Saturday

SESSSION KEY:

ELEM - Elementary
MS - Middle, Junior High
HS - High School
2Y - 2-year College
4Y - 4-year College & University

NABT BIOLOGY EDUCATION POSTER SESSION • 8:00AM–10:00AM • Marquis Ballroom

BIOLOGY EDUCATION RESEARCH COMPETITION – GRADUATE STUDENTS

1. **Can Non-Religious Instructors Reduce Perceived Conflict Between Religion and Evolution? A Randomized Controlled Study**
   Rahmi Aini, M. Elizabeth Barnes, Casey Epting, & Alexa Summersill, Middle Tennessee State University, Murfreesboro, TN; Baylee Edwards, Arizona State University, Tempe, AZ
2. **The Impacts of Science Communication Instruction on Introductory Undergraduate Biology Students' Ability to Communicate about Culturally Controversial Science Topics**
   Kate Coscia, M. Elizabeth Barnes, Donye Asberry, Casey Epting, & Alexa Summersill, Middle Tennessee State University, Murfreesboro, TN
3. **Measuring and Exploring the Cultural Wealth and Experiences of First-Year Latin* Biology Students at a Large Hispanic-Serving Institution**
   Alexander Eden & Bryan Dewsbury, Florida International University, Miami, FL
4. **The Effect of Struggle on Student Mindset in a CURE**
   Claire Freimark, Ana Garcia Vedrenne, Kevin Garcia, & Celia Faiola, University of California Irvine, Irvine, CA
5. **Enhancing Learning Outcomes: Specifications Grading in Parasitology**
   Kevin Garcia & Ana Garcia Vedrenne, University of California Irvine, Irvine, CA
6. **The Role of Job Advertisements in Building Diverse Faculty in STEM: A Semi-Automated Analysis with Large Language Module ChatGPT**
   Hannah Kam & Stanley Lo, University of California San Diego, La Jolla, CA; Erik Arevalo, Allen Hancock College, Santa Maria, CA; Mike Wilton, University of California Santa Barbara, Santa Barbara, CA
7. **Instructor-Perceived Benefits and Costs of Inviting Students to Answer Questions Voluntarily in Large Science Courses**
   Erika Nadile, Katelyn Cooper, Makena Winton, Tasneem Mohammad, Sara Brownell, & James Collins, Arizona State University, Tempe, AZ
8. **Exploring Undergraduate Students' Interpretations of Biological Sense-Making with Equations Using Eye Movements**
   Mallika Saha & Kristy Daniel, Texas State University, San Marcos, TX; Anita Schuchardt, University of Minnesota, Minneapolis, MN
9. **Exploring Biology Graduate Students' Awareness, Utilization, and Perceptions of ChatGPT: A Mixed Methods Analysis**
   Shifath Bin Syed & Joshua Reid, Texas Tech University, Lubbock, TX
10. **What a Rubber Ducky Can Teach Us about Doing Science**
    Jill Zipperer & Kristy Daniel, Texas State University, San Marcos, TX

BIOLOGY EDUCATION RESEARCH COMPETITION – UNDERGRADUATE & HIGH SCHOOL STUDENTS

11. **Perceptions of Evolution and Evolution Education among Undergraduate Muslim Biology Students in the United States**
    Khadijah Alnassari, M. Elizabeth Barnes, Rahmi Aini, Zaynab Alnassari, Ahmed Alnassari, & Fatimah Alnassari, Middle Tennessee State University, Murfreesboro, TN
12. **The Impact of Identity on Undergraduate Students' Science Communication about Culturally Controversial Science Topics**
    Donye Asberry, M. Elizabeth Barnes, Kate Coscia, Casey Epting, & Alexa Summersill, Middle Tennessee State University, Murfreesboro, TN
13. **Faculty-Mentored Research Enhances Self-Efficacy, Effort Control, and Teacher Immediacy: Key Indicators of Student Success and Retention**
    Nellie Bowman Hernandez, Sadie Jensen, Ashley Stone, & Heather Wilson-Ashworth, Utah Valley University, Orem, UT
14. **Exploring the Role of Linguistic Capital in Asian American Students within STEM**
    Tammy Bui, Jeremy Hsu, & Jessie Tsai, Chapman University, Orange, CA; Desiree Forsythe, Santa Clara University, Santa Clara, CA; Andy Trinh & Stanley Lo, University of California San Diego, La Jolla, CA; Lillian Lee & Rou-Jia Sung, Carleton College, Northfield, MN
15. **Leveraging AI to Enhance Learning in a Biochemistry Classroom**
    Addie Colclasure, Emily Hamilton, & John Cogan, The Ohio State University, Columbus, OH
16. **Factors Shaping Students' Study Strategies in an Introductory Biology Class at an Open-Enrollment University**
    Makaylee Dahms & Jeremy Hsu, Chapman University, Orange, CA
17. **Analysis of the Impact of a Computational Chemistry Intervention on Undergraduate Biology Students' Understanding of Enzyme Structure and Function**
    Keeley Farmer & Nathan DeYonker, University of Memphis, Memphis, TN; Jamie Sabel, The Ohio State University, Columbus, OH
18. **Determining the Accuracy of ChatGPT 4.0 in Introductory Biology Courses Using Bloom's Taxonomy**
    Nicholas Girolamo, Joshua Reid, Lauren Linnebur, & Shifath Bin Syed, Texas Tech University, Lubbock, TX

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19. **Christian Undergraduate Biology Students' Climate Change Beliefs and Communication**
    Jadyn Hayes, M. Elizabeth Barnes, & Erin Rowland-Schaefer, Middle Tennessee State University, Murfreesboro, TN
20. **What Do Students Think of STEM Course Office Hours at a Two-Year College?**
    Grace Holick & Jeremy Hsu, Chapman University, Orange, CA; Meredith Dorner, Irvine Valley College, Irvine, CA
21. **Exploring the Effects of Student Mindset on Study Strategies**
    Molly Niswender & Jeremy Hsu, Chapman University, Orange, CA
22. **Enzyme Explorers**
    Leslie Sanchez, Ashley Mattison, & Amelia Paquin, Oklahoma State University, Stillwater, OK
23. **Exploring the Influence of Counter-Stereotypical Scientist Biographies on STEM Motivation, Interest, and Identity**
    Ashley Stone, Heather Wilson-Ashworth, Emily Heider, Sadie Jensen, Nellie Bowman Hernandez, & Micah Ross, Utah Valley University, Orem, UT

