

looking back

leaping forward

Atlanta

2013 NABT PROFESSIONAL DEVELOPMENT CONFERENCE



NABT

National Association of
Biology Teachers

1938 • 2013



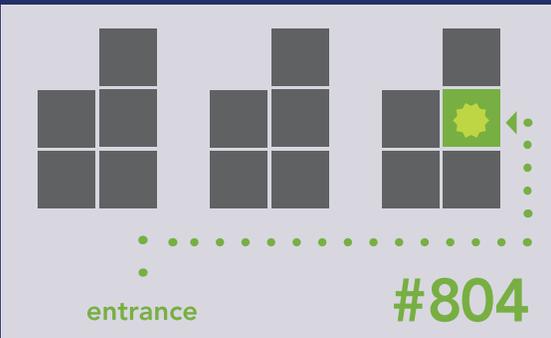
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ANNIVERSARY

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FROM THE PRESIDENT

Welcome to NABT's Professional Development Conference in Atlanta, Georgia. The Executive Director, Jacki Reeves-Pepin, the Board of Directors, and I thank you for attending the 2013 Conference, our **75th Anniversary**. I wish to extend a special thank you to the Conference and Professional Development Committees. The members of both committees have given generously of their time and worked hard to ensure this conference provides a rewarding experience for all attendees. I would also like to thank all NABT members who serve in leadership roles, those committee members and club and section chairs who help ensure that NABT remains a strong and healthy organization. In addition, I want to thank our sponsors who help make this conference possible and for the support that they provide NABT to promote biology education.

I want to take this opportunity to personally invite you to the **Town Hall Meeting** on Wednesday at 1:30pm. The Town Hall Meeting will provide you with the opportunity to learn more about NABT while interacting with the leadership of NABT, including our Executive Director and Board of Directors. On Wednesday night, there will be **HHMI Night at the Movies**, which provides another chance to meet and socialize with fellow NABT members. On Thursday morning, I would like to invite all first-time attendees to the **First Timers' Breakfast**. The breakfast provides "First Timers" with the opportunity meet other "First Timers" along with seasoned NABTers. Be ready to ask questions while receiving a warm welcome to NABT. Lastly, I invite you to attend the Friday night **75th Anniversary Gala**, a celebration of the past and future of NABT.

This year's conference is jam packed with an extensive agenda to meet the needs of all levels of biology educators, from K-12 to higher education. The conference provides an opportunity for everyone to meet and network with colleagues from all over the world. I look forward to connecting with long-time friends and colleagues, and meeting new friends and colleagues. By doing so, I exchange ideas that will help me continue to grow professionally and personally.

I wish everyone a rewarding conference.



Mark Little
NABT President 2013

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MEET US

SCHEDULE AT A GLANCE

am

7:00 :30 8:00 :30 9:00 :30 10:00 :30 11:00 :30 12:00 :30

Wednesday

Field Trip: Georgia Aquarium

Thursday

First Timers' Breakfast

General Session: Rita R. Colwell

Invited Speaker: Paul Andersen

NABT AP Biology Symposium

ASM and the CDC: Partners in Safety

Committee Meeting: Finance

Committee Meeting: Awards

Regular Sessions

Exhibitor Sessions

Friday

BioClub Breakfast

General Session: Ricki Lewis

Invited Speaker: Gordon Giesbrecht

The NABT Faculty Professional Development Summit

Four-Year Section Breakfast

Two-Year Section Breakfast

Coffee Break

Committee Meeting: Membership

Committee Meeting: Constitution & Bylaws

Regular Sessions

Exhibitor Sessions

Exhibit Hall

Saturday

General Session: David L. Nelson

Invited Speaker: Robert Farrell

College Board AP Biology Workshop

BDC Symposium

Committee Meeting: Occasional Publications

Committee Meeting: Global Perspectives

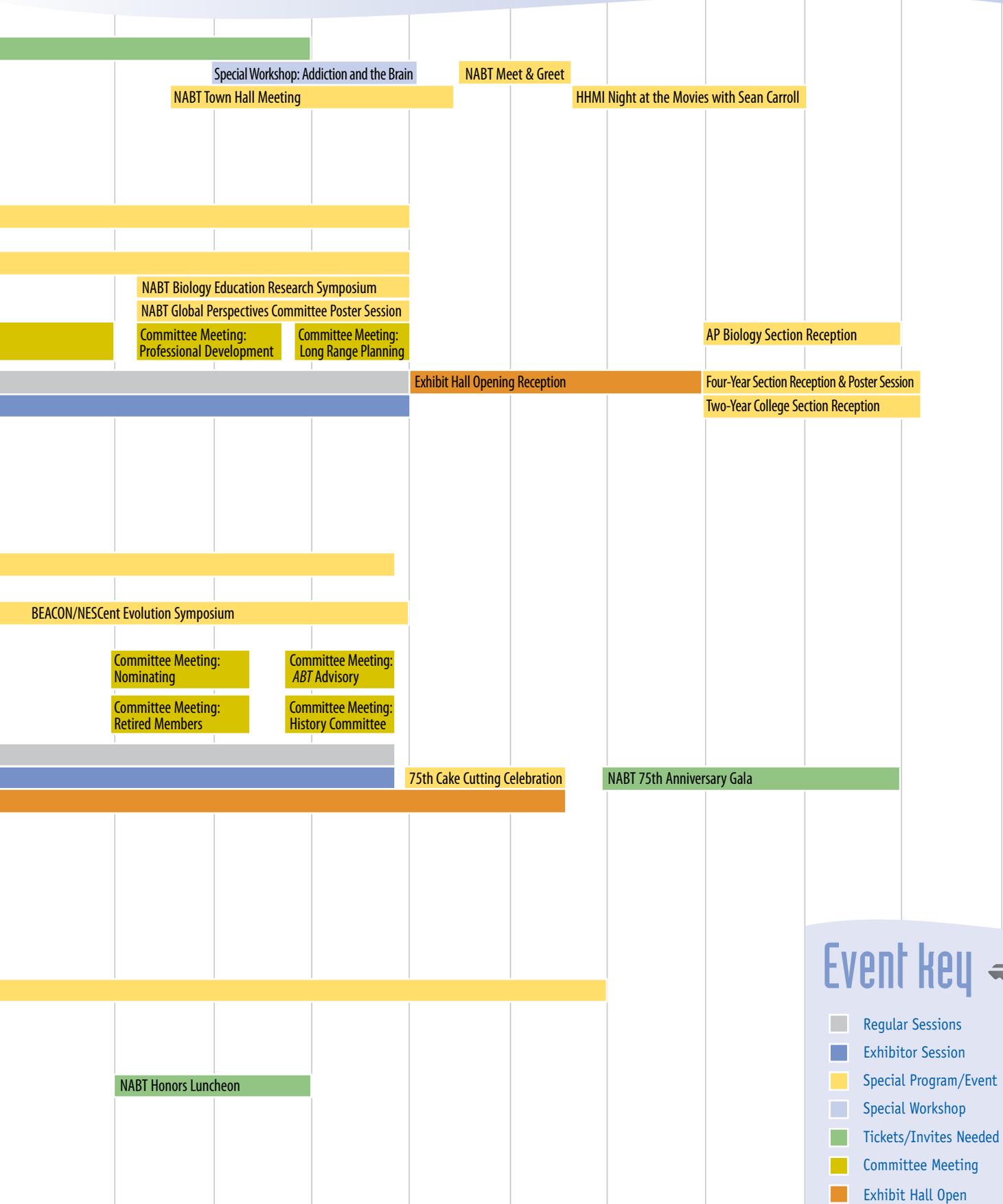
Special Workshop: NGSS Practices, Assessment, and You

Special Workshop: Developing a Naturalist Approach in the Teaching of Science Concepts and Inquiry

Regular Sessions

Exhibitor Sessions

7:00 :30 8:00 :30 9:00 :30 10:00 :30 11:00 :30 12:00 :30



Event key

-  Regular Sessions
-  Exhibitor Session
-  Special Program/Event
-  Special Workshop
-  Tickets/Invites Needed
-  Committee Meeting
-  Exhibit Hall Open

GENERAL INFORMATION

About NABT

The National Association of Biology Teachers (NABT) is the *leader in life science education*.™ Our association is the largest national organization dedicated exclusively to supporting biology and life science educators. Our members—representing all grade levels—teach more than one million students each year! Learn more by visiting www.NABT.org.

About the Professional Development Conference

All functions, meetings and exhibits will take place at the Hyatt Regency Atlanta unless otherwise noted.

Don't forget to Tweet using #nabt2013

Session Survey

Help us ensure you see great sessions at the NABT Conference. Take the session survey at <http://www.nabt.org/sessionsurvey>

About the Exhibition

Science equipment manufacturers, publishers, science suppliers, computer hardware and software developers, environmental groups, government agencies, health organizations, and many other companies will be on hand to show you how their products will help you in the classroom or laboratory. Registration badges are required for admission to the Exhibit Hall.

Exhibit Hall (Grand Hall) hours are:

Thursday, November 21	Opening Reception 4:00pm – 7:00pm
Friday, November 22	9:30am – 5:30pm

Field Trip

A special behind the scenes trip to the Georgia Aquarium is scheduled for Wednesday, November 20, and more details are available on page 16. The Aquarium is within walking distance of the hotel, but transportation for the 1:00pm tour will be leaving the hotel at 10:00am at allow for independent viewing. Please visit the registration desk for more details.

For Persons with Disabilities

Careful thought is given when planning the NABT Conference so that it is accessible to all persons. Should you require special services, please go to the registration area to contact an NABT representative. We will strive to meet your needs.

Certificate of Attendance

The certificate of attendance can be found at <http://www.nabt.org/websites/institution/index.php?p=677> and is also available using this QR Code.



Grad Credit

NABT has partnered with Northland College to offer credit for attending this year's conference. More information about requirements and costs are available at <http://www.nabt.org/websites/institution/index.php?p=677>.

Registration Hours

The NABT registration desk at the Hyatt Regency Atlanta is located in the Grand Hall Foyer. It will be open during the following hours:

Wednesday, November 20	7:00am – 9:00am Noon – 5:00pm
Thursday, November 21	7:00am – 4:00pm
Friday, November 22	7:00am – 4:00pm
Saturday, November 23	7:00am – 10:00am

Future NABT Conference Dates & Sites

2014 Professional Development Conference

November 12-15, 2014
Cleveland Convention Center
Cleveland, Ohio

2015 Professional Development Conference

November 11-14, 2015
Rhode Island Convention Center
Providence, RI

2016 Professional Development Conference

November 3-6, 2016
Denver Sheraton - Downtown
Denver, CO



1313 Dolley Madison Blvd.
Ste. 402, McLean, VA 22101

Phone: (888) 501-NABT
Fax: (800) 883-0698

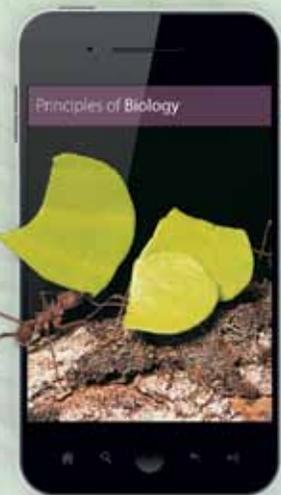
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highlighted

General Session Speakers

Rita R. Colwell, Ph.D.



Distinguished University Professor,
University of Maryland
College Park and
Johns Hopkins University
Bloomberg School of Public Health,
College Park, MD

Dr. Rita Colwell is Distinguished University Professor at both the University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health, Senior Advisor and Chairman Emeritus, Canon US Life Sciences, Inc., and President and Chairman of CosmosID, Inc. Her interests are focused on global infectious diseases, water, and health, and she is currently developing an international network to address emerging infectious diseases and water issues, including safe drinking water for both the developed and developing world, in collaboration with Safe Water Network, headquartered in New York City.

Dr. Colwell served as the Director of the National Science Foundation from 1998-2004. In her capacity as NSF Director, she served as Co-chair of the Committee on Science of the National Science and Technology Council. Dr. Colwell has held many advisory positions in the U.S. Government, nonprofit science policy organizations, and private foundations, as well as in the international scientific research community. She is a nationally-respected scientist and educator, and has authored or co-authored 17 books and more than 800 scientific publications. She produced the award-winning film, *Invisible Seas*, and has served on editorial boards of numerous scientific journals.

Dr. Colwell has previously served as Chairman of the Board of Governors of the American Academy of Microbiology (AAM) and also as President of the American Association for the Advancement of Science (AAAS), the Washington Academy of Sciences, the American Society for Microbiology (ASM), the Sigma Xi National Science Honorary Society, the International Union of Microbiological Societies, and the American Institute of Biological Sciences (AIBS).

Dr. Colwell has been awarded 55 honorary degrees from institutions of higher education, including her Alma Mater, Purdue University, and is the recipient of the Order of the Rising Sun, Gold and Silver Star, bestowed by the Emperor of Japan, the 2006 National Medal of Science awarded by the President of the United States, the 2010 Stockholm Water Prize awarded by the King of Sweden, and the **2013 Distinguished Service Award from the National Association of Biology Teachers**. Dr. Colwell is a member of the National Academy of Sciences, the Royal Swedish Academy of Sciences, Stockholm, the Royal Society of Canada, the Royal Irish Academy, the American Academy of Arts and Sciences, and the American Philosophical Society.

Born in Beverly, Massachusetts, Dr. Colwell holds a B.S. in Bacteriology and an M.S. in Genetics, from Purdue University, and a Ph.D. in Oceanography from the University of Washington.

For session details, see page 25.

Ricki Lewis



Author, Genetic Counselor,
Assistant Professor
Albany Medical College,
Albany, NY

Dr. Ricki Lewis is a science writer with a Ph.D. in Genetics. She is the author of *The Forever Fix: Gene Therapy and the Boy Who Saved It* (St. Martin's Press), the textbook *Human Genetics: Concepts and Applications* and co-author of two human anatomy and physiology textbooks (McGraw-Hill Higher Education), *Human Genetics: The Basics* (Routledge Press), an essay collection and a novel about stem cells. She has published thousands of articles, and writes the weekly *DNA Science* blog for the Public Library of Science (<http://blogs.plos.org/dnascience/>). She is a frequent contributor to *Medscape Medical News*, writes for *Scientific American* and the *Multiple Sclerosis Discovery Forum* and writes news releases for the *Genetics Society of America* and the *Rett Syndrome Research Trust*.

Dr. Lewis provides genetic counseling at CareNet Medical Group in Schenectady, NY, and teaches "Genethics" online for the doctoral program at the Alden March Bioethics Institute of Albany Medical College. You can reach Dr. Lewis at rickilewis54@gmail.com, www.rickilewis.com, and [@rickilewis](https://twitter.com/rickilewis).

For session details, see page 47.

speakers

David L. Nelson



Professor,
Baylor College of Medicine,
Houston, TX

Dr. David L. Nelson trained at MIT and was a Senior Associate at the Howard Hughes Medical Institute (Baylor College of Medicine) with Dr. C. Thomas Caskey. In 1991, he identified the mutation that causes Fragile X syndrome as a triplet repeat expansion in the *Fmr1* gene. The Nelson group has been involved in numerous aspects of the Human Genome Project, with key input into the mapping and sequencing of the human X chromosome. His group also identified the genes mutated in FRAXE disorder, Lowe syndrome and Incontinentia Pigmenti. He has worked to elucidate the function of *Fmr1* and the ways in which CGG repeat expansion leads to pathology in mouse and fly models.

Dr. Nelson is currently Editor-in-Chief of the *American Journal of Human Genetics*, Co-Director of the BCM Intellectual and Developmental Disabilities Research Center and Cullen Foundation Professor of Molecular and Human Genetics.

For session details, see page 61.

Invited Speakers

Paul Andersen



Science Teacher,
Bozeman High School,
Bozeman, MT

Mr. Paul Andersen has been teaching science in Montana for the last twenty years. He spent the first half of his career teaching all the science classes at a small rural school in northern Montana. Paul is currently an AP Biology teacher at Bozeman High School, where he uses technology and guided inquiry to differentiate instruction for his students.

Paul is well known for the hundreds of science podcasts that he has created. Those podcasts have been viewed millions of times by students, teachers and others around the world. Paul's videos cover the topics of biology, chemistry, physics, earth science and education. Paul was the Montana Teacher of the Year and he was a finalist for National Teacher of the Year Award.

When he is not teaching, Paul enjoys spending time with his family skiing and hiking in the mountains around Bozeman. Learn more about Paul and watch some of his videos at his website: www.bozemanscience.com

For session details, see page 25.

Robert Farrell



Associate Professor,
Penn State-York,
York, PA

Dr. Robert Farrell is an Associate Professor of Biology at Penn State. He previously served as President and principal investigator for Exon Intron, Inc., a biotechnology education and laboratory service firm. He has authored four editions of *RNA Methodologies: A Laboratory Guide for Isolation and Characterization* and has thirty-one years of hands-on experience with molecular biology and cell culture methods. He has also authored and co-authored numerous refereed articles for journals, including but not limited to, the *Journal of Cellular Physiology*, *Molecular and Cellular Biochemistry*, *Molecular and General Genomics*, and *Clinical Biotechnology*.

In addition to his teaching, Dr. Farrell has consulted extensively within the pharmaceutical and biotech industries, often providing extensive hands-on training. Dr. Farrell received his Ph.D. in Cell and Molecular Biology from The Catholic University of America. Dr. Farrell has been the acting Director of Academic Affairs at Penn State York since November 2011.

For session details, see page 63.

continued

highlighted speakers

continued from previous page

Gordon Giesbrecht



Professor,
University of Manitoba,
Winnipeg, MB

Gordon Giesbrecht, Ph.D. is a professor of Thermophysiology and Associate Dean in the Faculty of Kinesiology and Recreation Management at the University of Manitoba. Dr. Giesbrecht studies human responses to exercise/work in extreme environments. He has conducted hundreds of cold water immersion studies that have provided life-saving information about physiology and pre-hospital care for human hypothermia. He has also conducted over 100 vehicle submersions (with people in them) to study survival and exit strategies in sinking vehicles. He has over 100 publications, including a book about hypothermia and human thermoregulation.

