

FRIDAY, APRIL 1

NATIONAL CONFERENCE
on **SCIENCE EDUCATION**

NASHVILLE

MARCH 31–April 3, 2016

#NSTA16



VOL.2

NSTA National
Science
Teachers
Association



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Get Your Hands On Science



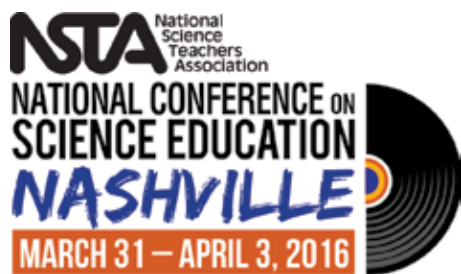
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NSTA National
Science
Teachers
Association



NSTA 64th National Conference on Science Education

Science: Empowering Performance

Nashville, Tennessee • March 31–April 3, 2016

Volume 2 Friday, April 1

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National Science Teachers Association

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www.nsta.org

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*People enjoy the Music City Walk of Fame Park in front of
the Country Music Hall of Fame in Nashville.*



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THE BEST PLACE TO EXPLORE THREE-DIMENSIONAL TEACHING AND LEARNING

Take a deep dive into the
*Next Generation Science
Standards (NGSS)*
with two special events
FREE to all conference
attendees!



NGSS@NSTA FORUM

FRIDAY, APRIL 1, 2016

Music City Center
Grand Ballroom C1

The NGSS@NSTA Forum explores resources you can use to implement three-dimensional instruction. Participate in one or more:

8:00–9:00 AM

How Should Districts and Schools Focus Professional Development When Starting to Implement NGSS?

9:30–10:30 AM

Using Three-Dimensional Standards to Plan Instruction and Assessment

11:00 AM–12 NOON

Supporting Ongoing Changes in Students' Thinking: The Primer

12:30–1:30 PM

Assessing Three-Dimensional Learning

2:00–3:30 PM

Designing or Adapting Curriculum and Instruction to Make It Three Dimensional

NGSS@NSTA SHARE-A-THON

SATURDAY, APRIL 2, 2016

Music City Center
Grand Ballroom C1

9:30–10:30 AM

Get even more tips and tools to implement three-dimensional standards from NSTA's NGSS Curators, NGSS writers, and other education experts. Leave with plenty of handouts and ideas you can use in your classroom right away!

www.nsta.org/ngss



NGSS@NSTA
STEM STARTS HERE

Courtesy of Music City Center



Mission Statement

The mission of NSTA is to promote excellence and innovation in science teaching and learning for all.

The ideas and opinions expressed in the conference sessions, and in any handout materials provided, are those of the presenter. They are not those of the National Science Teachers Association nor can any endorsement by NSTA be claimed.

Friday, April 1

7:30–8:00 AM	Science in the Community Breakfast (M-2):	15
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9:00 PM–12 Mid	President’s Mixer with DJ and cash bar	108

NSTA Teacher Awards Gala

Friday, April 1, 6:00–8:45 PM

By ticket only: #M-3

Cost: \$80

East/Center Ballroom,
Renaissance Nashville Hotel

Enjoy a fabulous evening celebrating with this year’s teacher award recipients! ALL of the teacher awards will be presented in one grand evening. Join your colleagues in recognition of this year’s winners.

All Conference Attendees are invited to the President’s Mixer—

*Friday, April 1, 9:00 PM–12 Midnight
West Ballroom, Renaissance Nashville Hotel*

(DJ and cash bar)



The Nashville Conference Committee has planned the conference around these four strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program.

See the following pages for a list of sessions and events for each strand.



Setting the Stage: Scientific Literacy

To reach the goal of a scientifically literate population, it is imperative to build an understanding of the nature of science, history of science, inquiry, and the practices of science and engineering. Students need opportunities to learn how scientists “know what they know” and what sound science looks like. In this strand, participants will develop understanding of the nature of science for all learners and explore how science and scientific tools have progressed over time.



Building the Band: Involving Community Stakeholders

To build authentic science experiences, it is necessary to reach outside a school’s walls to form strategic partnerships with informal science education (museums, community resources), Economic and Community Development (ECD), chambers of commerce, institutes of post-secondary education, after-school program providers, and national and local extracurricular groups (e.g., scouts, boys and girls clubs, and environmental education groups). Together, educators and stakeholder organizations can leverage opportunities for grants, outreach, and real-world collaboration for students. Participants in this strand will gain ideas for locating external resources and developing partnerships to strategically support instruction for real-life learning experiences.



Harmonizing Concepts: Integrating Instruction

High-quality instruction demands integration of STEM content with leading initiatives such as the Common Core State Standards, in English language arts and mathematics; CTE (Career and Technical Education); and subject areas, including social studies and the arts in trans-disciplinary approaches to teaching and learning. Authentic science learning requires concepts and skills from across multiple content areas. This strand will allow participants to explore how integrating targeted skills and concepts from other content areas can enhance science instruction and engage learners. Also emphasized will be the power of science to reinforce other content through authentic application tasks.



Stringing It All Together: Three-Dimensional Learning

The NRC *Framework* and the *Next Generation Science Standards* identified best practices from research for today’s learners. Good instruction must incorporate the NGSS three dimensions of crosscutting concepts, disciplinary core ideas, and science and engineering practices. Three-dimensional science learning produces scientifically literate and competent students. This strand will exemplify the intertwining nature of the three dimensions necessary for the highest quality science instruction. This strand will be tied together by accessing the latest research findings regarding science education.

Setting the Stage: Scientific Literacy

Friday, April 1

8:00–8:30 AM

Data Is Not a Four-Letter Word! Use NOAA Resources to Build Student Proficiency in Data Analysis

8:30–9:00 AM

Open-Ended Inquiry-Based Instruction in Ecology

9:30–10:30 AM

Exploring Engineering Practices

11:00 AM–12 Noon

Teach STEM Content and Spark Science Career Interest with Free Online Games

12:30–1:30 PM

Engaging the Natural Curiosities of Children in the Early Years

2:00–3:00 PM

Let's Go Outside...to the Schoolyard and Beyond

3:30–4:30 PM

Regurgitation and Argumentation: Teaching Science Practices Using Owl Pellets

5:00–6:00 PM

Newton's Nightmare: A Magnetic Mystery!



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Building the Band: Involving Community Stakeholders

Friday, April 1

8:00–9:00 AM

Bring New Life to the Geosciences: Opportunities for Connecting Student Learning to Real-World Applications

9:30–10:30 AM

See How an NSTA Student Chapter Is Impacting K–6 Science Learning Through an Informal Education Program

11:00 AM–12 Noon

Working in Concert: Successful Collaboration with Informal Centers

12:30–1:30 PM

Outbreak! Partnering CDC Scientists with Science Teachers

2:00–3:00 PM

How to Master Scientists Inside Your Classroom with High Results

3:30–4:30 PM

Developing STEM Partnerships You Can't Live Without

5:00–6:00 PM

The Smithsonian, STEM, and Your Classroom

Stringing It All Together: Three-Dimensional Learning

Friday, April 1

8:30–9:30 AM

Featured Presentation: Prions: Discovering a Unifying Etiology for Neurodegenerative Disorders, Including Alzheimer's and Parkinson's Diseases (Stanley Prusiner)

9:30–10:30 AM

Sound Through the Ages—From Cluckers to Pluckers

11:00 AM–12 Noon

Cellular Respiration: Reducing Confusion Through Collaboration

12:30–1:30 PM

Bioengineering Challenges and Middle School Life Science

2:00–2:30 PM

A Different Type of PPT: Phenomena, Practices, and Teaching

2:30–3:00 PM

Creating and Sharing Three-Dimensional NGSS-Focused High School Chemistry Lessons in a Virtual Professional Learning Community

3:30–4:30 PM

Using NGSS Tools and Resources in Your Classroom

5:00–6:00 PM

Linking Lessons into a Storyline—Making It Happen

Harmonizing Concepts: Integrating Instruction

Friday, April 1

8:00–9:00 AM

Filters Aren't Only for Coffee! How to Blend Multiple Curricular Materials Together into a Seamless STEM Unit on Water Quality and Filtration

9:30–10:30 AM

Featured Presentation: The Tinker.Make. Innovate. Program (Speaker: Jean Kaneko)

Constructing Science Explanations Using Reading and Writing Strategies to Support Grades 6–8 Students

11:00 AM–12 Noon

Professional Development to Support Integrated Inquiry-Based Teaching in the Outdoors

12:30–1:00 PM

Developing 21st-Century Reasoning Skills Through an Authentic Interdisciplinary STEM Research Experience

1:00–1:30 PM

Integrating Global STEM Education into All Aspects of the Curriculum

1:30–4:30 PM

Short Course: Geospatial Technology in the STEM Classroom: Integrating Place and Projects for Meaningful Learning Across Content Areas (SC-9: By Ticket Only)

2:00–3:00 PM

Authentic Interdisciplinary Learning Through Simulation

3:30–4:30 PM

Forces and Motion: An Integrated K–8 Hands-On Approach Supporting the NGSS and CCSS ELA

5:00–6:00 PM

Photosynthesis and Cellular Respiration: A Hands-On Approach for Grades 6–12

Booth 1014



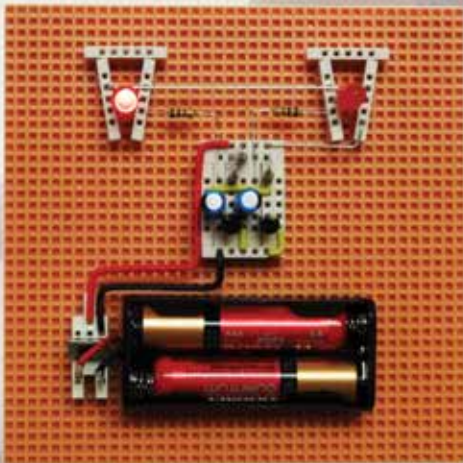
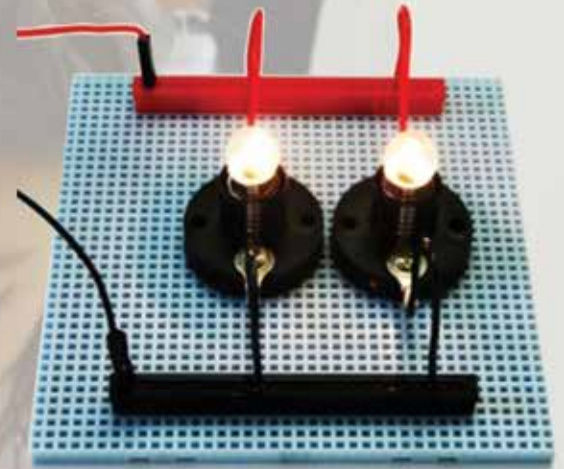
Engagement Exploration Explanation Elaboration Evaluation

*Referred to as "LEGOs for Electronics Projects",
5eBoard's Affordable Learning Kits Make
Interdisciplinary STEM Education Easy and Fun*

www.5eboard.com

The Differences

- No soldering is involved
- Reusable for different groups or grades
- Apply real-world electronic components
- Reconfigurable for advanced topics
- Damaged parts can be individually replaced
- Knowledge extendable to college and beyond