MENTORED STUDENT RESEARCH COMPETITION – UNDERGRADUATE & HIGH SCHOOL STUDENTS

24. **Pathonix: Enhancing Histopathological Ovarian Cancer Detection with an Explainable and Efficient Ensemble Learning Framework**
    Vishnu Mukku, Avon High School, Avon, CT; Ramachandran Kasu, University of Idaho, Moscow, ID
25. **Redesigning Recycling: The Impact of Bin Design and Placement on Campus Recycling Behavior**
    Katie Buc, Aimee Thomas, & Mark Tobler, Loyola University New Orleans, New Orleans, LA
26. **Transcriptome and Metabolome Analysis Reveals the Effect of Drought on Borago officinalis**
    Borey Kong & Hagop Atamian, Chapman University, Orange, CA
27. **Chia as a Potential Replacement for Water-Demanding Alfalfa**
    Sophie Pel, Hagop Atamian, Kevin Nguyen, Lilian Senger, & Nana Pepra-Ameyaw, Chapman University, Orange, CA; Evelyn Wu, Brown University, Providence, RI
28. **Assessing Flora and Fauna on Loyola University Campus by GIS Analysis**
    Elizabeth Redemann & Aimee Thomas, Loyola University New Orleans, New Orleans, LA

GENERAL (NON-COMPETITION) CATEGORY

29. **Moving the Needle: Improving Graduate Teaching Assistants Conceptions of Teaching**
    Rocksher Annur, Anisha Navlekar, Lisa Limeri, & Joshua Reid, Texas Tech University, Lubbock, TX
30. **The Utility of Pre/Post-Course Surveys: Tracking Learning Gains and Targeting Improvement**
    Jenny Archibald, University of Kansas, Lawrence, KS
31. **Immunology for Non-Immunologists: COVID-19 Diagnosis Role Play Activity**
    Holly Basta, Rocky Mountain College, Billings, MT; Sean Coleman, Wartburg College, Waverly, IO; Archana Lal, Labette Community College, Parsons, KS; Sumali Pandey, Minnesota State University Moorhead, Moorhead, MN; Iglika Pavlova, Michigan State University, East Lansing, MI; Aparna Shah, Virginia Tech, Blacksburg, VA
32. **Assessing Pseudoscientific Anti-LGBTQ Bias in Students and Designing Effective Curricular Interventions**
    Charlie Blake, STEM Center at Southern Illinois University, Edwardsville, IL
33. **C.U.R.E.ing Biofilms: A Multi-Week Investigative Research Experience for Microbiology Students**
    Lisa Bowers & Daae Ransom, St. Olaf College, Northfield, MN
34. **Connecting Children to Nature: Assessing the Impact of Nature Journaling, Children's Literature, and Time Outdoors**
    Ashley Campbell & Crystal Hughes, West Texas A&M University, Canyon, TX
35. **Designing Modeling Kits for a Teacher Professional Development Workshop on GLP-1 Agonist Drugs**
    Amber Cesare & Kathleen Hill, Penn State Center of Science and the Schools, University Park, PA; Boal Amie, The Pennsylvania State University, University Park, PA; Ira Ropson, Penn State College of Medicine, Hershey, PA; Mark Hoelzer & Heather Ryan, 3D Molecular Designs, Milwaukee, WI

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GENERAL (NON-COMPETITION) CATEGORY CONT.

36. Perceptions of Conflict Between Religion and Evolution Are Higher among Atheist Undergraduate Biology Students than Christian Biology Students

Kate Coscia, Rahmi Aini, Chloe Bowen, & M. Elizabeth Barnes, Middle Tennessee State University, Murfreesboro, TN; Baylee Edwards & Sara Brownell, Arizona State University, Tempe, AZ

37. A Focus on Reading and Writing in General Biology Class

Emral Devany, Kingsborough Community College CUNY, Brooklyn, NY

38. Collaborative Interrogation and Meaning-Making from the Primary Literature (CIMMPL)

Daniel Dries, Chapman University, Orange, CA

39. Exam Retakes Result in Modest Increase in STEM Retention in an Introductory Biology Course

Melinda Fowler, Mills College at Northeastern University, Oakland, CA

40. Gamifying Genetics for High School and Undergraduate Students via Plant GIFTS (Genetics In Farming Technology and Science)

Erin Friedman, University of Lynchburg, Lynchburg, VA; Mindy Findlater, University of California Merced, Merced, CA

41. Incorporating Technology Supported, Cooperative Learning into Large Enrollment CUREs

Ana Garcia Vedrenne, University of California Irvine, Irvine, CA

42. BCEENET: Inclusive CUREs Using Digitized Natural History Collections Data as a Gateway to the Scientific Research Community

Kristen Genet, Anoka-Ramsey Community College, Coon Rapids, MN; Janice Krumm, Widener University, Chester, PA; Carly Jordan & Cecily Bronson, The George Washington University, Washington, DC; Kathryn Weglarz, Westfield State University, Westfield, MA; Matt Johnson, Texas Tech University, Lubbock, TX

43. Embedded Research in Action: Western Painted Turtle Population and Growth Dynamics in a Shallow Suburban Lake (2013–2023)

Kristen Genet, Anoka-Ramsey Community College, Coon Rapids, MN

44. Out of Sight, Out of Mind: The Diminished Impact of Vision and Change on Undergraduate General Education Life Science Courses

Tamar Goulet, University of Mississippi, University, MS; Heather Rissler, North Iowa Area Community College, Mason City, IA; Gabriela Hamerlinck, University of Florida, Gainesville, FL; Dayna DeFeo, University of Alaska–Anchorage, Anchorage, AK; Gordon Uno, University of Oklahoma, Norman, OK

45. Evolving the Culture of Biology: Developing New Strategies and Resources for Teaching Assistant—Teaching Professional Development (TA-TPD)

Stephanie Gutzler, Georgia State University, Atlanta, GA; Kaleb Heinrich, University of Alabama, Tuscaloosa, AL; Adam Chouinard, Oregon State University, Corvallis, OR; Star Lee, University of California Irvine, Irvine, CA; Mitra Asgari, University of Missouri, Columbia, MO; Diyala Shihadih & Erin Shortlidge, Portland State University, Portland, OR

46. Students' Learning with AI in Biology Education

Tim Hartelt, University of Kassel, Kassel, Germany; Helena Aptyka, University of Cologne, Cologne, Germany

47. Virtual Reality Bodies: Incorporating VR Technology into Human Anatomy and Human Biology Courses as an Optional Study Tool

Caleb Hoffman, Kameron Monson, Jennifer Mraz-Craig, & Sarah Brock, Southern Utah University, Cedar City, UT

48. Incorporating Experiential, Student-Centered Learning into the Core Liberal Arts Curriculum: Example Modules and Outcomes from Plant Biology with Interdisciplinary Approaches to Active Learning

Ryan Huish, The University of Virginia's College at Wise, Wise, VA

49. Feature Counter-Stereotypical Scientists in Curricula with the Biologists and Graph Interpretation (BioGraphI) Project

Manjushri Kishore, Heartland Community College, Normal, IL; Christin Monroe, Landmark College, Putney, VT; Min Zhong, University of Texas at Austin, Austin, TX; Rachel M. Pigg, University of Louisville, Louisville, KY; Suann Yang, State University of New York Geneseo, Geneseo, NY

