led International Field Experiences
Alan Stam, Kerry Cheesman & Nancy Swails, Capital University, Columbus, OH

Hydroponic Greenhouse Bio-Sensor Curriculum Project
Christine Yukech, University of Akron, Akron, OH

Involving Students in Learning Biology through Faculty-Led International Field Experiences
Kerry Cheesman, Alan Stam & Nancy Swails, Capital University, Columbus, OH

Malaysia Tropical Field School: Integrating Field Biology with Local Culture and Knowledge
Nurul Salmi, Universiti Sains Malaysia, Penang, Malaysia

Students as Ecological Scientists
Simon Buzzard, Ecology Project International, Missoula, MT

TRIAD in Chile: Teaching, Research, and Industry Partnerships to Advance Global Scientific Understanding through the National Science Foundation GK-12 Program
Kim Cleary Sadler, Rachel Lytle, Tony Farone & Mary Farone, Middle Tennessee State University, Murfreesboro, TN
1:15pm – 2:30pm
continued

#ES13 Human Physiology with PASCO Probeware
Hanover A • Exhibitor Session • Hands-on Workshop (75 min) • Anatomy & Physiology • HS 2C 4C
Participate in innovative activities from PASCO’s biology lab manuals and get hands on with EKG, blood pressure, heart rate, and skin temperature sensors. See how you can make lecture come alive using PASCO’s intuitive SPARKvue® software.
Ryan Reardon (sales@pasco.com), PASCO scientific, Roseville, CA

#ES14 Field Biology with Vernier
Hanover B • Exhibitor Session • Hands-on Workshop (75 min) • Environment/Ecology • MS HS 2C 4C GA
Use LabQuest 2 to engage students in field biology and ecology. Learn how to use the Data Matrix mode, new Optical DO Probe, and internal GPS to get the most out of your field studies. Learn how to map your data on Google Maps™ using Logger Pro.
Mike Collins (sales@vernier.com), Vernier Software & Technology, Beaverton, OR

#478 HHMI’s How and Why Species Multiply
Hanover C • Hands-on Workshop (75 min) • Evolution • HS GA
HHMI’s latest short film journeys from the Galapagos to the Caribbean to discover the processes responsible for the diversity of species on our planet. Participants will learn about free multimedia resources to support key concepts in the film.
Paul Strode (paul.strode@bvsd.org), Fairview High School, Boulder, CO

#341 Free Online Stem Cell Curriculum with Five Units
Hanover D • Demonstration (75 min) • General Biology • 2C
California’s stem cell funding agency has developed a FREE five-module curriculum on stem cells, two basic biology and three AP level. Each online unit is pegged to state guidelines and is resource rich with materials for teachers and students.
Don Gibbons (dgibbons@cirm.ca.gov), California Institute for Regenerative Medicine, San Francisco, CA

#390 American Society for Microbiology Presents: CDC Excite Program – Epidemiology in the Classroom
Hanover F & G • Paper (75 min) • Microbiology & Cell Biology • HS 2C 4C
This presentation will introduce the attendee to the Centers for Disease Control and Prevention’s EXCITE program. The EXCITE program introduces students to epidemiology through case studies and exciting hands-on activities.
Ralph Cordell, Centers for Disease Control and Prevention, Atlanta, GA and Dave Westenberg, Missouri S&T, Rolla, MO

#314 How to Integrate NGSS using NASA Education Materials
Baker • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • MS HS
Learn to incorporate the Next Generation Science Standards by using NASA Educational Resources that encourage critical thinking while integrating science and engineering practices and crosscutting ideas into the core discipline of life science.
Sandra Lampley (sal2j@mtmail.mtsu.edu), Chatoria Kent (cak2e@mtmail.mtsu.edu), and Ginger Rowell (rowell@mtsu.edu), Middle Tennessee State University, Murfreesboro, TN