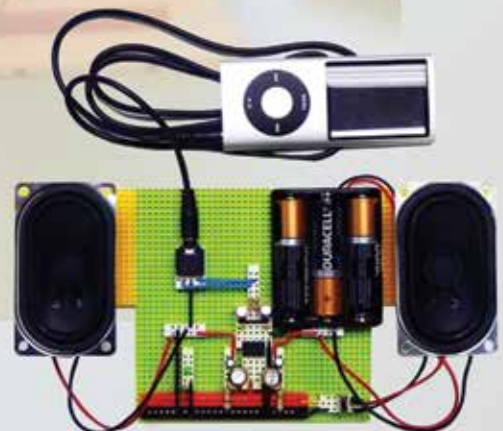


We Provide

- Cross-disciplinary STEM curriculum
- Interactive lab sets
- Hands-on DIY kits
- Makerspace materials

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- After school program initiation



NGSS@NSTA Forum

Friday, April 1, 2016
Grand Ballroom C1, Music City Center



The NGSS@NSTA Forum explores resources you can use to implement three-dimensional instruction. Participate in one or more presentations. *See page 4 for details.*

8:00–9:00 AM	How Should Districts and Schools Focus Professional Development When Starting to Implement NGSS?	11:00 AM–12 Noon	Supporting Ongoing Changes in Students' Thinking: The Primer
9:30–10:30 AM	Using Three-Dimensional Standards to Plan Instruction and Assessment	12:30–1:30 PM	Assessing Three-Dimensional Learning
		2:00–3:30 PM	Designing or Adapting Curriculum and Instruction to Make It Three Dimensional

Science in the Community Friday Events

The Science in the Community Forums and events build awareness of the abundance of existing high-quality out-of-school (informal) science education methods, resources, and opportunities available to enhance science teaching and learning. Both out-of-school and in-school science educators meet and interact to share best practices in informal science, learn about exciting collaborations happening among informal and formal science organizations, network with colleagues, and dialogue around ideas and innovations. Informal organizations participating in the Science in the Community Forums include zoos, museums, media, after-school programs, universities outreach, and others that provide or support out-of-school science education. The Science in the Community events are sponsored by Google Inc. (“GOOGLE”).

7:30–8:00 AM	Science in the Community Breakfast (M-2 ticket)	9:15–11:15 AM	Science in the Community Share-a-Thon
8:00–9:00 AM	Science in the Community Featured Presentation (Speaker: Andrew Fraknoi) <i>(open to all conference attendees)</i>	2:00–4:00 PM	Interactive Forum in Science and Art

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The National Association for the Education of Young Children is a professional membership association actively working to ensure that children have equitable access to developmentally appropriate, high-quality early learning, including new STEM resources and curricula!

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Item #7226 List: \$18
Member Price \$14.40

BEST SELLER!

Spotlight on Young Children:
Exploring Science

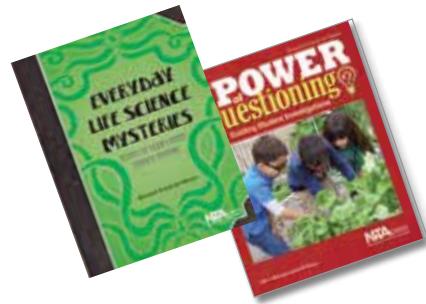
Item #373 List: \$20
Member Price: \$16

NEW! Engaging Young Engineers:
Teaching Problem-Solving Skills
through STEM

Item #7237 List: \$37
Member Price: \$29.60

NSTA Press Sessions

NSTA Press® books offer new classroom ideas and standards-based strategies. Join NSTA Press authors for these sessions linked to the topics of their books.



Friday, April 1

8:00–9:00 AM

Engaging Students in Predict, Observe, Explain Sequences in Your Science Classroom

9:30–10:30 AM

It's Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12

11:00 AM–12 Noon

Linking the *Uncovering Student Ideas in Science Series* and *Everyday Science Mysteries* to K–5 Language Literacy

12:30–1:30 PM

Doing Good Science in Middle School

2:00–3:00 PM

Models and Approaches to STEM Professional Development

The Power of Questioning: Guiding Student Investigations

3:30–4:00 PM

Beyond the Numbers: Making Sense of Statistics

5:00–6:00 PM

Using *Everyday Mysteries* to Promote Literacy

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Friday, April 1, 2016
4:00 - 5:30pm
Music City Center
Room 212

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Three Dimensions of the Next Generation Science Standards (NGSS)

Science and Engineering Practices	Crosscutting Concepts
<p>SEP1 Asking Questions and Defining Problems</p> <p>SEP2 Developing and Using Models</p> <p>SEP3 Planning and Carrying Out Investigations</p> <p>SEP4 Analyzing and Interpreting Data</p> <p>SEP5 Using Mathematics and Computational Thinking</p> <p>SEP6 Constructing Explanations and Designing Solutions</p> <p>SEP7 Engaging in Argument from Evidence</p> <p>SEP8 Obtaining, Evaluating, and Communicating Information</p>	<p>CCC1 Patterns</p> <p>CCC2 Cause and Effect: Mechanism and Explanation</p> <p>CCC3 Scale, Proportion, and Quantity</p> <p>CCC4 Systems and System Models</p> <p>CCC5 Energy and Matter: Flows, Cycles, and Conservation</p> <p>CCC6 Structure and Function</p> <p>CCC7 Stability and Change</p>

Disciplinary Core Ideas

Disciplinary Core Ideas in Physical Science	Disciplinary Core Ideas in Life Science	Disciplinary Core Ideas in Earth and Space Science	Disciplinary Core Ideas in Engineering, Technology, and the Application of Science
<p>PS1: Matter and Its Interactions PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1.C: Nuclear Processes</p> <p>PS2: Motion and Stability: Forces and Interactions PS2.A: Forces and Motion PS2.B: Types of Interactions PS2.C: Stability and Instability in Physical Systems</p> <p>PS3: Energy PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer PS3.C: Relationship Between Energy and Forces PS3.D: Energy in Chemical Processes and Everyday Life</p> <p>PS4: Waves and Their Applications in Technologies for Information Transfer PS4.A: Wave Properties PS4.B: Electromagnetic Radiation PS4.C: Information Technologies and Instrumentation</p>	<p>LS1: From Molecules to Organisms: Structures and Processes LS1.A: Structure and Function LS1.B: Growth and Development of Organisms LS1.C: Organization for Matter and Energy Flow in Organisms LS1.D: Information Processing</p> <p>LS2: Ecosystems: Interactions, Energy, and Dynamics LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems LS2.C: Ecosystem Dynamics, Functioning, and Resilience LS2.D: Social Interactions and Group Behavior</p> <p>LS3: Heredity: Inheritance and Variation of Traits LS3.A: Inheritance of Traits LS3.B: Variation of Traits</p> <p>LS4: Biological Evolution: Unity and Diversity LS4.A: Evidence of Common Ancestry and Diversity LS4.B: Natural Selection LS4.C: Adaptation LS4.D: Biodiversity and Humans</p>	<p>ESS1: Earth's Place in the Universe ESS1.A: The Universe and Its Stars ESS1.B: Earth and the Solar System ESS1.C: The History of Planet Earth</p> <p>ESS2: Earth's Systems ESS2.A: Earth Materials and Systems ESS2.B: Plate Tectonics and Large-Scale System Interactions ESS2.C: The Roles of Water in Earth's Surface Processes ESS2.D: Weather and Climate ESS2.E: Biogeology</p> <p>ESS3: Earth and Human Activity ESS3.A: Natural Resources ESS3.B: Natural Hazards ESS3.C: Human Impacts on Earth Systems ESS3.D: Global Climate Change</p>	<p>ETS1: Engineering Design ETS1.A: Defining and Delimiting an Engineering Problem ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution</p> <p>ETS2: Links Among Engineering, Technology, Science, and Society ETS2.A: Interdependence of Science, Engineering, and Technology ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World</p>



Nashville is located beside the Cumberland River where the grass is soft and sweet.

7:30–8:00 AM Networking Event

INF Science in the Community Breakfast

(Tickets Required; \$18) M-2 Broadway E, Omni
Science Focus: INF

Come join your colleagues who are interested in building connections between in-school and out-of-school educators and resources. Then stay for the Featured Presentation about the public science event of the decade—the August 2017 Total Eclipse of the Sun, which will be visible only in the United States.

7:30–9:30 AM Networking Event

AMSE Annual Alice J. Moses Breakfast

(By Invitation Only) Legends F, Omni
Sponsored by Pearson. For details, please visit www.amsek16.org.

8:00–8:20 AM Presentation

SCST Session: Completing the Circle: Using Innovative Co-Teaching Collaborations to Unite University Scientists, Science Teachers, and Their Middle School Students

(Grades 6–College) Ryman One, Renaissance
Science Focus: ETS, CCC1, CCC2

Renee Clary (rclary@geosci.msstate.edu) and **Anastasia Elder** (aelder@colled.msstate.edu), Mississippi State University, Mississippi State, Miss.

Teachers participating in professional development engaged in co-teaching with university scientists within their middle school classrooms. Collaboration broadened everyone’s perspective and yielded positive student outcomes.

8:00–8:30 AM Presentations

 **Data Is Not a Four-Letter Word! Use NOAA Resources to Build Student Proficiency in Data Analysis**

(Grades 6–College) 101E, Music City Center
Science Focus: GEN, NGSS

June Teisan ([@jlteisan](https://twitter.com/jlteisan); june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

Scientists at the National Oceanic and Atmospheric Administration collect a stunning array of data in their work. Learn how to access this treasure trove of archived and real-time data, and explore NOAA’s data-rich resources, lesson plans, and visualization tools help you build student proficiency in scientific data analysis.

Science Area

A science area category is associated with each session. These categories are abbreviated on the Science Focus line for each session listing. On page 122, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

- LS** = Life Science
- PS** = Physical Science
- ESS** = Earth and Space Science
- ETS** = Engineering, Technology, and the Application of Science
- GEN** = General Science Education
- INF** = Informal Science Education

NGSS

See page 13 for a complete list of the *NGSS* codes used in this program.

Strands

The Nashville Conference Committee has planned the conference around the following four strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 6.



Setting the Stage: Scientific Literacy



Building the Band: Involving Community Stakeholders



Harmonizing Concepts: Integrating Instruction



Stringing It All Together: Three-Dimensional Learning

The following icons will be used throughout this program.



NSTA Press® Sessions



Professional Learning Institutes



Sessions highlighting STEM learning experiences that occur in out-of-school environments.

The Pitfalls and Successes of Teaching Biotechnology and Statistics

(Grades 9–College)

Broadway D, Omni

Science Focus: LS3.A, LS3.B, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Taryn Surabian (@thestudyoflife) and **Lisa Collins** (lcollins@ursulineacademy.net), Ursuline Academy, Dedham, Mass.

Come learn about the hurdles, failures, and victories experienced in our first year co-teaching a laboratory-based biotechnology and statistics class.

Engaging Generation Z in Inquiry-Based Physics Using Media Technologies

(Grades 9–12)

Cumberland 5, Omni

Science Focus: PS, SEP

Natalia Chabebe (n.chabebe@gmail.com), Columbia Grammar and Preparatory School, New York, N.Y.

John Craven III (jcraven@fordham.edu), Fordham University, New York, N.Y.

We will share multiple inquiry-based activities in which students use cell phone cameras to derive physics equations and collect/analyze data to test predictions and hypotheses. Please note that participants must bring laptops to this session.



8:00–9:00 AM Science in the Community Featured Presentation

INF When the Sky Goes Dark: The All-American Total Eclipse of the Sun

(Open to All Participants)

Broadway E, Omni

Science Focus: ESS, INF



Andrew Fraknoi (fraknoiandrew@fhda.edu), Chair, Astronomy Department, Foothill College, Los Altos Hills, Calif.