50. A Study on the Current Status of Inquiry Activities in Basic Biology Classes in Japanese High Schools: A Questionnaire Survey for Teachers

Naoko Kosaka & Kenji Matsubara, Japan Society for the Promotion of Science & National Institute for Educational Policy Research, Tokyo, Japan

51. The Impact of Quantitative Reasoning Modules on General Education Outcomes in Introductory Biology

Jennifer Laing & Christine DeStefano, Community College of Baltimore County, Baltimore, MD

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52. **Supporting Community College STEM Students Through a Network of Research Experiences**
Kelly Livernoche & Seth Miller, Anne Arundel Community College, Arnold, MD

53. **Conceptions of Organismal Organization in Experts and Novices**
Tina Marcroft, Texas State University, San Marcos, TX; Stanley Lo & Regis Komperda, University of California San Diego, La Jolla, CA

54. **Bringing the Ocean to Ohio**
Amy McElhinney, University of Mount Union, Alliance, OH

55. **Exploring How STEM Education Researchers Define Inclusion: A Scoping Review**
Michael Moore, University of Arkansas at Little Rock, Little Rock, AR; Richard Harvey, St. Louis University, St. Louis, MO; Erin Carrillo, Virginia Commonwealth University, Richmond, VA; Alexander Eden, Florida International University, Miami, FL; Chelsey Nardi, Empirical Education Inc., Berkeley, CA

56. **Leveraging Faculty Desire for Improved Teaching Assessment to Spark Interest in University-Wide Teaching Reform**
Michael Moore, Lundon Pinneo, Stephanie Feola, & Mark Baillie, University of Arkansas at Little Rock, Little Rock, AR

57. **Is Oxford Nanopore Sequencing Educator Friendly?**
Barbara Murdoch, Eastern Connecticut State University, Willimantic, CT

58. **Learning about our Local Biodiversity Through Play: The Impact of Educational Card Game on Student Engagement**
Hilton Oyamaguchi, Grant Brugger, Rebecca Dalton, Elizabeth Figiel, Glenda Garcia, Erin McCarthy, Robert Sabatino, Anna Sanverdine, & David Contosta, Chestnut Hill College, Philadelphia, PA

59. **Unlocking Engagement: Enhancing Non-Majors Biology Through Digital Escape Rooms and Interactive Games**
Christine Patrum, Georgia State University Perimeter College, Decatur, GA

60. **The Look Again Quilt: Creative Approaches to Biology Education**
Melanie Peffer, University of Colorado, Boulder, CO

61. **The BioQUEST Curriculum Consortium: A Community of Educators Supporting Evolution and Revolution in STEM Education**
Sarah Prescott, BioQUEST, Raymond, NH; Deborah Rook, BioQUEST, Vienna, VA; Drew LaMar, BioQUEST, Williamsburg, VA; Sam Donovan, BioQUEST, Pittsburgh, PA

62. **Leveraging Exam Wrappers to Boost Metacognitive Growth**
Paulette Reneau, Georgia State University Perimeter College, Dunwoody, GA

63. **Improving Access to Computational and Data-Centric Teaching and Learning Resources for Biology Education: The Open Education Ecosystem Research Coordination Network**
Deborah Rook, BioQUEST, Vienna, VA; Drew LaMar, BioQUEST, Williamsburg, VA; Sarah Prescott, BioQUEST, Raymond, NH; Sam Donovan, BioQUEST, Pittsburgh, PA

64. **Developing Instruments to Evaluate and Improve Undergraduate Interpersonal Science Communication about Culturally Controversial Science Topics**
Erin Rowland-Schaefer, Kate Coscia, Donye Asberry, & M. Elizabeth Barnes, Middle Tennessee State University, Murfreesboro, TN

65. **The Pollinator Path: A Living Lab on an Urban Campus**
Doreen Schroeder & Catherine Grant, University of St. Thomas, St. Paul, MN

66. **The Value of Communicating Communal Goal Affordances: How Teacher Behaviors Can Communicate Safety in STEM Education**
Heather Stigge & Nassiba Adjerid, College of Saint Mary, Omaha, NE; Abigail Folberg, University of Nebraska Omaha, Omaha, NE

67. **Cell Aggregation Laboratory Activity for Teaching Cell-Cell Adhesion Using Synthetic Biology**
Daryn Stover, Ethan Howley, Adriana Cimetta, & Ingmar Riedel-Kruse, The University of Arizona, Tucson, AZ

68. **Nexus Institute for Quantitative Biology (NIQB): An Inter-Institutional and Interdisciplinary Consortium Building Curricula that Support Growth of Quantitative Reasoning Skills in Students Taking Introductory Biology I (Cells & Molecules)**
K. Rebecca Thomas, Evdokia Kastanos, & Vedham Karpakakunjaram, Montgomery College, Rockville, MD

69. **Enhancing Inclusivity: Adapting College-Level Introductory Biology Lab for Visually Impaired Students**
Benjamin Weibell, Julie Takacs, & Nancy Weibell, Anne Arundel Community College, Arnold, MD

70. **Supporting Implementation of Evidence-Based Instructional Practices by Community College Biology Faculty**
Rebecca Westphal, Cape Cod Community College, West Barnstable, MA; Parks Collins, Mitchell Community College, Statesville, NC

71. **A Writing-Enriched CURE for First-Year Students: Exploring Authentic Research and Preparing for Careers**
Min Zhong, University of Texas at Austin, Austin, TX; Scott Bowling & Rachel Whitman Rotch, Auburn University, Auburn, AL

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JOIN OUR WORKSHOP ON FRIDAY, NOVEMBER 19

Introduction to Spectroscopy

ROOM: OC Ballroom 2 • **TIME:** 12:00–12:30 p.m.

Join us for an interactive hands-on workshop designed to help you make spectroscopy simple and exciting for your students!

You'll learn how to

- **Capture and analyze spectra** from spinach, berries, fruit, and olive oil
- Use algae powder extracts to **teach plant evolution**
- **Teach phenomenon-based lessons** with Vernier technology

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7:30AM–8:30AM

NABT BioClub Breakfast

Grand Ballroom E • Special Event (Tickets Required) (60 min) • GA

Every year, the NABT BioClub supports students at K-12 schools, community colleges, and informal learning organizations throughout North America. Join us to share what your club is doing or learn how to start a BioClub chapter of your own!

Sponsored by CAROLINA® www.carolina.com

NABT's 2SLGBTQIA+ Practitioners' Affinity Meeting

Gold Key I & II • JEDI / Inclusive Teaching Practices • Special Event (60 min)• GA

Connect with fellow (Two Spirit, Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual, plus) practitioners! This event is open to educators at all levels who self-identify as 2SLGBTQIA+ (Please note: A does not stand for Ally/ Aligned for this session).

7:30AM–8:45AM

NABT Committee Meetings

Marquis Ballroom • Committee Meeting (75 min) • GA

Learn more about different volunteer opportunities from NABT committee chairs and regional coordinators. There are lots of ways to get involved—and help develop—programs that support you as a leader in life science education.