Dr. Giesbrecht has been featured on several television documentaries including "The Cold Embrace" on *CTV* and the *Discovery Channel*, and "Self-Experimenters" which aired on *CBC The Nature of Things*. He also was dubbed "Professor Popsicle" in a feature article in *Outdoor Magazine*, has appeared on the *Late Show With David Letterman* and has twice been a guest on the *Rick Mercer Report*.

For session details, see page 47.



NOVEMBER 12—15



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1:15 – 2:30 pm	Field Biology with Vernier
2:45 – 4:00 pm	Advanced Biology and Biotechnology with Vernier

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NABT AWARDS PROGRAM

The National Association of Biology Teachers, with the support of our generous sponsors, is proud to offer a variety of awards that recognize both teachers and students. We congratulate the 2013 NABT Award Winners, and are honored to recognize their achievements.

BioClub Student Awards

Jordan Barrows

Helena High School, Helena, MT

Hillary Gries

Vincennes University, Vincennes, IN

Outstanding student members of a NABT BioClub are eligible for this textbook scholarship. One student from each BioClub high school chapter and one student from each community college chapter can be nominated. The students must be a graduating senior who has been accepted to a two or four year college/university.

Sponsored by Carolina Biological Supply Company

Biology Educator Leadership Scholarship (BELS)



Benton Shriver

Putnam City High School, Oklahoma City, OK

The Biology Educator Leadership Scholarship (BELS) program was established to encourage and support teachers who are furthering their education in the life sciences or life science education. The award recipient is required to be a practicing educator who is also enrolled (or anticipates enrolling) in a graduate program at a Masters or Doctoral level.

Sponsored by NABT Member Donations and PASCO scientific

Distinguished Service Award

Rita Colwell

Distinguished University Professor, University of Maryland College Park and Johns Hopkins University Bloomberg School of Public Health

Established in 1988 to commemorate the 50th anniversary of the NABT, the Distinguished Service Award is presented to a nationally recognized individual who has made major contributions to biology education through his or her research, writing, and teaching.

Sponsored by the National Association of Biology Teachers

Ecology/Environmental Science Teaching Award

Kelly Boehmer

Randolph Middle School, Randolph, NJ

This award recognizes a secondary school teacher who has successfully developed and demonstrated an innovative approach in the teaching of ecology/environmental science and has carried his/her commitment to the environment into the community.

Sponsored by Vernier Software and Technology

Evolution Education Award

Paul Strode

Fairview High School, Boulder, CO

This award recognizes innovative classroom teachers and their larger community education efforts to promote the accurate understanding of biological evolution.

Sponsored by BEACON, BSCS, and NESCent

Four-Year College & University Section Biology Teaching Award

Grant E. Gardner

Middle Tennessee State University, Murfreesboro, TN

This award recognizes creativity and innovation in undergraduate biology teaching. This includes curriculum design, teaching strategies, and laboratory utilization that have been implemented and demonstrated to be effective.

Sponsored by NABT's Four-Year College & University Section and Pearson

Four-Year College & University Section Research in Biology Education Award

Sally G. Hoskins

City College of New York, CUNY, New York, NY

Recognizing innovation in research that furthers our understanding of undergraduate biology teaching, this award is given to an individual who displays creativity in scholarship and research in biology education.

Sponsored by NABT's Four-Year College & University Section, Pearson and Leica Microsystems

Honorary Membership

Todd Carter

Seward County Community College, Liberal, KS

The highest honor from the association, this award recognizes those individuals who have achieved distinction in teaching, research, or service in the biological sciences and designates them lifetime members of NABT.

Sponsored by the National Association of Biology Teachers

The Kim Foglia AP® Biology Service Award

Ann Brokaw

Rocky River High School, Rocky River, OH

The Kim Foglia AP® Biology Service Award was established to recognize an AP® Biology teacher who displays a willingness to share materials, serves as a mentor to both students and professional colleagues, creates an innovative and

student centered classroom environment, and exemplifies a personal philosophy that encourages professional growth as an AP® Biology teacher and member of that community.

Sponsored by Pearson

Outstanding Biology Teacher Award

See the full OBTA listing for names of the 2013 honorees.

Every year, the Outstanding Biology Teacher Award (OBTA) program attempts to recognize an outstanding biology educator (grades 7-12) in each of the 50 states; Washington, DC; Canada; Puerto Rico; and overseas territories. Honorees are judged on their teaching ability and experience, cooperativeness in the school and community, inventiveness, initiative, and student-teacher relationships.

Special sponsorship consideration given by Carolina Biological Supply Company and Leica Microsystems

Outstanding New Biology Teacher Achievement Award

Isaac Stewart

Fisher Jr/Sr High, Fisher, IL

This award recognizes outstanding teaching (grades 7-12) by a "new" biology/life science instructor within his/her first three years of teaching biology who has developed an original and outstanding program or technique, while also making a contribution to the profession at the start of his/her career.

Sponsored by Pearson and Ken-A-Vision

The Ron Mardigian Biotechnology Teaching Award

Aaron Kallas

UAF BioPREP, Fairbanks, AK

The Ron Mardigian Biotechnology Teaching Award is given to a secondary school teacher or undergraduate college biology instructor who demonstrates outstanding and creative teaching of biotechnology by incorporating active laboratory work in the classroom.

Sponsored by Bio-Rad Laboratories

Two-Year College Biology Teaching Award

Caroline McNutt

Schoolcraft College, Livonia, MI

This award recognizes a two-year college biology educator who employs new and creative techniques in his/her classroom teaching. The recipient shows skill in teaching and scholarship demonstrated through publications or innovative techniques relating to teaching strategies, curriculum design, or laboratory utilization.

Sponsored by NABT's Two-Year College Section and McGraw-Hill

FOR OVER 50 YEARS

the National Association of Biology Teachers
has been committed to recognizing
outstanding biology teachers.



OBTA Honorees 2013

Region I

Susan Bagge
Champion High School
Brockton, MA

John Girard
Plainville High School
Plainville, CT

Peter Southam
Gould Academy
Bethel, ME

Jennifer Stainton
Woodstock Union High School
Woodstock, VT

Region II

Amy Balling
Lancaster High School
Lancaster, NY

Myron Blosser
Eastern Mennonite School
Harrisonburg, VA

Sandra Litvin
Unionville High School
Kennett Square, PA

Region III

John Rhude
Nicolet High School
Glendale, WI

Pamela Sparks
Hazel Park High School
Hazel Park, MI

Region IV

Pamela Close
David H. Hickman High School
Columbia, MO

Justin Lovrien
Brandon Valley High School
Brandon Valley, SD

Jeremy Mohn
Blue Valley Northwest High
School
Overland Park, KS

Brad Wymer
West High School
Iowa City, IA

Region V

Kirstin Bullington
W.J. Keenan High School
Columbia, SC

Lori (Loretta) Jones
Renaissance School at Olympic
High School
Charlotte, NC

Eric Kincaid
Morgantown High School
Morgantown, WV

Region VI

Maria Avitia-Freeman
Hillgrove High School
Powder Springs, GA

R. Ryan Cilsick
Edgewood Jr/Sr High
Merritt Island, FL

Eve O' Connor Kendrick
Northside High School
Northport, AL

Kathy McKone

Enterprise Attendance Center
Bogue Chitto, MS

Lori Ridgdell

St. Amant High School
Ascension Parish, LA

Region VII

Teresa Kay Fuller
Cross County High School
Cherry Valley, AR

Anne Gill
Cy-Fair High School
Cypress, TX

Deborah Hill
Norman High School
Norman, OK

Region VIII

Daniel Johnson
Cimarron-Memorial High
School
Las Vegas, NV

Cherie Wyatt
Kiowa High School
Kiowa, CO

Region X

Kristine Corolis
Ridley College
St Catharines, ON

Narsh Ramrattan
Innisfail High School
Innisfail, AB

The Outstanding
Biology Teacher
Award is proudly
sponsored by

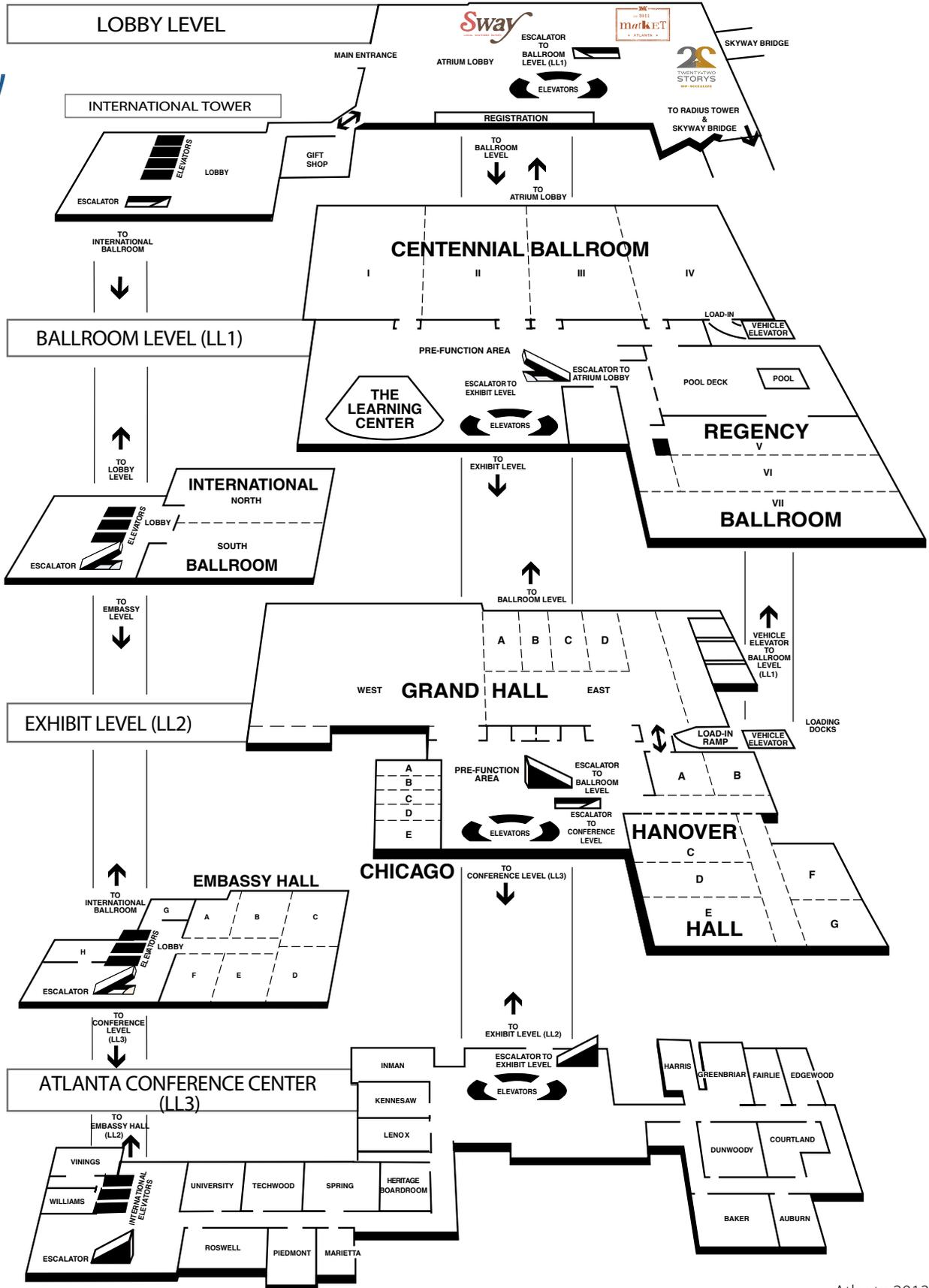
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presented to each
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Hyatt Regency Atlanta



LOCATION

Hyatt Regency Atlanta, with its signature blue dome, has been a landmark destination since its grand opening in 1967. In 2012, the hotel completed an historic \$65 million transformation that renewed Hyatt Regency Atlanta's look and feel, as well as its dining experiences, technology and functionality

VISITOR INFORMATION

- Language: English
- Currency: USD
- Climate: humid subtropical, with hot humid summers and mild, yet temperamental winters
- Visa: Please refer to your local travel consultant for visa information prior to travel

TRANSPORTATION

- Hartsfield-Jackson Atlanta Int'l Airport - 12 miles / 17 min

POINTS OF INTEREST

- Georgia Aquarium
- Georgia World Congress Center (GWCC)
- Georgia Dome
- Centennial Olympic Park
- High Museum of Art
- Martin Luther King Center
- Stone Mountain Park
- CNN Center
- Philips Arena
- World of Coca-Cola
- Atlantic Station
- AmericasMart
- Turner Field
- Fox Theatre
- Piedmont Park & Botanical Gardens
- Zoo Atlanta

Nearby Points of Interest



special events

workshops

Wednesday, November 20

Addiction and the Brain: A University Course for High School Students

Presenter: Mari Knutson Herbert, Lynden High School and University of Washington, Seattle, WA

2:00pm-4:00pm • Hanover E • Neuroscience • General Audience • FREE

"Addiction and the Brain" is a university course that is available to high school students. The content is based upon current neuroscience and the structure of the course facilitates self-paced learning. Throughout the course, students use and make models to explore and explain scientific concepts while incorporating non-fiction materials to deepen understanding and address common core literacy standards.

Saturday, November 23

Developing a Naturalist Approach in the Teaching of Science Concepts and Inquiry

Presenter: Bill Klein, Western Iowa Tech Community College, Sioux City, IA

\$ 9:45 am-12:45 pm • Hanover G • General Biology • High School • \$65

Following their natural curiosity, students use creativity, problem solving skills and inquiry processes to comprehend science concepts inherent to life cycles, behavior, and structure/function of common organisms in their immediate surroundings

NGSS Practices, Assessment, and You

Presenters: Cole Entress, The Lawrence Hall of Science, University of California Berkeley, Berkeley, CA and Aimee Wagner, West Charlotte High School (Project LIFT), Charlotte, NC

9:45am – 12:45pm • Hanover F

\$ Curriculum Development/Supervision • Middle School, High School • \$45

Assessing science practices and skills alongside content is difficult. Create diagnostic and unit assessments that will empower you to seamlessly integrate skills and content.

field trip

Wednesday, November 20

Behind the Scenes at Georgia Aquarium

\$ Noon – 3:00pm • Tour Starts at 1:00pm • \$85

Experience a unique, behind-the-scenes tour of the famous Georgia Aquarium. Your ticket includes full admission, access to the AT&T Dolphin Tales Show, and:

- Access to the view from the top of Georgia Aquarium's live coral reef exhibit, where you will view the tropical waters and the mangrove forest. This exhibit includes multiple jellyfish exhibits, live coral and thousands of colorful reef fish, garden eels, and more.

- Interactions with the aquarium team that cares for the animals and prepares their food with a special visit to the Commissary and Veterinary Clinic.
- A top down view of the largest ocean exhibit in North America. This will give you a new perspective on the world's largest fish, the whale shark, as it swims below. The *Ocean Voyager* exhibit houses four whale sharks, four manta rays, several other shark species and thousands of other fish.

Georgia Aquarium houses a number of impressive species, including beluga whales, sand tiger sharks, bottlenose dolphins, loggerhead sea turtles, penguins, southern sea otters, Asian small-clawed otters and American alligators.

Your ticket gives you access to it all in this 3 hour aquarium excursion on Wednesday, November 20. (Tour starting at 1 pm)

If you would like to experience another Atlanta icon, you will receive \$1 off of your admission to the Coca Cola Factory by bringing your aquarium ticket. The Coca Cola Factory is also within walking or a short cab ride distance from the Hyatt.

Sponsored by



GEORGIA AQUARIUM



All special events prices listed are per person

Friday, November 22

Four-Year Section Breakfast Meeting

 7:00am – 8:15am • Regency VII
• \$45

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

NABT 75th Anniversary Gala

 6:00pm – 9:00pm • Centennial III & IV
• \$30

Help NABT celebrate 75 years of empowering biology and life science educators at this special Gala. Featuring a look back at the history of NABT, this special commemoration will honor NABT's past and celebrate our future. Special guests and friends will help make this a night to remember.

Sponsored by 

Saturday, November 23

NABT Honors Luncheon

 1:00pm – 3:00pm • Regency V
\$60

End the conference with a celebration of excellence at the 2013 Honors Luncheon. Join us as we recognize the accomplishments of all of the 2013 NABT Award recipients, including the winners of this year's Outstanding Biology Teacher Award (OBTA).



ec-o-sys-tem noun:

the complex of a community of organisms and its environment functioning as an ecological unit.

NABT ecosystem noun:

a complex community of biology teachers interacting through a digital interface.

The **NABT ecosystem** offers new ways for you to learn and share with your colleagues:

Resources: Do you know of a great, free resource you want to share? Post a link to it in the Resources Section. The more Resources that are posted, the more you can help and be helped by the ecosystem.

Events: Looking for something local? Looking for something national? Highlighted conferences and workshops are posted for your review.

Members Like Me: You are not alone. Easily find members in your area or in similar professional settings and contact them using ecosystem email.

Discussions: Sometimes you just need to talk. Focused discussion groups are being added frequently.

The **NABT ecosystem** is one more way NABT is supporting a diverse community of educators focused on the teaching of biology and life science.

All biology teachers are welcome to join the **NABT ecosystem** by visiting

www.NABT.org/ecosystem

Get connected today!

The NABT ecosystem was made possible with the support of the NIH National Human Genome Research Institute, and replaces the Community of Genetics Educators (CoGE).