President: Dennis Schatz, Field Editor *Connected Science Learning*; NSTA Director, Informal Science; and Pacific Science Center, Seattle, Wash.

On August 21, 2017, everyone in the United States (and North America) will be treated to an eclipse of the Sun. Interest will be high because the total phase of this “All-American” eclipse will only be visible on a track that crosses the U.S. (and no other country)! A partial eclipse will be seen by 500 million people in the U.S., Canada, and Mexico—assuming their weather is clear that Monday. Attendees at the presentation will get lots of practical information and guidance, including when and where to see the total eclipse; what the eclipse will look like in major cities across the country; and how to watch safely with your family, or with classes and other groups. We will discuss ways to make this a community-wide event and how to use the eclipse as a “hook” to excite people about motions in the sky and science in general. Everyone will receive a resource guide to the 2017 eclipse and the science of eclipses overall.

Andrew Fraknoi is the winner of the 2012 Faraday Prize for Science Communication from NSTA, as well as a regular guest on Science Friday and other radio shows where he explains astronomical developments in everyday language. He is co-author of the new NSTA Press® astronomy curriculum resource, Solar Science: Exploring Sunspots, Seasons, Eclipses, and More.

Chair of the Astronomy Department at Foothill College, Andrew edited the popular set of K–12 astronomy activities, The Universe at Your Fingertips. Fraknoi was the cofounder and coeditor of Astronomy Education Review, the online journal and magazine published by the American Astronomical Society. The International Astronomical Union has named Asteroid 4859 Asteroid Fraknoi to recognize his contributions to astronomy education and outreach (but he wants us to mention that it’s a very boring asteroid, and no threat to Earth!).

Friday, April 1

	Featured Speakers/Special Events	Featured Speakers/Special Events	Special Sessions/Events	Special Sessions/Events
7:00 AM				
8:00 AM		Science in the Community Breakfast 7:30–8:00 AM Broadway E, Omni Ticket Required (M-2)		
9:00 AM	Featured Presentation 8:30–9:30 AM Davidson A1, Music City Center Speaker: Stanley B. Prusiner	Science in the Community Featured Presentation 8:00–9:00 AM Broadway E, Omni Speaker: Andrew Fraknoi <i>(open to all conference participants)</i>	Elementary Extravaganza 8:00–10:00 AM Grand Blrm. A, Music City Center <i>Sponsored by Carolina Biological Supply, College of Education and Human Services at Central Michigan University, Delta Education, and Educational Innovations</i>	High School Hands-On Hodge-Podge Share-a-Thon 8:00–9:30 AM Broadway F, Omni
10:00 AM	Featured Presentation 9:30–10:30 AM 102 A/B, Music City Center Speaker: Jean Kaneko <i>sponsored by Shell</i>	Science in the Community Share-a-Thon 9:15–11:15 AM Broadway E, Omni <i>Science in the Community Forums and Events are sponsored by Google Inc. ("GOOGLE")</i>		NGSS@NSTA Forum 8:00 AM–3:30 PM Grand Blrm. C1, Music City Center
11:00 AM				
12 Noon				
1:00 PM	SCST Marjorie Gardner Lecture 12:30–1:30 PM Ryman One, Renaissance Speaker: Marcy Towns		"Meet and Greet" the Presidents and Board/Council 12:45–1:30 PM Hall B, Music City Center	
2:00 PM			NSTA District Director and Chapter/Associated Group Social in Honor of Wendell Mohling 1:30–2:30 PM Hall B, Music City Center	
3:00 PM		Science in the Community Interactive Forum on Science and Art 2:00–4:00 PM 101 A/B, Music City Center <i>Sponsored by Google Inc. ("GOOGLE")</i>		
4:00 PM	Robert H. Carleton Lecture 3:30–4:30 PM Davidson A2/3, Music City Center Speaker: Herb Brunkhorst			
5:00 PM		National Geographic Channel Film Screening: Breakthrough: More Than Human Directed by Paul Giamatti 4:30–6:30 PM Grand Blrm. C2, Music City Center		
6:00 PM	NSTA Teacher Awards Gala 6:00–8:45 PM East/Center Ballroom Renaissance Ticket Required (M-3)			
7:00 PM				
8:00 PM				
9:00 PM				
10:00 PM	President's Mixer 9:00 PM–12 Midnight West Ballroom, Renaissance			

8:00–9:00 AM Presentations

Abstract Concepts for the Concrete Mind: Techniques and Lessons to Engage Middle School Students and Provide a Valuable Purpose for Learning

(Grades 5–10) *104B, Music City Center*
 Science Focus: LS, PS, SEP

Nicole McRee (*mcree.nicole@d46.org*) and **Tracy Bratzke** (*clownfish39@yahoo.com*), Grayslake Middle School, Grayslake, Ill.

Inquiry-based, ready-to-use activities in chemistry and life science will be shared that incorporate cross-curricular and multimodal learning. This promotes experiential authentic engagement in which students are encouraged to think critically and analytically.

Evidence-Based Reasoning and the Big Bang Theory in the Classroom

(Grades 7–12) *106A, Music City Center*
 Science Focus: ESS1.A, CCC5, SEP6, SEP7

Brian Kruse (*@astroteacher8; bkruse@astrosociety.org*), Astronomical Society of the Pacific, San Francisco, Calif.

Minda Berbeco (*@MindaBerbeco; berbeco@ncse.com*), National Center for Science Education, Oakland, Calif.

Explore the evidence for the Big Bang Theory, its place in the NGSS, as well as how to respond to objections and dispel misconceptions.

ELEMENTARY EXTRAVAGANZA

Friday, April 1, 2016

8:00–10:00 AM • Grand Ballroom A
 Music City Center

- Hands-on activities
- Preview science trade books
- Learn about award and grant programs
- Walk away full of ideas and arms filled with materials
- Door prizes and refreshments—Win an iPad!
- 100+ presenters

Sponsored by:



Organizations participating in the Elementary Extravaganza include the Association of Presidential Awardees in Science Teaching, the Council for Elementary Science International, the NSTA Committee on Preschool–Elementary Science Teaching, *Science & Children* authors and reviewers, and the Society of Elementary Presidential Awardees.



Using NGSS in a non-NGSS State

(Grades K–8) Davidson A2/3, Music City Center

Science Focus: GEN, NGSS

Susan Disch, ETHOS Science Center, Elkhart, Ind.

Douglas Hunnings (@Ethos_Douglas; dhunnings@elkhart.k12.in.us), Riverview Elementary School, Elkhart, Ind.

Hear how one regional professional development organization uses three-dimensional learning and NGSS even though their state did not adopt the NGSS.

NGSS@NSTA Forum: How Should Districts and Schools Focus Professional Development When Starting to Implement NGSS?

(Grades K–12) Grand Ballroom C1, Music City Center

Science Focus: GEN, NGSS

Philip Bell (@philipbell; pbell@uw.edu) and **Shelley Stromholt** (@sshellery; stromhos@uw.edu), University of Washington, Seattle

Carrie Tzou (@tzouct; tzouct@uw.edu), University of Washington Bothell

Presider: **Ted Willard** (twillard@nsta.org), Program Director, NGSS@NSTA, NSTA, Arlington, Va.

NGSS calls for engaging ALL students in meaningful science learning. We'll highlight equity-focused tools and approaches for implementing this new vision with students and teachers, and across districts.

INF K–12 Science Resources and Programs from University STEM Centers

(General) Broadway J, Omni

Science Focus: ETS2, INF

Julius Su (jsu@caltech.edu), California Institute of Technology, Pasadena

James Maloney (maloney@caltech.edu), Community Science Academy, Pasadena, Calif.

Tomas Yan (tom00907@gmail.com), Stratford High School, Nashville, Tenn.

Find out about K–12 outreach programs at Caltech and Vanderbilt STEM Centers, and access freely available lessons, activities, software, and plans for build-it-yourself instruments.

NSELA Session: Building School and District Capacity for Understanding Student Thinking Through Formative Assessment

(General) Cumberland 1, Omni

Science Focus: GEN, NGSS

Page Keeley (@CTSKeeley; pagekeele@gmail.com), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Joyce Tugel (jtugel@gmail.com), Maine Mathematics and Science Alliance, Augusta

Learn about tools and strategies leaders can use to build school- and district-wide capacity to gather and use evidence of students' thinking about core ideas, crosscutting concepts, and science practices.

Modeling-Infused Instruction to Prepare Students for Physics, Chemistry, and Biology

(Grades 7–10) Cumberland 3, Omni

Science Focus: LS, PS, SEP2

Daniel Damelin (ddamelin@concord.org), The Concord Consortium, Concord, Mass.

Mason Converse (conversem@apps.harpercreek.net), Harper Creek High School, Battle Creek, Mich.

Presider: **Joseph Krajcik** (krajcik@msu.edu), CREATE for STEM Institute, Michigan State University, East Lansing
Join us to explore an innovative NGSS-focused curriculum that uses modeling of atomic interactions to tie together phenomena across physics, chemistry, and biology.

Ignite Science Writers

(Grades 6–8) Cumberland 4, Omni

Science Focus: GEN, SEP7

Charlotte Frazier-Cantkier (charlotte.cantkier@gmsdk12.org) and **Andrea Starks** (andrea.starks@gmsdk12.org), Houston Middle School, Germantown, Tenn.

Emphasis will be placed on strategies for integrating writing in the science classroom. Engage in reading scientific informational text, responding creatively to a given prompt, and constructing science writing assignments.

Out with the Old, In with the New

(Grades 6–12) Cumberland 6, Omni

Science Focus: GEN, NGSS

Tiffany Cohen (@tiffanycohen; cohent@northernhighlands.org), Northern Highlands Regional High School Board of Education, Allendale, N.J.

Aarti Mallya (aartimallya@gmail.com), Pascack Hills High School, Montvale, N.J.

See how instructional activities and assessments can be evaluated and revised to integrate the three dimensions of the NGSS.

The World of Google in Science*(Grades 3–College)**Legends D, Omni*

Science Focus: GEN, SEP

Ben Smith, Red Lion Area Senior High School, Red Lion, Pa.

Just when you thought you knew everything about Google! Come learn the hidden gems that are found using Google to improve science education.

Professional Development Models: Showcasing and Sustaining Meaningful Practices and Collaborative Approaches Focusing on STEM and the NGSS for Teacher Leaders and PD Providers*(General)**Music Row 1, Omni*

Science Focus: GEN, NGSS

Jack Rhoton (*rhotonj@etsu.edu*), East Tennessee State University, Kingsport**Gerry Madrazo, Jr.** (*gerrymadrazo@gmail.com*), 1993–1994 NSTA President, and Science Education Consultant, Gibsonville, N.C.**LaMoine Motz** (*llmotz@comcast.net*), 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich. Join our group of science education leaders as we focus on STEM education and the NGSS in our delivery of professional development. Our panel will share trends, best practices, current research, teaching and learning models, projects, and collaborative approaches toward strengthening science teaching and learning. Handouts!**Using Relevance (Hawaiian and Modern Culture) to Teach College Prep Chemistry***(Grades 9–College)**Music Row 2, Omni*

Science Focus: PS

Joel Truesdell (*jotruesd@ksbe.edu*), Kamehameha Schools Hawaii, Keauu

Join me as I highlight a method using Hawaiian or modern culture to establish relevance and engagement in an inquiry and project-based curriculum. Come taste a Hawaiian snack, too. Data and resource material will also be given.