See page 11 for details about the different NABT Committees.

8:00AM–10:00AM

NABT Biology Education Poster Session & Coffee Break

Marquis Ballroom • General Biology • Special Symposium (120 min) • 2Y, 4Y, GA

The NABT Poster Session highlights best practices, programs, and research in three distinct categories: general strategies for teaching biology, the scholarship of teaching, and mentored student research. Student presenters are eligible for two competitions, and winners will be announced before the general session closing speaker.

See full listing on page 42

9:00AM–11:00AM

2024 AP® Life Science Symposium

Platinum Ballroom 2 • Instructional Strategies • Symposium (2 hours) • HS

Join other AP® life science teachers (Biology & APES) to discuss emerging trends impacting the advanced placement course. Discussions will highlight using storylines to teach AP® new testing modalities, and updates to the 2024-2025 AP® Biology exam. Don't miss this opportunity to learn and network with your fellow AP® teachers.

Britt Murcko Czupryna, Niles West High School, Niles, IL; Lee Ferguson, The Episcopal School of Dallas, Dallas, TX; and Catherine Walsh, The College Board, Alachua, FL

9:00AM–10:15AM

INVITED SPEAKER

Briana Pobiner

See biography on page 19

Teaching Human Evolution: Obstacles and Opportunities

Platinum Ballroom 3 & 4 •
Evolution • Special Speaker (75 min) • 2Y, 4Y, GA

Levels of acceptance of evolution in the United States, especially human evolution, are relatively low. Yet there is intense interest in understanding our origins and evolution, and learning about evolution in humans can be a "hook" to generate interest in evolution more broadly. This talk will review approaches that support positive dialogue and engagement on this topic, even in areas where there is some resistance to learning about evolution, and provide data from two projects that developed teaching materials for use in high school biology classrooms incorporating these approaches.

1675-106427 NABT Justice, Equity, Diversity, & Inclusion (JEDI) Networking Session

Gold Key I & II • JEDI / Inclusive Teaching Practices • Hands-on Workshop (75 min) • GA

Network with other practitioners who are passionate about justice, equity, diversity, and inclusion. This event is open to everyone, all identities and levels are welcome!

Enya Granados, Clarke Central High School, Athens, GA and Maribel Gendreau, Hampton Roads Academy, Newport News, VA

1675-106262 Empowering Change in Biology Pedagogy and Student Perception

Grand Ballroom A & B • Curriculum Development • Hands-on Workshop (75 min) • 2Y

Inspired by the "Exploring Academic Unit Change in Two-Year Colleges" project, participants in this workshop will acquire tools and practical ideas to engage in team-based, department-wide change projects.

Heather Zimbler-DeLorenzo and Christine Patrum, Georgia State University Perimeter College, Decatur, GA; Tara Jo Holmberg, Northwestern Connecticut Community College, Winstead, CT

1675-106387 Analyzing Data to Explore Environmental Justice in Local Community Contexts

Grand Ballroom C & D • Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS

How can we engage students in analyzing graphical and map-based data to explore environmental justice in our local communities? Come to this session to learn about data sources and scaffolds to support this work.

Brianna Balke, Brown University and Blackstone Academy, Providence, RI

SPECIAL PROGRAMMING PRESENTED BY HHMI

1675-108517 Addressing Misconceptions about Patterns of Human Phenotypic and Genetic Diversity Using HHMI BioInteractive Resources

Grand Ballroom F • Genetics • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Explore two new lesson sequences from BioInteractive that guide students to address common misconceptions by analyzing authentic data to build a strong conceptual understanding of human phenotypic and genetic diversity.

Paul Beardsley, Cal Poly Pomona, Pomona, CA and Holly Basta, Rocky Mountain College, Billings, MT

1675-106286 GMO CER, OMG! Teach Decision-Making Skills and Close the Gap Between CP and Honors Biology Students

Orange County Ballroom 1 • General Biology • Hands-on Workshop (75 min) • HS

Participants will use activities that help students decide whether and how we should genetically modify corn. Materials can be integrated into genetics, evolution, and/or ecology units in both CP and Honors Biology.

Lindsey L'Ecuyer, Andover High School, Andover, MA

1675-106176 Exploring the Wonders of Evolution: Hands-on Activities Unveiled

Orange County Ballroom 2 • Evolution • Hands-on Workshop (75 min) • HS, GA

Join us as we dive into "Exploring the Wonders of Evolution: Hands-on Activities Unveiled," where teachers guide students through exciting, NGSS-aligned activities to appreciate evolution's fascinating journey through interactive, educational experiences.

Mary Ann M. Palencia, La Vista High School, Fullerton, CA

9:00AM–10:15AM CONT.

1675-106156 DataVersify: Humanizing and Diversifying Scientist Role Models in Data Literacy Instruction

Orange County Ballroom 3 • Instructional Strategies • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Strategies and resources to use scientist profiles alongside data literacy instruction will be discussed. Results from our efficacy study, examining how inclusion of diverse scientist role models during instruction affected student attitudes, will be shared.

Melissa K. Kjelvik, Michigan State University, Valdez, AK

1675-106280 Jellyfish Research: Building a High School Research Program

Orange County Ballroom 4 • Science Practices • Hands-on Workshop (75 min) • HS, GA

Learn about our high school's co-curricular jellyfish research program and complete a hands-on activity measuring pulse rates in moon jelly ephyra!

David Herman, Laura Kaufman, and Kate Tucci-Share, Flintridge Preparatory School, La Cañada Flintridge, CA

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR

1675-109620 Modeling mRNA—Life after Transcription

Platinum Ballroom 1 • AP® Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Engage in a hands-on approach to transcription and mRNA modification, taking your Flow of Genetic information kit to the next level for AP® Bio, including exon splicing, GTP cap, and poly-A tail.

Alice Scheele, 3D Molecular Designs/Patrick Henry High School, Ashland, VA

1675-106172 Bringing Trees to the Forefront of Evolution Education

Platinum Ballroom 8 • Evolution • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Learn how to use low-cost materials to effectively teach biology students how to use a cladogram model to interpret and test predictions of evolutionary relationships.

Kristy L. Daniel, Texas State University, San Marcos, TX and Mark Little (retired), Broomfield High School, Arvada, CO

1675-106080 Descriptive Statistics Crash Course

Platinum Ballroom 9 • Science Practices • Hands-on Workshop (75 min) • HS, GA

Learn what's "behind the curtain" of calculating and interpreting statistics like variance, SEM, and 95% confidence intervals. Use your new confidence and understanding to help your students with theirs!

Paul Strode, Annabelle Merg, Dylan Muzny, and Thomas Oviatt, Fairview High School, Boulder, CO

1675-105521 Searching for "Catalysts" for the IGELS Project

Platinum Ballroom 10 • Instructional Strategies • Symposium (75 min) • 2Y, 4Y, GA

The NSF-funded project "Interactions in General Education Life Sciences courses (IGELS)" introduces a new model of faculty professional development. We're seeking fellow "catalysts," undergraduate instructors who can help support future IGELS initiatives. Learn more at this networking session.

