SATURDAY

7:30AM – 8:45AM

NABT BioClub Breakfast

JW Grand 7 • Meal Function (Tickets Required) • GA

The BioClub continues to grow, with new chapters being formed at K-12 schools, community colleges, and informal learning organizations all over North America. Share the great things your club is doing, or learn how to start one.

8:15AM – 10:15AM

NABT Biology Education Poster Session & Coffee Break

JW Grand 9-10 (Level 3) • General Biology • 2Y, 4Y, GA

The NABT Poster Session features practices, programs, and research in three distinct categories: general strategies for teaching biology, the scholarship of teaching, and mentored student research. Posters presented by students are elgible for two competitions, and winners will be announced before the closing general session.

See full poster linsting on page 42

9:00AM – 11:00AM

2022 AP Biology Symposium: Emphasizing Science Practices in AP Biology Through Reading Primary Literature

JW Grand 2 (Level 3) • AP Biology • Symposium (120 min) • HS, 2Y

This session will focus on how to guide the teaching of students to read and deconstruct primary scientific literature. It will include bridging the gap between understanding the story told by the literature and the message conveyed in the data.

Lee Ferguson and Maureen Jimenez, NABT AP Biology Section Coordinators

9:00AM – 10:15AM

SCOTT WILLIAMSON SPEAKER SERIES:

Bret Payseur

See biography on page 9

The Evolution of Giants on Islands

201-203 (Level 2) • Evolution • Special Speaker • GA

Organisms that colonize islands routinely evolve unusual body sizes. Small-bodied species tend to increase in size, whereas large-bodied species often decrease in size. This pattern, known as the "island rule", presents an opportunity to understand general mechanisms of evolution. Dr. Bret Payseur will share progress from his lab toward deciphering the genetic basis of the island rule, using the largest wild house mice on record as a study system. He will show how a combination of strategies ranging from statistical modeling to molecular biology is leading us closer to the identification of genes involved in the island rule.

NABT Archival Committee

206 (Level 2) • Committee Meeting (75 min) • GA

Committee chair to be determined.

3331 System Modeling: Constructing and Simulating Computational Models Using Stock-and-Flow Diagrams

White River A (Level 1) • Science Practices • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Build system models using stock-and-flow diagrams. Bring your own device (laptop/Chromebook) to construct and simulate computational models of growth, negative feedback, and natural selection models using free online tools.

Jon Darkow, Seneca East High School, Attica, OH

3370 Immersive Online Escape Rooms Promote Student Collaboration and Enhance Learning

White River B (Level 1) • Instructional Strategies • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Promote collaboration, communication, and critical thinking skills by engaging students in creative online escape rooms made using Google Forms and Zoom to develop scientific inquiry skills and enhance learning.

Tanya Watts, Waubonsee Community College, Rockton, IL

3421 Design for Doing with Data – Using Student Outcomes to Design an Action-Based STEM Classroom

White River C (Level 1) • Curriculum Development • Hands-on Workshop (75 min) • ML, HS

Data analysis is at the core of STEM practice. This workshop will focus on the power of data to design instruction and assessment.

Mitch Price and Karen Lionberger, The College Board, New York City, NY

3378 Bringing Data and Quantitative Reasoning into an Anatomy and Physiology Course

White River D (Level 1) • Anatomy & Physiology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

We will focus primarily on NGSS Practices 4 and 5, Analyzing and Interpreting Data and Using Mathematics and Computational Thinking, but in the context of an Anatomy and Physiology course.

Paul Strode and Andy Feeney, Fairview High School, Boulder, CO

NABT BIOLOGY EDUCATION POSTER SESSION • 8:15AM–10:15AM • JW Grand Ballroom 9–10

BIOLOGY EDUCATION RESEARCH COMPETITION (GRADUATE STUDENTS)

1. **Addressing Student Engagement and Comprehension Within Online Versus In-person Discussions**

   Kylea Garces, Aaron Sexton, Nathan Steffens, Abigail Hazelwood, and Natalie Christian, University of Louisville, Louisville, KY

2. **Biological Thinking: A Comparison Between Major and Non-major Mindsets**

   Kendra Wright and Jaime Sabel, University of Memphis, Memphis, TN

3. **Discussion Modality and Exam Performance in Introductory Environmental Biology**

   Nathan Steffens, Natalie Christian, Kylea Garces, and Abigail Hazelwood, University of Louisville, Louisville, KY; Aaron Sexton, Centre de Synthése et d'Analyse sur la Biodiversité, Montpellier, France

4. **Exploring the Impact of Peer-Led Team Learning on the Science Identity of Undergraduate Biology Students**

   Mariah Maxwell and Jason Wiles, Syracuse University, Syracuse, NY

5. **High School STEM Teacher's Motivation for Reading and Teaching with Primary Scientific Literature**

   Ashli Wright and Melissa McCartney, Florida International University, Miami, FL

6. **Impacts of an Introduction to Primary Literature Course on First-year Undergraduate Biology Students' Science Identity and Interest in Research**

   Takunda Maisva, Mariah Maxwell, and Jason Wiles, Syracuse University, Syracuse, NY

7. **Public Perceptions of Spiders and Identifying Trends in Community Science Participation**