CSSS Session: How Do I Demonstrate That My Students Are Showing Growth?*(Grades 1–12)**Music Row 4, Omni*

Science Focus: GEN, NGSS

Joanna Bruno, Colorado Dept. of Education, Denver

Hear about the work being done in Colorado to engage educators in establishing unit-based student learning objectives to drive instruction and evaluate growth.



—Courtesy of Jacob Slaton

NARST Session: Engaging in the Formative Assessment Design Cycle for the NGSS*(Grades 6–12)**Fisk One, Renaissance*

Science Focus: GEN, NGSS

Erin Furtak (*@furtak; erin.furtak@colorado.edu*), University of Colorado Boulder

Learn about a research-based process for engaging with your colleagues to design, enact, and reflect upon formative assessment activities linked to the NGSS.

Teaching Science Through a Public Health Lens*(Grades 7–College)**Music City Ballroom, Renaissance*

Science Focus: GEN, CCC, SEP

Kelly Cordeira (*kcordeira@cdc.gov*), Centers for Disease Control and Prevention, Atlanta, Ga.

Public health is a vehicle for teaching math and science. Hear how to engage students in solving real-world outbreaks from the classroom alongside the Centers for Disease Control and Prevention.

Evaluating Resources for Lessons That Fit the NGSS*(Grades K–12)**West Ballroom, Renaissance*

Science Focus: GEN, NGSS

Karen Mesmer (*klmesmer@gmail.com*), Mesmer Science Education Consulting, Baraboo, Wis.**Carolyn Higgins** (*@mrshigginsri; carolyn.higgins@warwickschools.org*), Winman Junior High School, Warwick, R.I.**Erica Motamed** (*emotamed@llcsd.net*), Lake Center Middle School, Santa Fe Springs, Calif.**Mary Koga** (*mkoga@bousd.us*), Brea Junior High School, Brea, Calif.

Join curators of NGSS resources for NSTA as they share how to use the EQUIP (Educators Evaluating the Quality of Instructional Products) rubric to determine what shifts are needed in existing lessons to align with the NGSS.

8:00–9:00 AM Hands-On Workshops



NSTA Press® Session: Engaging Students in Predict, Observe, Explain Sequences in Your Science Classroom

(Grades 6–12)

101C, Music City Center

Science Focus: GEN, CCC1, CCC2

Michael Bowen (gmbowen@yahoo.com), NSTA Director, District XVIII, and Mount Saint Vincent University, Halifax, N.S., Canada

Tony Bartley, Lakehead University, Thunder Bay, Ont., Canada

Using examples from our NSTA Press book, we will demonstrate how to engage middle school and high school students in POE activities to develop their understanding of science concepts. Resources will be provided.



Bring New Life to the Geosciences: Opportunities for Connecting Student Learning to Real-World Applications

(Grades 5–10)

103B, Music City Center

Science Focus: ESS2, ESS3, CCC2, CCC4, CCC7, SEP2, SEP3, SEP6

Rachel Ruggirello (ruggirello@wustl.edu), Washington University in St. Louis, Mo.

Megan Eberle (eberle.megan@gmail.com), KIPP St. Louis, Mo.

A team of middle school teachers and scientists share how they brought cutting-edge research to life, connecting geology, fossil fuels, and technological innovation.



Filters Aren't Only for Coffee! How to Blend Multiple Curricular Materials Together into a Seamless STEM Unit on Water Quality and Filtration

(Grades 5–12)

103C, Music City Center

Science Focus: ESS2.C, ESS3.A, ESS3.C, ETS1.A, ETS1.B, LS2.A, LS2.C, LS2.D, CCC1, CCC2, CCC3, CCC4, SEP

Jennifer Cody (jlc36@scasd.org), Park Forest Elementary School, State College, Pa.

Mandy Biggers (@drmandybiggers; msb33@psu.edu) and **Erin Glocke** (eeg5095@psu.edu), Pennsylvania State University, University Park

D'Anne Garban, Radio Park Elementary School, State College, Pa.

Leigh Haefner (@LeighAnHaef; lab194@psu.edu), Penn State Altoona, Pennsylvania

President: Carla Zembal-Saul, Pennsylvania State University, University Park

Learn to integrate Problem-Based Learning and STEM as you ignite a passion in your students through content with a storyline and engineering tasks that solve real-life problems.

Engaging Families in STEM

(Grades 1–8)

104D, Music City Center

Science Focus: ETS, INF, SEP1, SEP3, SEP6, SEP8

Joan Schumaker Chadde (jchadde@mtu.edu), Michigan Technological University, Houghton

Joy Reynolds (reynolds.joy@gmail.com), Detroit (Mich.) Public Schools

Teneshia Moore (teneshia.moore@detroitk12.org), Detroit (Mich.) Board of Education

Actively engage parents and elementary-aged children in hands-on engineering activities in order to create the next generation of problem solvers.

NASA: Putting the EM Spectrum Together

(Grades 5–10)

Science Focus: ESS, PS

David Beier, The Burdett School, Kansas City, Mo.

Come experience this NASA-designed workshop that can help you facilitate a deeper understanding of the EM spectrum. Free NASA resources at the end of the workshop. All materials will be available electronically.

Na...No Seams: Methods for Seamless Integration of Nanoscience into State-Standard Curriculum

(Grades P–6)

105A, Music City Center

Science Focus: GEN, CCC

Krista Adams, University of Nebraska–Lincoln

Nanoscience is not just a special topic! Learn how to integrate nanoscale exploration at a billionth of a meter into current K–6 curriculum.

Climate Change: Extremes or Norms?

(Grades 6–12)

106B, Music City Center

Science Focus: ESS2.D, ESS3.D, CCC1, CCC2, CCC4, CCC5, CCC7, SEP

Lynne Hehr (lhehr@uark.edu), University of Arkansas, Fayetteville

Studying the norm leads to understanding the extreme! In climate, that is. Learn how the Köppen Climate Classification System and precipitation/temperature data can differentiate between evidence-based science and pseudoscience.

Using Issues as a Context to Enhance Students’ Three-Dimensional Learning

(Grades 6–9) *106C, Music City Center*
 Science Focus: LS2.A, LS2.C, CCC, SEP

Maia Willcox (*mwillcox@berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

Dora Kastel (*@Dora_AMNH; dkastel@amnh.org*), American Museum of Natural History, New York, N.Y.

Participate in hands-on ecology activities that use biotic and abiotic ecological disruptions to engage middle school students in the three dimensions of the NGSS.

Get Connected! Promoting Collaboration During Hands-On Science Lessons with Free Online Tools

(Grades 7–College) *Broadway C, Omni*
 Science Focus: GEN, SEP4

Dorothy Nguyen-Graff (*dng@csun.edu*), California State University, Northridge

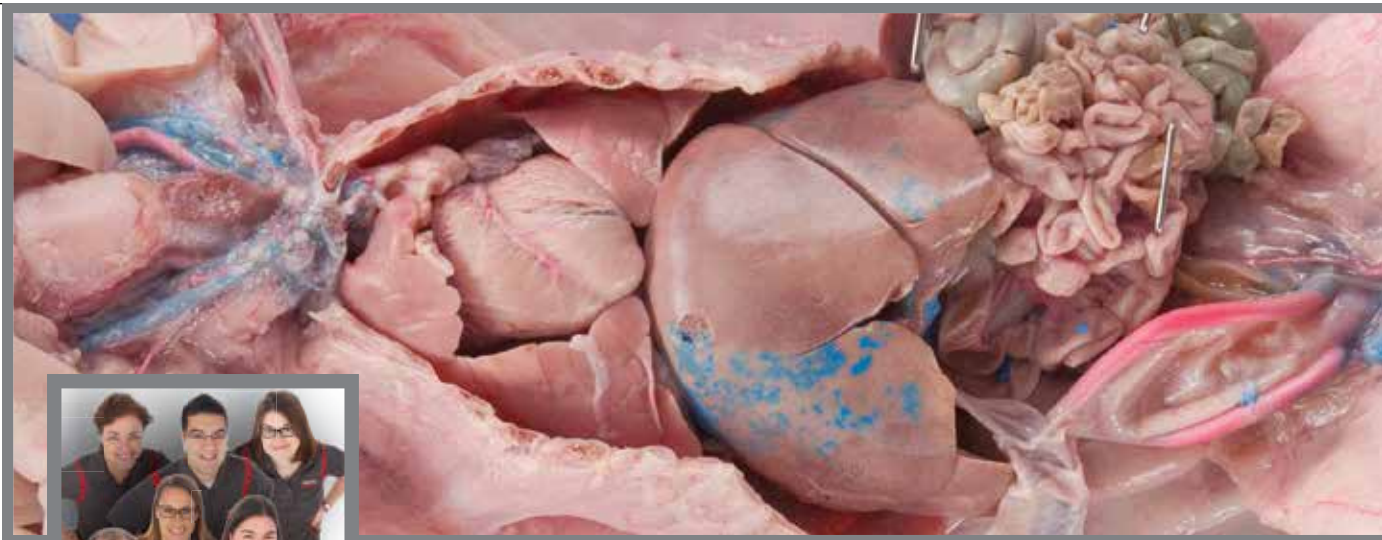
Learn how to use free cloud-based collaborative online documents (Google) to pool data in real time, identify trends, and exchange ideas about data interpretation.

Bumpers Save Lives

(Grades 6–8) *Broadway H, Omni*
 Science Focus: ETS, PS2, CCC4, SEP6

Reeda Hart (*hartr@nku.edu*) and **Bonnie Embry** (*bce3209@twc.com*), Northern Kentucky University, Highland Heights

In this hands-on and very active session, experience the science behind the materials selected for car bumpers. Apply those concepts to engineer a car bumper. Bumpers will be tested and analyzed to determine the best design solution. Take home a CD of lesson plans and resources.



Take The Ward's Pure Challenge

Introducing Ward's Pure Preserved, the Best Dissection Experience from Start to Finish!

The Plus is Us! We're here to connect you to superior science supplies, plus personalized support.

Stop by Booth #142 to see our latest products and enter to win science prizes!





Integrative 3-D Learning Through Investigating Bird Species Richness with Web-Based Maps

(Grades 7–12)

Legends E, Omni

Science Focus: LS2.C, LS4.D, CCC, SEP

Nancy Trautmann (nancy.trautmann@cornell.edu), The Cornell Lab of Ornithology, Ithaca, N.Y.

James MaKinster (makinster@hws.edu), Hobart and William Smith College, Geneva, N.Y.

Michelle Watkins (michellewatkins@frontiernet.net), Beaver River Central School, Beaver Falls, N.Y.

Carol Burch (cburch129@gmail.com), Hannibal High School, Hannibal, N.Y.

Experience and take home a lesson in which students use free online maps to learn ecological concepts while exploring bird biodiversity across the Americas.

Moving Peer Instruction (PI) and Process-Oriented Guided Inquiry Learning (POGIL) from College to High School Biology Classrooms

(Grades 9–College)

Legends G, Omni

Science Focus: LS

Jennifer Parrish (jp4k@mtmail.mtsu.edu) and **Grant Gardner** (grant.gardner@mtsu.edu), Middle Tennessee State University, Murfreesboro

POGIL and PI are instructional strategies used in higher education. We will share tools to help implement these strategies in the high school biology classroom. Curriculum materials provided.