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2012—Maura Flannery
2011—Louisa Stark
2010—Patricia Waller and Brad Williamson
2008—Donald Cronkite
2007—William H. Leonard
2006—Terry Hufford
2005—Randy Moore & Eugenie Scott
2004—John Penick
2003—Donald Emmeluth
2002—Leonard Blessing
2001—Gordon E. Uno
2000—Elizabeth Carvellas
1998—Ivo Lindauer
1997—Sam Rhine
1996—Kenneth S. House
1995—Joseph D. Novak
1994—Nancy V. Ridenour & Alton L. Biggs
1993—George S. Zahrobsky
1992—Jon R. Hendrix
1991—Robert E. Yager
1990—Jane Butler Kahle
1989—Joseph D. McInerney
1988—Thomas Mertens & Marjorie King
1987—Floyd Nordland
1986—Donald S. Dean
1985—Stanley Weinberg
1984—Jack Carter & Samuel Postlethwait
1983—Manert Kennedy
1982—Harold “Sandy” Wiper & Jerry P. Lightner
1981—Sophie Wolfe
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1979—Ingrith Olsen
1978—John A. Moore
1977—Addison E. Lee
1976—Paul DeHart Hurd
1975—Garrett Hardin & Stanley E. Williamson
1974—H. Seymour Fowler
1973—William V. Mayer
1972—Chester A. Lawson, Paul E. Klinge & Robert L. Gantert
1969—Arnold B. Grobman
1965—John Breukelman, H. Bentley Glass, George W. Beadle, Paul B. Sears & Brother H. Charles Severin
1964—E. Laurence Palmer, Hermann J. Muller, Roger Tory Peterson, Oscar Riddle & Helen Irene Battle

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2013 Rita R. Colwell, University of Maryland College Park and Johns Hopkins University Bloomberg School of Public Health, College Park, MD
2012 Michael Pollan, UC Berkeley Graduate School of Journalism, Berkeley, CA
2011 Neil Shubin, Ph.D., University of Chicago, Chicago, IL
2010 Richard Dawkins, The Richard Dawkins Foundation for Reason and Science, Falcon, CO
2009 Mario Capecchi, University of Utah, Salt Lake City, UT
2008 Ken Miller, Brown University, Providence, RI
2007 Sean Carroll, University of Wisconsin — Madison, Madison, WI
2006 Shirley Malcom, AAAS, Washington DC
2005 James A. Thompson, V.M.D., University of Wisconsin—Madison, Madison, WI; and Nina Leopold Bradley, Aldo Leopold Foundation, Baraboo, WI
2004 Barbara Bancroft, RN, MSN, PNP, CPP Associates, Inc., Chicago, IL
2003 Roberta Pagon, M.D., Children’s Hospital & Regional Medical Center, Seattle, WA
2002 Thomas E. Lovejoy, The H. John Heinz III Center for Science, Economics and the Environment, Washington, DC
2001 E.O. Wilson, Harvard University, Cambridge, MA
2000 Roger and Deborah Fouts, Chimpanzee and Human Communication Institute, Ellensburg, WA
1999 Jack Horner, Museum of the Rockies, Bozeman, MT
1998 Dr. Leroy Hood, University of Washington, Seattle, WA
1997 Neal Lane, Director, National Science Foundation, Washington, DC; and Donald Kennedy, Stanford University, Palo Alto, CA
1996 Dr. Francis Collins, National Institutes of Health, Bethesda, MD
1995 Carl Djerassi, Stanford University, Palo Alto, CA
1994 Bruce Alberts, National Academy of Sciences, Washington, DC
1993 Nancy S. Wexler, College of Physicians and Surgeons of Columbia University, New York State Psychiatric Institute, New York, NY
1992 Paul R. Ehrlich, Stanford University, Palo Alto, CA
1991 Stephen Jay Gould, Harvard University, Cambridge, MA
1990 Peter Raven, Missouri Botanical Garden, St. Louis, MO
1989 Stanley Cohen, Stanford University, Palo Alto, CA
1988 Lynn Margulis, University of Massachusetts, Boston, MA; and James D. Watson, Cold Spring Laboratory, Cold Spring Harbor, NY

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2011—Daniel Ward
2010—Marion “Bunny” Jaskot
2009—John H. Moore
2008—Todd Carter
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1946—Prevo L. Whitaker
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1943—Merle A. Russell
1942—Homer A. Stephens
1941—George W. Jeffers
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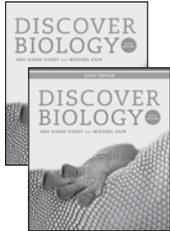
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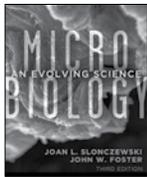
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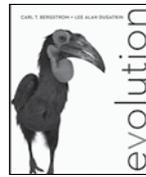
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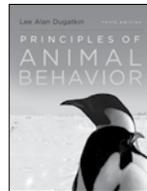


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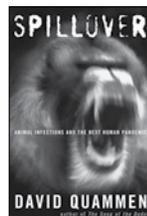
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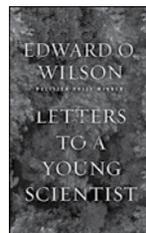
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Letters to a Young Scientist

EDWARD O. WILSON



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



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WEDNESDAY

NOV.

20

8:00am – Noon

Board Meeting
Executive Suite 219

8:30am – 4:30pm

NABT/BSCS AP Biology Leadership Academy Workshop

Cohort I • Hanover C • Special Program • Invitation Only

Support provided by HHMI and the Richard Petritz Foundation

NABT/BSCS AP Biology Leadership Academy Workshop

Cohort II • Hanover C • Special Program • Invitation Only

Support provided by HHMI and the Richard Petritz Foundation

Noon – 3:00pm

Field Trip: Behind the Scenes at Georgia Aquarium

 (Tour Starts at 1:00pm)
Special Program • GA • \$85

Georgia Aquarium houses a number of impressive species, including beluga whales, sand tiger sharks, bottlenose dolphins, loggerhead sea turtles, penguins, southern sea otters, Asian small-clawed otters and American alligators.

Please see page 16 for full details.

1:30pm – 4:30pm

Town Hall Meeting

Learning Center • Special Program

NABT is an association for the members, by the members. Let us know how we're doing by attending the Town Hall Meeting. Interact with volunteer leaders and fellow members in a format that includes a review of the "state of the association", committee reports, introductions to new initiatives, and brainstorming working groups. Your voice will be heard.

2:00pm – 4:00pm

SP1 Special Workshop: Addiction and the Brain: A University Course for High School Students

Baker • Hands-on Workshop • Instructional Strategies/ Technologies • GA • FREE

Addiction and the Brain is a university course that is available to high school students. The content is based upon current neuroscience and the structure of the course facilitates self-paced learning. Throughout the course, students use and make models to explore and explain scientific concepts while incorporating non-fiction materials to deepen understanding and address common core literacy standards. Those attending will receive directions for making models along with student materials designed to facilitate literacy.

Mari Knutson Herbert, Lynden High School and University of Washington, Seattle, WA

4:30pm – 5:30pm

NABT Meet & Greet

Terrace Foyer • Special Program

This year, we're starting the evening program a little differently. Meet up with friends and make some new ones before the red-carpet reception for the HHMI *Night at the Movies* with Sean Carroll.

5:30pm – 8:00pm

HHMI Night at the Movies with Sean Carroll

Centennial III-IV • Special Program

We are pleased to invite you to HHMI's 3rd annual *Night at the Movies* with Sean Carroll, featuring the screening of the newest short films from HHMI, followed by a panel discussion with Dr. Carroll and special guests. This event will start with a red-carpet reception before the movie begins. This is a free event and everyone is welcome to attend!



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abbrev.
key 

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

WEDNESDAY
NOV.
20

THURSDAY

NOV.

21

7:00am – 8:15am

First Timers' Breakfast

Regency VI • Special Event • Invitation Only

NABT Conference *first timers* are invited to learn more about the association and the Professional Development Conference over a complimentary breakfast. Each table will have an NABT mentor available to answer your questions and help you make the most of your time in Atlanta.

The NABT First Timers' Breakfast is made possible through the generous support of HHMI.

8:30am – 9:30am

GENERAL SESSION

Rita R. Colwell, Ph.D.

Recipient of the 2013 NABT Distinguished Service Award

Bio appears on page 8.

Climate Change, Oceans, and Waterborne Infectious Diseases: Prediction and Prevention

Centennial III & IV • Special Speaker

Since the mid-1980's, when utilization of satellite sensors to monitor land and oceans for purposes of understanding climate, weather, and vegetation distribution and seasonal variations became possible, refinement of the inter-relationships of the environment and infectious diseases was accomplished, both qualitatively and quantitatively. Seasonality of diseases like malaria and cholera had been documented years earlier by epidemiologists, but the new research yielded knowledge of the very close interaction of the environment and many infectious diseases. With satellite sensors, these relationships could be quantified and comparatively analyzed.

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.

10:15am – 11:30am

INVITED SPEAKER

Paul Andersen

Bio appears on page 9.

Lessons of a Half Life

Regency VII • Special Speaker

Paul Andersen has spent half of his life teaching science in Montana, and will describe the obstacles he has faced and the lessons he has learned along the way. Paul is currently an AP Biology teacher at Bozeman High School, where he uses technology and guided inquiry to differentiate instruction for his students. He has created hundreds of science podcasts that have been viewed millions of times by students around the world. Paul's videos cover the topics of biology, chemistry, physics, earth science and education. Paul was the Montana Teacher of the Year and he was a finalist for National Teacher of the Year. Learn more about Paul and watch some of his videos at his website: www.bozeman.science.com

#ES3 Bring Inquiry Into Your Classroom with pGLO

Chicago A & B • Exhibitor Session • Hands-on Workshop (75 min) • Biotechnology • HS 2C 4C

Using pGLO as an example, learn how to ask simple questions about labs you already do to make them inquiry based instead of cookbook. Infuse elements of STEM to expand your students' horizons.

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

#ES4 Genes and conSEQUENCES

Chicago C & D • Exhibitor Session • Hands-on Workshop (75 min) • Biotechnology • 2C 4C

Help your students understand the central dogma of biology using real-world examples and modern research tools. Utilize a hands-on tool to help your student master these concepts.

Madelene Loftin (mloftin@hudsonalpha.org) and Jennifer Carden (jcarden@hudsonalpha.org), HudsonAlpha Institute for Biotechnology, Huntsville, AL

Presented in partnership with Carolina Biological Supply Company.

#ES1 Using Probeware to Effectively Conduct Inquiry in AP® Biology

Hanover A • Exhibitor Session • Hands-on Workshop (75 min) • AP Biology • HS GA

Explore PASCO's biology products and see how they can help you deliver content and inquiry in the new AP® Biology labs. See how SPARKvue® software can help students through the sense-making process while building their quantitative analysis skills.

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

highlighted speakers

Read their bios on pages 8-10.

abbrev. key

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

THURSDAY

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THURSDAY

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10:15am – 11:30am

continued

#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

#474 HHMI Presents: Enhance Your Teaching of the New AP Biology Curriculum Framework with Free Resources from HHMI

Hanover C • Hands-on Workshop (75 min) • AP Biology • HS

Teach ahead of the textbook with HHMI's free resources for AP Biology available at BioInteractive.org. Participants will

receive a free teacher guide organized according to the *Big Ideas* of the newly released AP Biology Curriculum Framework.

Ann Brokaw, Rocky River High School, Rocky River, OH

#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 (kjelvikm@msu.edu) and Elizabeth Schultheis (eschultheis@gmail.com), Michigan State University – Kellogg Biological Station, Hickory Corners, MI and Louise Mead (lmead@msu.edu), BEACON, East Lansing, MI

#369 Partnership for Undergraduate Life Science Education (PULSE)

Hanover E • Symposium (75 min) • Curriculum Development • 2C 4C

Leadership Fellows will introduce the participants to the PULSE projects that support the incorporation of the *Vision and Change* recommendations for transforming undergraduate life science education into courses, programs and departments.

Sharon Gusky (sgusky@nwcc.edu), Northwestern Connecticut Community College, Winsted, CT; Gina Semprebbon (gsempreb@baypath.edu), Bay Path College, Longmeadow, MA; Melanie Lee-Brown, (mleeebro@guilford.edu), Guilford College, Greensboro, NC; Judy Awong-Taylor (jawangta@ggc.edu), Georgia Gwinnett College, Lawrenceville, GA; Karen Klyczek (karen.k.klyczek@uwrf.edu), University of Wisconsin-River Falls, River Falls, WI; and David Marcey (marcey@clunet.edu), California Lutheran University, Thousand Oaks, CA

ASM PRESENTS

Eliminating Polio in our Lifetime: What it Takes

Dr. Olen Kew, Centers for Disease Control and Prevention, Atlanta, GA

THURS NOV 21, 10:15-11:30 AM | HANOVER F & G

Learning from Catastrophe: Stopping Foodborne Illness

Dr. Robert Tauxe, Centers for Disease Control and Prevention, Atlanta, GA

THURS NOV 21, 11:45 AM-1:00 PM | HANOVER F & G

CDC Excite Program: Epidemiology in the Classroom

Dr. Ralph Cordell, Centers for Disease Control and Prevention, Atlanta, GA

THURS NOV 21, 1:15-2:30 PM | HANOVER F & G

ASM Laboratory Biosafety Guidelines

Dr. Cristina Bressler, Centers for Disease Control and Prevention, Atlanta, GA

THURS NOV 21, 2:45-4:00 PM | HANOVER F & G

Visit booth #403 to learn about our latest K-12 Outreach Activities!



AMERICAN SOCIETY FOR MICROBIOLOGY

www.asm.org/educators

10:15am – 11:30am

continued

#393 American Society for Microbiology Presents: Eliminating Polio in Our Lifetime - What it Takes

Hanover F & G • Paper (75 min) • Global Perspective • GA

The polio eradication story is a near-success. This session will describe the wide and deep partnerships of many, many stakeholders who have banded together to eliminate a disease globally.

Olen Kew, Centers for Disease Control and Prevention, Atlanta, GA and Dave Westenberg, Missouri S&T, Rolla, MO

Presented as part of ASM and the CDC: Partners in Safety

#409 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 extracted 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

#249 Beyond X and Y: Recent Discoveries about the Mechanisms 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

#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 various 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

#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 amazement 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

#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 collaborative 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 Precollegiate Education and Training and UF College of Education, Gainesville, FL and Houada Darwiche (houdad@cpet.ufl.edu), University of Florida Center for Precollegiate Education and Training, Gainesville, FL

#408 No More Mosquito!

Harris (Session II) • Demonstration (30 min) • General Biology • MS HS

Emerging pathogens are terrific interdisciplinary 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 Precollegiate Education and Training and UF College of Education, Gainesville, FL and Houada Darwiche (houdad@cpet.ufl.edu), University of Florida Center for Precollegiate Education and Training, Gainesville, FL

Committee Meeting: Finance Committee

Heritage Boardroom

Bob Melton (bmelton@putnamcityschools.org), Committee Chair

THURSDAY

NOV.

21

10:15am – 11:30am

continued

#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@vwr.com), Ward's Science, Rochester, NY

#435 Dynamic Nature of Science: Discovering the Tree of Life

Piedmont • Hands-on Workshop (75 min) • Evolution • HS

Explore student activities linking NGSS to scientific research. Activities focus on the nature of science through the changing models of the tree of life and facilitate discussions about the controversial term "prokaryote". Free curriculum materials.

Chandana Jasti and Barbara Hug, University of Illinois, Champaign, IL

#279 Bringing Vision and Change to Our College

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

Redesigning undergraduate biology curriculum at Tulsa Community College is a faculty collaborative effort. Faculty members will share student-centered learning activities in line with *Vision and Change*.

Melissa Gentry (melissa.gentry@tulsacc.edu), Jennifer Kneafsey (jennifer.kneafsey@tulsacc.edu), Constance Murray (constance.murray@tulsacc.edu), Mary Phillips (mary.phillips@tulsacc.edu) and Patty Smith (patty.smith@tulsacc.edu), Tulsa Community College, Tulsa, OK

#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 Lytle (rrl2j@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@bfpwpub.com), W.H. Freeman, New York, NY

11:45am – 4:00pm

NABT AP BIOLOGY SYMPOSIUM

Regency V • Special Program • AP Biology • HS 2C 4C

Join participants of the *NABT/BSCS AP Biology Leadership Academy* for sessions that highlight key practices and concepts from the Academy Program. Designed for AP Biology, this symposium will impact your teaching in other courses as well.

Constructing Meaningful Scientific Explanations in AP Biology

Constructing explanations is one of the practices of science in the new AP Biology Curriculum Framework. In this session, take part in an investigation and learn about a tool to help students link activities to science concepts as they construct good scientific explanations.

Presented by NABT/BSCS AP Biology Leadership Academy Participants

Bringing the Practices of Science to AP Biology

In this session, learn about the practices of science and levels of inquiry that are described in the new AP Biology Curriculum Framework. Consider how to engage students more fully in inquiry-based science and practice using a tool to analyze a laboratory experience.

Presented by NABT/BSCS AP Biology Leadership Academy Participants

Developing and Applying Quantitative Skills in AP Biology

Bring your computer with a spreadsheet application and together, let's explore strategies and examples to help our students develop and apply quantitative skills of statistical analysis. I will share examples that work in my Research Methods course.

Brad Williamson (ksbioteacher@gmail.com), University of Kansas Center for STEM Education, Lawrence, KS

Sponsored by 

11:45am – 1:00pm

#ES9 Worm and Squirm Your Way into Behavior Labs

Chicago A & B • Exhibitor Session • Hands-on Workshop (75 min) • AP Biology • 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

Presented in partnership with Carolina Biological Supply Company.

#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@uwlax.edu), University of Wisconsin – LaCrosse, LaCrosse, WI; Becca Price

THURSDAY

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NABT Biology Education Research Symposium

Thursday, November 21 • 1:15pm – 4:15pm • Learning Center

Join us for the 5th Annual NABT 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.

SCHEDULED PRESENTATIONS:

Self-efficacy and First Year Biology Majors

Michele J. Mann and Christopher Golubski, The University of Texas at Austin, Austin, TX

Using the Motivated Strategies for Learning Questionnaire (MSLQ), self-efficacy was evaluated at the beginning and end of the semester in an entry-level biology course for biology majors. 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, $t(.70) = -1.77$, $p=.082$, 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 their 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:

Demystifying and Humanizing Biology Through Intensive Analysis of Scientific Literature—The C.R.E.A.T.E Strategy

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.

11:45am – 1:00pm

continued

(beccap@uw.edu), University of Washington – Bothell, Bothell, WA; Greg Davis (gdavis@brynmaur.edu), Bryn Mawr College, Bryn Mawr, PA; and Mark Terry (mark.terry@northwestschool.edu), The Northwest School, Seattle, WA

#380 Students Who Do Not Accept Evolution and Climate Change

Hanover D (Session II) • Paper (30 min) • Environment/Ecology • HS 2C 4C

We report findings of a survey of undergraduate students, aiming to better understand students who do not accept anthropogenic climate change (ACC) and evolution. Participants will gain ideas of how to approach these topics in their classrooms.