   Bria Marty and Kristy Daniel, Texas State University, San Marcos, TX

8. **Student Reports of Religious Cultural Competence in Evolution Education (ReCCEE) is Associated with Gains in Students' Evolution Acceptance**

   Rahmi Q. Aini, Alexa Summersill, and M. Elizabeth Barnes, Middle Tennesee State University, Murfreesboro, TN; K. Supriya, UCLA Center for Education Innovation and Learning in the Sciences, Los Angeles, CA; Baylee Edwards and Sara Brownell, Arizona State University, Tempe, AZ

9. **Understanding the Effects of Administration Stakes and Setting on Biology Concept Assessment Scores**

   Crystal Uminski and Brian Couch, University of Nebraska-Lincoln, Lincoln, NE; Joanna Hubbard, Truman State University, Kirksville, MO

BIOLOGY EDUCATION RESEARCH COMPETITION (UNDERGRADUATE STUDENTS)

10. **Application and Refinement of the Protein Landscape**

    Cole Dwyer, University of Arkansas at Little Rock, Little Rock, AR; Lydie Guercin, Emory University, Atlanta, GA; L. Kate Wright and Dina Newman, Rochester Institute of Technology, Rochester, NY

11. **Evaluating a Specialized Skills Workshop for Introductory Majors General Biology Lab**

    Mary Amato and Jeanette Gore, University of Tampa, Tampa, FL

12. **How Much Has the COVID-19 Pandemic Disrupted Undergraduate Learning?**

    George Konstantinou, Miranda Fanara, and Suann Yang, SUNY Geneseo, Geneseo, NY

13. **Inclusion in STEM**

    Taylor Arnold and Michael E. Moore, University of Arkansas at Little Rock, Little Rock, AR

14. **Pandemic-related Changes in Assessment Methods Including the Use and Efficacy of Open-Note, Open Computer Testing in Introductory Classes**

    Sydney Wurth, Aubrey Weinstein, Rakesh Murugesan, and Sameer Parashar, The Ohio State University, Columbus, OH

15. **Students' Perceptions of Bring Your Own Device (BYOD) Clickers in an Introductory Biology Course**

    Seanice Beard and Eva Nyutu, University of Detriot Mercy, Detroit, MI

16. **What Factors Shape Undergraduate Students' Perceptions of Scientists?**

    Mouhamad Berte, Syndou Cisse, and Suann Yang, SUNY Geneseo, Geneseo, NY

MENTORED STUDENT RESEARCH COMPETITION (UNDERGRADUATE STUDENTS)

17. **Acne Case Study and Minimum Inhibitory Concentration of Its Treatment Compounds**

    Jinoh Jang, Nalini Broadbelt, Michelle Young, and Crystal Ellis, Massachusetts College of Pharmacy and Health Sciences, Boston, MA

18. **Antibacterial Effect of Allium sativum (garlic) Extract Against Methicillin-Resistant Staphylococci aureus**

    Jimena Hernandez and Banhi Nandi, Georgia Highlands College, Cartersville, GA

19. **Changes in Student Vaccination Reasoning as the Pandemic Progresses**

    Ana Evenson and Kimberly Booth, North Dakota State University, Fargo, ND

20. **Developing Sustainable Urban Farming Model Using a Greenhouse, Hydroponics, and Battery Bank Charged by Solar Panel Array**

    April Nguyen, Jayden Morton, and Parag Muley, Middlesex College, Edison, NJ

21. **Neighborhood Competition Between Co-occurring Native and Invasive Species**

    Kaitlin Murphy, Karissa Michel, and Suann Yang, SUNY Geneseo, Geneseo, NY

GENERAL (NON-COMPETITION) CATEGORY

22. **A Small Intervention Can Make a Big Difference in Scientific Writing in a Biology Course**

    Bin Zhu, University of Hartford, West Hartford, CT

23. **Building a Research Network for Undergraduate Opportunities in Molecular Biochemistry**

    Michele Morris, HudsonAlpha Institute for Biotechnology, Huntsville, AL; Jeremy Prokop, Michigan State University, Lansing, MI

24. **Development, Implementation, and Analysis of a Module on Osmosis which Incorporates Math Core Competencies in Introductory, College-level Biology Courses Across Multiple Institutions**

    Evdokia Kastanos, Montgomery College, Rockville, MD; Julie Takacs, Anne Arundel Community College, Arnold, MD; Tory Williams, University of Maryland Baltimore County, Baltimore, MD

25. **Do Kahoot Test Review Sessions Improve Exam Grades?**

    Lynn Ulatowski, Ursuline College, Pepper Pike, OH

26. **Does Humanizing Scientists Increase Student Science Identity and Quantitative Skills?**

    Sara Sawyer, Glenville State University, Glenville, WV; Elizabeth Hamman, St. Mary's College of Maryland, St. Mary's City, MD; Rachel Hartnett, Mount St. Mary's University, Emmitsburg, MD; Rebecca McHugh and Denise Piechnik, University of Pittsburgh at Bradford, Bradford, PA

27. **Educators' Views on the Use of Dissection and Dissection Alternatives in American Biology Classrooms**