DuPont Presents: The Science of Packaging

(Grades 9–12)

Music Row 5, Omni

Science Focus: ETS, CCC1, CCC2

Timothy Dalby (@tddalby; tdalby@wilmingtonfriends.org), Wilmington Friends School, Wilmington, Del.

Get introduced to a brief history of polymers and how they are used in the packaging industry. Experience a hands-on activity that illustrates the variables that must be considered and get your students excited about how science plays a role in food packaging.

Success on a Global Scale

(Grades 1–12)

Center Ballroom, Renaissance

Science Focus: GEN

Laura Schisler, Crowder College, Neosho, Mo.

Shannon Sahabi (@shannonsahabi; shannon.sahabi@nisd.net), Clark High School, San Antonio, Tex.

Learn from our experiences what to do (and not do!) in Global Collaborative Science while creating your own collaboration plan. Leave with classroom-ready learning resources.

INF Empowering Communities by Engaging Caregivers: Developing Partnerships in Informal Learning Settings

(Grades P–K)

East Ballroom, Renaissance

Science Focus: INF

Kristen Olson (kkolson@amnh.org), **Natalie Tahsler** (ntahsler@amnh.org), and **Donna Spadoni** (dspadoni@amnh.org), American Museum of Natural History, New York, N.Y.

Expand your outreach programs! Experienced educators from the American Museum of Natural History will model the logistics and techniques from a successful caregiver-child program.

ASTE Session: Are You Smarter Than a Rocket Scientist? Design a Spaceship

(Grades 5–9)

Fisk Two, Renaissance

Science Focus: ESS, ETS, PS, CCC2, CCC4, SEP

John Pecore, University of West Florida, Pensacola

Let's build marshmallow astronauts and experimentally design rocket housing in order to explore the effect of a vacuum on astronauts during inter-space travel.

8:00–9:00 AM Exhibitor Workshop**Engineering Bumpers and NGSS: Hands-On Physics with PASCO's New Wireless Smart Cart!***(Grades K–12) 206 A/B, Music City Center*

Science Focus: ETS1, PS

Sponsor: PASCO scientific

Dan Burns (*dburns@lgsuhsd.org*), Los Gatos High School, Los Gatos, Calif.

Use PASCO's Smart Cart to explore the relationship between momentum and impact forces in collisions, using engineering design to create a solution to a problem. You will design your own bumper for the Smart Cart to minimize the collision force. Six attendees will win a free Smart Cart!

8:00–9:30 AM Presentation**High School Hands-On Hodge-Podge Share-a-Thon***(Grades 8–College) Broadway F, Omni*

Science Focus: GEN, CCC1, CCC2

Bev DeVore-Wedding (*@bdevore; bdevorewedding@gmail.com*), NSTA Director, High School Science Teaching, and University of Nebraska–Lincoln**Lauren Case** (*sciencecase@gmail.com*), South Fork High School, Stuart, Fla.**Cliff Cockerham** (*ccl149@cornell.edu*) and **Gisele Giorgi**, Merritt College, Oakland, Calif.**Summer Cortinas** (*scortinas@ncbionetwork.org*), BioNetwork, Candler, N.C.**Harvey Gendreau** (*hgendreau@alumni.umass.edu*), The Laboratory Safety Institute, Natick, Mass.**Sally Harms** (*saharms1@wsc.edu*), NSTA Director, College Science Teaching, and Wayne State College, Wayne, Neb.**Caroline Humes** (*chumes@d125.org*), Adlai E. Stevenson High School, Lincolnshire, Ill.**Mary Maddox** (*mary.maddox@stjohns.k12.fl.us*), St. Johns Virtual School, Saint Augustine, Fla.**Bertha Martinez** (*martinezber@asf.edu.mx*), The American School Foundation, A.C., Mexico City, Mexico

Ellie Williamson (*ellie.williamson@uasdc.org*), Urban Assembly School of Design and Construction, New York, N.Y. Join us for a variety of ideas for different STEM subjects. Come see what you can learn!

8:00–9:30 AM Exhibitor Workshops**Science Is NOT a Spectator Sport!***(Grades K–12) 107A, Music City Center*

Science Focus: GEN, SEP

Sponsor: McGraw-Hill Education

Carol Baker, Community High School District 218, Oak Lawn, Ill.

Through NGSS's three-dimensional learning, students should be doing science not just hearing lectures about science. Learn about using the NGSS science and engineering practices to transform your classroom into a busy working/thinking environment where students are engaging in hands-on activities that meet the NGSS performance expectations.

Amplify Science for Grades K–5: Experience Three-Dimensional Teaching and Learning with the Newest Curriculum from The Lawrence Hall of Science*(Grades K–5) 107B, Music City Center*

Science Focus: GEN, CCC

Sponsor: Amplify

Rebecca Abbott and **Traci Wierman**, The Lawrence Hall of Science, University of California, Berkeley

Experience our field-tested, technology-enhanced, 100% NGSS-designed K–8 curriculum. Built around digital tools, hands-on investigations, and explicit instruction in disciplinary literacy, Amplify Science engages students with deep dives into understanding the natural and designed worlds. Focusing on elementary grades, this workshop provides a sneak peek.

One Small Step...to Mars!*(Grades 6–12) 110A, Music City Center*

Science Focus: ESS

Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District**Erick Archer**, Texas Instruments, Dallas

NASA and TI have teamed up to bring you challenges for your students to solve related to getting a manned mission to Mars and back! Making sure astronauts stay healthy on the long journey is crucial. This session is for middle level and high school students. Check out the program at www.missionimagineit.com.

Take Your Students on a Quest! A Real-World Problem-Based Learning Project That Incorporates All Three Dimensions of NGSS

(Grades K–8)

110B, Music City Center

Science Focus: GEN, NGSS

Sponsor: Pearson Education

Chuck McMillan, Pearson Education, Chicago, Ill.

Take your students on a Quest! These real-world Problem-Based Learning projects incorporate all three dimensions of NGSS. A Quest! brings classroom concepts to life as students are immersed in a world of discovery to help solve real-world problems through a combination of hands-on digital simulations.

CPO's Link™ Learning Module Optics with Light and Color: Use Light to Learn About Light

(Grades 6–12)

201A, Music City Center

Science Focus: PS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Experience CPO's Optics with Light and Color kit with LED flashlights, a laser, lenses, a mirror, and more. Try color mixing, relate it to human vision, and examine different spectra. We make studying light exciting! Take away applications of the concept of light and other electromagnetic waves in technology (STEM and NGSS).

What Does Argumentation Look Like in an Elementary Classroom?

(Grades K–5)

201B, Music City Center

Science Focus: GEN, SEP7

Sponsor: Delta Education/School Specialty Science–FOSS

Brian Campbell, The Lawrence Hall of Science, University of California, Berkeley

Join FOSS Next Generation program developers to learn about science practices within the context of active investigations. Experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson. Find out about transitioning to FOSS Next Generation.

What the Heck Happened?!?

(Grades 2–9)

202A, Music City Center

Science Focus: PS1.A, PS1.B, PS2, PS3.B, PS3.C, PS3.D, CCC2, CCC5, CCC6, CCC7, SEP1, SEP3

Sponsor: Educational Innovations, Inc.

Edward Beyer, Educational Innovations, Inc., Bethel, Conn.

Discrepant events seize students' attention, and Educational

Innovations has real jaw-droppers. Come explore our favorite student confusers, including The Chinese Spouting Bowl, "anti-gravity," and much more! Door prizes and freebies!

Observing and Inferring in the Science Classroom: New Tips, Tools, and a Twist from Dinah Zike's Notebooking Central

(Grades 3–12)

202B, Music City Center

Science Focus: GEN, SEP1, SEP4, SEP7, SEP8

Sponsor: *Dinah.com*

Dinah Zike (*sara@dinah.com*), *Dinah.com*, San Antonio, Tex.

This workshop features new Notebooking Central templates for classroom (and real-world) observations and inference to help students learn to see and think like scientists. Build a mini-notebook of ideas and applications ready to use on Monday. Brain-engaging, research-based interactive activities for observation and inference.

Cool Tools for Light and Color

(Grades 6–College)

202C, Music City Center

Science Focus: PS

Sponsor: Arbor Scientific

Dwight "Buzz" Putnam (*buzzputnam@gmail.com*), Whitesboro High School, Marcy, N.Y.

Strap in for amazing light and color demos presented by award-winning physics teacher Buzz Putnam. These classroom-ready activities include mixing primary colors to cast shadows in cyan and magenta, graphing emission lines of gas tubes with the RSpec-Explorer, and answering his famous "mirror challenge" question! Door prizes!

Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens

(Grades 9–12)

204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Explore animal diversity by comparing and contrasting anatomical adaptations of the pig, rat, dogfish, and frog. Participants use hands-on dissection to identify characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring our very best Carolina's Perfect Solution specimens.

FLINN

Morning of Chemistry

Taking Over the Music City with Science

Over a Dozen Demonstrations that Educate and Entertain

Presented by:

Paul Price

Trinity Valley School
Fort Worth, TX

Jesse Bernstein

Miami Country Day School
Miami, FL

Where:

Music City Convention Center
Davidson Ballroom C

When:

Friday, April 1, 2016
10:00 – 11:45 am

Come to the "Must See" event of the conference! Watch two of the most talented and innovative chemistry educators in the country present 18 exciting demonstrations.



Pushing and Pulling Your Teachers to NGSS

(Grades K–2) 205A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

The NGSS are presented as performance expectations of what students should know and be able to do from K to 12. Each PE includes the components of the three dimensions: disciplinary core ideas, crosscutting concepts, and science and engineering practices. Experience a set of lessons for grades K–2 that help students meet the performance expectations of the NGSS through three-dimensional learning.

Partners in Crime: Forensic Fingerprinting with the Professionals

(Grades 6–College) 205B, Music City Center

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Thinking about incorporating forensic science into your classroom? The professionals from Sirchie can help! Expose your students to the fascinating world of forensics by using real-world techniques practiced by law enforcement agencies. Ink, analyze, and classify your own fingerprints, and then get hands on and learn how to dust and lift fingerprints.

Photosynthesis and Respiration Shuffle

(Grades 9–12) 205C, Music City Center

Science Focus: LS1.C

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding how matter and energy flows, both at the micro (cellular) and macro (ecosystem) levels. Using a computer simulation, a hands-on activity, and notebooking and discussion strategies expose student thinking—all from SEPUP’s new *Science & Global Issues: Biology* program from LAB-AIDS.

Outbreaking Bad!

(Grades 7–12) 207A, Music City Center

Science Focus: LS

Sponsor: Ward’s Science

Michelle Pagani and **Liam Casey**, VWR Science Education, Rochester, N.Y.

An Arizona school has had a dramatic increase in student illness. Could it be drug or disease related? Use biotechnology to identify if this is due to a pathogen, discuss possible causes for the re-emergence of certain infectious diseases,

and simulate a disease outbreak with and without vaccination of participants. Data can be collected and analyzed to demonstrate the concept of herd immunity.

Welcome to the Anthropocene: Free Teaching Resources for a New Era

(Grades 6–12) 207B, Music City Center

Science Focus: ESS1.C, ESS2.E, ESS3.A, ESS3.C, ESS3.D, CCC3, CCC4, CCC7, SEP4, SEP7

Sponsor: HHMI BioInteractive

Mark Nielsen, Howard Hughes Medical Institute, Chevy Chase, Md.

David Hong, Monrovia High School, Monrovia, Calif.

James Serach, Greens Farms Academy, Westport, Conn.