Gordon Uno, University of Oklahoma, Norman, OK; Bryan Dewsbury, Florida International University, Miami, FL; Sam Donovan, BioQUEST, Pittsburgh, PA; Karla Fuller, Gutmann Community College, New York, NY; Tamar Goulet, University of Mississippi, University, MS; Gabriela Hammerlinck, University of Florida, Gainesville, FL; Elizabeth Harrison, Kennesaw State University, Kennesaw, GA; Melanie Lenahan, Raritan Valley Community College, Clinton, NJ; Heather Rissler, North Iowa Area Community College, Mason City, IA; Davida Smyth, Texas A&M University-San Antonio, San Antonio, TX

10:30AM–11:00AM

1675-106426 Developing Course-Based Research Experiences in Your Courses

Grand Ballroom A & B • Instructional Strategies • Hands-on Workshop (30 min) • HS, 2Y, 4Y

Authentic research experiences help students learn content. Incorporating research projects as units, modules, or whole-course experiences is daunting. Learn from our successes and mistakes as we help you develop research experiences for your course.

Carrie Jo Bucklin and Jennifer Idema, Texas State University, San Marcos, TX; Roger Gold, Southern Utah University, Cedar City, UT

10:30AM–11:00AM CONT.

1675-109950 Using Science in the News to Build Science Identity and Scientific Literacy in Non-STEM Majors

Grand Ballroom C & D • Instructional Strategies • Demonstration (30 min) • 2Y, 4Y, GA

We all see the headline "A new study says..." frequently. This session will highlight a project and presentation developed for non-STEM majors' classes to build their science identity and scientific literacy by leveraging popular media they encounter frequently.

Krista Lucas, Pepperdine University, Malibu, CA

SPECIAL PROGRAMMING PRESENTED BY HHMI

1675-108518 Better Understanding Our Breathing Biosphere Using an Interactive Graphing Tool

Grand Ballroom F • Ecology / Environmental Science / Sustainability • Hands-on Workshop (30 min) • HS, 2Y, 4Y

Engage your students with a responsive model that illustrates the relationship between atmospheric gasses, cellular processes, and human activity. With this BioInteractive resource, students analyze real data to examine what affects atmospheric carbon dioxide levels.

Bernice Brythorne, Monticello High School, Charlottesville, VA

1675-106554 The LEGO DNA Sequencer

Orange County Ballroom 1 • Instructional Strategies • Demonstration (30 min) • ML, HS, GA

DNA sequencing revolutionizes education by enabling real-time DNA analysis in classrooms, supporting hands-on learning in genetics, biodiversity, and personalized medicine. We will demonstrate how DNA sequencing works using the LEGO sequencer.

Cristina Fernandez, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

1675-109688 Are You Looking for Paid Opportunities to be a Teacher Leader and Presenter?

Orange County Ballroom 2 • Instructional Strategies • Demonstration (30 min) • ML, HS, GA

Join us to learn more about paid opportunities to lead workshops offering free lessons, webinars, and cash scholarships. Learn about our three projects: ScienceSaves, The Teacher Institute for Evolutionary Science, and GenerationSkeptics. Information: https://centerforinquiry.org/education-department/

David Amidon, Teacher Institute for Evolutionary Science, Syracuse, NY

1675-106385 AI and Paper Summaries: A Brief Lesson

Orange County Ballroom 3 • Instructional Strategies • Hands-on Workshop (30 min) • 2Y, 4Y

This session will demonstrate how to help students understand that AI summaries of articles are not always the best. An AI comparison assignment will be shared, and you are welcome to share your own examples as well.

Stacey Kiser, Lane Community College, Eugene, OR

1675-106407 The St. Jude Virtual Journal Club: Engaging Students in the Scientific Process Through Primary Literature

Orange County Ballroom 4 • Nature of Science • Paper (30 min) • HS

Participants will learn about a virtual journal club that encourages interaction between students, teachers, and scientists through reading and interpreting research papers. Asynchronous resources are being developed to support integration into high school curricula.

Shelby Montague, Lausanne Collegiate School, Memphis, TN

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR

1675-108948 Modeling Enzymes: From Basics to Bacterial Resistance

Platinum Ballroom 1 • AP® Biology • Demonstration (30 min) • HS, 2Y, 4Y

Engage in hands-on exploration of enzyme structure and function using tactile, physical models. First explore fundamental concepts and then apply them to the specifics of bacterial cell wall synthesis, antibiotics, and antibiotic resistance mechanisms.

Keri Shingleton, 3D Molecular Designs, Tulsa, OK

1675-108733 The College Board Presents: AP® Biology Course Updates

Platinum Ballroom 2 • AP® Biology • Demonstration (30 min) • HS, 2Y, 4Y

In this session, we will present the crosswalk of course changes expected to launch for the 2025–2026 school year.

Catherine Walsh, The College Board, Alachua, FL

1675-105908 The Students' Prairie: Creating Your Own Land Lab

Platinum Ballroom 7 • Ecology / Environmental Science / Sustainability • Demonstration (30 min) • HS

High school students in Aurora, IL, have created and grown their own 12-acre tallgrass prairie ecosystem since 2001. Learn how to adapt this quarter-century program for your school and create your own land lab.

Carl Armstrong, Waubonsie Valley High School, Plano, IL

10:30AM–11:00AM CONT.

1675-106395 Using Authentic Data Figures to Teach Predator-Prey Interactions and Other Topics in Ecology

Platinum Ballroom 8 • Ecology / Environmental Science / Sustainability • Hands-on Workshop (30 min) • HS, 2Y, 4Y

Learn about an open educational resource to teach predator-prey interactions and other ecological topics! These modules also teach graph interpretation skills. You'll explore and adapt one of our lessons for your own course. Laptops recommended.

Suann Yang, SUNY Geneseo, Geneseo, NY and Jeremy Hsu, Chapman University, Orange, CA

1675-106364 Using Yogurt Fermentation as a Tool for Hands-on Investigation of Microbiology Anywhere

Platinum Ballroom 9 • Microbiology & Cell Biology • Paper (30 min) • HS, 4Y, GA

We have developed a group research project-based activity designed to introduce students to concepts of microbiology and scientific thinking. The activity doesn't require any special equipment and can be completed anywhere.

Tatiana V. Kuzmenko, Loyola Marymount University, Los Angeles, CA

11:15AM–12:30PM

1675-106533 Conservation Biology Curriculum & Instructional Practices: Applying a Framework for an Equitable Transformation

Gold Key I & II • JEDI / Inclusive Teaching Practices • Hands-on Workshop (75 min) • HS

Participants will consider a lesson's underlying principles, identify its location along a continuum from reproducing to transforming power, and engage in an environmental justice lesson exploring equitable solutions for conserving biodiversity.