#295 Using Manipulatives to Teach Photosynthesis and Respiration
Dunwoody • Hands-on Workshop (75 min) • AP Biology • HS 2C 4C
Photosynthesis and respiration are two topics that are difficult to teach and misunderstood by students. In this module, manipulatives will be used to reinforce the basic concepts of energy, oxidation, reduction, ATP and reducing agents.
Umadevi Garimella (ugarimel@uca.edu), University of Central Arkansas, Conway, AR

#320 Pedagogy, Practice, and Partnership in the Biology Classroom
Edgewood (Session I) • Paper (30 min) • Anatomy & Physiology • HS 2C 4C
During this session, members of the IDEAL biology team will present findings from their NIH funded Science Education Partnership Award (SEPA) project that created, implemented, and assessed novel curricular materials in secondary biology classrooms.
Georgia Hodges (gagee@uga.edu) and J. Steve Oliver (slover@uga.edu), University of Georgia, Athens, GA

#338 Creating Motivating Environments for Biology Students
Edgewood (Session II) • Paper (30 min) • General Biology • 4C, 2C
We implemented a socio-scientific issues-based laboratory curriculum in a university majors biology course. In order to assess the effectiveness of this curriculum, we conducted a mixed methods research study investigating student motivation.
Krissi Hewitt (hewittkr@onid.orst.edu) and Lori Kayes (Lori.Kayes@science.oregonstate.edu), Oregon State University, Corvallis, OR
#326 Know What They Know: Engaging, Hands-on Formative Assessment
Fairlie • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • E MS
If you teach elementary or middle level, join us for a session filled with hands-on, student-centered strategies that will enhance instruction and provide immediate feedback for students and teachers. Walk away with highly effective formative assessment activities.

Marianne Dobrovolny, Center for the Integration of STEM Education and Research at Texas Tech University, Nashville, TN and Tobi McMillan, Center for the Integration of STEM Education and Research at Texas Tech University, Lubbock, TX

#292 Population Ecology: Wolf vs. Moose
Greenbriar • Hands-on Workshop (75 min) • Environment/Ecology • MS HS
The wolf vs. moose, a predator/prey relationship, provides an excellent opportunity to study population ecology on an island, Isle Royale National Park. With the wolf population in peril, the 55+ year study may need to be altered.

Sylvia Tufts (stufts@ix.netcom.com), Thronridge High School (retired), Flossmoor, IL

#371 Teaching Nature of Science, Science Practices, and Biology
Harris • Paper (75 min) • General Biology • HS 2C 4C
This session presents practical strategies for integrating the teaching of nature of science and scientific practices, while also teaching cellular and molecular biology concepts in an undergraduate course. Assessments are included.

Renee Schwartz (r.schwartz@wmich.edu), Brandy Skjold (b.skjold@wmich.edu) and Andrea Bierema (andrea.m.kryger@wmich.edu), Western Michigan University, Kalamazoo, MI

Committee Meeting: Professional Development Committee
Heritage Boardroom
Catherine Ambos (CAMbos@somervillenjk12.org), Committee Chair

#244 Even Before STEM, Biology and Math Loved Each Other!
Inman • Hands-on Workshop (75 min) • General Biology • MS HS GA
Integrating biology and math should be seamless, natural and painless. Come and see how the philosophy of STEM has really been alive (but not named) for a long time.

Jeff Lukens (jeffrey.lukens@k12.sd.us), Roosevelt High School, Sioux Falls, SD

#248 Using Bioethics Case Studies to Enhance a Biology Curriculum
Kennesaw • Hands-on Workshop (75 min) • Bioethics • MS HS 2C
Science teachers are often confronted with questions from their students about bioethical issues. Many teachers have concerns about time constraints or the controversial nature of the topics, but the study of bioethics can encourage important critical thinking.

Terry Maksymowych (tmaksymowych@ndapa.org), Academy of Notre Dame de Namur, Villanova, PA

#ES17 Guided and Student Lead Inquiry in AP Biology and Other Labs
Lenox • Exhibitor Session • Hands-on Workshop (75 min) • AP Biology • HS
Share ideas and get hands on practice with inquiry labs while reviewing the new AP Biology Labs from Ward’s Science. We’ll show you ways to get students started on developing their own experiments using our Inquiry Tool Kit.