    Pamela Osenkowski, Ignas Karaliunas, and Merari Diorio, National Anti-Vivisection Society, Chicago, IL

28. **Exploring Interdisciplinary Professional Development Opportunities through QB@CC**

    Sheela Vemu, Waubonsee Community College, Sugar Grove, IL; Beatriz Gonzalez and Irene Corriette, Santa Fe College, Gainesville, FL; Daniela Kitanska and Henriette Mozsolitis, Passaic County Community College, Paterson, NJ

29. **Filtered – Discover Bioinformatics and Save the World!**

    Madelene Loftin, Michele Morris and Neil Lamb, HudsonAlpha Institute for Biotechnology, Huntsville, AL

30. **For a Racially-Just, Inclusive, Open, STEM Education: The RIOS Institute Imagines an Open Education as the Radical Idea that Education Should be Affordable, Accessible, Equitable, Inclusive, and Relevant to Everyone**

    Kaitlin Bonner, St. John Fisher University, Rochester, NY; Carrie Diaz Eaton and Krystie Wilfong, Bates College, Lewsiton, ME; Karen Cangialosi, Keene State College, Keene, NH; Bryan Dewsbury, Florida International University, Miami, FL; Sam Donovan, BioQUEST, Pittsburgh, PA

31. **Investigating the Impacts of a Semester-Long Growth Mindset Intervention on Students' Academic Success in a Human Anatomy Course**

    Parker Stuart and Daniel Wolcott, University of Central Missouri, Warrensburg, MO

NABT BIOLOGY EDUCATION POSTER SESSION • 8:15AM–10:15AM • JW Grand Ballroom 9–10

GENERAL (NON-COMPETITION) CATEGORY CONT.

32. Lessons from Teaching Data Exploration and Visualization to Biology Students

Kristine Grayson and Angela Hilliker, University of Richmond, Richmond, VA

33. Leveraging a Two-Year / Four-Year Partnership to Develop Shared Curricula for Quantitative Skill-Building in an Introductory Biology Course

K. Rebecca Thomas, Montgomery College, Rockville, MD; Laura Ott, University of North Carolina at Chapel Hill, Chapel Hill, NC

34. Spaced Retrieval Practice has Variable Effects on Student Learning in Introductory Biology

Shira Rabin, Rachel Pigg, Ryan Patrick, Patricia Ralston, Jason Immekus, and Campbell Bego, University of Louisville, Louisville, KY

35. STEP BIO, A Summer Bridge Program to Help Students Succeed in Introductory Biology

Emily Rauschert, Shamone Gore Panter, Andrea Corbett, and Meagan Harless, Cleveland State University, Cleveland, OH

36. Student Attitudes and Perceptions of Biology Labs Across Modalities

Carrie Bucklin, Jennifer Mraz-Craig, and Sierra Marines, Southern Utah University, Cedar City, UT

37. The Bean Beetle Microbiome Project: An Instrument to Teach about Hypothesis Forming and Microorganism Taxa Identification in Biolabs

Thalita Abrahao, Georgia State University Perimeter College, Atlanta, GA

38. The Biologists and Graph Interpretation (BioGraphI) Project: Professional Development for a Curriculum to Both Value Diverse Identities and Foster Data Literacy

Suann Yang, SUNY Geneseo, Geneseo, NY; Rachel Pigg, University of Louisville, Louisville, KY; Brent Allman, University of Texas at Austin, Austin, TX; Derek Braun, Gallaudet University, Washington, DC; Kristen Butela, University of Pittsburgh, Pittsburgh, PA; Robert Furrow, University of Calfornia Davis, Davis, CA; Elizabeth Hamman, St. Mary's College of Maryland, St. Mary's City, MD; Dmitry Kondrashov, University of Chicago, Chicago, IL; Stanley Lo, University of San Diego, San Diego, CA; Patricia Marsteller, Emory University, Atlanta, GA; Catherine Quinlan, Howard University, Washington, DC; Merrie Richardson, Southcentral Kentucky Community and Technical College, Versailles, KY; Sheela Vemu, Waubonsee Community College, Aurora, IL

39. The Genomics Education Partnership: Democratizing Genomics Research Experiences Nationwide

Katie Sandlin, Genomics Education Partnership, Tuscaloosa, AL; Wilson Leung, Washington University in St. Louis, St. Louis, MO; Chinmay Rele and Laura Reed, The University of Alabama, Tuscaloosa, AL

40. Using LEGO® to Model Evolution of Fruit Color: An Inter-institutional Effort to Improve Quantitative Competency in Core Biology Courses

Kelly Livernoche and Gina Wesley, Montgomery College, Rockville, MD; Kiersten Newtoff, Montgomery College, Germantown, MD

41. What Students Think They Know: Identifying Non-major Biology Students' Cardiovascular System Alternative Conceptions

Parker Stuart, University of Central Missouri, Warrensburg, MO

42. A Mixed-methods Study of Louisiana K-12 Education Administrators' Knowledge, Perceptions, and Influence of the Teaching of Evolution

Blake Touchet, National Center for Science Education, Oakland, CA

43. A Virtual Study Abroad Development: Environmental Science through Experiential Learning in The Bahamas

Athertina Steinau, Georgia State University, Decatur, GA

44. Using Breast Cancer to Teach Evolution in Introductory College Biology

Peter White, David Filice, Joe Riedy, Merle Heidemann, and Jim Smith, Michigan State University, East Lansing, MI

45. Who's Afraid of Peer Review? Activities to Teach Undergraduate Biology Students About Authorship and the Peer Review Process

Melissa Haswell, Delta College, University Center, MI

9:00AM – 10:15AM CONT.