Jocelyn Miller and Melissa Olson, E.O. Wilson Biodiversity Foundation, Durham, NC

11:15AM–12:30PM CONT.

1675-106073 Introduction to Trauma-Informed Pedagogy

Grand Ballroom A & B • Instructional Strategies • Hands-on Workshop (75 min) • GA

This workshop will provide an introduction to trauma-informed pedagogy strategies with short application activities. It emphasizes the importance and acknowledgement of faculty self-care and ends with a reflective discussion.

Melissa Haswell, Delta College, Midland, MI

1675-106367 Art of Making Digital Maps of Estuary Ecology Data

Grand Ballroom C & D • Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS, 2Y

Explore why coastal wetlands are a tool in the fight against climate change. Analyze raw data collected by students monitoring marshes. Bring your laptop or other device to create your Google Map of estuary vegetation.

Jesse Wade Robinson, High Tech High, San Diego, CA

SPECIAL PROGRAMMING PRESENTED BY HHMI

1675-108519 Data-Rich Resources from HHMI BioInteractive to Engage Students in Asking Questions and Constructing Explanations

Grand Ballroom F • Science Practices • Hands-on Workshop (75 min) • HS, 2Y

Participants will explore how to use data to elicit testable questions and help students construct scientific explanations. These strategies can be applied to teach different content areas while engaging students in key science practices.

Jim Lane, Mahtomedi High School, Mahtomedi, MN and Deanna Digitale-Grider, Solorio Academy High School, Chicago, IL

1675-106449 Why Do Elephants Rarely Get Cancer? Exploring Genomic Evolutionary Adaptations and the Role of a Tumor Suppressor Gene

Orange County Ballroom 1 • Evolution • Hands-on Workshop (75 min) • HS, 2Y, GA

Explore the low incidence of cancer in elephants using evolutionary clues from different animals, electrophoresis results, genomic database exploration, model building, and applications to human cancer. Bring your laptop to this session.

Peggy O'Neill Skinner, The Bush School (retired) and Fred Hutchinson Cancer Center, Seattle, WA and Rebecca K. Brewer, Troy High School, Troy, MI

1675-105568 Enhancing Student Engagement and Concept Mastery: Leveraging Trade Books in a Spiraled Approach to Teaching Biology

Orange County Ballroom 2 • Instructional Strategies • Hands-on Workshop (75 min) • 2Y, 4Y

Are you struggling to engage students in biology while making conceptual and real-world connections? Here, we will describe spiral design and trade books, and you will collaborate to brainstorm ideas for your own courses.

Erin J. Friedman, Kim Geier, and Jamie L. Brooks, University of Lynchburg, Lynchburg, VA

1675-105965 Empowering Advocates: Using Scientific Literacy to Address Global Prenatal Care Barriers

Orange County Ballroom 3 • Instructional Strategies • Hands-on Workshop (75 min) • HS, 2Y, 4Y

In this interactive lesson, participants become health advocates, engaging in a scavenger hunt-style activity, where they analyze and interpret scientific research to propose effective solutions for barriers to global prenatal care access.

Ashley Burkart, Estrella Mountain Community College, Glendale, AZ

11:15AM–12:30PM CONT.

1675-106296 Teaching Biology Through Computational Modeling

Orange County Ballroom 4 • Science Practices • Hands-on Workshop (75 min) • HS

Join this session to get hands-on experience with an NGSS-aligned learning unit that teaches core biology content through computational modeling and computer programming. No computer programing experience needed.

Kristy Sundberg, McKinley Technology High School, Washington, DC

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR

1675-108450 Modeling Infection and Immunity

Platinum Ballroom 1 • General Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

This session introduces a summer course focused on the molecular mechanisms of virus infection and our innate and adaptive immune systems that have evolved to protect us. The course also addresses new vaccine platforms.

Tim Herman, 3D Molecular Designs, Milwaukee, WI

1675-106397 Using Fungi in Pop Culture to Engage Students with a Hands-on Activity Anchored in Real-World Research

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

While it's not the *Last of Us*, Valley Fever is a potentially life-threatening fungal disease that is on the rise in today's changing climate. Come learn, lab, and see the real-world VF research.

Mary Haus, Chaffey Joint Union High School District, Ontario, CA and Heather Roberts-Gundrum, Alta Loma High School, Rancho Cucamonga, CA

1675-106542 Pandemics! How Changes in Human Ecology and Evolution Drive the Evolution of New Diseases

Platinum Ballroom 3 & 4 • Evolution • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Viruses like COVID and HIV that infect multiple species evolve across all members of their infectious ecosystem. The term "zoonosis" rarely appears in state standards, but describes most infectious diseases that challenge medicine and public health.

Joseph S. Levine, Savvas, Concord, MA

1675-106344 Using VR as an Educational Tool

Platinum Ballroom 8 • Technology in the Classroom • Hands-on Workshop (75 min) • ML, HS, GA

We will explore the multifaceted landscape of using virtual reality as a teaching tool, diving into its potential benefits and the challenges educators might encounter, and also experience the technology in practice.

Molly Dunn, CSU Spur, Denver, CO

1675-106548 Make Your Own Taq DNA Polymerase

Platinum Ballroom 9 • Biotechnology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Polymerase chain reaction (PCR) is used to mass-produce hundreds of important biological proteins. Extract and purify the key PCR enzyme Taq polymerase from recombinant bacteria and take it home with you!

Cristina Fernandez, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

11:30AM–2:00PM

NABT Honors Luncheon

Grand E • Special Event (Tickets Required) • GA

NABT is proud to recognize the 2024 NABT Award Recipients during this celebratory event. We will honor exceptional biology teachers from all levels, and everyone is welcome to join us to congratulate these remarkable professionals.

2:00PM–3:15PM

1675-106378 Embedding Literacy Supports in 3D Units for Equitable Sensemaking and Learning

Gold Key I & II • Instructional Strategies • Hands-on Workshop (75 min) • ML, HS, 2Y

Embedding literacy supports for reading, writing, and academic discourse in 3D units promotes equitable sensemaking and science understanding! Learn how the BSCS Anchored Inquiry Learning instructional model leverages literacy supports throughout cycles of inquiry.

Cindy Gay, BSCS Science Learning, Steamboat Springs, CO

1675-106485 Promoting Student Growth and Engagement Through Competency-Based Feedback

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

While content covered science courses is broad, the skills and practices used to engage with content stay the same. We will discuss how shifting to skill-based feedback supports student growth.

Faith Nelson and Stephen Traphagen, Oak Park and River Forest High School, Oak Park, IL

2:00PM–3:15PM CONT.

1675-106523 Mapping to Conserve Biodiversity Design Challenge

Grand Ballroom C & D • Ecology / Environmental Science / Sustainability • Hands-on Workshop (75 min) • HS

Attendees will participate in a hands-on mapping design challenge centered on the grand global challenge of conserving Earth's biodiversity. The activity will engage learners in biodiversity conservation decisions that reflect efforts in science and policy.