Jana Penders (jana.penders@vwr.com), Ward’s Science, Rochester, NY

Committee Meeting: Professional Development Committee
Heritage Boardroom
Catherine Ambos (CAMbos@somervillenjk12.org), Committee Chair

Academic Excellence. Professional Success.
#266 Slither, Slide, Run, & Hide: Animals in the Classroom
Piedmont • Hands-on Workshop (75 min) • Environment/Ecology • GA
Learn how to use snakes, salamanders, turtles, lizards and frogs to address the Next Generation Science Standards in your classroom. Discover how your school grounds can provide students with authentic research experiences in field biology.

Lacey Huffling (ldhuffli@uncg.edu) and Catherine Matthews (cmatthews@uncg.edu), University of North Carolina at Greensboro, Greensboro, NC and Terry Tomasek (tomasek@elon.edu), Elon University, Elon, NC

#323 Connecting Phenotype to Genotype: FPsc Genetic Resources
Rosewell • Hands-on Workshop (75 min) • Genetics • HS 2C 4C
The FPsc suite of genetic and molecular resources enable you and your students to transition seamlessly from Mendelian genetic analysis to molecular biology and modern genomic sciences by using plants in your classroom.

Scott Woody (swoody@wisc.edu), University of Wisconsin – Madison, WI

#273 Writing for The American Biology Teacher
Spring (Session I) • Paper (30 min) • General Biology • HS 2C 4C
Learn techniques for writing a successful article for The American Biology Teacher. Included are author guidelines, sample articles and an opportunity to ask questions.

William Leonard (leonard@clemson.edu), Clemson University (emeritus), Mountain Rest, SC and William McComas, University of Arkansas, Fayetteville, AR

#290 Reviewing for The American Biology Teacher
Spring (Session II) • Demonstration (30 min) • General Biology • HS 2C 4C
The ABT depends upon expert blind reviews to judge the quality of manuscript submissions and we are always seeking reviewers. The Editor will share reviewing techniques for new and potential reviewers and show how you can contribute.

William Leonard (leonard@clemson.edu), Clemson University (emeritus), Mountain Rest, SC and William McComas, University of Arkansas, Fayetteville, AR

#466 AARK Presents: Amphibian Declines, Conservation, and Outreach Education
Techwood • Demonstration (75 min) • Global Perspective • HS 4C GA
IUCN Amphibian Ark will present an overview of the scientific and conservation challenges of global amphibian declines. Resources for educators will be reviewed and distributed to participants. Specific activities for educators will be suggested.

Joseph Mendelson (joe@amphibianark.org), Amphibian Ark, Atlanta, GA and Rachel Rommel (rachel@amphibianark.org), Amphibian Ark, St. John, NB, Canada

#ES18 Delicate Arrangement: Alfred Russel Wallace, Charles Darwin
Marietta • Exhibitor Session • Symposium • Evolution • HS 2C 4C GA
To mark the centenary this year of Wallace’s death, we will celebrate the man and discuss why the theory of evolution was discovered not once but twice, who Wallace was, how he came to the idea, and why he remains in the shadow of Darwin to this day.

Andrew Berry, Harvard University, Cambridge, MA

Continued: NABT AP Biology Symposium
Regency V • Special Program • AP Biology • HS 2C 4C

Continued: NABT Biology Education Research Symposium
Learning Center • Special Program

#ES21 Explore Molecular Evolution Using Protein Electrophoresis
Chicago A & B • Exhibitor Session • Hands-on Workshop (75 min) • AP Biology • HS 2C 4C
Generate protein profiles from fish using protein gel electrophoresis. Test the hypothesis that these profiles are indicators of evolutionary relatedness and construct cladograms.

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, CA

#ES22 Science Video Journals to Increase Productivity in Education
Chicago C & D • Exhibitor Session • Demonstration (75 min) • Instructional Strategies/Technologies • HS 2C 4C
This presentation will be an overview of the growing field of scientific video publication and educational resources and discuss the technical challenges, implications for scholarly communication and acceptance in the academic and library community.