Humans are having a profound and lasting effect on Earth’s systems. In recognition of this, we are now living in a new geologic epoch called the Anthropocene. This workshop will highlight the latest research and demonstrate free ready-to-use classroom resources for teaching about human impact on planet Earth.

Renewable Energy with KidWind and Vernier

(Grades 7–College) 207C, Music City Center

Science Focus: ETS, SEP

Sponsor: Vernier Software & Technology

Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Explore renewable energy and engineering design using KidWind Experiment Kits with Vernier data-collection technology. In this hands-on workshop, design, test, and refine a wind turbine to maximize its energy output. These activities from our book, *Renewable Energy with Vernier*, embody the spirit of STEM education through this highly relevant topic.

Advanced Physics with Vernier

(Grades 9–College) 207D, Music City Center

Science Focus: PS, SEP

Sponsor: Vernier Software & Technology

Frances Poody (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Already experienced using basic physics sensors from Vernier? This hands-on workshop will introduce additional Vernier sensors and lab equipment that can enhance your AP, IB, or college physics laboratory in mechanics and beyond. Plus, you will learn to employ advanced data-analysis techniques to explore quantitative relationships.

How to Use Pop Culture in Your Life Science Class*(Grades 9–College)**208A, Music City Center*

Science Focus: LS3, SEP

Sponsor: Bio-Rad Laboratories

Leigh Brown (*leigh_brown@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Use popular science to engage high school and college students and increase science literacy in your classroom. See how popular TV and movies can be connected to real-world discoveries and issues. Then learn how to use a fun hands-on lab to increase student involvement and understanding.

Preparing Tomorrow’s Scientists: Issues in Inquiry-Based Life Science Education*(Grades 9–College)**208B, Music City Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

Join curriculum development experts in a panel-style discussion on inquiry-based teaching experiences in life sciences. Audience members are encouraged to participate in discussions and ask questions relevant to inquiry teaching strategies for high school and college-level learners, development of inquiry based curricula, and challenges associated with inquiry lessons.

Fantastic Physical Science Demonstrations from Flinn Scientific*(Grades 9–12)**209A, Music City Center*

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Gus Alvarez and **Janet Hoekenga**, Flinn Scientific, Inc., Batavia, Ill.

Amaze your students with quick demonstrations that teach common physical science topics, including density, motion, force and equilibrium, rotation, waves, light and color, energy, pressure, and scientific inquiry. More than a dozen effective demonstrations will be performed. Handouts for all activities.

Engage with NGSS Using STEM Gauge™*(Grades 6–8)**209B, Music City Center*

Science Focus: GEN, NGSS

Sponsor: Measured Progress

Susan Tierney and **Janet Dykstra**, Measured Progress, Dover, N.H.

Learn strategies for transitioning to NGSS and gathering evidence of three-dimensional learning using STEM Gauge formative assessment tools. This interactive workshop high-

lights a variety of classroom strategies to engage students with assessment questions, rubrics, and self-reflection templates. Participants will get a free Middle School STEM Gauge tool set!

Project-Based Inquiry Science™ (PBIS): Creating “Coherence and Science Storylines” for Middle School Science—Grades 6–8*(Grades 6–8)**209C, Music City Center*

Science Focus: GEN, NGSS

Sponsor: It’s About Time

Mary Starr (*mary@starrscience.com*), Michigan Mathematics and Science Centers Network, Plymouth

Join us to learn about “Coherent Storylines” and explore the power of clearly articulated middle school science content storylines developed around answering a Big Question and addressing a Big Challenge. Investigate the storyline for a PBIS ecology/water quality unit, *Living Together*, and discuss the nature of scaffolded, carefully ordered investigations that help students actively engage in answering questions and addressing a challenge. Formative and summative assessments included.

Is Cancer in My DNA?*(Grades 9–College)**210, Music City Center*

Science Focus: LS3, CCC1

Sponsor: Fisher Science Education

Robert Marshall (*robert.marshall@thermofisher.com*), Fisher Science Education, Pittsburgh, Pa.

Through a complete hands-on session, help Jane determine if she has a genetic predisposition to colon cancer. Learn how genetic mutations can cause cancer and the role genes have in cancer risk by examining family history and comparing DNA sequencing and lab analysis in this real-life case study.

Human Anatomy Lab: Building from the Inside Out*(Grades 8–College)**212, Music City Center*

Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

Chuck Roney, Retired High School Teacher, Haddonfield, N.J.

Get introduced to a new method of learning anatomy and physiology. We will discuss how to teach skeletal, muscular, and other body systems in a powerful, kinesthetic way using clay. This approach is a perfect fit to help integrate NGSS and STEM practices into your classroom. Come build your muscles in clay!

Living By Chemistry: What Shape Is That Smell?

(Grades 9–12)

214, Music City Center

Science Focus: PS

Sponsor: Bedford, Freeman, & Worth High School Publishers
Jeffrey Dowling, Bedford, Freeman & Worth and W.H. Freeman & Co., New York, N.Y.

Teach rigorous chemistry with guided inquiry! Let's explore activities that help students understand molecular structure and other core chemistry concepts using the context of smell. Take home free sample lessons and materials from the *Living By Chemistry* (2nd ed.) curriculum.

10 Creative Ways to Read, Write, and Think Like a Scientist

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Patti Duncan, Discovery Education, Silver Spring, Md.

Is literacy all you talk about in your school? Prepare to leave with 10 practical research-based literacy strategies that you can implement throughout your science classrooms. Ensure that all of your students are reading, writing, and thinking like scientists.



8:00–10:00 AM Hands-On Workshop

Elementary Extravaganza

(Grades P–6)

Grand Ballroom A, Music City Center

Science Focus: GEN

Sponsored by Carolina Biological Supply, College of Education and Human Services at Central Michigan University, Delta Education, and Educational Innovations.

Organized by **Linda Froschauer** (fro2@me.com), 2006–2007 NSTA President, Pasadena, Calif.

Visit bit.ly/1pz9aES for a complete list of Extravaganza participants or please pick up a program at the door.

This Extravaganza is not to be missed! Join elementary groups of professionals for an exceptional opportunity. Gather resources for use in your classroom immediately. Engaging hands-on activities, strategies to excite and encourage your students, a preview of the best trade books available, information about award opportunities, contacts with elementary science organizations, sharing with colleagues, door prizes, and much more will be available to participants. Walk away with a head full of ideas and arms filled with materials.

Organizations participating in the Elementary Extravaganza include Association of Presidential Awardees in Science Teaching, Council for Elementary Science International, NSTA Preschool Elementary Committee, *Science & Children* authors and reviewers, and Society of Elementary Presidential Awardees.

8:00–11:00 AM Hands-On Workshop

NGSS Toolkit Pathway Session: Learning About the BSCS 5E Instructional Model to Design NGSS Learning Sequences

(Grades 6–College)

Legends B, Omni

Science Focus: GEN, NGSS

Jody Bintz (@JBintzBSCS; jbintz@bscs.org), BSCS, Colorado Springs, Colo.

Kathy DiRanna (kdirann@wested.org), K–12 Alliance/WestEd, Huntington Beach, Calif.

Come compare classroom scenarios to learn the different phases of the BSCS 5E (Engage, Explore, Explain, Elaborate, and Evaluate) Instructional Model to plan for NGSS learning sequences.

BRING AEROSPACE



INTO YOUR SPACE

LAUNCH INTO

science, technology, engineering, and math with the National Air and Space Museum's webcast series, STEM in 30. Each fast-paced, 30 minute episode is broadcast LIVE from the floor of the museum.

STEM in 30 webcasts are perfect for students in the sixth to eighth grades and feature interviews with experts, demonstrations, animations, student experiments, challenges, audience polls, and viewer questions.

A dynamic teaching tool, the STEM in 30 website is designed to allow classrooms to get directly involved with the live broadcast. Viewers can participate online by sending in questions and answering polls, connecting students directly to museum experts from anywhere in the world.



2016 Schedule

- April 20** Kites
- May 11** Helicopters
- May 25** Moon Rocks
- June 15** Milestones of Flight: Lunar Module
- September 14** Science on the Station
- September 28** Star Trek 50th Anniversary
- October 19** Hot Air Balloons
- November 16** Landing on Other Planets
- December 14** Wright Brothers



Smithsonian
National Air and Space Museum

Watch online at
airandspace.si.edu/stemin30

facebook.com/stemin30
 [@stemin30](https://twitter.com/stemin30)



8:00 AM–12 Noon Short Courses

What Lies Beneath Our Feet? Using Remote-Sensing Technologies to Better Understand the World (and the Ice Sheets) Beneath Us! (SC-5)

(Grades 6–12) Tickets Required; \$45 Capitol 1, Sheraton
Science Focus: ESS2, ESS3.D, SEP1, SEP2, SEP3, SEP4, SEP7, SEP8

Susan Bromley Kelly (sbkelly2@illinois.edu), University of Illinois at Urbana–Champaign

Sridhar Anandakrishnan (sak@essc.psu.edu), Pennsylvania State University, University Park

Susan Schwartz (sschwartz@ucsc.edu), University of California, Santa Cruz

For description, see Volume 1, page 55.

Project-Based Learning Using Case Studies to Teach AP or IB Biology (SC-6)

(Grades 9–12) Tickets Required; \$75 Capitol 2/3, Sheraton
Science Focus: LS, SEP2, SEP7

Kristen Daniels Dotti (kdotti@vvsaz.org), Verde Valley School, Sedona, Ariz.

For description, see Volume 1, page 55.

Garrett A. Morgan Technology and Transportation Education Program (GAMTTEP): STEM in Motion (SC-7)

(Grades K–8) Tickets Required; \$35 Capitol 4, Sheraton
Science Focus: ESS3.C, ETS, CCC, SEP

Meiko Thompson (@journee97; meiko.thompson@knox-schools.org), Knox County Schools, Knoxville, Tenn.

Sondra LoRe (sondra@utk.edu), **Karena Ruggiero, Jerry Everett** (jeverett@utk.edu), and **Jennifer Richards** (jennifer.richards@utk.edu), The University of Tennessee, Knoxville

Rebecca Sneed (rebecca.sneed@blountk12.org), Blount County Schools, Maryville, Tenn.

Becky Ashe (becky.ashe@knoxschools.org), Chairperson, NSTA Nashville National Conference, and L&N STEM Academy and Knox County Schools, Knoxville, Tenn.

For description, see Volume 1, page 55.

8:20–8:40 AM Presentation

SCST Session: STEM Research Experiences for Pre-service Science Teachers

(College) Ryman One, Renaissance
Science Focus: GEN, CCC1, CCC2

Julie Angle (@sciedu4u; julie.angle@okstate.edu), Oklahoma State University, Stillwater

Hear how STEM and science education faculty joined forces to provide preservice science teachers with a STEM research experience.



8:30–9:00 AM Presentations

Open-Ended Inquiry-Based Instruction in Ecology

(Grades 9–College) 101E, Music City Center
Science Focus: LS2.A, CCC1, SEP3, SEP4

Kristin Bliss (kbliss@randolphcollege.edu), Randolph College, Lynchburg, Va.

Have your students grow in their appreciation of ecology as they engage in novel lab experiments on global warming and plant growth.

Integrating Literacy Techniques Without Sacrificing Content

(Grades 7–12) Acoustic, Omni
Science Focus: GEN, CCC, SEP4, SEP7

Kelly Ramey (@kellyramey; kramey@tntech.edu), Tennessee Tech University, Cookeville

With limited class time, it is important to use high-leverage practices that both address content and increase student skill in the literacy standards. We will explore some activities and related ways of assessing student learning that will meet both content and literacy requirements.