Dennis Liu and Selim Tlili, E.O. Wilson Biodiversity Foundation, Durham, NC

SPECIAL PROGRAMMING PRESENTED BY HHMI

1675-108520 Using HHMI BioInteractive's Free Assessment Builder to Crowdsource Your Assessments for Learning

Grand Ballroom F • Instructional Strategies • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Assessment for learning is a powerful tool in our teaching toolkits, but writing high-quality items is time-consuming. Learn how BioInteractive's free, new Assessment Builder tool brings crowdsourced, vetted assessment items to your life science courses.

Valerie May, Woodstock Academy, Woodstock, CT and Rebecca Orr, Collin College, McKinney, TX

1675-106461 Chutes and Ladders: Identifying and Circumventing Barriers to Increase Student Engagement in Learning Activities

Orange County Ballroom 1 • Instructional Strategies • Hands-on Workshop (75 min) • GA

An interactive workshop to explore barriers to student participation in active learning, including obstructions on student mindsets and in activity design. We will share methods to identify obstacles and brainstorm strategies to address these concerns.

Bethany B. Stone, Sarah L. Bush, and Amanda Durbak, University of Missouri - Columbia, Columbia, MO

1675-106519 A Novel Case-Based Approach to Teaching Upper-Level Biology Majors

Orange County Ballroom 2 • Evolution • Hands-on Workshop (75 min) • 4Y

Using a case-based approach to teaching difficult biological concepts has proven effective in strengthening engagement, deepening understanding of challenging concepts, and honing written and oral communication skills for upper-level biology students.

Raelynn Deaton Haynes, Texas State University, Buda, TX

1675-106413 Exploring the Future: Harnessing AI for Science Education Tools

Orange County Ballroom 3 • Instructional Strategies • Hands-on Workshop (75 min) • HS. 2Y, GA

Harness the potential of generative AI in science education. The session showcases the benefits and some limitations of using AI to create classroom resources.

Christine Patrum, Georgia State University Perimeter College, Decatur, GA and Jewels Morgan, Georgia State University Perimeter College, Covington, GA

1675-106351 Teaching the Evolution of Complexity Using the Volvocine Algae Model System

Orange County Ballroom 4 • Evolution • Hands-on Workshop (75 min) • ML, HS, GA

This hands-on workshop will present how the volvocine algae model system can be applied to the teaching of the evolution of biological complexity at the K-12 level through the demonstration of a laboratory activity.

Joshua S. Hoskinson, Arizona State University, Mesa, AZ and Dinah R. Davison, Kansas State University, Manhattan, KS

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR

1675-108947 Protein Puzzles: Decoding Sickle Cell and CRISPR Solutions

Platinum Ballroom 1 • AP® Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Unravel sickle cell's molecular mysteries with hands-on, minds-on models. Fold beta-globin, applying amino acid properties and varying levels of protein structures. Compare typical and sickled variants to explore structure-function relationships. Dive into cutting-edge CRISPR therapies.

Keri Shingleton, 3D Molecular Designs, Tulsa, OK

1675-106343 Exploring Students' Knowledge Gaps—Using Data from the 2024 AP® Biology Exam to Inform Instructional Practices

Platinum Ballroom 2 • AP® Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Participants will utilize the College Board's "AP® Biology Chief Reader Report" from the 2024 exam to identify student misconceptions and knowledge gaps and then select instructional strategies to improve students' learning.

Ross Sappenfield, Vail Mountain School, Vail, CO and Rachel Lytle, Brentwood High School, Brentwood, TN

2:00PM–3:15PM CONT.

1675-106359 Learning Unity and Diversity in Alabama: A Cultural and Religious Sensitivity Resource and Curriculum Materials for Teaching Evolution in General High School Biology Classrooms

Platinum Ballroom 3 & 4 • Evolution • Hands-on Workshop (75 min) • ML, HS, GA

Learn to use a cultural and religious sensitivity resource and three curriculum units focused on teaching evolution using human and non-human case studies in general high school biology classrooms (field tested in Alabama).

Paul Beardsley, Cal Poly Pomona, Pomona, CA; Connie Bertka, Science and Society Resources, Potomac, MD; Briana Pobiner, Smithsonian Institution, Washington, DC

1675-106222 Regional Feedstocks: Are They the Answer to Achieving a Net Zero Future?

Platinum Ballroom 7 • Ecology / Environmental Science / Sustainability • Demonstration (75 min) • HS, 2Y, 4Y

Learn about the sustainability challenges facing the transportation industry and the potential of transportation biofuels, as well as impacts on greenhouse gas emissions.

Cait McGraw, Idaho National Laboratory, Idaho Falls, ID and Kelly Sturner, Argonne National Laboratory, Chicago, IL

1675-105812 Targeting Misinformation

Platinum Ballroom 8 • Science Practices • Hands-on Workshop (75 min) • GA

Anti-vaxxers, climate change naysayers, COVID myths, wonder diets, and greenwashing by industry—all challenge our students. Help them develop skills in assessing credibility and expertise and busting bogus scientific claims in the media.

Douglas Allchin, University of Minnesota, St. Paul, MN

1675-106503 Microbiomes for All

Platinum Ballroom 9 • Instructional Strategies • Hands-on Workshop (75 min) • ML, HS, GA

This session will introduce the Research Experiences in Microbiomes Network and the "Microbiomes for All" project and how it can be leveraged in the K-12 setting to expose students to STEM research.

Davida Smyth, Texas A&M University - San Antonio, San Antonio, TX and Theodore Muth, Brooklyn College, Brooklyn, NY

1675-107050 DIY Bioinformatics: Create a DNA Activity That Connects Genetic Analysis to Your Current Science Curricula

Platinum Ballroom 10 • AP® Biology • Hands-on Workshop (75 min) • HS, 2Y, 4Y

Bring your computer for a guided tour of the free NCBI website to locate, interpret, and download sequences. Small group discussions and handouts will help teachers craft a self-tailored activity, transferable to students.

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

3:30PM–4:00PM

1675-105824 Cannabis and Society—Teaching Undergraduate Biology Through a Social Justice Lens

Gold Key I & II • Botany & Plant Biology • Demonstration (30 min) • 2Y, 4Y

Plants & Society, a non-major lab course, is a Social Justice Studies course at Harper College. The theme, Cannabis and Society, explores the botanical nature, history, environmental impact, public policy, and social dipartites of cannabis.

Virginia McHugh-Kurtz, William Rainey Harper College, Palatine, IL

3:30PM–4:00PM CONT.

1675-106539 Designing a Computational Tool for Media Literacy in Conservation Biology

Grand Ballroom C & D • Technology in the Classroom • Hands-on Workshop (30 min) • HS

Workshop attendees will participate in a computational design challenge focused on evaluating information sources. They will engage in a hands-on exercise to evaluate information sources and then apply these methods to design a computational tool.