3326 Supporting Student Development and Recovery: Leveraging Science Practices in the Post-quarantine Biology Classroom

White River G (Level 1) • Instructional Strategies • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Learning disruptions and pandemic modalities made our classrooms even more stratified. Come hear how these challenges manifest from 9th grade inclusion to college-level biology, and get tools for your classroom.

Stephen Traphagen and Pat McCormack, Oak Park and River Forest High School, Oak Park, IL; Kirstin Milks, Bloomington South High School, Bloomington, IN; Julie Minbiole, Columbia College Chicago, Chicago, IL

3300 Invasive Mussel Project 2.0

White River J (Level 1) • Biotechnology • Demonstration (75 min) • HS, 2Y, 4Y

Come learn about the Invasive Mussel Project and how you and your students can use gel electrophoresis and PCR to identify and combat invasive species in your own backyard.

Sam Garson, Friday Harbor High School, Friday Harbor, WA

SPECIAL PROGRAMMING PRESENTED BY CAROLINA BIOLOGICAL SUPPLY COMPANY

3449 Using Real Data to Help Explain Climate Change and Model Inheritance Patterns

204-205 (Level 2) • General Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Data analysis provides evidence for posing scientific arguments and models. Tree ring and Fast Plant data are collected then used to make arguments about climate change and inheritance patterns.

Julie Stubbs and Crystal Risko, Carolina Biological Supply Company, Burlington, NC

SPECIAL PROGRAMMING PRESENTED BY LAB-AIDS

3441 Cell Differentiation and Gene Expression

302-303 (Level 3) • General Biology • Hands-on Workshop (75 min) • HS

Students often struggle to conceptualize how selective gene expression works. We will use unique models to teach this concept and explain how it is connected to genetic engineering.

Wendy Jackson, Lab-Aids, Ronkonkoma, NY

3403 Science Can Make You Strong!

304-306 (Level 3) • Nature of Science • Hands-on Workshop (75 min) • HS

Join the National Center for Science Education (NCSE) to help students distinguish between valid, evidence-based science and unintentional or misleading misinformation. Additionally, strategies to inoculate students against pseudoscience will be provided.

Lin Andrews, Cari Herndon, and Blake Touchet, National Center for Science Education, Oakland, CA

3395 What a Mess We've Made! How Human Impacts Lead to Harmful Algal Blooms

309-310 (Level 3) • General Biology • Hands-on Workshop (75 min) • ML, HS, 2Y, 4Y

As agricultural runoff infringes on aquatic ecosystems, learn how to introduce your students to the microcosms of freshwater communities.

Jennifer Hofeld and Julie Angle, Oklahoma State University, Stillwater, OK

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR DESIGNS

3455 CRISPR: Isn't it Time We fixed Your Genome?

JW Grand 1 (Level 3) • Biotechnology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

CRISPR technology allows eukaryotic genome editing -- including the human genome. Explore the Cas9 protein, how it functions as an adaptive immune system in bacteria, and modifications for genome editing.

Tim Herman, 3D Molecular Designs, Milwaukee, WI

SPECIAL PROGRAMMING PRESENTED BY HUDSONALPHA

3413 HudsonAlpha Presents: FILTERED Mini-Training

JW Grand 3 (Level 3) • Biotechnology • Hands-on Workshop (75 min) • HS, 2Y

Learn more about a game-based method to introduce computational biology concepts in your classes. The comic-style FILTERED puzzles help students grasp the function of programs used to analyze DNA.

Madelene Loftin and Michele Morris, HudsonAlpha Institute for Biotechnology, Huntsville, AL

3428 Engaging in Science Practices Using HHMI's BioInteractive Skin Color Resources

JW Grand 4 (Level 3) • AP Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

We will explore a scaffolded set of activities based on HHMI BioInteractive's "Human Skin Color: Evidence for Selection" resource to engage students in data analysis, modeling, and constructing explanations.

Britt Czupryna, Niles West High School, Skokie, IL and Heather Peterson, Holt High School, Holt, MI

10:30AM – 11:00AM

3308 Exploring Animal Behavior in the Classroom or Lab

White River A (Level 1) • Instructional Strategies • Hands-on Workshop (30 min) • HS, 2Y, 4Y

Using *Exploring Animal Behavior in Laboratory and Field, 2nd edition,* several hands-on activities will be explored: data collection using cricket observations, the prisoner's dilemma, and how to read primary literature.

Heather Zimbler-DeLorenzo and Christine Patrum, Georgia State University Perimeter College, Decatur, GA

3469 STEM Educators as Civic Educators

White River B (Level 1) • Instructional Strategies • Hands-on Workshop (30 min) • 2Y, 4Y

How teaching through issues of waste, exposure to toxic chemicals, and emerging diseases can help students understand and engage with the dynamic process of science.