Using Active Learning Strategies to Impact Non-Science Majors' Critical-Thinking Skills

(College) Broadway D, Omni
Science Focus: LS

Megan Litster (mlitster@uwlax.edu) and **Teresa Mika** (tmika@uwlax.edu), University of Wisconsin–La Crosse

Hear how active learning strategies can be employed to create more scientifically minded students in a biology course for nonmajors.

From Novice to Expert—Supporting Student Independence and Metacognition in Problem Solving

(Grades 9–12) Cumberland 5, Omni
Science Focus: PS, SEP5

Laura Wang (laura.wang@kstf.org), School of the Future, Moorestown, N.J.

Join me as I cover the nature of solving problems and present classroom-ready scaffolds that support teaching mathematical problem-solving skills in physical science.

8:30–9:30 AM Featured Presentation**3D Prions: Discovering a Unifying Etiology for Neurodegenerative Disorders, Including Alzheimer's and Parkinson's Diseases***(Grades 7–College)**Davidson AI, Music City Center*

Science Focus: PS



Stanley Prusiner, Professor of Neurology and Biochemistry, and Director, Institute for Neurodegenerative Diseases, University of California, San Francisco

President: Sally Pardue, Stringing It All Together: Three-Dimensional Learning Strand Leader, and Director, Oakley STEM Center and Associate

Professor of Mechanical Engineering, Tennessee Technological University, Cookeville

What will it take to cure Alzheimer's, Parkinson's, Lou Gehrig's, and other devastating diseases of the brain? Join Nobel Prize winner Stanley Prusiner as he shares his groundbreaking research and discovery of prions—infectious proteins that replicate and cause disease but surprisingly contain no genetic material. Mounting evidence argues that prions feature in the pathogenesis of many, if not all, neurodegenerative diseases. Such disorders include Alzheimer's, Parkinson's, Lou Gehrig's, and Creutzfeldt-Jakob diseases as well as the frontotemporal dementias. To date, there is not a single drug that halts or even slows one neurodegenerative disease, but his research stands at the forefront for the development of eventual cures.

Stanley B. Prusiner is director of the Institute for Neurodegenerative Diseases and professor of Neurology and Biochemistry at the University of California San Francisco (UCSF). He was awarded the Nobel Prize in Physiology or Medicine in 1997 for his discovery of prions—proteins that acquire an alternative shape that becomes self-propagating—as an explanation for the cause of bovine spongiform encephalopathy (“mad cow disease”) and its human equivalent, Creutzfeldt-Jakob disease. Much of his current research focuses on developing therapeutics that reduce the levels of the specific prions responsible for Alzheimer's, Parkinson's, MSA, and other neurodegenerative diseases.

Dr. Prusiner's recently published book Madness and Memory chronicles his discovery of prions. He holds 50 United States patents. In 2009, President Obama awarded him with the National Medal of Science.

8:30–9:30 AM Exhibitor Workshop**Forensic DNA Activities and More with K'NEX Education's DNA, Replication, and Transcription Set***(Grades 7–12)**108, Music City Center*

Science Focus: LS

Sponsor: K'NEX Education®

Robert Jesberg, K'NEX Education, Hatfield, Pa.

CSI has heightened students' interest in forensics and DNA fingerprinting. Let's build on that interest to strengthen their understanding of DNA concepts and processes. You will build actual K'NEX Education DNA models to examine a DNA ladder, structure, the double helix, and more. Also, explore mRNA, replication, transcription, and translation.



8:30–10:30 AM Roundtable

Exemplary Science Programs (ESP) Meeting Current Reform Efforts

(General) *Broadway A/B, Omni*
Science Focus: GEN, CCC

Kim Sadler (*kim.sadler@mtsu.edu*), Middle Tennessee State University, Murfreesboro

Pradeep Dass (*@PradeepMDass*; *pradeep.dass@nau.edu*), Northern Arizona University, Flagstaff

Stephen Pompea (*spompea@noao.edu*), National Optical Astronomy Observatory, Tucson, Ariz.

Jyoti Gopal (*jpgopal@riverdale.edu*) and **Ella Pastor** (*epastor@riverdale.edu*), Riverdale Country School, Bronx, N.Y.

Jeff Weld (*@IowaSTEM*), Iowa Governor's STEM Advisory Council, Cedar Falls

Kristy Kidd (*@kristyakidd*), University of Arkansas at Little Rock

Renee Clary (*rclary@geosci.msstate.edu*), Mississippi State University, Mississippi State, Miss.

Presider: Jeff Weld

The Four Goals/Justifications for Science were used by the *National Science Education Standards (NSES)*—first offered by Project Synthesis in 1981 in K–16 settings. The *NSES*, in turn, was used as a guide in the development of the recent *Next Generation Science Standards (NGSS)*. The goals indicate what students should experience while: 1) Doing Science; 2) Solving Personal Problems; 3) Solving Societal Problems; and 4) Making Career Choices.

The former NSTA book series *Exemplary Science Programs*, *ESP* identified people and places where the reforms recommended have been achieved. The exemplars include: 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; 7) Exemplary Science for Resolving Societal Challenges; 8) Exemplary Programs for Building Interest in STEM Careers; and 9) Exemplary College Science Teaching; and 10) Exemplary STEM Programs: Designs for Success. The series was conceived by Robert E. Yager (1982–1983 NSTA President), who continues *ESP* searches and ways of recognizing classroom successes while also encouraging more to try!

8:30–10:30 AM Meeting

Aerospace Programs Advisory Board Meeting

Gibson Boardroom, Omni

8:40–9:00 AM Presentation

SCST Session: Creating an Authentic Research Experience in a General Biology Lab Using the Experience of Publishing

(College) *Ryman One, Renaissance*
Science Focus: LS, CCC1, CCC2

Donald French (*dfrench@okstate.edu*) and **Lance Forshee** (*lance.forshee@okstate.edu*), Oklahoma State University, Stillwater

Come see how we used publishing to create an authentic research experience for biology undergraduates, and how this experience changed their perception of lab.

8:40 AM–3:30 PM Short Course

Retaining Excellent Science Teachers: Finding and Sustaining Teachers' Voices in Science Education (SC-8)

(General) *Tickets Required; \$70 Shelby Bottoms Nature Center*
Science Focus: GEN

Vicki H. Metzgar (*@midtnstem*; *vicki.metzgar@gmail.com*), Middle Tennessee STEM Innovation Hub, Belmont University, Nashville

Sandra Merriam (*smerriam@sc.rr.com*), Center for Courage & Renewal, North Myrtle Beach, S.C.

For description, see Volume 1, page 56.

9:00–10:30 AM Hands-On Workshop

PLI McREL Pathway Session: GreenSTEM: Transforming Your Existing Lessons to Be Community Relevant and Project Based

(General) *Legends A, Omni*
Science Focus: GEN, CCC

Laura Arndt (*laura.arndt1@gmail.com*), McREL International, Denver, Colo.

Work with the GreenSTEM model and tools to make a lesson relevant and empowering to your students. Let them apply their STEM knowledge and strategies to design and implement solutions for a local sustainable problem.

9:00–10:30 AM Exhibitor Workshop
Beyond the Flipped Classroom: A Pedagogical Pilgrimage

(Grades 6–12) Grand Ballroom C2, Music City Center
 Science Focus: GEN, INF

Sponsor: Carolina Biological Supply Co.

Aaron Sams (aaron@flippedclass.com), Sams Learning Designs, LLC, Pittsburg, Pa.

Don't flip your class...at least don't flip just for the sake of flipping. Join us to ask the hard questions and probe beyond the latest trends in pedagogy to the heart of a teacher's high calling—engaging each student to learn and grow to their fullest potential. Learn from one of the pioneers of flipped learning on how to launch from a flipped classroom to an active one.

9:00 AM–5:00 PM Exhibits

Hall B, Music City Center

The NSTA Exhibit Hall is a must-see! NSTA brings you the leading science education companies and organizations to showcase products, services, curricula, and much more. You'll discover something new and exciting in the world of science teaching. Some exhibitors will offer materials for sale.

9:00 AM–5:00 PM Networking Opportunity
NSTA International Lounge

Mockingbird 1, Omni

Please stop by the NSTA International Lounge to relax or meet colleagues while you're at the conference. The lounge is open Thursday through Saturday, 9:00 AM–5:00 PM.

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9:15–11:15 AM Hands-On Workshop

INF Science in the Community Share-a-Thon

(General) *Broadway E, Omni*

Science Focus: INF, CCC, SEP

Tanya Breeling (*tbreeling@dmns.org*), Denver Museum of Nature & Science, Denver, Colo.

Cary Busby (*cary@themuseknoxville.org*), The Muse Knoxville, Tenn.

Sarah Carter (*scarter@tpt.org*), Twin Cities Public Television, St. Paul, Minn.

Alex Eilers (*alex.eilers@memphistn.gov*), The Pink Palace Museum, Memphis, Tenn.

Tiffany Ellis Farmer (*tfarmer@adventuresci.org*), Adventure Science Center, Nashville, Tenn.

Josie Fox (*teacherworkshops@sandiegozoo.org*) and **Kimberly Kutina** (*teacherworkshops@sandiegozoo.org*), San Diego Zoo Institute for Conservation Research, Escondido, Calif.

Alex Hamilton (*alex.hamilton@cityofpaloalto.org*), Palo Alto Junior Museum & Zoo, Palo Alto, Calif.

Eric Hamilton (*ehamilton@amnh.org*), American Museum of Natural History, New York, N.Y.

Janice Harvey (*jharvey@gemini.edu*), Gemini Observatory, Hilo, Hawaii

Brian Kruse (*bkruse@astrosociety.org*), Astronomical Society of the Pacific, San Francisco, Calif.

Tina Lanese (*tina@sciencebuddies.org*), Science Buddies, Milpitas, Calif.

Eric Muller (*emuller@exploratorium.edu*), Exploratorium, San Francisco, Calif.

Carolyn Ng (*carolyn.y.ng@nasa.gov*), NASA Goddard Space Flight Center, Greenbelt, Md.

Deb Novak (*deb.novak@state.nm.us*), New Mexico Museum of Natural History and Science, Albuquerque

Chris Schaben (*chris.schaben@ops.org*), Omaha (Neb.) Public Schools

Dennis Schatz (*schatz@pacsci.org*), NSTA Director, Informal Science, and Pacific Science Center, Seattle, Wash.

Brad Tanner, Mote Marine Laboratory & Aquarium, Sarasota, Fla.

Allison Taylor, National Geographic Education, Washington, D.C.

President: Elsa Bailey, Elsa Bailey Consulting, San Francisco, Calif.

Come meet and engage with folks that bring exciting resources, programs, and opportunities available to you from museums, after-school programs, media, and other science providers!



9:30–9:50 AM Presentation

SCST Session: How Prepared Are First-Year College Students to Learn About Cellular Respiration in Introductory Biology?

(Grades 9–College) *Ryman One, Renaissance*
Science Focus: LS, CCC1, CCC2

Chelsea Fortenberry (*chelsea.fortenberry@okstate.edu*), **Lance Forshee** (*lance.forshee@okstate.edu*), and **Donald French** (*dfrench@okstate.edu*), Oklahoma State University, Stillwater

Come listen to our progress determining how prepared incoming biology students are for cellular respiration. Our results will help attendees plan their approach in teaching this topic!