Jocelyn Miller and Melissa Olson, E.O. Wilson Biodiversity Foundation, Durham, NC

SPECIAL PROGRAMMING PRESENTED BY HHMI

1675-108521 Beautiful Biology: A New HHMI Website Featuring Phenomenal Images for Student Engagement

Grand Ballroom F • General Biology • Hands-on Workshop (30 min) • HS, 2Y, 4Y

Discover ways to engage students with images from the new HHMI Beautiful Biology website to build connections to content, ask probing questions, improve observational skills, and reinforce crosscutting concepts.

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

1675-106269 The Clover Project: Connecting Genetics, Ecology, and Plant Biology

Orange County Ballroom 1 • AP® Biology • Demonstration (30 min) • HS, 2Y

Unlock the secrets of cyanogenesis in clover! Participants will learn to implement this hands-on, inquiry-based lab that uses common lawn clover to investigate the connections between cell structure, genetics, evolution, ecology, and local climatic adaptation.

Carolyn "Beanie" Spangler and Kenneth Bateman, Wellesley High School, Wellesley, MA

3:30PM–4:00PM CONT.

1675-106239 Case Studies: The Key to Maintaining Inquiry-Based Learning on Assessments

Orange County Ballroom 2 · General Biology · Demonstration (30 min) · ML, HS, 2Y

Do you want to transform your tests to be inquiry-based and "cheat" proof? This workshop will teach you how to use scientific articles to create inquiry-based assessments and case studies.

Charaun Wills, The Potomac School, McLean, VA

1675-106458 Unlocking the Potential of AI in High School Biology: Strategies and Tools for Effective Integration

Orange County Ballroom 3 · Technology in the Classroom · Demonstration (30 min) · HS, 2Y, 4Y

This session presents strategies for integrating AI-powered adaptive learning in high school biology classrooms. Suitable for both experienced and beginner teachers, the session empowers educators to transform learning and prepare students for the future.

Kate Silber, Highland Park High School, Highland Park, IL

1675-106494 Comparing the Impact of Physical Model Construction and Digital Model Construction on Conceptual Understanding of Abstract STEM Concepts

Orange County Ballroom 4 · Instructional Strategies · Paper (30 min) · ML, HS, GA

This paper session examines results from a long-term research study comparing physical and digital model construction through different assessment strategies to measure conceptual understanding. Benefits and disadvantages of pedagogies and assessment tools will be discussed.

Salvatore G. Garofalo, Queens College, City University of New York, Queens, NY

1675-109288 "Dear Colleague:" Meet Your NSF Program Officers

Grand A & B · Instructional Strategies · Symposium (30 min) · GA

This session will highlight some of NSF's key programs while also giving participants advice on how to improve their chances of impressing Reviewer #2.

Gordon Uno, National Science Foundation, Alexandria, VA

SPECIAL PROGRAMMING PRESENTED BY 3D MOLECULAR

1675-108448 How Does Anthrax Kill You?

Platinum Ballroom 1 · Microbiology & Cell Biology · Hands-on Workshop (30 min) · HS, 2Y, 4Y

We will explore the molecular mechanism whereby the anthrax protective antigen heptamer binds to a virulence factor that unfolds as it passes through a 16-stranded beta-barrel that penetrates the membrane of the target cell.

Tim Herman, 3D Molecular Designs, Milwaukee, WI

1675-105479 What Do Students Think of When They Hear the Term "Evolution"? Exploring Students' Conceptions of Evolution in Introductory Biology Courses

Platinum Ballroom 3 & 4 · Evolution · Paper (30 min) · HS, 2Y, 4Y

We will discuss results from a research study examining how students define evolution at the beginning of undergraduate introductory biology courses and what this means for both high school and college biology instructors.

Jeremy Hsu, Chapman University, Orange, CA

1675-106256 Hexaconnection: Making Student Thinking Visible

Platinum Ballroom 9 · Instructional Strategies · Hands-on Workshop (30 min) · GA

Explore hexagonal thinking as a powerful student-to-student discussion strategy that promotes evidence-based collaboration to produce novel scientific explanations.

Vyjayanti Joshi, Haley Whelan, and Alyssa Martin, Lake View High School, Chicago, IL

3:30PM–4:00PM CONT.

1675-106243 Open Science in the Classroom: Explore Open Data Tools and Free Educational Resources from the Allen Institute

Platinum Ballroom 10 • General Biology · Demonstration (30 min) · HS, 2Y, 4Y

Join the Allen Institute as we demonstrate ways to guide students in using our cutting-edge open science datasets. Tour our curriculum library with free lessons incorporating our open data in neuroscience, cell biology, and immunology.

Alli Wiener and Kaitlyn Casimo, Allen Institute, Seattle, WA

4:15PM–4:30PM

Announcement of the 2024 Poster Winners

Platinum Ballroom 5 & 6 • Special Event · GA

NABT is pleased to announce the student winners of the Biology Education Research competitions and the Mentored Student Research competitions.

4:30PM–7:30PM

GENERAL SESSION

Natalia Reagan

See biography on page 19

Making Biology Humerus: The Life of a Scientist Comedian

Platinum Ballroom 5 & 6 • Special Speaker (60 min) · GA

Science—especially biology—is hilarious. From garish animal morphology, to elaborate mating rituals, to all things poop—the biological sciences are a comedy goldmine of endless content. But as educators, we are often taught to avoid wading into silly territory—that we have to remain serious so that we may be taken seriously. However, Natalia Reagan is a firm believer that humor is an invaluable teaching too. She has built a career combining her two passions—science and comedy- to create digestible science communication for the public and her classrooms! Though she may have an unfair advantage as a primatologist, as monkeys are a treasure trove of hilarity.

Some of Natalia's scicomm roles include hosting a Bigfoot TV show, writing comedy and hosting for Neil deGrasse Tyson, being a science expert on Nat Geo, Nat Geo Wild, History, & Travel Channel, writing and hosting for Discovery, podcasting for Scientific American, and creating her own science comedy content on YouTube, TikTok, and Instagram. Currently, she produces, writes, and hosts a science comedy variety show called *Survival of the Filthiest*. Essentially, her job is to make science accessible, fun, and memorable. Humor makes a lasting impact—and she have the receipts to prove it! Natalia will share her scicomm journey, from methodology, to soul-crushing failures, to happy successes so that you can be the best science communicator inside and outside your classroom!

6:00PM–8:00PM

Saturday Night Closing Reception and Silent Disco

Platinum Patio • Special Event (Tickets Required) · GA

Get ready to dance the night away at NABT's first-ever silent disco! This unique event will feature food, fun, and friends catching up and getting down. Don't have boogie fever? You're still guaranteed to leave Anaheim with a smile.

Sunday

8:30AM–10:30AM

Four-Year College & University Section Meeting

Platinum Ballroom 1 • Committee Meeting • 4Y, GA

Two-Year College Section Meeting

Platinum Ballroom 2 • Committee Meeting • 2Y, GA