Deena Wassenberg (deenaw@umn.edu) and Sehoya Cotner (harri054@umn.edu), University of Minnesota – Twin Cities Campus, St. Paul, MN

#391 American Society for Microbiology Presents: Learning from Catastrophe: Stopping Foodborne Illness

Hanover F & G • Paper (75 min) • Microbiology & Cell Biology • GA

Food safety and how we track them is so critical for ensuring public safety. Dr. Tauxe will present stories about outbreaks of foodborne illnesses and how scientists at the Centers for Disease Control monitor potential risks to our food supply.

Robert Tauxe, Centers for Disease Control and Prevention, Atlanta, GA and Dave Westenberg Missouri S&T, Rolla, MO

Presented as part of
ASM and the CDC: Partners in Safety

#392 Understanding Microarrays

Baker • Hands-on Workshop (75 min) • Biotechnology • HS

The session will demonstrate the entire process involved in creating a microarray

as well as the analysis of the finished product. 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

#427 Tiny Bubbles, Popcorn and More: Ecology Mini-lab Activities

Dunwoody • Hands-on Workshop (75 min) • AP Biology • HS 2C

Participants will model student learning activities which explore the concepts of logistic and exponential growth, carrying capacity, survivorship curves, and Batesian mimicry.

Pamela Close, D. H. Hickman High School, Columbia, MO

#316 Teaching A&P Through Authentic Case Studies

Edgewood • Paper (75 min) • Anatomy & Physiology • HS 2C

Make A&P teaching exciting and relevant by integrating case studies into your lectures and labs. Authentic case studies encourage critical thinking, reinforce terms and concepts, and are simple to apply learning outcomes.

Brian Shmaefsky (brian.r.shmaefsky@lonestar.edu), Lone Star College – Kingwood, Kingwood, TX

#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 (bfLOURNOY@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.umaryland.edu), Committee Chair



11:45am – 1:00pm

continued

#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.envmc.rochester.edu/>

Susan Holt (sholtbmn@aol.com) and Dina Markowitz (dina_markowitz@urm.c.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 • MS 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-Carboro Schools (retired), Chapel Hill, NC

#381 Next Generation Science Standards “Do It Yourself!”

Rosewell • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • E MS 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 (robby.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 Cheek High School, Greenwood Village, CO, Rachel Packer (rachel.packer@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@bfpwpub.com), W.H. Freeman, New York, NY

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 mushrooms to find and characterize novel cellobiase 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.

Sherrri Andrews (sherrri_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

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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@bvsvd.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

Presented as part of ASM and the CDC: Partners in Safety

#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

#356 Which Frog is My Prince?

Courtland • Hands-on Workshop (75 min) • Evolution • HS

Come join us on a wild adventure in natural selection. Learn Alabama frog calls and determine your fitness. Will prezygotic isolation keep you from your

true love or will you find your prince?

Teresa Gregory (tgregory@jefcoed.com), Clay Chalkville High School, Pinson, AL, Joy Bates (jbates@jefcoed.com), McAdory High School, McCalla, AL and Kristen Self (kself@shelbyed.k12.al.us), Pelham High School, Pelham, AL

#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 (galee@uga.edu) and J. Steve Oliver (soliver@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 socioscientific 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

1:15pm – 2:30pm

continued

#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 Dobrovlny, 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 Ambros (CAmbros@somervillenk12.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

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continued

#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 (ldhuffi@uncg.edu) and Catherine Matthews (cematthews@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, 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@clmson.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@clmson.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

Presented in partnership with W.H. Freeman

2:45pm – 4:00pm

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

2:45pm – 4:00pm

continued

#ES19 CSI In the Classroom – STEM Approach to Biology

Hanover A • Exhibitor Session • Hands-on Workshop (75 min) • General Biology • HS 2C

Discover how STEM can be integrated into your biology curriculum. Get hands on training with Nasco's *Cause of Death Autopsy Kit*. This unique experience will take you through the steps used during a forensic investigation.

Deb Tipton (dtipton@enasco.com),
NASCO, Fort Atkinson, WI

#ES20 Advanced Biology and Biotechnology with Vernier

Hanover B • Exhibitor Session • Hands-on Workshop (75 min) • Biotechnology • HS 2C 4C

Perform experiments from our *Advanced Biology with Vernier* lab book using LabQuest 2, Logger Pro on computers, and Graphical Analysis for iPad®. Learn how to perform Gel Analysis with Logger Pro and how to use the SpectroVis Plus spectrophotometer.

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

#476 HHMI's Free Classroom Resources for Teaching Evolution

Hanover C • Hands-on Workshop (75 min) • Evolution • HS

Discover free classroom-ready activities and multimedia resources to help you teach key concepts in evolution. Bring science to life with inquiry-based investigations, including data collection, analysis, and computation.

Mary Colvard, STANYS, Deposit, NY

#373 Igniting the Passion in Students in an Online Course

Hanover D (Session I) • Paper (30 min) • Instructional Strategies/Technologies • 2C 4C

The *Vision and Change* report recommends that we "ignite the passion

of students", but is this possible in a completely online course where we never see our students face-to-face? Come and find out!

Caroline McNutt (cmcnutt@schoolcraft.edu), Schoolcraft College, Livonia, MI

#451 Evolution's Footprints: Lessons from Biochemistry

Hanover D (Session II) • Paper (30 min) • Evolution • 2C 4C HS

Evolution first occurs at a chemical level. We will examine "molecular fossil" evidence including porphyrin rings, electron carriers, ATP synthase, and membrane lipids in the context of common ancestry and biochemical pathways.

Elizabeth Cowles (cowlese@easternct.edu), Eastern Connecticut State University, Willimantic, CT

#389 American Society for Microbiology Laboratory Biosafety Guidelines

Hanover F & G • Paper (75 min) • Microbiology & Cell Biology • HS 2C 4C

An introduction to the new *American Society for Microbiology Laboratory Biosafety Guidelines*. The presentation will include background on the potential risks in the teaching laboratory and how to minimize them.

Cristina Bressler, Centers for Disease Control and Prevention, Atlanta, GA and
Dave Westenberg, Missouri S&T, Rolla, MO

Presented as part of
ASM and the CDC: Partners in Safety

#440 Science Teaching Has Evolved & It Is Time to Get Online!

Harris • Demonstration (75 min) • Instructional Strategies/Technologies • 2C 4C

Demonstration of versatile online programs that have students reading the text & enhancing their comprehension before class. A report of student reactions documenting new understanding of how to take responsibility for learning will also be discussed.

Leslie Sandra Jones (lesliesj@valdosta.edu) and Rebekah Davis (rebdavis@valdosta.edu), Valdosta State University, Valdosta, GA

#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.

Jason Williams (williams@cshl.edu),
Cold Spring Harbor Laboratory,
Cold Spring Harbor, NY

#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.

Tim Herman (herman@msoe.edu) and
Gina Vogt (vogt@msoe.edu), MSOE CBM,
Milwaukee, WI

#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.

Claudia Lutz, Sara Patterson, and Barbara
Hug, University of Illinois, Urbana, IL

#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

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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 (jhmoore@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

#ES23 Iron Teacher – Inquiry Lab Contest

Lenox • Exhibitor Session • Hands-on Workshop (75 min) • Environment/Ecology • E MS HS

You will be provided a variety of Ward's specimens and supplies to complete this challenge and compete against your peers in a fast paced, high energy, contest modeled after Food Network's *Iron Chef*. The winning team will get awesome prizes.

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

#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

#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

#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

continued

#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 H_2O .

Cheryl Mangum, Fairview High School, Cullman, AL

#ES24 Engaging Stories: Teaching Environmental Science in Context

Marietta • Exhibitor Session • Demonstration (75 min) • Environment/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!

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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**

Four-Year College & University Section Reception

Regency VII • Special Event

Join us at this popular reception and poster session. This is a wonderful opportunity to grab some food, get a drink, network with colleagues, and peruse research in a relaxed setting. Well-known NABT scholars, new contributors and graduate students will all be featured.

Sponsored by **WILEY**

Undergraduate Education Poster Session

Regency VII • Special Event

See the following column for listing of poster titles and authors.

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** **FM** **MCNEIL**

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-kun, 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, Mississenwa 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. Balsler, University of Florida, Gainesville, FL

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Undergraduate Education Poster Session
POSTER TITLES AND AUTHORS
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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 Elwess, 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***
Krisi 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***
Jaime Sabel, Cory Forbes, and Laura Zangori, University of Iowa, Iowa City, IA
16. **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 Elwess, 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. **Haplogroup Determination of Ancient Maya DNA***
Michael Haynes, Nancy Elwess, 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**
Mamta 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
29. **Increasing Access to Rigor: Adaptation of a Majors Level Course for a Non-Majors Population.**
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 Elwess, 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; Aimee 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**
Miti Shah, DeVry University, Phoenix, AZ
37. **SATURN Journal: Research as a Teaching Methodology in the Undergraduate Curriculum**
Louis Rocanova, 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 Fateen, 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 iCollaborative' 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 Firooznia, 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

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NABT Workshop Schedule — Join us in Chicago A and B for our workshops

Thursday November 21

10:15 AM – 11:30 AM: Bring Inquiry into Your Classroom with pGLO™ — the 20 Question Approach (AP Big Ideas 1, 2, 3, and 4)

11:45 AM – 1:00 PM: Worm and Squirm Your Way into Behavior Labs (AP Big Ideas 1, 2, 3, and 4)

1:15 PM – 2:00 PM: Ecology to Enzymes to Industry (AP Big Ideas 1, 2, and 4)

2:45 PM – 4:00 PM: Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, and 4)

Saturday November 23 — Join a special presentation by Cindy Gay in the **Piedmont Room**

9:45 AM – 11:00 AM: DNA Barcoding: an Authentic BLAST Investigation

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time
to meet
**Stacey
Kiser!**



You'll know her
by her
charm.



She is active in NABT
because being a
biology educator
is in her
DNA.



She likes to
play,
which helps her teach
more creatively and learn
more deeply.



She will be
present
at the NABT Conference
and looks forward to
meeting you.



Say "hi" to Stacey in Atlanta and enter to win some great prizes from PASCO scientific. The drawing will be on **Friday, Nov. 22** at the NABT Professional Development Conference.

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Implementing *Vision and Change* in the Biology Classroom

2013 NABT Faculty Professional Development Summit

10:30am – 3:45pm • Regency VI

This year's summit showcases innovative teaching practices and new curricula that promote the ideals of Vision and Change.

Summit moderated by: **Dr. Jacqueline McLaughlin**, The Pennsylvania State University
Dr. Anneke Metz, Southern Illinois University Carbondale

PROFESSIONAL DEVELOPMENT SUMMIT

10:30am – 10:45am	Symposium Introduction: Moving Toward Implementation
10:45 am – 11:15am	Revamping the Biology Curriculum: Meeting the Challenges Elizabeth Cowles, Eastern Connecticut State University
11:15am – 11:45am	Soaring with IBIS: Implementing a New Biology Curriculum Tarren Shaw, Oklahoma State University Suann Yang, Presbyterian College
11:45am – Noon	Introduction of Poster Session
Noon – 1:00pm	Implementing <i>Vision and Change</i> Poster Presentations ~ Lunch Break Margaret Franzen ~ Connecting Researchers, Educators and Students Kelly Gull ~ Biology Scholars (Faculty Development) Program at ASM Deborah Donovan ~ Activities for Small and Large Biology Classes Erin Baumgartner ~ Vision and Population Change: Jar of Pond Bernadette Connors ~ Inquiry Laboratory with Null Mutants of <i>S. cerevisiae</i>
1:00pm – 1:30pm	Going Beyond the Mean: Statistics in the High School and College Science Classrooms Paul K. Strode, Fairview High School
1:30pm – 2:00pm	Initiating Student Discussions of Primary Literature in Classroom Settings Justin Knight, Hsiangyu Hu & Quincy Rosemarie, University of Minnesota
2:00pm – 2:30pm	Transforming an Undergraduate Biology Laboratory Experience into a Research Environment Melissa Coyle & Jacqueline McLaughlin, The Pennsylvania State University
2:30pm – 3:00pm	Integrating Student-led Research in an Introductory Biology Laboratory Course at a 2-Year College Jean Maines, Tarrant County College
3:00pm – 3:15pm	Wrap-up and Stretch Break
3:15pm – 3:45pm	2013 NABT Four-Year Section Biology Teaching Award Winner Grant E. Gardner, Asst. Professor of Mathematics and Science Education Middle Tennessee State University

7:00am – 8:15am

BioClub Breakfast

Regency VI • Special Event

It's been another great year for the NABT BioClub, with new clubs being added at high schools and community colleges across the country. Both *current* and *future* BioClub advisors are invited to participate in this informational meeting and networking function. Join the club (BioClub that is)!

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

Four-Year College & University Section Breakfast Meeting

Regency VII • Special Event
• 4C • \$45

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

Two-Year College Section Breakfast Meeting

University • Special Event • 2C

Wake up early, grab your breakfast, and head to the Two-Year College Section business meeting. Initiatives impacting instruction at the two-year college will be discussed, and all two-year and community college educators are invited to attend.

8:30am – 9:30am

GENERAL SESSION

Ricki Lewis, Ph.D.

Bio appears on page 8.

Gene Therapy: A Forever Fix?

Centennial III & IV
• Special Speaker

On a bright fall day in 2008, 8-year-old Corey Haas walked up to the Philadelphia zoo with his parents. He heard kids chattering about the hot air balloon above, so he looked up, and screamed. It was the first time he'd seen the sun. Four days earlier, doctors had sent gene-bearing viruses into Corey's left eye to treat his hereditary blindness, and now the sun was unbearably bright.

Corey's suddenly restored vision marked a renaissance in gene therapy, a biotechnology sidelined nine years earlier when an 18-year-old died from it. The road to gene therapy has been long and winding, with the first product approved in Europe, to treat a rare metabolic disorder, a year ago. But gene therapy isn't only for rare conditions. Of the 1850 clinical trials that are completed, ongoing, or about to start, in 31 nations, cancers account for 64.4%, single-gene disorders 8.7%, cardiovascular disease 8.4%, and infectious disease 8%.

Science writer and geneticist Ricki Lewis will discuss Corey's inspiring story against the backdrop of other children treated since the field was born in 1990, and those looking ahead to future gene therapy, a saga that celebrates science, medicine, parent activism, families, model organisms, and pioneering researchers, many of them women. It is an ongoing story of science, innovation, and hope.

Dr. Lewis will be available to sign copies of her book, *The Forever Fix: Gene Therapy and the Boy Who Saved It*

9:30am – 10:15am

Exhibit Hall Coffee Break

Grand Hall • Special Event

Why not stop by the Exhibit Hall for a quick "pick me up" before you embark on another day of great sessions?

Sponsored by **BIO-RAD**

10:30am – 3:45pm

NABT Faculty Professional Development Summit: Implementing *Vision and Change* in the Biology Classroom

Regency VI • Special Program • 2C 4C

This year's Faculty Summit showcases innovative teaching practices and new curricula that promote the ideals of the AAAS *Vision and Change* report. This symposium features a combination of presentations and posters, giving you the flexibility to attend all day or only for a few sessions. If you teach at the undergraduate level, this is an event you don't want to miss.

See page 46 for complete details.

10:30am – 11:45am

INVITED SPEAKER

Gordon Giesbrecht, Ph.D.

Bio appears on page 10.

Goal Setting: Lessons Learned from 100 Winter Nights on Lake Winnipeg

Regency VII • Special Speaker

In a 20-year quest to become the first North American to do a solo expedition to the North Pole, I learned several lessons on four expeditions in record breaking cold temperatures on Lake Winnipeg: dare to dream, prepare, start, work hard and keep going. Following these principles will usually lead to significant accomplishments, even if the original high goal isn't met.

Sponsored by
The American Physiological Society

highlighted speakers

Read their bios on pages 8-10.

abbrev. key

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

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10:30am – 11:45am

*continued***#ES27 High Definition Digital Imaging for the Microscopy Classroom**

Chicago A & B • Exhibitor Session
• Hands-on Workshop (75 min)
• Instructional Strategies/
Technologies • 2C 4C GA

Viewing, capturing, and sharing high quality images from a microscope is a must for an interactive learning environment. This session will allow you to experience the latest in High Definition Digital Imaging Technology for the microscopy classroom.

Sy Stevens (sy.stevens@leica-microsystems.com), Leica Microsystems, Buffalo Grove, IL

#ES25 Data Collection on your iPad® with SPARKvue HD

Hanover A • Exhibitor Session
• Hands-on Workshop (75 min)
• Instructional Strategies/
Technologies • GA

See how you can use iPads™ in your science lab with PASCO sensors and SPARKvue® HD. Offering a full suite of display and analytical tools, reflection prompts, journaling, and more – plus full support of PASCO's growing collection of SPARKlabs®.

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

#ES26 Engaging Students Effectively: The BIOZONE Solution

Hanover B • Exhibitor Session
• Demonstration (75 min)
• General Biology • HS

BIOZONE's unique presentation of content provides an effective solution for student engagement. Find out how and why teachers are using BIOZONE's resources to improve outcomes for their students. FREE product samples provided to every attendee.

Richard Allan (richard@biozone.co.nz), BIZONE International, Hamilton, Waikato, NZ

#477 HHMI's The Making of the Fittest: Evolving Switches, Evolving Bodies Free Classroom Resources

Hanover C • Hands-on Workshop (75 min) • Evolution • HS

Learn how you can teach about genes and gene switches with a visually-stunning short film on the evolution of the stickleback fish, and free classroom-ready resources, including an exciting virtual laboratory in which students collect their own data.

Ann Brokaw, Rocky River High School, Rocky River, OH

#388 Addressing Student Alternate Conceptions of Darwin's Model

Hanover D (Session I) • Paper (30 min) • Evolution • 2C 4C GA

This paper presents ways to help students discuss how examples of human evolution (multiple drug resistant tuberculosis and sickle cell anemia) relate to each item in Darwin's Model, thereby addressing student misconceptions about natural selection.

Kathy Gallucci (gallucci@elon.edu), Elon University, Elon, NC

#368 Using Primary Literature to Teach Evolution

Hanover D (Session II) • Paper (30 min) • Evolution • HS 2C

Learn about strategies for using primary literature to teach evolution in high school and community college classes. We will discuss our approach and experiences and provide guidelines to help you implement the strategy in your classroom.