Davida Smyth, Texas A&M-San Antonio, San Antonio, TX

3312 Climate Change: Transforming the Classroom Environment by Assessing Instructor Immediacy and Exploring Student Emotions

White River C (Level 1) • Instructional Strategies • Hands-on Workshop (30 min) • 2Y, 4Y, GA

Class climate is the environment created in the space where students learn. Join us in exploring behaviors that contribute to class climate while reflecting on your own classroom management.

Ben England, Saint Louis University, St. Louis, MO

3388 Giving Non-biology Majors the Option to Put the "A" in STEAM

White River D (Level 1) • Instructional Strategies • Hands-on Workshop (30 min) • HS, 2Y, 4Y

This session discusses how student learning can be assessed in a more equitable manner, allowing students the option to communicate comprehension using non-traditional responses.

Heather Wols, Columbia College Chicago, Chicago, IL

3303 Between a Rock and a Hard Place: Teaching Evolution with Phage Steering

White River G (Level 1) • Microbiology & Cell Biology • Paper (30 min) • HS, 2Y, 4Y

Bacteriophages can kill bacteria and select for antibiotic-sensitive bacteria concurrently. Come learn how high school student researchers are using the NGSS science practices to address the antibiotic resistance crisis.

Zachary Pratt, Parker High School, Janesville, WI

3367 Now Stream-ing! Course-based Undergraduate Research Experiences (CUREs) in Aquatic Ecology

White River J (Level 1) • Ecology / Environmental Science / Sustainability • Demonstration (30 min) • HS, 2Y, 4Y

Authentic and relevant examples of CUREs for introductory biology or ecology courses that can be conducted in most local streams or that utilize online data sources where access is limited.

Johnathan Davis, Young Harris College, Young Harris, GA

ABT Advisory Committee Meeting

206 (Level 2) • Committee Meeting (75 min) • GA

William McComas, ABT Editor

3273 Rise of the Mutant Weed: Using DNA Analysis Tools to Identify Mutations that Create Superweeds

302-303 (Level 3) • Evolution • Hands-on Workshop (30 min) • HS, 2Y, 4Y

Artificial selection has led to the development of herbicide resistance in several weed species. This session uses DNA analysis to identify resistance using a step-by-step process with an online database.

Jane Hunt, EducationProjects.org, Dublin, OH and Zack Bateson, National Agricultural Genotyping Center, Fargo, ND

SPECIAL PROGRAMMING PRESENTED BY CAROLINA BIOLOGICAL SUPPLY COMPANY

3450 Introducing a New Tool for Teaching Selection to Both Intro and AP Biology Students

204-205 (Level 2) • Evolution • Hands-on Workshop (30 min) • MS, HS, 2Y

Carolina and Wisconsin Fast Plants are introducing a new, easy tool to observe trait that can be used to perform selection experiments. Options for 4-day and 50-day experiments will be demonstrated.

Julie Stubbs and Crystal Risko, Carolina Biological Supply Company, Burlington, NC

3353 Diverse Voices in Nature Writing Brings Biophilia to Students Across Disciplines for Broader Inclusion

304-306 (Level 3) • Instructional Strategies • Hands-on Workshop (30 min) • ML, HS, 2Y

Explore diverse voices for protecting nature with an emphasis on graphic novels featuring key passages, reading rubrics, and supporting hands-on activities for STEM and other disciplines.

Dennis Liu, E.O. Wilson Biodiversity Foundation, Potomac, MD

3284 Plant-Derived Drud Discovery: Student Research in an Introductory Biology Lab Course

309-310 (Level 3) • General Biology • Demonstration (30 min) • HS, 2Y, 4Y

To spark student interest in plants and introduce them to research, we have developed an educational module that is based on testing plant extracts for various medicinal properties.

Tatiana Kuzmenko, Loyola Marymount University, Los Angeles, CA

10:30AM – 11:00AM CONT.

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR DESIGNS

3464 Unraveling Chromosomes Through Modeling

JW Grand 1 (Level 3) • General Biology • Hands-on Workshop (30 min) • HS

Mitosis, meiosis, chromosome structure, and crossing over will be explored in this hands-on modeling event. Bring your student hat and be ready to engage.

Keri Shingleton, 3D Molecular Designs, Milwaukee, WI

SPECIAL PROGRAMMING PRESENTED BY HUDSONALPHA

3424 Meet HudsonAlpha's FILTERED

JW Grand 3 (Level 3) • Biotechnology • Demonstration (30 min) • HS, 2Y, GA

FILTERED, an online game using puzzles to introduce the concepts and tools of bioinformatics, has students attempt to unlock the identity of a mysterious pathogen crisscrossing the globe.

Madelene Loftin and Michele Morris, HudsonAlpha Institute for Biotechnology, Huntsville, AL

3430 HHMI BioInteractive's Online Course on Inclusive Teaching

JW Grand 4 (Level 3) • Instructional Strategies • Hands-on Workshop (30 min) • HS, 2Y, 4Y

We will explore BioInteractive's new online course, which is loosely built on liberatory pedagogy and brings together dynamic approaches to fulfill the promise and practice of inclusive teaching.