Linda Evers (linda.evers@jove.com), JoVE (Journal of Visualized Experiments), Cambridge, MA

Continued: NABT Global Perspectives Committee Poster Session
Hanover E • Special Program
continued

2:45pm – 4:00pm

#397  #21 Your Students’ Understanding of the Sciences
Ellen Gilbert, University of Illinois, Chicago, IL

#358 From DNA to Genomics: What Should We Teach?
Courtland - Hands-on Workshop (75 min) • General Biology • HS 2C
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.

#352 DNA Subway: Cutting-Edge Bioinformatics for the Classroom
Baker • Demonstration (75 min) • Biotechnology • HS 2C 4C
Learn about DNA Subway, a free and easy-to-use online resource for teaching the bioinformatics of genomics and DNA barcoding.

#407 What Makes Honey Bees Work Together?
Dunwoody • Hands-on Workshop (75 min) • AP Biology • HS 2C 4C
The intersection between genetics, environment and behavior will be investigated in the charismatic honey bee. Come explore hands-on activities addressing Next Generation Science Standards. Free NIH-SEPA curriculum materials will be distributed.

#298 TOPIC Sense: Helping Students Start a Research Project
Edgewood • Paper (75 min) • General Biology • MS HS
Research is an excellent way to improve student understanding of the sciences. Students reach the first stumbling block
very early on: picking a topic! Ideas and strategies will be discussed that will help educators guide students to success.

Karen Shepherd, Plano ISD, Plano, TX

#404 Nature Journals for Everyone
Greenbriar • Hands-on Workshop (75 min) • Environment/Ecology • 2C GA
Nature journaling is an accessible and inexpensive way to connect students with nature. In this workshop, a short lecture/demo on nature journaling basics is followed by going outside to practice the skills for a creative & engaging experience.

Beth Ann Krueger (Beth.krueger@centralaz.edu), Central Arizona College – Aravaipa Campus, Winkelman, AZ

Committee Meeting: Long Range Planning Committee
Heritage Boardroom
Todd Carter (todd.carter@sccc.edu), Committee Chair

#258 A Framework for Teaching of Protein Synthesis and DNA
Inman • Demonstration (75 min) • Instructional Strategies/Technologies • HS 2C 4C
Protein synthesis is a detailed process which students find difficult to grasp. Come see a framework for the teaching of protein synthesis and DNA that helps lead to an understanding and desire to study genetics. Free web-based materials provided.

John Moore (jmoore@taylor.edu), Taylor University, Upland, IN

#274 Disease Detectives – Meningitis
Kennesaw • Hands-on Workshop (75 min) • General Biology • HS
Conduct simulated lab tests to determine that a teen patient has bacterial meningitis. Use a pre-writing grid to organize information for writing a letter to inform parents about the importance of the meningitis vaccine. This activity, and other neurobiology activities, are available online at http://lifesciences.envmed.rochester.edu/

Susan Holt (sholtbmn@aol.com) and Dina Markowitz (Dina_markowitz@urmc.rochester.edu), University of Rochester Life Sciences Learning Center, Rochester, NY

#308 Model Systems and Methods for Independent Student Research
Rosewell • Paper (75 min) • Curriculum Development • HS 2C 4C
We run an independent research program in molecular and cellular biology for advanced seniors. Learn how model systems, including C. elegans, cell culture and bacteria, can be used in cutting edge student research – without breaking the budget.

Christine Marshall-Walker (cmarshallwalker@andover.edu), Phillips Academy, Andover, MA

#267 Vision and Change in Non-Majors Biology: A Data Driven Model
Spring (Session I) • Paper (30 min) • General Biology • 4C
An overview of efforts to bring Vision & Change to non-majors introductory biology at Western Oregon University. This session will share strategies, tools and templates for initiating and implementing curriculum revisions, with sample lessons and assessments.