Jaime Sabel, University of Iowa, Iowa City, IA and Barry Greenwald, Harding High School, St. Paul, MN

#473 Society for Study of Evolution Presents: The Evolution of Biological Complexity: A New Lab Exploring the Origin of Multicellularity

Hanover E • Hands-on Workshop (75 min) • Evolution • 2C 4C GA

Through simple and safe laboratory methods appropriate for high school

and undergraduate students, we show how single-cell yeast can evolve into snowflake-shaped clusters that continue to evolve as multicellular individuals. Free yeast strains and curricula.

William Ratcliff (william.ratcliff@biology.gatech.edu), Georgia Tech, Atlanta, GA, Tami Limberg (tlimberg@greatriver.school.org), Great River High School, St. Paul, MN and Nicholas Beerman, (nybeermann@gmail.com), MacDowell Montessori, Milwaukee, WI

#365 Karyotyping and Beyond

Hanover F & G • Paper (75 min)
• Genetics • MS HS

Walk through the progression of detection methods for genetic disorders over the past thirty years. Begin by exploring karyotyping and its limitations, and progress forward towards modern day applications of genome sequencing.

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

#422 Food For Thought: A Modeling Unit Investigating Connections Between the Endocrine and Nervous Systems, Metabolism, and Health

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

Come explore a full unit of lessons that include hands-on activities addressing core ideas addressed in the NGSS connecting to energy metabolism, neuroendocrine function, and homeostasis. Access to free NIH SEPA funded curriculum materials included.

Tommy Wolfe (wolfe5@illinois.edu), Claire Scavuzzo (cscavuz2@gmail.com), Hillary Lauren, (hgzg.lauren@gmail.com) and Barbara Hug (bhug@illinois.edu), Project NEURON, Champaign, IL

#400 A Year Into the AP Biology Redesign

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

Join us to discuss the first year of implementing the AP Biology redesign. We will share a variety of online resources

Join us for the 2013 NESCent/BEACON Evolution Symposium

Wallace, Islands, and Biogeography 100 Years Later

Friday, Nov 22, 2013
Hyatt Regency Atlanta
Room: The Learning
Center



The Wallace Line (shown in red) deliniates the fauna of southeast Asia and Australia. Wouldn't he have loved to see this satellite photo?

The symposium will be followed by a teacher workshop on Saturday, November 23, from 11:15 am to 12:30 pm in Hanover D, which will provide participants with resources, ideas and strategies to introduce topics such as biogeography, natural selection and speciation in their classroom.

Few scientists are as important or misunderstood as Alfred Russel Wallace, the British naturalist and contemporary of Charles Darwin. 2013 marks the 100th anniversary of Wallace's death, and this year's NESCent/BEACON Evolution Symposium examines his historical and scientific legacies and his often-misunderstood relationship with Darwin, as well as two examples of exciting, contemporary work in biogeography, the field he helped create.

12:30 PM Welcome/Introduction

12:45 PM The Force of Admiration: Alfred Russel Wallace on the Evolutionary Trail

James Costa (Professor of Biology, Western Carolina University; Director, Highlands Biological Station) Trace Wallace's "evolutionary trail" from his "species notebook," the most important of his field notebooks during his crucial years in southeast Asia.

1:30 PM Seeing the Island through the Trees: Reconstructing the Biogeography of Madagascar's Mammals in the Absence of a Fossil Record

Anne Yoder (Professor of Biology and Evolutionary Anthropology, Duke University; Director of Duke Lemur Center) This talk focuses on the mammals of Madagascar, especially its iconic lemurs, asking when and by what means they colonized the island.

2:30 PM Evolutionary Biogeography and Conservation on a Rapidly Changing Planet: Building on Wallace's Vision

Ana Carnaval (Assistant Professor of Biology, City College of New York) How are the tools of evolutionary biogeography used to model biological responses to former climate change in the coastal forests of Brazil?

3:15 PM Wallace and the Limits of Darwin's Natural Selection

Will Kimler (Associate Professor of History, North Carolina State University) Explore the distinctive experiences of Wallace and Darwin as naturalists, and the relationship between the two men in the 1860s-70s.

4:00 PM Closing Comments

Brian Wiegmann (NESCent Assoc. Director and Professor of Entomology, North Carolina State University)



10:30am – 11:45am

continued

that are currently free that helped teachers and students transition to a more inquiry-based curriculum.

Carol Leibl (cleibl@nms.org), National Math and Science Initiative, Dallas, TX and Robert Summers, (robert@aplusala.org), A+ College Ready, North Birmingham, AL

#412 Keep Science in the Science Classroom, and Non-Science Out

Dunwoody • Hands-on Workshop (75 min) • Evolution • E MS HS

Controversy in the classroom? What can you do when evolution, climate change, or other topics are under attack by students, parents, or even your colleagues? The National Center for Science Education (NCSE) and SETI Institute have resources for you.

Eric Meikle (meikle@ncse.com) and Minda Berbeco (berbeco@ncse.com), National Center for Science Education, Oakland, CA and Pamela Harman (pharman@seti.org), SETI Institute, Mountain View, CA

#418 Using College Labs to Help Future Teachers Learn to Teach

Edgewood • Paper (75 min)
• Instructional Strategies/
Technologies • 2C 4C GA

Come learn how we use inquiry-based, college-level introductory biology laboratories as a low-threat training ground for pre-service teachers enrolled in their science methods course.

Julie Angle (julie.angle@okstate.edu) and Donald French (dfrench@okstate.edu), Oklahoma State University, Stillwater, OK

#288 Team-based Learning for Environmental Science

Fairlie • Hands-on Workshop (75 min) • Environment/Ecology • HS 2C 4C

Participants will “be the class” as the session leader demonstrates guiding students through student-centered learning activities and instructor-led discussion

to grasp basic environmental concepts based on real world case studies.

Susan Karr (sukarr@cn.edu), Carson-Newman University, Jefferson City, TN

#374 Measuring Student Proficiency

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

Join us to discover ways to integrate science practices into your curriculum, track student mastery throughout a course of study, and increase student engagement and ownership over learning. Planning templates and assessment techniques will be shared.

Aimee Wagner (aimee.wagner@gmail.com), West Charlotte High School, Charlotte, NC and Cole Entress (cole.entress@gmail.com), Lawrence Hall of Science, Berkeley, CA

#398 Genome Science: Biology in the Post-genome Age

Harris • Demonstration (75 min)
• Genetics • HS 2C 4C

Join the experts in DNA and move your biology labs from DNA basics and recombinant technology in prokaryotes into the exciting world of eukaryotic genomics.

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

Committee Meeting: Membership Committee

Heritage Boardroom

Sherry Annee (sannee@brebeuf.org) and Sue Trammel (suetrammell@jalc.edu), Committee Chairs

#443 Investigating the Environment's Influence on Gene Networks

Inman • Hands-on Workshop (75 min) • Genetics • HS 2C

An intro to lessons used to teach the concepts of gene and protein networks, multi-level data analysis, microbiology, biotechnology, and systems biology. Students act as collaborative scientists and design their own experiment. Free cultures provided.

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

#469 BSCS Presents: Assessing What Your Students Know

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

Join this interactive session to learn about a tool to examine student work and use resulting data to inform teaching. Bring samples of student work.

Brooke Bourdelat-Parks and Betty Stennett, BSCS, Colorado Springs, CO

Committee Meeting: Constitution & Bylaws Committee

Lenox

Ann Lumsden (Lumsden@bio.fsu.edu), Committee Chair

#452 Excel: Math in Bio Applications

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

Build math skills including the use of Excel into biology curriculum from middle school through AP Bio. From surface-area to volume through Hardy-Weinberg, demystify the mathematics that students (and teachers) need in order to truly understand patterns in biology.

Karen Lucci (klucci@hvrstd.org), Hopewell Valley Central High School, Pennington, NJ and Catherine Ambos (CAmbos@somervillenjk12.org), Somerville Middle School, Somerville, NJ

#336 From Surviving to Thriving: Making Strides Toward an Amazing AP Biology Career

Rosewell • Symposium (75 min)
• AP Biology • HS

What's the difference between teaching AP Biology and being a Rock Star at it? Can early-career teachers transition from surviving to innovating in the profession? Novices and veterans share stories of survival and success.

10:30am – 11:45am

continued

Beth Dixon (bdixon@rocklinacademy.org), Western Sierra Collegiate Academy, Rocklin, CA, Jenny Sarna, Farragut Career Academy, Chicago, IL and Valerie May, Woodstock Academy, Woodstock, CT

#348 Students Creating Puzzles as Active Learning Opportunities

Spring • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • HS 2C 4C

Learning biology involves discovering new words and what they mean; this can be a daunting task for many students. When students create puzzles such as Sudoku and crosswords, learning becomes active and engaged. Learn to do this in your classroom.

Kerry Cheesman (kcheesma@capital.edu), Capital University, Columbus, OH

#293 Anatomy & Physiology

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

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

Sylvia Tufts, Thronridge High School (retired), Flossmoor, IL

#ES28 Flipping Your Classroom with Learning Catalytics™

Marietta • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • HS 2C 4C

Bring your web-enabled laptop, smartphone or tablet to test drive the Learning Catalytics student engagement.

Jung Choi, Georgia Institute of Technology, Atlanta, GA

Presented in partnership with Pearson

Noon – 1:00pm

Lunch Break

It's time to take a break and "digest" what you've learned while you digest some food. And don't forget to stop by the Exhibit Hall since you have some free time.

Continued: NABT Faculty Professional Development Summit: Implementing *Vision and Change* in the Biology Classroom

Regency VI • Special Program • 2C 4C

NABT Undergraduate Biology Meeting

Regency V • Invitation Only • 2C 4C

12:30pm – 4:00pm

NESCent/BEACON Evolution Symposium: Wallace, Islands, and Biogeography, 100 Year's Later

Learning Center • Special Program • Evolution • GA

Few scientists are as important or as misunderstood as Alfred Russel Wallace, the British naturalist and contemporary of Charles Darwin. This year's NABT **Evolution Symposium** focuses on Wallace, examining his historical and scientific legacies and his often-misunderstood relationship with Darwin, and exploring two examples of exciting, contemporary work in biogeography being conducted in Madagascar and Brazil.

See page 49 for full details.

The 2013 NABT Evolution Symposium is presented by BEACON and NESCent.

1:00pm – 2:15pm

Continued: NABT Faculty Professional Development Summit: Implementing *Vision and Change* in the Biology Classroom

Regency VI • Special Speaker • 2C 4C

#ES31 Proven Multimodal Tools for Significant Learning Improvement

Chicago A & B • Exhibitor Session • Demonstration • General Biology • HS 2C 4C

This session is an interactive experience demonstrating how a teacher uses a cloud based multimodal introduction to biology text that scientific lab research has shown significantly improves student learning by as much as two full grades.

William Rogers (wrogers@bsu.edu), Ball State University and Vizi Courseware, Muncie, IN

#ES29 Water Quality with PASCO Probeware

Hanover A • Exhibitor Session • Hands-on Workshop (75 min) • Environment/Ecology • GA

Participate in innovative activities from PASCO's biology lab manuals and get hands on with water quality sensors. See how PASCO's Multi-Measure™ Sensors and eZsample tests make field sampling easier than ever before.

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

#ES30 BIOZONE AP® Biology: Meeting the Needs of the New Examination

Hanover B • Exhibitor Session • Demonstration (75 min) • AP Biology • HS

BIOZONE presents innovative approaches for teaching AP Biology within the thematic framework of the four big ideas. Find out how BIOZONE's pedagogical approach can improve student achievement

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1:00pm – 2:15pm

continued

in the current environment. Attendees receive FREE samples.

Richard Allan (richard@biozone.co.nz),
BIZONE International,
Hamilton, Waikato, NZ

#475 HHMI Presents: Building Phylogenetic Trees from DNA Sequences

Hanover C • Hands-on Workshop
(75 min) • Genetics • HS

Discover how to introduce students to basic bioinformatics concepts, explore sequence alignment and tree-building tools, and guide the interpretation of alignments and phylogenetic trees with free classroom-ready multimedia resources from HHMI.

David Knuffke, Deer Park High School,
Deer Park, NY

#321 Topics and Strategies to Influence Evolution Acceptance

Hanover D (Session I) • Paper
(30 min) • Evolution • HS 2C 4C

This session presents pedagogical implications of research which examined the influence of macroevolution instruction on students' understanding and acceptance of evolution. Ideas for influential content and teaching strategies are discussed.

Emily M. Walter (emw2n4@mail.
mizzou.edu), University of Missouri,
Columbia, MO

#461 Constructing & Testing a Hardy-Weinberg Math- ematical Model in AP Biology

Hanover E • Hands-on Workshop
(75 min) • AP Biology • HS

The new AP Biology Framework places an increased emphasis on quantitative skills & mathematical models. Bring your computer with a spreadsheet application and let's explore strategies to construct and test a Hardy-Weinberg equilibrium model.

Brad Williamson (ksbioteacher@gmail.
com), University of Kansas Center for
STEM Education, Lawrence, KS

#333 APS Presents: Ideas for Using The New Next Generation Science Standards

Hanover F & G • Hands-on Work-
shop (75 min) • General Biology
• MS HS

Experience active learning as you work to familiarize yourself with the newly released Next Generation Science Standards, and sample some of the many resources available in the *APS Archive of Teaching Resources* that can help.

Margaret Shain (mshain@the-aps.org)
and Melinda Lowy (mlowy@the-aps.
org), American Physiological Society,
Bethesda, MD

#284 Using Models to Construct Meaningful Explanations in Biology

Baker • Hands-on Workshop (75
min) • Instructional Strategies/
Technologies • HS 2C

Participants will use models of cell communication, photosynthesis and hands

on homeostasis. The focus will be using inexpensive materials to bring these explanations to life in the classroom. They will also receive templates for all activities.

Karen Lucci (klucci@hvrsd.org),
Hopewell Valley Central High School,
Pennington, NJ and Lynn Meldru,
Cheltenham High School, Wyncote, PA

#379 Join NIH in Engaging Your Students with the Latest Human Genome Research

Courtland • Hands-on Workshop
(75 min) • Genetics • HS 2C

This summer, the Smithsonian debuted an exhibit celebrating the human genome project and 60 years of the double helix. This session invites you to bring this celebration into your classroom with hands-on activities aligned with the NGSS.

Dave Vannier (vannierd@mail.nih.gov),
Carla Easter (easterc@mail.nih.gov), and
Keisha Findley (keisha.findley@nih.gov),
NIH National Human Genome Research
Institute, Bethesda, MD



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1:00pm – 2:15pm

continued

#438 Archaea, Bacteria, Eukaryotes: Relatives in the Tree of Life

Dunwoody • Hands-on Workshop (75 min) • Evolution • HS

Practice using multiple lines of evidence such as molecular evidence and anatomical structures to support the evolutionary relationship of organisms. Place organisms on a large "Tree of Life", explain relationships based on evidence. Handouts will be provided.

Pamela Harman (pharman@seti.org), SETI institute, Mountain View, CA

#332 Improving STEM Completion for Community College Students

Edgewood (Session 1) • Paper (30 min) • Instructional Strategies/Technologies • 2C 4C

This session describes the processes and services used to attain a 92% graduation rate for students participating in a partnership between three Hispanic-serving community colleges and Kansas State University.

Todd Carter (todd.carter@sccc.edu), Seward County Community College, Liberal, KS

#446 Meet NGSS through Resiliency, Permaculture and Biodynamics

Edgewood (Session II) • Paper (30 min) • General Biology • HS 2C 4C

Environmental biology has been growing by leaps and bounds. The terminology and links to classroom learning can be hard to figure out. How do you get past "gardening" and "recycling" and into deeper, meaningful, interdisciplinary curriculum?

Teddie Phillipson-Mower (t0phil01@louisville.edu), University of Louisville, Louisville, KY

#319 Using Simulations in the Environmental Science Classroom

Fairlie • Hands-on Workshop (75 min) • Environment/Ecology • HS 2C 4C

Participants will experience two simulations that can be easily used in the classroom: *NIMBY Landfill Siting* and *Kildare: An Environmental Health Simulation*. These simulations promote critical thinking, problem-solving and active student involvement.

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

#396 What's the Big Idea for Anatomy and Physiology?

Greenbriar • Demonstration (75 min) • AP Biology • HS

Instructors from Georgia Perimeter College invite you to join them as they discuss content from the new AP Biology Curriculum and demonstrate hands-on activities on the nervous and endocrine systems and immunity.

Patricia Mote (patricia.mote@gpc.edu) and Simone Brito (simone.brito@gpc.edu), Georgia Perimeter College, Dunwoody, GA

Committee Meeting: Nominating Committee

Heritage Boardroom

Betsy Ott (bott@tjc.edu), Committee Chair

#448 Making Microbiology Manageable - The Haloarchaea

Harris • Demonstration (75 min) • Microbiology & Cell Biology • HS 2C GA

Safe microbes for teaching fundamental microbiological and biological concepts via hands-on experimentation and exploration, *Haloarchaea* are remarkable extremophiles, and are also used for biotechnology & space survival studies.

Priya DasSarma (pdassarma@som.umaryland.edu), University of Maryland – Baltimore, Baltimore, MD

booth 615
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1:00pm – 2:15pm

*continued***#436 NMSU-HHMI
Phenotypes to Genotypes:
Eyes Absent Gene**Inman • Hands-on Workshop
(75 min) • Genetics • HS

Participants in this workshop will be guided through the determination of *Drosophila* phenotypes and genotypes for a gene that controls the development of eyes, using the molecular biology techniques of DNA extraction, PCR, and gel electrophoresis.

Raena Cota (hhmi_mml@nmsu.edu) and
Christin Slaughter (hhmi_asc@nmsu.edu),
New Mexico State University-
HHMI, Las Cruces, NM

**#467 BSCS Presents: Using
Evidence-Based Medicine to
Teach NGSS Science Practices**Kennesaw • Hands-on Workshop
(75 min) • General Biology
• HS 2C 4C

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

Mark Bloom and Brooke Bourdelat-
Parks, BSCS, Colorado Springs, CO

**Committee Meeting:
Retired Members Committee**

Lenox

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

**#419 Evidence, Evaluation,
and Explanations Through
Neuroscience**Piedmont • Hands-on Workshop
(75 min) • Neuroscience
• MS HS 2C

Explore student-driven activities and an engaging computer game that support skills in obtaining data, evaluating

evidence, and constructing explanations through a curriculum unit on neuroscience! Includes access to free NIH SEPA funded materials.