Bryan Dewsbury, Florida International University, Miami, FL

11:15AM – 11:45AM

3417 Using Data from the AP Exam to Reveal Common Misconceptions

JW Grand 2 (Level 3) • Instructional Strategies • Paper (30 min) • HS, 2Y, 4Y

This discussion illuminates our data regarding students' answers to multiple-choice questions and what it reveals about student-held misconceptions. We'll discuss solutions to alleviate these misconceptions.

Catherine Walsh, The College Board, New York, NY

11:15AM – 12:30PM

3317 Using the Three-Dimensional Learning Assessment Protocol to Develop Undergraduate Biology Exams that Target Scientific Practices

White River A (Level 1) • Science Practices • Demonstration (75 min) • HS, 2Y, 4Y

Learn how to use the Three-Dimensional Learning Assessment Protocol to modify and create exam items that explicitly engage undergraduate biology students in scientific practices.

Crystal Uminski, University of Nebraska-Lincoln, Lincoln, NE

3314 Cancer-Fighting Proteins Found in Nature: Modeling Protein Folding and Brain Surgery

White River B (Level 1) • General Biology • Hands-on Workshop (75 min) • HS

Violets, scorpions, sea slugs, potatoes, and more are candidates in the fight against cancer. Join us to construct 3D cancer-fighting peptide models and perform simulated brain surgery with nature-based guides.

Rebecca Brewer, Troy High School, Troy, MI; Regina Wu and Jeanne Chowning, Fred Hutchinson Cancer Center, Seattle, WA

3355 Scaffolding Scientific Inquiry, Quantitative Skills, and Collaborative Writing within a Course-based Undergraduate Research Experience (CURE)

White River D (Level 1) • General Biology • Demonstration (75 min) • 2Y, 4Y

In this session, we will demonstrate how we used a soil microbiome CURE to teach experimental design, statistics, and collaborative writing of scientific reports in college-level introductory biology laboratory courses.

Rachel Pigg, Natalie Christian, Mikus Abolins-Abols, and Jeffery Masters, University of Louisville, Louisville, KY

3368 Our Classes are Pointless

White River G (Level 1) • Instructional Strategies • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Join us in a discussion on running your classes without points, in a low stress environment, and where student focus is on learning and not grades.

Paul Strode, Fairview High School, Boulder, CO and Aaron Mathieu, Acton-Boxborough Regional High School, Acton, MA

3351 Teaching Beyond Insulin: Exploring Environmental Contributions to Type 2 Diabetes

White River J (Level 1) • General Biology • Hands-on Workshop (75 min) • ML, HS, GA

You've used blood glucose regulation to teach homeostasis. Extend those lessons with classroom-ready strategies that address how policy and place contribute to Type 2 Diabetes.

Joan Griswold and Atom Lesiak, University of Washington, Seattle, WA

11:15AM – 12:30PM CONT.

3304 Reflecting on Who's Coming to Dinner: Broadening Participation vs. Inclusion in Biology Education

201-203 (Level 2) • Instructional Strategies • Hands-on Workshop (75 min) • 2Y, 4Y, GA

Come join the iEMBER network to discuss how teaching is impacted when changing from a broadening participation to an inclusion mindset, and then work on a lesson for your classroom.

Michael Moore, University of Arkansas at Little Rock, Little Rock, AR; Jana Marcette, Montana State University Billings, Billings, MT; Gary McDowell, Lightoller LLC, Chicago, IL; Emily Weigel, Georgia Tech, Atlanta, GA

3386 Creation of Maker Science Artifacts - Formative and Summative Assessments in the Biology Classroom

204-205 (Level 2) • Instructional Strategies • Hands-on Workshop (75 min) • ML, HS, GA

Incorporating authentic maker projects into curriculum allows students to creatively demonstrate their knowledge offering teachers alternative assessments. This session offers examples of projects, rubrics, and a hands-on engineering design activity.

Catherine Bischoff, Rye Country Day School, Rye, NY and Charaun Wills, Potomac School, McLean, VA

SPECIAL PROGRAMMING PRESENTED BY LAB-AIDS

3442 Exploring the Evolutionary Connection between Cystic Fibrosis and Tuberculosis

302-303 (Level 3) • General Biology • Hands-on Workshop (75 min) • HS

Use a computer simulation to analyze and interpret mathematical data that explores the evolutionary connection between cystic fibrosis (a genetic disease) and tuberculosis (an infectious disease) and evaluate mathematical representation.

Wendy Jackson, Lab-Aids, Ronkonkoma, NY

3383 Improving Science Practices with Scientific Journal Articles

304-306 (Level 3) • AP Biology • Hands-on Workshop (75 min) • HS, 2Y

We will provide concrete, scaffolded methods for teaching students to effectively and thoroughly understand text, evaluate data, and model design presented in scientific journal articles.

Karen O'Connor and Eric Brown, Stevenson High School, Lincolnshire, IL

3357 Biophilia Effects on Long-Term Concept Retention, Academic Achievement, and Intrinsic Motivation in Secondary Science Classrooms

309-310 (Level 3) • Instructional Strategies • Hands-on Workshop (75 min) • HS, 4Y, GA

Our study is one of many in ten years of research protocols in Midwestern PK-12 classrooms. E.O. Wilson's definition of biophilia is "the urge to affiliate with other forms of life."