Erin Baumgartner (baumgare@wou.edu), Western Oregon University, Monmouth, OR

#282 Low Cost, CCSS Standard-Based & Engaging Strategies
Piedmont • Hands-on Workshop (75 min) • General Biology • MS HS
Hands-on activities to address the nature of science, heredity, and ecosystems. All are engaging, aligned to CCSS & real world processes and use low cost supplies. Complete lesson plans accessible online; free materials and prizes distributed.

Linda Fitzhugh (lfitzhugh@gulfcoast.edu), GCSC/PAEC, Panama City, FL; Tammy Stundon (stundtm@bay.k12.fl.us), Mosley High School, Lynn Haven, FL; Nancy Dow (downd@bay.k12.fl.us), J.R. Arnold High School, Panama City Beach, FL; and Jill Hansen (hansejm@bay.k12.fl.us), Bay High School, Panama City, FL

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Christine Marshall-Walker (cmarshallwalker@andover.edu), Phillips Academy, Andover, MA

#416 Group Motivation in Large Undergraduate Biology Classes
Spring (Session II) • Paper (30 min) • General Biology • 2C 4C
In this research to practice session, we discuss the implications of considering the motivational composition of small groups in a large introductory biology course. An outline of the class and impact on student learning outcomes will be provided.

Grant Gardner, Middle Tennessee State University, Murfreesboro, TN
2:45pm – 4:00pm

#283 Photosynthesis: Bringing the Light Reactions to Life
Techwood • Hands-on Workshop (75 min) • General Biology • HS
“The Light Reactions come to Life” with this role-playing activity that allows students to become part of Photosystem I and II. Students gain understanding of the light reactions by becoming the players as they pass e-, move H+, and split H2O.

Cheryl Mangum, Fairview High School, Cullman, AL

#ES24 Engaging Stories: Teaching Environmental Science in Context
Marietta • Exhibitor Session • Demonstration (75 min) • Environmental/Ecology • HS 2C 4C
A variety of examples will be presented demonstrating how to use engaging stories about current environmental issues, paired with active learning class activities, to enhance learning and spark student interest.

Susan Karr, Carson-Newman University, Jefferson City, TN
Presented in partnership with W.H. Freeman.

4:00pm – 7:00pm

Exhibit Hall Opening Reception
Grand Hall • Special Event
You are the guest of honor at this special reception showcasing the NABT Exhibitors. The NABT Exhibit Hall is the place to learn about the latest and greatest in technologies, programs and resources. Meet new companies and visit your favorites. And make sure you are getting those freebies for your classroom and your colleagues back home!

Sponsored by Vernier Software & Technology

7:00pm – 9:00pm

AP Biology Section Reception
Regency V • Special Event
You’ve been working with the new curriculum and your students have taken their exams. Now it’s your opportunity to discuss the changes with some “friends” from the AP Community, even if you haven’t met them in person yet.

Sponsored by Pearson

Undergraduate Education Poster Session
POSTER TITLES AND AUTHORS

1. Analysis of Eye-Tracking Characteristics from High Achievers and Underachievers in Middle School When Learning the Instructional Materials Containing Explanative or Nonexplanative Illustrations
Kil Jae Lee, Ae Jin Jeong, and Hee Young Ju, Korea National University of Education, Cheongwon-ku, Chung-buk, Korea

2. Animal Behavior and Invasive Species in a Socio-Scientific Issues-Based Laboratory Module*
David L. Hubert, Krissi M. Hewitt, and Lori Kayes, Oregon State University, Corvallis, OR

3. Are We Educating New Teachers about Biological Evolution?*
Justyce Lanae Launa Lewis, Valdosta State University, Valdosta, GA

4. Association of the 5-HTTLPR Polymorphism and Depressive Symptoms in College Students
Casey Mohrien, SUNY Plattsburgh, Plattsburgh, NY

5. Biology and Business Do Mix: Course-Embedded Travel Experience in Barbados
William Kroen, Wesley College, Dover, DE

6. Biology Teaching Assistant Project (BioTAP)
Kristen Miller, University of Georgia, Athens, GA; Elisabeth Schussler and Sarah Dalrymple, University of Tennessee, Knoxville, TN