Hillary Lauren, Chandana Jasti and
Barbara Hug, (bhug@illinois.edu),
Project NEURON, Champaign, IL

**#346 Using Epidemiology
to Engage Students in
Scientific Practice**Rosewell • Demonstration
(75 min) • Curriculum
Development • MS HS

Epidemiology is a great way to engage students in the NGSS practices in your class! Explore how students can become disease detectives while being immersed in scientific practice. Outbreak investigation, ethics, and epi surveys will be discussed.

Emily Adams, The Walker School,
Marietta, GA

**#459 Alternative Assess-
ments – Creativity and
Critical Thinking**Spring • Paper (75 min)
• General Biology • 4C GA

Join us for two approaches that have been very successful in our BIO 101 General Biology course. *Cells R Us* incorporates factual information, analogies, a creative spirit and a somewhat different form of learning. *Biology in the News* promotes critical thinking, investigation of current science issues and research, following specific directions and using analytical thinking.

Sandra M. Latourelle (latoursm@
together.net) and Nancy Elwess (nancy.
elwess@plattsburgh.edu), Plattsburgh
State University, Plattsburgh, NY

**#239 Making Bioaccumula-
tion & Biomagnification
Relevant to Students**Techwood • Hands-on Workshop
(75 min) • Environment/Ecology
• MS HS GA

Distinguish between bioaccumulation and biomagnification, and examine how

pollutants move through trophic levels to impact ecosystems and human health.

Dana Haine (dhaine@unc.edu),
University of North Carolina –
Chapel Hill, Chapel Hill, NC

**#ES32 Enliven Your Class-
room with The *Instructor
Exchange***Marietta • Hands-on Workshop
(75 min) • Instructional
Strategies/Technologies
• 2C 4C

The *Instructor Exchange* is an online community where instructors can share teaching ideas and classroom materials with each other. In this session, we'll generate and discuss classroom strategies to improve learning outcomes and student engagement.

Eric Simon, New England College
Henniker, NH
Presented in partnership with Pearson

2:30pm – 3:45pm

***Continued:* NESCent/BEACON
Evolution Symposium:
Wallace, Islands, and
Biogeography, 100 Year's
Later**Learning Center • Special
Program • Evolution • GA***Continued:* NABT Faculty
Professional Development
Summit: Implementing
*Vision and Change in the
Biology Classroom***Regency VI • Special Speaker
• 2C 4C

2:30pm – 3:45pm

continued

#ES33 Painless Titrations with Probeware

Hanover A • Exhibitor Session
• Hands-on Workshop (75 min)
• General Biology • GA

Get hands on with PASCO's drop counter and multi-measure sensors to see how easy titrations can be. Collect data on the iPad® using PASCO's PASPORT AirLink 2 Bluetooth™ interface and PASPORT sensors.

Mike Blasberg (sales@pasco.com),
Fort Atkinson, WI

#ES34 Biology for NGSS: A New Approach for a New Program

Hanover B • Exhibitor Session
• Demonstration (75 min)
• General Biology • HS

BIOZONE's newest title has been written from first principles to engage young biology students while addressing the specific requirements of the Next Generation Science Standards for High School Life Sciences. Free sample provided to every attendee.

Richard Allan (richard@biozone.co.nz), BIZONE International, Hamilton, Waikato, NZ

#479 HHMI's The Double Helix

Hanover C • Hands-on Workshop (75 min) • General Biology
• HS GA

HHMI's new short film recounts the challenges, false starts, and eventual success leading to the discovery of the double-helical structure of the DNA molecule. Participants will receive free, classroom-ready resources to explore key concepts presented.

Cindy Gay, Steamboat Springs High School, Steamboat Springs, CO



NABT

National Association of
Biology Teachers

1938 • 2013



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a **SUCCESS.**

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NABT PROFESSIONAL DEVELOPMENT CONFERENCE

FRIDAY

NOV.

22

2:30pm – 3:45pm

*continued***#449 Spicing Up Introductory Biology Labs with Sex and Live Organisms**

Hanover D (Session I) • Paper (30 min) • General Biology • 2C 4C

In “The Evolution and Biology of Sex,” an introductory-biology course for non-science majors, we have successfully used live organisms and the primary literature in laboratory activities. We draw on these data to make conclusions and recommendations.

Sehoya Cotner (harri054@umn.edu),
University of Minnesota, St. Paul, MN

#410 Organelles as Organisms

Hanover D (Session II) • Paper (30 min) • Evolution • HS 2C 4C

An activity is presented where students evaluate evidence and construct arguments supporting claims about the evolution of cells. Students learn about the epistemic criteria used to evaluate arguments about events that occurred in deep time.

Robert Cooper, Pennsbury High School,
Fairless Hills, PA

#364 Help Your Students Succeed in AP Biology

Hanover E • Hands-on Workshop (75 min) • AP Biology • HS

Join two experienced AP teachers for a lively session on how to use the new curriculum framework to help students learn more biology. There will be hints on how to assess inquiry labs, develop skills in “Science Practices” and write better essays.

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

#347 A Bakers Dozen: 13 New Biotech Discoveries for 2013

Hanover F & G • Paper (75 min) • Genetics • MS HS 2C

Want to include cutting edge genetic research in your class? Ever wonder where all of this new science fits into your curriculum? Hear the top 13 discoveries of 2013 in student friendly language and correlated to national standards.

Neil Lamb, HudsonAlpha Institute for
Biotechnology, Huntsville, AL

#457 Data Nuggets: Unearthing Quantitative and Inquiry Skills

Baker • Hands-on Workshop (75 min) • Evolution • GA

“Data Nuggets” are worksheets with which students can practice interpreting quantitative information and make evidence based claims. Nuggets introduce a scientist and their research and students are led through making a scientific claim and supporting it quantitatively using graphs.

Elizabeth Schultheis (schulth5@msu.edu) and Melissa Kjelvik (kjelvikm@msu.edu), Michigan State University
– Kellogg Biological Station, Hickory
Corners, MI

#327 Educational Primers in GENETICS: A New Classroom Tool

Courtland (Session I) • Paper (30 min) • Genetics • HS 2C 4C

The importance of incorporating primary literature and current research into biology curricula has been emphasized in many education initiatives. This series of companion articles allows faculty to do that easily and effectively using current papers.

Beth Ruedi (eruedi@genetics-gsa.org),
Genetics Society of America (GSA),
Bethesda, MD

#430 Branch Out With Software to Create Phylogenetic Trees

Dunwoody • Hands-on Workshop (75 min) • AP Biology • HS 2C

Learn to use free software to construct phylogenetic trees and explore the role of genetics in evolution of social behavior. In this hands-on workshop, attendees will participate in a series of activities and plan for implementing them with students.

Robert Wallon (rwallon2@illinois.edu),
Claudia Lutz (cclutz2@illinois.edu),
and Barbara Hug (bhug@illinois.edu),
University of Illinois at Urbana –
Champaign, Champaign, IL

#441 Delivering Biology Online

Edgewood (Session I) • Paper (30 min) • General Biology • 2C

Online biology courses are an important component of community college course offerings. In this experimental design, students were randomly assigned to 2 delivery methods: at-home kits and virtual simulations. Virtual simulations scored higher.

Beverly Ranney, University of Northern
Colorado, Greeley, CO

#375 Storytelling and Collaborative Projects in Online ClassesEdgewood (Session II)
• Demonstration (30 min)
• Instructional Strategies/
Technologies • HS 2C 4C

I will share my permanent website of biology-related stories created by students, and explain how I have students in online classes work collaboratively to build web pages on applied biology concepts, which the class views to prep for a quiz.

Mike Tveten (mtveten@pima.edu),
Pima Community College, Tucson, AZ

2:30pm – 3:45pm

continued

#370 Real World Connections with Respiration and Photosynthesis

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

Participants will learn about teaching photosynthesis and cellular respiration by exploring connections and applications in experiments with plants, NASA climate data models, interactive nutrient cycle activities, exercise and ecosystem services.

Beth Peterson (lpeterson@dist113.org), Highland Park High School, Highland Park, IL

#340 Strategies for Teaching Evolution in Anatomy and Physiology

Greenbriar • Paper (75 min) • Anatomy & Physiology • HS 2C 4C

We will explore activities that incorporate adaptation and evolution in human anatomy and physiology courses. Presentation topics will include highlighting the emergence and prevalence of certain diseases and exploring comparative skull anatomy.

Katey Hughes (hughes_kathleen1@columbusstate.edu), Columbus State University, Columbus, GA and George Sellers (gsellers@gwd51.org), Ware Shoals High School, Ware Shoals, SC

#351 DNA Barcoding = Independent Research in the Classroom

Harris • Demonstration (75 min) • Biotechnology • HS 2C 4C

Have students direct their own research and learn molecular biology, bioinformatics, and phylogenetics with projects that identify plants, animals, and food sources through unique DNA barcodes.

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

Committee Meeting: ABT Advisory Committee

Heritage Boardroom

Peter Mecca (meccap@fccps.org), Committee Chair

#401 Zoo Genetics: A Free Conservation Biology Curriculum

Inman • Demonstration (30 min) • Genetics • MS HS 2C

Zoo Genetics is a free curriculum developed by teacher Jason Crean and geneticist Jean Dubach, Ph.D. These activities look at real world conservation issues and how modern genetics helps to answer questions while simulating actual laboratory methods.

Jason Crean (jcrean@lths.net), Lyons Township High School – St. Xavier University, Chicago, IL

#362 Drugs, Drug Targets and You: A Molecular Perspective

Kennesaw • Hands-on Workshop (75 min) • Neuroscience • HS 2C

Join us as we introduce a hands-on modeling approach to teach the molecular basis of drug action, synapses and the science of addiction.

Tim Herman (herman@msoe.edu) and Shannon Colton (colton@msoe.edu), MSOE CBM, Milwaukee, WI

Committee Meeting: History Committee

Lenox

Pat Waller (wallerfp@enter.com) and Bunny Jaskot (BunnyJ19@aol.com), Committee Chairs

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FRIDAY
NOV.
22

2:30pm – 3:45pm

*continued***#439 Evolution in Action in the Classroom**

Piedmont • Hands-on Workshop (75 min) • Evolution • HS 2C 4C

Come see what's new with Avida-ED, digital evolution for education. Software, lessons, and instructor support materials will be provided. Participants are strongly encouraged to bring a laptop

Amy Lark (majchrz1@msu.edu) and
Wendy Johnson (john3062@msu.edu),
Michigan State University,
East Lansing, MI

#281 Make Student Voice Real: Motivation, Engagement, & CommunityRosewell • Symposium (75 min)
• Instructional Strategies/
Technologies • MS HS

Uncovering student thinking requires us to give students opportunities to think, speak, and know we care what they say. Help motivate rigorous scientific work by unpacking assumptions about your students' experiences.

Kirstin Milks, Bloomington High School
South, Bloomington, IN and Stephen
Trophagen, Rolling Meadows High
School, Rolling Meadows, IL

#345 Science Fiction or Fact?

Spring • Hands-on Workshop (75 min) • General Biology • 2C 4C GA

Is *Jurassic Park* possible? Students often ask about the science in movies & TV shows. Why not use them to initiate discussions or apply scientific concepts? Our workshop will provide resources to use video clips and ways to assess learning.

Kathy Kresge and Sharon Lee-Bond
Northampton Community College,
Bethlehem, PA

#304 Get your Brain On: Engaging Your Neurons – and Your Students

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

One of the practices of effective instruction is modeling. Modeling with the nervous system will allow students to develop understanding of the anatomy and physiology of the neuron as well as the transmission of the impulse and chemical synapse.

Julie Baker and Karen Shepherd,
Plano ISD Administration, Plano, TX
and Kim Wolff, Plano Senior
High School, Plano, TX

#ES35 New Advance Inquiry Labs for AP Biology from Flinn Scientific

Marietta • Demonstration (75 min) • AP Biology • HS

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

Maureen Hunt (flinn@flinnsci.com),
Flinn Scientific, Batavia, IL

6:00pm – 7:00pm

BDC Welcome MixerRegency V • Special Event •
Invitation Only

6:00pm – 9:00pm

NABT 75th Anniversary Gala

 Centennial III & IV
• Special Event • \$30

Help NABT celebrate 75 years of empowering biology and life science educators at this special Gala. Featuring a look back at the history of NABT, this special commemoration will honor NABT's past and celebrate our future. Special guests and friends, including Janet Carlson (BSCS) Jay Labov (NAS), Dennis Liu (HHMI) and Eugenie Scott (NCSE) will help make this a night to remember.

See page 59 for details.

Sponsored by 

4:00pm – 5:30pm

75th Cake Cutting Celebration

Grand Hall • Special Event

Turning 75 is kind of a big deal, and like most "birthdays," we're celebrating with family, friends, and cake. Meet us in the Exhibit Hall for the festivities, and to see if you are a winner of one of three great treasure hunt prizes.

75th Anniversary Gala

PRESENTATION:

75 Years of Protecting Scientific Integrity

Friday, November 23 • 6:00pm – 9:00pm

Since 1938, NABT has been empowering educators to provide the best possible biology and life science education for all students by protecting scientific integrity in the classroom. Help celebrate this milestone by joining us for dinner and a very special presentation highlighting the relationships between education policy, classroom materials, leadership, and advocacy in promoting and protecting scientific integrity.

Jay B. Labov, Ph.D.

Senior Advisor for Education and Communication
National Academy of Sciences and National Research Council

Jay B. Labov is Senior Advisor for Education and Communication for the National Academy of Sciences (NAS) and the National Research Council (NRC). He has directed or contributed to fifteen National Academies reports focusing on teacher education, advanced study for high school students, K-8 education, international education, and undergraduate education. He has served as Director of committees on K-12 and undergraduate science education, the National Academies' Teacher Advisory Council, and was Deputy Director for the Academy's Center for Education. He directed a committee of the NAS and the Institute of Medicine that authored *Science, Evolution, and Creationism*, and oversees the NAS's efforts to confront challenges to teaching evolution in the nation's public schools. He oversees efforts at the Academy to work with professional societies and with state academies of science on education issues. He also oversees work on improving education in the life sciences under the aegis of the NRC's Board on Life Sciences.



Janet Carlson, Ph.D.

Senior Science Educator, BSCS
Executive Director,
Center to Support Excellence in Teaching,
Stanford Graduate School of Education

Janet Carlson was the Executive Director of BSCS (Biological Sciences Curriculum Study) until October 2013. She worked at BSCS, a non-profit research and development organization located in Colorado Springs, CO, for 23 years where she oversaw the research that defined the work at BSCS as well as operations divisions and *The Science Exchange*, which communicates the work of BSCS and fosters the exchange of ideas, data, services, and materials among science educators. Dr. Carlson was responsible for initiating research projects and partnerships that bring the three lines of research to life: the nature of effective curriculum materials, teacher learning and practice, and leadership and policy. She also cultivates new opportunities for BSCS to partner with other organizations that are interested in improving the teaching and learning of science for all.

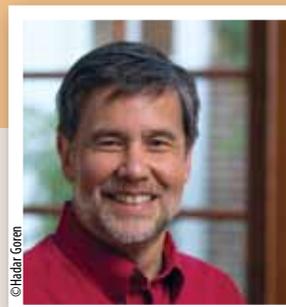
Currently, Dr. Carlson is the Executive Director of the Center to Support Excellence in Teaching (CSET) in the Graduate School of Education at Stanford University. She continues to work part time with BSCS.



Dennis W. Liu, Ph.D.

Head of Educational Media and Outreach,
Department of Science Education,
Howard Hughes Medical Institute

Dennis Liu is Head of Educational Media and Outreach for the Howard Hughes Medical Institute (HHMI) where he leads a team of scientist-educators producing multimedia to support teaching high school and college science. The team's award winning BiolInteractive



website is visited by millions of instructors seeking fresh ideas and content to engage students. His team's virtual labs won the Pirelli Top Prize for "Educational Media Promoting the Diffusion of Scientific Thinking and Culture." Dr. Liu trained in neuroscience and genetics, earning a B.S. in Zoology from the University of Wisconsin and a doctorate from the University of Oregon. While on faculty in the department of genetics at the University of Washington, he became passionate about education and the potential of multimedia. He has participated in numerous partnership projects such as the DNA Learning Center's DNAi website, The Smithsonian's *What it Means to Be Human* program, The E.O. Wilson Foundation's *Life On Earth* digital textbook, and Annenberg's *Reading in the Disciplines*. He is a contributing editor of the journal *CBE Life Sciences Education*. Dr. Liu is also currently leading the HHMI initiative producing short films to tell the greatest stories in science.



Eugenie C. Scott, Ph.D.

Executive Director
National Center for Science Education, Inc.

Eugenie C. Scott is Executive Director of the National Center for Science Education, Inc. (NCSE), a not for profit membership organization of scientists, teachers, and others that works to improve the teaching of science as a way of knowing, the teaching of evolution, and the teaching of climate change.

Scott is the author of *Evolution vs Creationism: An Introduction*, co-editor (with Glenn Branch) of *Not In Our Classrooms: Why Intelligent Design Is Wrong For Our Schools*, and the author of many articles in science journals. She has served as President of the American Association of Physical Anthropologists, and has been honored with the National Academy of Sciences Public Welfare Medal, the National Science Board Public Service Award, the AIBS Outstanding Service Award, the Geological Society of America Public Service Award, the AAAS Award for Scientific Freedom and Responsibility, the California Science Teachers Association Distinguished Service Award, and the National Association of Biology Teachers Honorary Membership, "the association's highest honor." She has also been awarded nine honorary degrees. In 2009, *Scientific American* named her "one of 10 outstanding leaders involved in research, business or policy pursuits that have advanced science and technology."

SATURDAY

NOV.

23

7:00am – 8:15am

Past President's Breakfast

Sway Restaurant • Invitation Only

Four-Year College and University Section Executive Meeting

Chicago A & B • Invitation Only

8:30am – 9:30am

GENERAL SESSION

David L. Nelson, Ph.D.

Bio appears on page 9.