Noah Christians, Clear Lake High School, Clear Lake, IA and Michael Bechtel, Wartburg College, Waverly, IA

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR DESIGNS

3456 COVID-19: Science to the Rescue

JW Grand 1 (Level 3) • General Biology • Hands-on Workshop (75 min) • HS, 2Y

Explore the components of the coronavirus using a 3D-printed physical model and explain how a vaccine protects us from infection. Discuss novel vaccine platforms that promise to prevent future pandemics.

Tim Herman, 3D Molecular Designs, Milwaukee, WI

3426 Teaching Biology Beyond the Binary with HHMI BioInteractive's Sex Verification Testing of Athletes Resource

JW Grand 4 (Level 3) • General Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

We will explore the biology of sex determination and development in humans as it applies to historical and present-day sex verification tests in athletic competitions.

Morgan Heinz, University of Washington Tacoma, Tacoma, WA and Catherina Sammons, Tates Creek High School, Lexington, KY

11:30AM – 1:45PM

2022 NABT Honors Luncheon

JW Grand 7-8 (Level 3) • Tickets Required • GA

NABT is proud to recognize the 2022 NABT Award Recipients during this celebration. We will honor exceptional biology teachers from all levels, and everyone is welcome to join us and congratulate these remarkable professionals.

2:00PM – 3:15PM

3342 Teaching the Genome Generation: Incorporating Data Analysis and Quantitative Skills into Biology Classrooms through Bioinformatics

White River A (Level 1) • Genetics • Hands-on Workshop (75 min) • HS, 2Y, 4Y

In this hands-on workshop, participants will engage with genetics curriculum focused on data analysis and quantitative skills framed around cancer and comparative genomics.

Sarah Wojiski, Erica Gerace, and Alexa Wnorowski, The Jackson Laboratory, Farmington, CT

3332 Shipping Science - A Hands-on Laboratory for Students in an Online Elementary Teacher Education Program

White River B (Level 1) • General Biology • Hands-on Workshop (75 min) • 2Y, 4Y

Come learn about our remote Introductory Biology course for pre-service elementary teachers that engages students in science processes using extended hands-on labs, not online simulations.

Jennifer Hofeld, Harrah High School, Harrah, OK; Donald French and Aimee Elmquist, Oklahoma State University, Stillwater, OK

3400 Back to the Future: Climate Edition

White River C (Level 1) • Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS

Join the National Center for Science Education to explore how proxies are used to gather evidence for past climate events in order to understand current and future climates.

Lin Andrews, DeeDee Wright, Cari Herndon, and Blake Touchet, National Center for Science Education, Oakland, CA

3293 Teaching the Next Generation: Finding Success, Sustainability, and Sanity in Teaching

White River D (Level 1) • Instructional Strategies • Symposium (75 min) • HS, GA

Join other teachers like you (newbies, old hats, and everywhere else in between) for Tips, Tricks, and Techniques to being a successful, sustainable, and sane teacher.

Julie Angle, Oklahoma State University, Stillwater, OK and Carrie Bucklin, Southern Utah University, Cedar City, UT

3387 Anchored Inquiry Learning: Designing Meaningful Instruction to Explore Phenomena and Problems

White River G (Level 1) • Instructional Strategies • Hands-on Workshop (75 min) • HS, GA

Experience firsthand how the Anchored Inquiry Learning instructional model can be used to design learning experiences that motivate students to engage with significant, real-world phenomena and problems in biology!

Cindy Gay, BSCS Science Learning, Steamboat Springs, CO

3275 Tick-Borne Diseases and One Health: Connecting Humans, Animals, and the Environment

White River J (Level 1) • General Biology • Hands-on Workshop (30 min) • HS, 2Y

Investigate the spread of tick-borne diseases in humans and animals. Experience hands-on, minds-on, NGSS practice-based lessons related to One Health – the connections between human, animal, and environmental health.

Dina Markowitz, University of Rochester, Rochester, NY and Lisa Brosnick, Buffalo State College, Buffalo, NY

3334 Investigating "Humanity" Using Skulls, Hands, Feet, Maps, Tools, and the History of Science

201-203 (Level 2) • Evolution • Hands-on Workshop (75 min) • HS, 2Y, 4Y

We model an engaging, active-learning lesson through which high school and college students practice science with real data, develop critical thinking skills, consider bias, and have fun exploring biology.

Armin Moczek, Indiana University Bloomington, Bloomington, IN and Kirstin Milks, Bloomington High School South, Bloomington, IN

SPECIAL PROGRAMMING PRESENTED BY VERNIER

3467 Let's Get Physical: Human Physiology Experiments

204-205 (Level 2) • Anatomy & Physiology • Hands-on Workshop (75 min) • HS

Explore limb position, grip strength, heart rate, and EKGs/EMGs. Experiments are designed to encourage students to think about the physiology of human organ systems. Human physiology has never been easier.