7. Bringing Quantitative Data Alive in the AP Biology Classroom
Kari L. Clase, Purdue University, West Lafayette, IN; Georgia Everett, Western High School, Russiaville, IN; Kathy Daniels, Mississinewa High School, Gas City, IN; Loran Carleton Parker, Purdue University, West Lafayette, IN

8. Building Leadership Capacity for Transformational Change
Susan Musante, American Institute of Biological Sciences, Reston, VA; Muriel Poston, Pitzer College, Claremont, CA; Teresa C. Balser, University of Florida, Gainesville, FL

Two-Year College Section Reception
Regency VI • Special Event
Teaching at the community college level presents unique challenges and the NABT Two-Year College Section always has some great ideas (and stories) to share. The winner of the Two-Year College Biology Teaching Award will be honored and everyone is welcome to attend.

Sponsored by Hayden M. McNeil

continued
Undergraduate Education Poster Session

POSTER TITLES AND AUTHORS

continuation

9. Characteristics of Students Retaking Introductory College Biology Courses at Angelo State University, TX
Connie Russell, Angelo State University, San Angelo, TX, and Amanda Smiley, Oxford High School, Mission, TX

10. Combinational PCR to Produce a Multi-functional Plasmid*
David Bates, Tess Rasmussen, and Steven Christenson, Brigham Young University-Idaho, Rexburg, ID

11. COMT Gene Ratios and GPA Correlation*
Alexander Oliver Bender, Nancy Elwell, and Sandra Latourelle, SUNY Plattsburgh, Plattsburgh, NY

12. Creating High-School Teaching Materials that Interweave Sea-Level Rise Research with High School Teaching Standards
Joshua S. Reece, Valdosta State University, Valdosta, GA; Leah B. Reidenbach and Reed F. Noss, University of Central Florida, Orlando, FL

13. Design and Implementation of a Socio-Scientific Issues-Based Curriculum*
Krissi M. Hewitt, Lori Kayes, and Robert Mason, Oregon State University, Corvallis, OR

14. Design of an Integrated Teaching and Learning Biological Sciences Course for Prospective Elementary Teachers*
Jaimie Sabel, Cory Forbes, and Laura Zangori, University of Iowa, Iowa City, IA

15. Direct Display of Student Learning: Student-Made Teaching Videos
Jennifer Guess and Robert Noyd, United States Air Force Academy, Colorado Springs, CO

17. Do Genes Affect Altruism and Stress Reactivity: an Exploration of the OXTR Gene*
Gregg LaFleur, SUNY Plattsburgh, Plattsburgh, NY

18. Does the 2D:4D Finger Ratio in Athletes Suggest a More Aggressive Behavior?*
Jenny Kistner, Nancy Elwell, and Sandra Latourelle, SUNY Plattsburgh, Plattsburgh, NY

19. Environmental Lessons from Salt-Loving Microbes*
Folasade Ekulona, Priya DasSarma, and Karen M. Watson, Institute of Marine & Environmental Technology, Baltimore, MD

20. Establishing a DNA Database for the Genus Rana in the New York Lake Champlain Basin*
Justin Andrews, SUNY Plattsburgh, Plattsburgh, NY

21. Evolution: Verification of Emotional Response in Students
Elizabeth Morrison and Mark W. Bland, University of Central Arkansas, Conway, AR

22. Exploring Motivating Factors Engaging Undergraduates in Research*
Chandrani Mishra, Anna Goodman, and Shamekia Woods, University of Southern Mississippi, Hattiesburg, MS

23. Finding Invasive Species in Lake Champlain and Its Basin with the Use of Environmental DNA*
Maxwell Marsh, SUNY Plattsburgh, Plattsburgh, NY

24. Haplotype Determination of Ancient Maya DNA*
Michael Haynes, Nancy Elwell, and Sandra Latourelle, SUNY Plattsburgh Plattsburgh, NY