Mutation and Fragile X Syndrome

Centennial III & IV • Special Speaker

Fragile X Syndrome is a common form of inherited intellectual disability caused by an unusual mutation involving expansion of a trinucleotide repeat in a gene that encodes an RNA binding protein involved in regulating synaptic function. Dr. Nelson will describe the peculiar genetics of the fragile X syndrome and the other disorders found in carriers of this mutation. He will also present efforts to define the function of the gene affected by the mutation (*FMR1*) and consequences of its loss of function in a variety of model organisms. These studies have led to clinical trials for fragile X syndrome, and findings from the trials will also be presented. Characterization of this disorder and its mutational basis is an example for ongoing similar efforts in many genetic disorders and provides an example of how biomedical investigators work to translate gene discovery to treatment.

Sponsored by the American Society for Human Genetics (ASHG)

9:45am – 12:30pm

College Board AP® Biology Workshop

Regency VI • Special Program
• AP Biology • HS 2C 4C

The redesigned AP Biology course merges rigor with creativity, and offers students myriad opportunities for learning through scientific inquiry, development of laboratory skills, and assessment. Throughout this workshop, teachers will be fully engaged in becoming familiar with all aspects of the AP Biology Curriculum Framework.

Designing Instruction for the Revised AP Biology Course

In this session, participants will be actively engaged in sharing strategies and activities, and creating an outline for an instructional unit with activities using the AP Biology Curriculum Framework.

Understanding and Preparing for the Redesigned AP Biology Exam

Members of the AP Biology Development Committee will provide an overview of the updated exam, question writing techniques and exam related resources. Participants will be actively engaged in writing and sharing questions.

AP Biology Open Forum

Bring your questions and get them answered! This session will focus on the changes to the AP Biology Course and Exam. An overview of the course, exam, and labs will be presented. College Board instructional materials and professional development opportunities will be discussed.

Jennifer Pfannerstill, North Country Day School, Winnetka, IL, Sharon Radford, The Paideia School, Atlanta, GA, Brenda Alston-Mills, Michigan State University, East Lansing, MI and Tanya Sharpe, College Board, Duluth, GA

#SP2 Special Workshop: NGSS Practices, Assessment, and You

 Hanover F • Hands-on Workshop • Curriculum Development/Supervision
• MS HS • \$45

Assessing science practices and skills alongside content is difficult. This workshop will help you create your own diagnostic and unit assessments that will empower you to seamlessly integrate skills and content.

Cole Entress, The Lawrence Hall of Science, University of California Berkeley, Berkeley, CA and Aimee Wagner, West Charlotte High School (Project LIFT), Charlotte, NC

#SP3 Special Workshop: Developing a Naturalist Approach in the Teaching of Science Concepts and Inquiry

 Hanover G • Demonstration • General Biology • HS • \$65

Following their natural curiosity, students use creativity, problem solving skills and inquiry processes to comprehend science concepts inherent in life cycles, behavior, and structure/function of common organisms in their immediate surroundings. A wealth of materials including labs, teaching strategies, alternative methods of assessment and a CD are provided.

Bill Klein, Western Iowa Tech Community College, Sioux City, IA

highlighted speakers

Read their bios on pages 8-10.

abbrev. key

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

9:45am – 6:00pm

Biology Directors Consortium Presents: Institutional Approaches to Improving Student Success in the Life Sciences

Hanover A & B • Special Program • General Biology • 2C 4C • Space is limited

In response to *Vision and Change*, biology faculty across the nation are working to structure their courses around learning outcomes based on core concepts and competencies. In this day-long workshop, members of the Biology Directors Consortium (BDC) will introduce models of student-centered learning activities, assessment, program development, and initiatives for student success. Participants will discuss these approaches and share their own challenges and best practices. A workshop summary will be made available to participants following the conference.

See page 62 for a full listing of workshop details.



Institutional Approaches to Improving Student Success in the Life Sciences

Presented by the: **Biology Directors' Consortium (BDC)**

The **BDC** is a consortium of biological sciences faculty and staff from over 30 different colleges and universities in the US and Canada.

We believe not only in our students' success but also in the success of our faculty, departments and campuses.

We believe that we can always do a better job educating our students.

We believe that reform is more than simply changing pedagogy.

We believe that trying to make this happen in isolation is inefficient and insufficient.

We believe that collaboration is the way to increase success overall.

What do we hope to accomplish today and over the coming years?

Our focus is on improving the introductory or core biology experience by providing a venue for collaboration and for beginning change at all administrative levels.

What is the plan for the sessions?

Vision and Change states that "faculty need to decide what they want their students to know or be able to do when they have completed a given topic, course, or program of study and then, once these learning goals have been clearly identified, develop assessments to evaluate whether students have achieved those stated goals. These learning outcomes and assessments can then serve as a guide for which teaching strategies will engage students and help them advance their understanding to the desired level of comprehension."

The question remains, how do we do this?

Over the course of the day, we will work in small discussion groups to address these areas and will provide some concrete examples of approaches that have worked.

SATURDAY	
9:45am – 10:45am	1a. Introduction to IBP — Gordon Uno, University of Oklahoma 1b. What is the BDC? — Melissa Michael, University of Illinois U-C 1c. Integrating Essential Learning Outcomes, <i>Vision and Change</i> and Next Generation Science Standards with your own institution's goals for students
10:45am – 12:30pm	2. Models of Program Development and Assessment Designed to Improve Student Learning a. Developing Longitudinal Goals and Learning Outcomes as a Basis for Overall Program Development and Assessment - The Wyoming Model — Mark Lyford, University of Wyoming b. Using Assessment to Design Instruction that Enhances Student Learning — Michelle Withers, West Virginia University
12:30pm – 1:15pm	LUNCH
1:15pm – 2:15pm	3. What good models are there for developing content-based and noncontent-based competencies? a. Teaching Core Biology 'Content' through student-centered active learning while engaging the principles of Scientific Teaching — Randall Phillis, University of Massachusetts - Amherst b. Using simple models to help students learn and overcome misconceptions — John Merrill, Michigan State University
2:15pm – 3:00pm	Discussion
3:00pm – 3:30pm	c. Developing inquiry-based labs in introductory biology — Ruth Buskirk, University of Texas - Austin and Jean Heitz, University of Wisconsin - Madison
3:30pm – 4:00pm	Small group discussion
4:00pm – 4:30pm	4. Engaging and retaining students: Student outcomes matter! a. The Biology Boot Camp and Retention in the major — Bill Wischusen, Louisiana State University b. Active Learning Can Reduce the Achievement Gap — David Haak, Indiana University
4:30pm – 5:00pm	Discussion
5:00pm – 6:00pm	5. Small group discussion and report out: Inviting the conversation — How can The BDC help? — Jim Morris, Brandeis University and Melissa Michael, University of Illinois U-C

Handbook materials will be on line at: <http://tinyurl.com/BDC-at-NABT-2013> or at https://mywebspace.wisc.edu/xythoswfs/webui/_xy-51185040_1-t_4kVUoJzi

9:45am – 11:00am

INVITED SPEAKER

Robert Farrell, Ph.D.

Bio appears on page 9.

Rapid Transcriptional Response in Apple to Fire Blight Disease

Regency VII • Special Speaker

Fire blight, caused by the bacterium *Erwinia amylovora*, is a destructive disease of certain types of apple, pear, and other plants in the Rosaceae, which are flowering members of the rose family. The goal of this study was to use an all-inclusive, i.e., global, analysis of gene expression to characterize the temporal response of apple to infection by *E. amylovora*. RNA, produced in the cell by transcription, is by far the most widely used parameter of gene expression, but its inherent chemical instability makes working with it something of a challenge. RNA, however, can be used as template material for the synthesis of complementary DNA (cDNA), which is a direct mirror of the original population of RNA molecules, albeit with much greater stability. A technique known as cDNA suppression subtractive hybridization (SSH) was used to compare control mRNA with mRNA from *E. amylovora*-infected 'Gala' apple leaves at time intervals after exposure in order to identify genes expressed in one population and not in another. By physically subtracting cDNA synthesized from mRNAs expressed in uninfected plant tissue (mock inoculated) from cDNAs derived from mRNAs expressed in another state (fire blight challenged) one can obtain a pool of gene sequences that are responsive to pathogen exposure because sequences common to both populations are removed by nucleic acid hybridization. Gel electrophoresis of PCR-amplified subtracted cDNAs and unsubtracted controls indicate a greater quantity and size diversity in reverse

subtracted samples (down-regulated genes) collected at 1h and 2h, compared to changes in gene expression at later time points. The resultant cDNA molecules were PCR-amplified and then identified by comparing their sequences against online databases.

#481 HHMI Presents: Deep Time Evolution & Extinctions

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

Throughout our planet's long history, Earth's environment and organisms have both changed dramatically, and often in concert. Come explore this biology-geology connection with our free multimedia resources, including the popular EarthViewer app!

Jeremy Conn, Goshen High School,
Goshen, OH

#415 How to Induce Better Learning Through Exercises in the Classroom

Hanover D (Session I) • Paper (30 min) • General Biology • 2C

This session will explore using short in-class assignments instead of assigned homework. Techniques used in the classroom that have resulted in the improvement of the reports students submit will be described. The classroom is shown to be the most important place for learning.

Mohamed Lakrim (mlakrim@aol.com),
Kingsborough Community College,
Brooklyn, NY

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SATURDAY

NOV.

23

9:45am – 11:00am

continued

#402 Flipping an Inquiry-based Biology Course – Lessons Learned

Hanover D (Session II) • Paper (30 min) • Instructional Strategies/Technologies • 2C 4C GA

This presentation describes an adventure in flipping the classroom in an introductory course already using a highly student-centered approach to increase self-reliance. We report data from students' reflections, observations, and assessments.

Donald French (dfrench@okstate.edu) and Michael E. Moore (michael.e.moore@okstate.edu), Oklahoma State University, Stillwater, OK

#297 The X Files: A Sample from ASHG's Lesson Plan Database

Hanover E • Hands-on Workshop (75 min) • Genetics • HS 2C

Experience a sample lesson on sex-linked inheritance from the American Society of Human Genetics' new database of lessons developed by geneticist-teacher teams and designed to target student misconceptions while using the BSCS 5Es learning cycle.

Katherine Lontok (klontok@ashg.org) and Michael Dougherty (mdougherty@ashg.org), American Society of Human Genetics (ASHG), Bethesda, MD

#330 Biology's Best Engaged!

Baker • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • MS HS 2C

Michigan's 2012 OBTA recipient shares engagement strategies, inquiry driven lessons and case studies to better teach content and scientific literacy. Want EVERY student engaged EVERY hour? Need more CCSS in science? Join us in this active session!

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

#256 Teaching Genetics with Wisconsin Fast Plants

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

In this hands-on workshop, we will practice a variety of techniques and inquiry-based approaches for teaching genetics, using Fast Plants. We will show how – in as little as 36 hours – easily observable phenotypic evidence can be gathered for analysis.

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

#425 Case It! - Case-based Learning for Undergraduate Research

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

Case It is an award-winning project that provides molecular biology computer simulations and cases to educators free of charge. Cases will be demonstrated relating to undergraduate research, using colony collapse disorder in honeybees as an example.

Karen Klyczek (karen.k.klyczek@uwrf.edu) and Mark Bergland (mark.s.berglan@uwrf.edu), University of Wisconsin – River Falls, River Falls, WI

#262 Life After Poster Boards: Virtual Posters as Lab Assessment

Edgewood (Session I)
• Demonstration (30 min)
• Instructional Strategies/Technologies • MS HS GA

With more emphasis on virtual learning, teachers need new tools to assess. In this workshop, participants will learn how to convert a single PowerPoint slide into a virtual poster that can be posted and assessed.

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

#444 Using Citizen Science Projects in the Classroom

Edgewood (Session II) • Paper (30 min) • Instructional Strategies/Technologies • E MS HS

"Citizen Science" is scientific research in which anyone can participate in the collection of data that is analyzed by professional scientists. There are projects in which nonprofessionals can volunteer to monitor events and conduct experiments.

Nerissa DeRamus and Belinda Jolley, DeKalb County Schools, Geraldine, AL

#309 WOW Biology - XV

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

On a budget? Students don't know vocabulary? Need a review game? Join the Mississippi Association of Biology Educators as we share some of our most effective, inexpensive, hands-on, and literacy activities. Handouts! Door Prizes!

Sheila Smith (ssmith54@aol.com), Science Consultant, Ridgeland, MS; Tammy Cox (tamcox@jackson.k12.ms.us), Provine High School, Jackson, MS; Amber Moore (amoore1221@gmail.com), Humphreys County High School, Belzoni, MS; Mary Branson (mb11456@aol.com), Callaway High School, Jackson, MS; Ebonie Butler (ebbutler@jackson.k12.ms.us), Wingfield High School, Jackson, MS; and Angela Ellington (ellingtona@tunica.k12.ms.us), Rosa Fort High School, Tunica, MS

#387 Inspector Gadget: Detecting Genetic Disorders

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

Wowers! You never know what might happen with genetics! Take a ride on family trees through generations, discovering genetic disorders and treatments, using everything from researcher databases to biochemical tests, to summation "Go-Go-Science-Gadgets."

Monique Thomas, Central High School, Rockford, AL and Keshia Williams, Robert E. Lee High School, Montgomery, AL

9:45am – 11:00am

continued

#417 Carbon sequestration and Global Ecosystems

Harris (Session I) • Paper (30 min)
• General Biology • 4C

Description of an outdoor lab which allows students to investigate the role of forests and fossil fuel use in the carbon cycle and climate change. Highlights connection between organic and inorganic carbon in global ecosystems.

Mark Yates and Randall Colvin, LaGrange College, LaGrange, GA

#240 Publish or Perish: Learn the Art of Science Writing

Harris (Session II) • Paper (30 min)
• Instructional Strategies/
Technologies • MS HS

Writing and publishing original research is essential for success as a scientist; however, no opportunities exist for students to engage in this process. JEl provides a realistic science writing experience and engages youth with working scientists.

Sarah Fankhauser, Harvard GSAS Journal of Emerging Investigators, Boston, MA

Committee Meeting: Occasional Publications Committee

Heritage Boardroom

Richard Poole (poolerj@comcast.net),
Committee Chair

#272 Mapping the Process of Science: Setting the Stage for the NGSS

Inman • Hands-on Workshop (75 min)
• Instructional Strategies/
Technologies • HS 2C 4C

The *Understanding Science* website (www.understandingscience.org), developed by the University of California Museum of Paleontology, is an engaging, freely accessible resource designed to communicate what science is and how it works.

Lisa White (ldwhite@berkeley.edu),
University of California Museum of
Paleontology, Berkeley, CA

#344 The War on Cancer: The Cell Cycle and Clinical Trials

Kennesaw • Hands-on Workshop
(75 min) • Microbiology & Cell
Biology • HS

This seven unit curriculum, designed for regular and AP Biology classes, incorporates biotechnology, the nature of science and translational medicine. Session attendees will preview the curriculum and receive materials for use in their own class.

Jennifer Broo (jsunderman@saintursula.org), St. Ursula Academy, Cincinnati, OH and Jessica Mahoney (Jessica.Mahoney@ocps.net), Edgewater High School, Orlando, FL

#313 DNA Barcoding: An Authentic BLAST Investigation

Piedmont • Hands-on Workshop
(75 min) • AP Biology • HS 2C 4C

DNA Barcoding is an authentic laboratory for AP Investigation 3. In this hands-on

session, learn how your students can extract, amplify, and verify the CO1 gene. Using sequence data, students use BLAST to identify the species of their fish sample.

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

#433 Explore Human- microbe Interactions with Hands-on Activities

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

Take part in student activities focused on modeling microbial communities and their essential role in the human organism. Activities are designed to shift students' thinking about human-microbe interactions. Receive free NIH SEPA curriculum materials.

Chandana Jasti, Project NEURON,
Champaign, IL and Sean O'Connor,
Kristen Talbot and Barbara Hug,
University of Illinois, Champaign, IL

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9:45am – 11:00am

continued

#411 Addressing Human Impacts on Natural Systems within the NGSS

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

How can teachers address new requirements of the NGSS to learn about human impacts on natural systems in an educational, scientific, and positive manner? We will address how to integrate these new standards into your biology classes.

Minda Berbeco (berbeco@ncse.com) and Eric Meikle (meikle@ncse.com), National Center for Science Education (NCSE), Oakland, CA

#376 Digital Biology

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

Come learn how to combine cellphones, digital cameras, iPads[®] and microscopes to record and document both the macro and micro learning in your classroom. Lab manual will be provided.

Whitney Hagins, Lexington High School, Lexington, MA

11:15am – 12:30pm

Continued: College Board AP[®] Biology Workshop

Regency VI • Special Program • AP Biology • HS 4C

Continued: #SP2 Special Workshop: NGSS Practices, Assessment, and You

 Hanover F • Hands-on Workshop • Curriculum Development/Supervision • MS HS • \$45

Continued: #SP3 Special Workshop: Developing a Naturalist Approach in the Teaching of Science Concepts and Inquiry

 Hanover G • Demonstration • General Biology • HS • \$65

Continued: Biology Directors Consortium Presents: Institutional Approaches to Improving Student Success in the Life Sciences

Hanover A & B • Special Program • General Biology • 2C 4C • Space is limited

#238 Integrating Epigenetics into Your Biology Curriculum

Hanover C • Hands-on Workshop (75 min) • Genetics • HS 2C 4C

Receive lessons and resources for promoting 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 (dhaine@unc.edu), University of North Carolina – Chapel Hill, Chapel Hill, NC

#395 BEACON/NESCent Evolution Workshop - Teaching Biogeography

Hanover D • Demonstration (75 min) • Evolution • MS HS 4C

Join us for resources, ideas and strategies to introduce concepts from yesterday's BEACON/NESCent Evolution Symposium (*Wallace, Islands, and Biogeography - 100 Years Later*) in your classroom.

Louise Mead (lsmead@msu.edu), BEACON, East Lansing, MI and Jory Weintraub (jory@nescent.org), NESCent, Durham, NC

#310 Teaching the Genomics of Complex Traits

Hanover E • Hands-on Workshop (75 min) • Genetics • HS 2C

Genomics increasingly focuses on complex traits such as autism and height, complementing studies of single-gene traits. Help your students learn the concept of polygenic inheritance using an inquiry-based activity that teaches complex trait genetics.

Michael Dougherty (mdougherty@ashg.org) and Katherine Lontok (klontok@ashg.org), American Society of Human Genetics (ASHG), Bethesda, MD

#378 20 in 20

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

This workshop will introduce participants to 20 exciting, informative 20-minute activities to enhance their AP Biology course. Handout provided.