John Melville and Sara Tallarovic, Vernier Software & Technology, Beaverton, OR

NABT Social Media Committee

206 (Level 2) • Committee Meeting (30 min) • GA

John Moore and Stacey Kiser, Committee Chairs

3338 Refresh Your Biology Relationship: How to Bring the Love (Back) to Your Classroom!

302-303 (Level 3) • Instructional Strategies • Hands-on Workshop (75 min) • ELEM, ML, HS

Build a yearlong, scaffolded routine that authentically increases student engagement by empowering yourself to reignite your passion for teaching biology! Reflect/share your Biology Love Story. Bring your best bio jokes.

Bethany Cates, Western Sierra Collegiate Academy, Rocklin, CA

2:00PM – 3:15PM CONT.

3389 Strategies to Improve Student Scientific Reasoning and Writing

304-306 (Level 3) • General Biology • Hands-on Workshop (75 min) • HS, GA

Practical tips for teaching, practicing, and assessing student writing for standards-based grading models, AP free response questions, lab conclusions, argumentation, and CER.

Amy Inselberger, Adlai E. Stevenson High School, Lincolnshire, IL and Christine Lesh, Winters Mill High School, Westminster, MD

3376 Justice, Equity, Diversity, & Inclusion (JEDI) Work In Our Science Teaching Practices

309-310 (Level 3) • Instructional Strategies • Symposium (75 min) • GA

Presenters share their experiences of how JEDI values are demonstrated in their teaching practices. Participants engage through reflecting, sharing, and exploring ideas of implementing JEDI values in their contexts.

Enya Granados, Alabama Connections Academy, Athens, AL

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR DESIGNS

3465 Discovering Dynamic DNA: More Than Just As, Ts, Gs, and Cs

JW Grand 1 (Level 3) • General Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Transition between an assortment of physical DNA models and discover student-centered activities that explore the structure and function of this amazing biomolecule.

Kris Herman, 3D Molecular Designs, Milwaukee, WI

3298 Labs from the AP Environmental Science Lab Manual

JW Grand 2 (Level 3) • Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS

Participants will engage with labs from the new lab manual. Participants will discuss how integrating these activities into environmental science and biology courses of any level can support all students.

David Hong, College Board, La Habra Heights, CA and Sarah Utley, New Trier Township High School, Winnetka, IL

SPECIAL PROGRAMMING PRESENTED BY HUDSONALPHA

3423 HudsonAlpha Presents: Data Science in Biotech: Why Now? Why Bother?

JW Grand 3 (Level 3) • Biotechnology • Symposium (75 min) • HS, 2Y, 4Y

Today's genomic and biotechnology experiments routinely generate terabytes of information. This entry-level conversation will highlight how HudsonAlpha is working with today's algorithms. We'll also identify informatic tools accessible to students.

Neil Lamb, HudsonAlpha Institute for Biotechnology, Huntsville, AL

3427 Teaching Population Growth Concepts Using HHMI BioInteractive's Ecological Case Studies

JW Grand 4 (Level 3) • AP Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

We will explore ecological case studies used to teach exponential and logistic growth, including examples with lionfish, an invasive species in Atlantic ecosystems.

Mara Evans, UNC-Chapel Hill, Chapel Hill, NC and Kristine Grayson, University of Richmond, Richmond, VA

3:30PM – 4:00PM

Announcement of the 2022 Poster Winners

White River Ballroom (Level 1) • Special Event • 2Y, 4Y, GA

Join us for this special announcement of the student winners of the Biology Education Research and Mentored Student Research Competitions.

4:15PM – 5:30PM

GENERAL SESSION:
& PRESENTATION OF THE 2022 NABT DISTINGUISHED SERVICE AWARD

Michael Osterholm

See biography on page 10

A Conversation with Michael Osterholm: Public Health & Preparing for the Next Pandemic

White River Ballroom (Level 1) • Special Speaker • GA

Dr. Osterholm is one of the world's foremost experts on infectious diseases in the world. As the SARS-CoV-2 outbreak evolved into a global pandemic, Dr. Osterholm became one of the most trusted and popular communicators on the pandemic. Drawing from his vast experience as a state epidemiologist, principal investigator, author, and educator, Dr. Osterholm has been a continual source of fact-based information and analysis, including via CIDRAP's weekly "Osterholm Update: COVID-19" podcast.

In this informal format, Dr. Osterholm will discuss some of the most rewarding and challenging aspects of his work, discuss the most pressing infectious disease threats and strategies on how to face them, and finally what gives him hope for a healthy future. Have your questions ready for this interactive session.

NABT is proud to name Dr. Michael Osterholm the recipient of the 2022 Distinguished Service Award for Enhancing Education through Biological Research.

6:00PM – 8:00PM

NABT at the NCAA Hall of Champions

Offsite Event • Tickets Required • GA

Show your school spirit at this interactive museum where all 24 NCAA sports are represented. Exhibits include trivia challenges, current team rankings, video highlights, and artifacts donated from colleges and universities around the nation. There is also a fully interactive area to compete virtually and hands-on through sports simulators, a 1930s retro gymnasium, ski simulator, and more.

The museum is a short walk from the hotel and tickets include admission, light appetizers, and drinks. A shuttle will also be provided.

SUNDAY

8:30AM – 10:30PM

Four-Year College & University Section Meeting

308 (Level 3) • Committee Meeting • 4Y, GA