25. How Effective are Learning Objectives? A Study of Student Utilization of Learning Objectives in a Non-Majors Biology Course*
Jessica Merricks and Bethany Stone, University of Missouri, Columbia, MO

26. Impact of I-70 and Freight Railroad lines on Martin University Campus and Its Neighborhood in Indianapolis, Indiana
Mama Singh, Martin University, Indianapolis, IN

27. Impacting Science and Environmental Attitudes through a Nature Center Day Camp*
Heather Barker and Cindi Smith-Walters, Middle Tennessee State University, Murfreesboro, TN

28. Improving Students’ Perceptions of the Scientific Method by Showing Them ‘How Real Science Works’*
Robert D. Denton, Matthew L. Holding, and Kate Mollohan, Ohio State University, Columbus, OH

Julie E. Minbiole, Columbia College Chicago, Chicago, IL

30. Investigating a Correlation Between the CD36 Genotype and a Preference for Fatty Foods*
Rebecca Robbins, Nancy Elwell, and Sandra Latourelle, SUNY Plattsburgh, Plattsburgh, NY

31. Investigating Students’ Use of Technology to Explore Nature*
Carrie J Boyce, Chandrani Mishra, and Kristy L. Halverson, University of Southern Mississippi, Hattiesburg, MS

32. An Investigation of Multiple Learning Platforms in an Introductory Biology Laboratory Class*
Amber J. Reece, Malcolm B. Butler, and Ken M. Fedorka, University of Central Florida, Orlando, FL

33. Learning by Teaching – Creating Student-Centered & Interactive Teaching
Cemile Turan, Georgia State University, Atlanta, GA

34. A Qualitative Snapshot of Nursing Students’ Attitudes toward Science
Jill D Maroo, University of Northern Iowa, Cedar Falls, IA, and Kristy L. Halverson, University of Southern Mississippi, Hattiesburg, MS

35. A Quantitative Analysis of a Hike in the Woods: Preliminary Results of What Students Learn O.U.T.S.I.D.E. *
Marks McWhorter, University of Southern Mississippi, Hattiesburg, MS; Aimée K. Thomas, Loyola University, New Orleans, LA; and Kristy L. Halverson, University of Southern Mississippi, Hattiesburg, MS

36. Role of Virtual labs in Onsite Science Courses with Wet Lab Component
Mitthi Shah, DeVry University, Phoenix, AZ

37. SATURNS Journal: Research as a Teaching Methodology in the Undergraduate Curriculum
Louis Roccanova, James Remsen Jr., and Hector Sepulveda, Suffolk County Community College, Brentwood, NY

38. Student Reflections on Using the Virtual Learning Environment ‘Second Life’ in Combination with Classroom Instruction*
Jennifer A. Mraz, Carrie J. Boyce, and Kristy L. Halverson, University of Southern Mississippi, Hattiesburg, MS

39. Teaching Homeostasis and Its Related Concepts Using Computer Simulation
Rasheeta Faten, Vivien M. Chabalengula, and Frackson Mumba, Southern Illinois University, Carbondale, IL

40. Unexpected Outcomes: Impacting University Genetics Instruction via Secondary School Outreach
Michael Dougherty, American Society of Human Genetics, Bethesda, MD; Patti Bourexis and Joyce Kaser, The Study Group, Kill Devil Hills, NC

41. Using the Pre-Health Collection within ‘MedEdPortal’s’ Collaborative’ to Prepare Students for the MCAT 2015 Exam
Laurel Roberts, University of Pittsburgh, Pittsburgh, PA

42. A Versatile, Inquiry-Based Enzyme Lab: Factors that Modulate the Inhibition of Acetylcholinesterase from Bean Beetles by an Organophosphate Insecticide*
Gurcharan Singh, Rahat Gul, Hector Fermin, and Fardad Firoozinia, City College of New York, New York, NY

43. Vision and Change in a Non-Science Major General Biology Course
Wendy Jamison and Joyce Hardy, Chadron State College, Chadron, NE

* denotes entries for Student Poster Competition