Whitney Hagins, Lexington High School, Lexington, MA

#317 Scaffolding and Assessing Students' Scientific Explanations

Courtland • Hands-on Workshop (75 min) • Instructional Strategies/Technologies • MS HS 4C

Participants will gain experience using a scaffolding tool to develop students' ability to write scientific explanations supported by data. Analysis of student work as formative assessment to inform both teachers and students will be explored.

Wendy Johnson (johnson3062@msu.edu), Michigan State University, East Lansing, MI

#322 Same Genes, Different Fates

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

Having trouble explaining and demonstrating gene expression with cell signaling? A modeling activity, concept

11:15am – 12:30pm

continued

mapping, lab options and supplies will be provided for your classroom to help you!

Cathy Oakes, Amber Vogel, and Nichola Hoffmann, UNC – CH Morehead Planetarium & Science Center – External Programs, Chapel Hill, NC

#302 Active Learning Using Virtual Classes and Lecture Captures

Edgewood • Demonstration (75 min) • General Biology • 2C 4C GA

Attend this session to see how audio/video is used to incorporate live and recorded presentations to help traditional and online students become active participants in lecture/lab instruction. Active learning tools will be demonstrated or discussed.

Reggie Cobb (rcobb@nashcc.edu), Nash Community College, Rocky Mount, NC

#385 Service Learning to Enhance Elementary STEM Education

Fairlie • Demonstration (75 min) • Curriculum Development • E 4C GA

Georgia Gwinnett College offered a "Service Learning" course in collaboration with Gwinnett County's McKendree E to enhance elementary STEM education. We will present the activities and assessment data from this collaboration.

Allison D'Costa, Bernadette Peiffer, Judy Awong-Taylor and Clay Runck, Georgia Gwinnett College, Lawrenceville, GA

#285 Marine Science Mania VI

Greenbriar • Hands-on Workshop (75 min) • Marine Biology • MS HS

Marine Science Mania IV and how Next Generation Science Standards impact teaching Marine Science. Explore NGSS and apply them to activities designed to dovetail marine science concepts, math, and English. Receive many giveaways and a CD of activities, labs, presentations.

Tom Froats (tom.froats@d214.org), Prospect High School, Mount Prospect, IL

#261 From Double Helix to Whole-Genome Sequencing: Molecular Genetic Testing in the Age of Personalized Medicine

Harris • Paper (75 min)
• Genetics • HS 2C 4C

This session will review the science and technology of molecular genetic testing for the diagnosis and treatment of disease, and will cover some of the related ethical and policy issues.

Wayne Grody (wgrody@mednet.ucla.edu), Molecular Diagnostic Laboratories and Clinical Genomics Center, Los Angeles, LA

Committee Meeting: Global Perspectives Committee

Heritage Boardroom

Jacqueline McLaughlin (jshea@psu.edu), Committee Chair

#269 Simulating Science: "Diagnosing Diabetes" & "A Kidney Problem"

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

Experience two hands-on labs. Use inexpensive "wet lab" simulations and models to enhance students' understanding of diabetes and kidney function. Teacher information and student handouts are available online from the <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

#349 Seeing Cancer: An Active Approach to Teaching Human Biology

Kennesaw • Hands-on Workshop (75 min) • General Biology
• MS HS GA

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11:15am – 12:30pm

continued

Teach students about cancer using a hands-on activity that allows students to see and diagnose cancer. The lab comes from the St. Jude Cure4Kids program that provides free lessons, videos, and professional development for teaching about cancer.

Katherine Ayers (kate.ayers@stjude.org) and Yuri Quintana (yuri.quintana@stjude.org), St. Jude Children's Research Hospital, Memphis, TN

#428 Go Full Screen with NGSS: A Model for Teaching with Video

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

Practice integrating multimedia video into your lessons using a model based on instructional intent. Example videos will be used to show how instructional intent impacts the design of learning experiences. Free curriculum materials available.

Robert Wallon (rwallon2@illinois.edu) and Barbara Hug (bhug@illinois.edu), University of Illinois at Urbana – Champaign, Champaign, IL, and Chandana Jasti (cjasti@illinois.edu) and Hillary Lauren (lauren1@illinois.edu), Project NEURON, Champaign, IL

#413 Evo-Ed: Integrative Case-based Tools for Teaching Evolution

Rosewell • Hands-on Workshop (75 min) • Evolution • HS 2C 4C

We will model an integrative case approach to evolution education. Based on this approach, participants will design a lesson plan and an assessment tool that they can use in their own classrooms.

Peter White (pwhite@msu.edu), Merle Heidemann (heidema2@msu.edu) and Jim Smith (jimsmith@msu.edu), Michigan State University, East Lansing, MI

#426 Scaling and Seeing our Invisible Universe with NASA

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

From the subatomic to astronomic, life on Earth lies somewhere in between. Help your students get a sense of size and scale in the Universe, plus visualize our "invisible" Universe of electromagnetic energy with free hands-on activities from NASA.

Tyson Harty (tharty@jasper.k12.ga.us), NASA Education & Public Outreach, Rohnert Park, CA

#328 Nature in the Classroom: The Power of Place

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

Life cannot exist without nature. Similarly, biology education cannot exist without a natural context. We will explore how place-based learning offers the opportunity to engage students in biology content with motivation from their natural surroundings.

Isaac Stewart, Fisher Jr/Sr High School, Fisher, IL and Jim Lane, Mahtomedi High School, Mahtomedi, MN

1:00pm – 3:00pm

NABT Honors Luncheon

 Regency V • Special Event • \$60

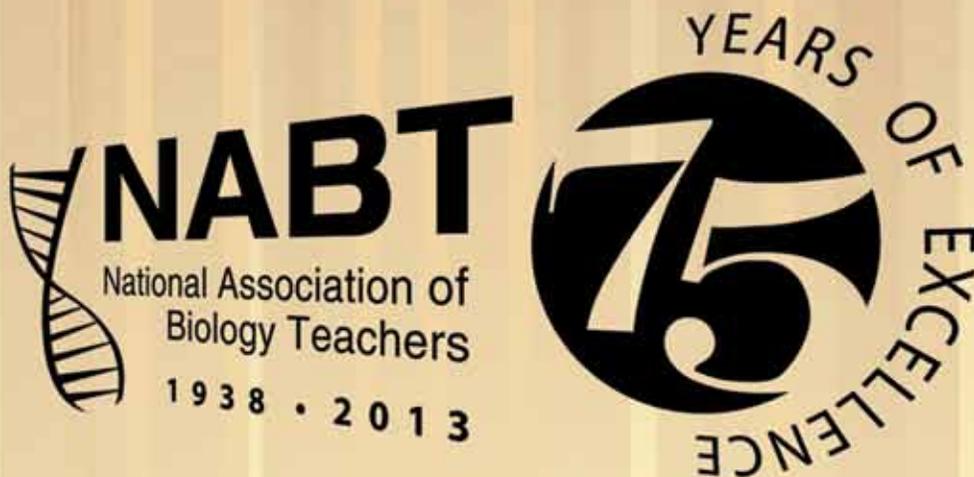
End the conference with a celebration of excellence at the 2013 Honors Luncheon. Help us recognize the numerous 2013 NABT Award recipients, including the Outstanding Biology Teacher Award (OBTA) honorees.

Full listing of 2013 Award Recipients found on pages 12 and 13.

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Milwaukee, WI

Booth 1002

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American Physiological Society

Bethesda, MD

Booth 812

www.the-aps.org

APS Education programs promote excellence in science teaching and learning and in the training of the physiologists of the future. Resources include curricula and PD for teachers such as national teacher workshops, fellowships, online courses, and outreach events.

American Phytopathological Society

Saint Paul, MN

Booth 406

www.apsnet.org

The American Phytopathological Society (APS) is the premier society dedicated to innovative plant pathology research. For more than a century, members of APS have been making and sharing significant breakthroughs. APS is driven by a distinctive community of scientists, whose commitment ensures the global advancement of this critical science.

American Society for Microbiology

Washington, DC

Booth 403

www.asnm.org

The ASM Education Board offers microbiological science resources for students, early career scientists and faculty. Information on microbiology careers, research fellowships, curriculum materials, ASM events is available at the booth. Featured this year are K-12 outreach posters and peer-reviewed K-12 classroom activities about microbial discovery.

2013 Exhibit Hall Floor Plan

Exhibit Hall (Grand Hall) Hours

Thursday Exhibit Hall Opening Reception: 4:00pm – 7:00pm

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Friday Exhibit hours: 9:30am – 5:30pm

Coffee Break: 9:30am – 10:15am

4:00pm – 5:30pm: Cake Cutting Ceremony and Treasure Hunt prize announcements



American Society of Plant Biologists

Rockville, MD

ASPB is devoted to the advancement of plant science worldwide. Its 4,500 members conduct scientific research as well as participate in formal and informal education to enhance and disseminate plant biology research. ASPB cultivates awareness of the importance of plant science research for scientific discovery, human health, and the economy.

Booth 903

www.aspb.org

Amphibian Ark

Apple Valley, MN

Amphibian Ark's vision is the world's amphibians safe in nature, and our mission is ensuring the global survival of amphibians, focusing on those that cannot currently be safeguarded in nature. Jump on board the Amphibian Ark!

Booth 204

www.amphibianark.org

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Booth 214

www.animalearn.org

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Booth 112

www.associatedmicroscope.com

Association of American Medical Colleges

Washington, DC

The Association of American Medical Colleges (AAMC) is a not-for-profit association representing all 141 accredited U.S. and 17 accredited Canadian medical schools; nearly 400 major teaching hospitals and health systems, including 51 Department of Veterans Affairs medical centers; and 90 academic and scientific societies.

Booth 106

www.mededportal.org/icollaborative/pre-health

Beacon Center for the Study of Evolution

East Lansing, MI

The BEACON Center for the Study of Evolution in Action is an NSF funded Science and Technology Center that brings together biologists, computational scientists, and engineers to study evolution as it happens and apply this knowledge to solve real-world problems. BEACON programs include K-16 outreach and education.

Booth 415

www.beacon-center.org

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Booth 310

www.brighterideasinc.com

California Institute for Regenerative Medicine

San Francisco, CA

California's state stem cell agency funds stem cell research and has developed a free online curriculum on stem cell science. Each of five modules has student materials, teacher materials, an overview PowerPoint, pre and post assessment tools and several layers of optional activities, with handouts, videos and graphics. Grades 9-13.

Booth 104

cirm.ca.gov

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Caretta Research Project

Savannah, Georgia

The Caretta Research Project is a hands-on research, education and conservation project that has been working with the threatened loggerhead sea turtles that nest on Wassaw NWR, GA since 1973. Volunteers come for weekly sessions in the summer to help patrol at night for nesting turtles, protect nests from predators and collect data for research.

Booth 304

www.carettaresearchproject.org

2013 Exhibitors



Carolina Biological Supply Company Booth 703

Burlington, NC  www.carolina.com

From our beginnings in 1927, Carolina Biological Supply Company has grown to become a leading supplier of science teaching materials. Today, from our headquarters in Burlington, North Carolina, we serve customers worldwide, including teachers, professors, home-school educators, and professionals in health and science-related fields.

Cell Zone, LLC Booth 714

Springfield, MA <http://cellzone.org>

Cell Zone provides interactive materials, designed by a biology teacher, that incorporate active learning and UDL to engage students. Our products target traditionally difficult topics in biology and facilitate learning for more students. Visit our booth to see how you can make your classroom more inclusive, interactive and fun!

Cengage Learning Booth 502

Belmont, CA <http://www.cengage.com>

Cengage Learning is a leading provider of innovative teaching, learning and research solutions for the academic, professional and library markets worldwide. The company's products and services are designed to foster academic excellence and professional development, increase student engagement, and improve learning outcomes.

Chill Expeditions Booth 915

Ardmore, PA www.chillexpeditions.com

Chill Expeditions, run by 2 teachers with a combined 50 years in the classroom, offers customized off-the-beaten path eco-immersion adventures in Latin America & Spain. Our unique approach to education in the field involves a network of visionaries collaborators and scientists, resulting in life-changing, authentic, and inspirational experiences.

Clemson University Booth 912

Clemson, SC <http://www.clemson.edu/cafls/departments/biosci/>
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Content Technologies, Inc. Booth 512

Moorpark, CA www.cram101.com

Cram101 Instructor Edition allows instructors to customize their courseware to their unique needs. This flattens the publishing process and puts the professor in control. Instructors can edit existing information and immediately push it to their students at no costs to the professor. Available as print copy, eBook, and on the web for Cram101 students.

Dallas Learning Solutions - Dallas County Community College District Booth 108

Dallas, TX <http://dls.dcccd.edu>

Dallas Learning Solutions introduces Biology Online for Non-Science Majors. Lesson and lab videos and self-assessment activities engage students and encourage active learning. This mobile accessible courseware is easily assembled and reassembled to fit an instructor's objectives and preferences. A customized lab kit is available from eScience Labs.

Ecology Project International Booth 410

Missoula, Montana ecologyproject.org

Ecology Project International is a non-profit organization that develops place-based, ecological education partnerships between local experts and high school students to address critical conservation issues. We engage youth from local communities and the U.S. in conservation as they learn about and help protect threatened species and habitats.

Edvotek, Inc Booth 504

Washington, DC www.edvotek.com

Edvotek (www.edvotek.com) manufactures robust research grade biotechnology education experiments, biologics, reagents and equipment for high schools and colleges. Experiments include DNA science, electrophoresis, forensics, PCR, molecular cloning, immunology, environmental science and AP Biology.

Embi Tec Booth 302

San Diego, CA <http://www.embitec.com>

Embi Tec manufactures and distributes the RunOne Electrophoresis System, a compact system with a built-in power supply and the PrepOne Sapphire, a blue illuminator for direct visualization of DNA gels without UV - both ideal for the research and classroom environment. We also have pipette aids and illuminators for setting up 96/384 well plates.

Flinn Scientific, Inc. Booth 614

Batavia, IL  www.flinnsci.com

Flinn Scientific is the leader in science and laboratory chemical safety. Publisher of the world-renowned Flinn Science Catalog Reference Manual, Flinn develops and offers a full line of chemistry, biology, physics, life science, Earth science, physical science, and safety products for middle and high schools.

Froguts Inc. Booth 114

Seattle, WA www.froguts.com

Froguts Inc is a Bio-eLearning company focused on creating the most engaging virtual dissection and lab software available. Our computer simulations of dissections and labs for K-12 and higher education engages students with immersive and interactive 3-D simulations of anatomy and physiology.

Genetics Society of America/American Society for Human Genetics Booth 814

Bethesda, MD www.genetics-gsa.org; www.ashg.org

The Genetics Society of America (GSA), founded in 1931, and the American Society of Human Genetics (ASHG), founded in 1948, work closely together to support geneticists and educate the public. Stop by our booth and learn about the programs GSA and ASHG offer for students and educators!

Genomikon Inc. Booth 211

Edmonton, AB, Canada genomikon.ca

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Panacea, Florida

Non-profit biological supply, marine life education center, and sea turtle rehab facility. We supply live marine life to universities, k-12 schools and public aquariums for research and education. We conduct marine life educational programs at our aquarium in Panacea, FL 45 minutes South of Tallahassee and with our mobile sea lab the Sea Mobile.

Booth 210

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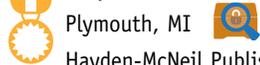
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Booth 205

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Booth 604

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Booth 906

holbrooktravel.com

Journal of Visualized Experiments (JoVE) Booth 805



Cambridge, Massachusetts

www.jove.com

Journal of Visualized Experiments (JoVE) is a peer reviewed, PubMed indexed journal devoted to the publication of biological, medical, chemical and physical research in a video format.

Late Nite Labs

New York, NY

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Booth 811

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Miami, FL

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Booth 612

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2013 Exhibitors

National Nanotechnology Infrastructure Network (NNIN)

Atlanta, GA

www.nnin.org/education-training

Booth 110

NNIN is an NSF-funded network of 14 universities which offer a variety of programs for K-16 communities including hands-on activities, demonstrations, summer research experiences, workshops, instructional materials and a web site - www.nnin.org/education-training. We publish (print & online) Nanooze, a magazine about nanotechnology for grades 5-8.

Nature Education

Boston, MA 

www.nature.com/principles

Booth 503

Nature Education, the educational division of Nature Publishing Group, is publisher of the Principles of Science series of interactive textbooks designed for the world we live in today. The first textbook in the series, Principles of Biology, is a research-oriented, affordable interactive textbook for university-level introductory biology courses.

NCSE

Oakland, CA

ncse.com

Booth 404

The National Center for Science Education (NCSE) is a not-for-profit membership organization that defends the teaching of evolution and climate science in the public schools. The NCSE provides information, resources, and advice to those defending science education--teachers, scientists, interested citizens, and more.

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Seneca Falls, NY

www.nycc.edu

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Houston, TX

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Booth 804

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Philadelphia, PA

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Austin, Texas

Booth 305

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Booth 402

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Orange, TX

www.scientificminds.com

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Booth 306

The Education Arcade

Cambridge, Massachusetts

education.mit.edu

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Booth 212

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Tuscaloosa, AL

opportunity.ua.edu

The College of Continuing Studies delivers The University of Alabama to individuals pursuing educational goals and career growth, and to organizations building excellence in the workplace.

Booth 202

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Birmingham, AL

www.todaysclass.com

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Booth 414

University College, Washington University in St Louis

- Master of Science in Biology Degree for Science Teachers

St Louis, MO

<http://ucollege.wustl.edu/MSinBiology>

Teachers can earn their Master of Science in Biology degree in two years through this hybrid program that combines life science content knowledge with pedagogy & leadership projects. It consists of two summer institutes, three weeks each, in residence. The remaining coursework during the 2 academic years is completed through distance learning.

Booth 514



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Beaverton, OR



Booth 603

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Booth 412

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Booth 602

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Booth 511

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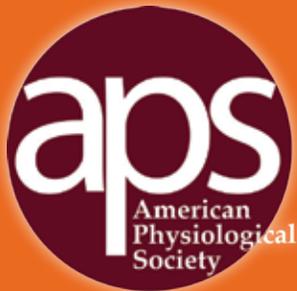
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