9:30–10:30 AM Featured Presentation**The Tinker.Make.Innovate. Program**

(General)

102 A/B, Music City Center

Science Focus: GEN

Sponsored by Shell

Jean Kaneko, Founder and Chief Tinkerer, The Exploratory, Culver City, Calif.

President: Margie Hawkins, Program Coordinator, NSTA Nashville National Conference, and Winfree Bryant Middle School, Lebanon, Tenn.

The Tinker.Make.Innovate. Program brings together design thinking, systems thinking, making, and standards to create Project-Based Learning opportunities for students—preschool to high school. Join the Exploratory’s founder and “Chief Tinkerer” as she shares case stories from the Los Angeles schools’ THE STEAM program, as well as Genius Hour/20% Time programs, which provide connected learning that is challenging, engaging, and inspiring.

Jean Kaneko has decades of experience in creating artistic and education applications using new technologies like computer graphics, special effects, HDTV programming, stereo IMAX films, theme park attractions, and online content. Her obsession with creative uses of technologies led her to establish The Exploratory, which creates Maker programs for schools—preschool to high school. In addition to creating Tinker.Make.Innovate., a multidisciplinary learning system, Jean was also the chief architect of the Tinkering and Making toolkit for Pearson Foundation’s Project Mash and she has provided professional development to educators on the development of innovative thinking programs that incorporate STEAM, design thinking, and systems thinking to prepare students of all ages for a rapidly changing, unknown future. Jean and her team at The Exploratory teach STEAM and design thinking classes at schools all over Los Angeles, California.

9:30–10:30 AM Meeting**Development Advisory Board Meeting***Executive Boardroom, Music City Center***9:30–10:30 AM Presentations****See How an NSTA Student Chapter Is Impacting K–6 Science Learning Through an Informal Education****INF Program***(Grades K–6/College)**103B, Music City Center*

Science Focus: INF, NGSS

Stephanie Coy (sscoy@iupuc.edu), Inglewood Elementary School, Nashville, Tenn.

Kate Baird (kabaird@iupuc.edu), Indiana University–Purdue University Columbus

Join us to see how one NSTA student chapter is delivering inquiry-based lessons not received by K–6 learners in local classrooms.

Using Technology to Engage Parents and Differentiated Instruction*(Grades 1–12)**104A, Music City Center*

Science Focus: ETS2

Joy Burton (@drdoolittle10; drdoolittle10@gmail.com), Sutter Middle School, Winnetka, Calif.

Ashley Burton (@beautifulrefuge; beautifulrefuge@gmail.com), Calabasas High School, Calabasas, Calif.

Who are the key players missing in your school community? Grab your parents’ attention with teacher websites that engage and increase student achievement in science!

Adapting Chemistry Lessons to Fulfill the Spirit of the NGSS*(Grades 6–College)**104B, Music City Center*

Science Focus: PS1, PS4.D, CCC, SEP

Patti Schaefer (@PattiSchaefer), Madison (Wis.) Metropolitan School District

Meaghan Cells (@MsCellsChem), Brookline High School, Brookline, Mass.

Join NGSS@NSTA Curators in learning how to adapt lessons to support the three-dimensional learning that meets the NGSS.

Use Art to Increase Scientific Literacy in Elementary Students with Special Needs*(Grades K–6)**106A, Music City Center*

Science Focus: GEN

Juan Catalan (jcvinxela@aol.com), 75th Street Elementary School, Los Angeles, Calif.

Come learn best practices that use basic art skills to build background and academic science content in students who are intellectually delayed.

INF Teachers' Voices in Building STEM Education Ecosystems and in STEM Leadership

(General) Davidson A2/3, Music City Center

Science Focus: GEN, INF, NGSS

Mike Town (*mtown01@msn.com*), Tesla STEM High School, Redmond, Wash.

Marguerite Murphy (*margo.murphy@fivetowns.net*), Camden Hills Regional High School, Rockport, Maine

K. Renae Pullen (*@krenaep; renaepullen@hotmail.com*), Caddo Parish Public Schools, Shreveport, La.

Steve Long (*stevejlong@gmail.com*), Rogers High School, Rogers, Ark.

Presider: Jay Labov (*jlabov@nas.edu*), National Academy of Sciences, Washington, D.C.

Discussion centers on the implications of two reports from the National Academies' Teacher Advisory Council that focus on teacher leadership and teacher roles in evolving STEM education ecosystems.

NGSS@NSTA NGSS@NSTA Forum: Using Three-Dimensional Standards to Plan Instruction and Assessment

(Grades K–12) Grand Ballroom C1, Music City Center

Science Focus: GEN, NGSS

James Short (*jshort@amnh.org*) and **Dora Kastel** (*@Dora_AMNH; dkastel@amnh.org*), American Museum of Natural History, New York, N.Y.

Presider: Ted Willard (*twillard@nsta.org*), Program Director, NGSS@NSTA, NSTA, Arlington, Va.

This session will provide an overview of five NGSS tools and professional learning processes for helping teachers translate standards into three-dimensional instruction and classroom assessment.

How to Implement STEM and the NGSS into Your Classroom Through the Use of NSTA Competitions

(Grades K–12) Broadway D, Omni

Science Focus: GEN, NGSS

Sue Whitsett, AEOP Project Director, NSTA, Arlington, Va.

Amanda Upton (*aupton@nsta.org*), Manager, Nominations and Teacher Awards Programs, NSTA, Arlington, Va.

Acacia McKenna (*amckenna@nsta.org*), Director, Competitions, NSTA, Arlington Va.

Sarah Beistel (*@Bright_Schools; sbeistel@nsta.org*), Program Manager, Science Education Competitions, NSTA, Arlington, Va.

Hear about various NSTA competitions and how they can bring STEM and the NGSS into the classroom, as well as give students and teachers a chance to earn prizes. Enjoy free food and take home a gift bag.

Differentiation with Explain Everything™

(General) Broadway G, Omni

Science Focus: GEN, CCC, SEP1

Alicia Johal (*@ALICIAJOHAL; aliciajohal@gmail.com*) and **Marielle Venturino** (*@msventurino; mari.venturino@gmail.com*), Mar Vista Academy, San Diego, Calif.

Use iPad video-creation apps as scaffolds to write amazing lab reports—support literacy for all, especially for long-term English language learners!

Pi in the Sky

(Grades 6–College) Broadway J, Omni

Science Focus: ESS2.E, PS1.A, ETS1, ETS2.A, SEP3, SEP4, SEP6, SEP8

Michael Davis (*@MDSscience; mdavis@ccc.edu*), Wilbur Wright College, Chicago, Ill.

Learn how open-source electronics like the Raspberry Pi and Arduino are used in high-altitude ballooning projects.

INF ASTC Session: Carnegie STEM Excellence Pathway: Journey to STEM Success

(Grades P–12) Cumberland 1, Omni

Science Focus: INF

Jason Brown (*@CSCDSE; brownj@carnegiesciencecenter.org*), Carnegie Science Center, Pittsburgh, Pa.

Learn about an initiative built upon the belief that schools and educators can improve their STEM education practices through a positive collaborative approach.

Using Student-Created Digital Products in a Technology-Rich Science Learning Environment

(Grades 6–8) Cumberland 4, Omni

Science Focus: GEN, SEP8

R. Thomas Layfield (*@LayfieldSCI; rlayfield@jackson.k12.ga.us*) and **Tiffany Barnett** (*tpbarnett@jackson.k12.ga.us*), East Jackson Middle School, Commerce, Ga.

Come see examples of technology-based science classroom experiences in which student learning is enhanced through digital product creation.

Forensics on the Fly

(Grades 6–12) Cumberland 5, Omni

Science Focus: GEN

Kristie Cannon (*kcannon@hoover.k12.al.us*), Spain Park High School, Birmingham, Ala.

Hear about budget-friendly, easy setup labs and activities for your forensic science program.

Science Performance Tasks as the Application of Math and Language Arts

(Grades 6–8)

Legends C, Omni

Science Focus: LS4.B, PS4, CCC3, CCC7, SEP4, SEP5, SEP8

Nancy Kenyon (nkenyon@etsd.org) and **Andrew Kasprisin**, Essex Middle School, Essex Junction, Vt.

We will present two performances tasks that incorporate the CCSS as well as physical science from the NGSS.

Hollywood BAD Science

(Grades 6–College)

Legends D, Omni

Science Focus: GEN, SEP2, SEP4, SEP7

Daryl Taylor (@DarylScience; daryl261@gmail.com), Retired Educator, Naugatuck, Conn.

Learn how to use popular media to either crush misconceptions or reinforce class topics. All videos used will be shared with participants and freebies to all.

Effective Professional Development Approach for Teachers and Districts

(General)

Music Row 1, Omni

Science Focus: GEN, SEP

Arthur Eisenkraft (arthur.eisenkraft@umb.edu), 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.

What are the necessary elements for teachers engaging in professional development to assist them and their school districts while creating communities of learners and leaders? Join me and find out.

Authors Needed! Share Your Teaching Ideas in an NSTA Journal

(General)

Music Row 2, Omni

Science Focus: GEN

Ken Roberts, Assistant Executive Director, Journals, NSTA, Arlington, Va.

Meet with NSTA journal editors to learn how to prepare and submit an article for publication.

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Safer STEM Activities Through Collaboration!

(Grades 1–12)

Music Row 3, Omni

Science Focus: ETS2, SEP

Kenneth Roy (@drroysafersci; royk@glastonburyus.org), Glastonbury (Conn.) Public Schools

Tyler Love (@UMES_Tech_Dept; tslove@umes.edu), University of Maryland Eastern Shore, Princess Anne

Trading in beakers for power tools in doing STEM activities? Hear how collaboration is critical to address potential hazards and make it safer before they become liability issues!

NSELA Session: Bring the Practice into Your Science Classrooms!

(Grades 6–8)

Music Row 4, Omni

Science Focus: GEN, SEP

Pamela Caffery, Hillsborough County Public Schools, Tampa, Fla.

Let's examine how to motivate teachers to practice literacy skills as part of guided inquiry units of instruction. Sample units are available.

NARST Session: Implementing STEM Design Challenges at the Middle School Level

(Grades 5–9)

Fisk One, Renaissance

Science Focus: GEN, SEP1, SEP6

Tamara Nelson (@tbuddhiker; tnelson1@vancouver.wsu.edu), **Kristin Lesseig** (kristin.lesseig@vancouver.wsu.edu), and

David Slavitt (dslavitt@vancouver.wsu.edu), Washington State University Vancouver

We describe how teachers addressed the challenges of implementing STEM design challenges with diverse students in a traditional middle school context.

Developing Teachers into Master Educators and Leaders: National Board Certification

(Grades P–11)

West Ballroom, Renaissance

Science Focus: GEN

Lisa Swenson (lisaswenson@newmanschool.org), Isidore Newman School, New Orleans, La.

Examine the process of National Board Certification and discover how this rigorous professional development process can deepen content and pedagogical knowledge.

9:30–10:30 AM Hands-On Workshops



NSTA Press® Session: It's Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12

(Grades K–12)

101C, Music City Center

Science Focus: ETS, CCC1, CCC2

Sami Kahn (samikahn@mail.usf.edu), Collegiate School, New York, N.Y.

Join me as I model the use of controversial societal issues related to science to develop students' scientific literacy.



Exploring Engineering Practices

(Grades 9–12)

101E, Music City Center

Science Focus: ESS, ETS, LS, PS, SEP

Brooke Whitworth (@bawhit41; brooke.whitworth@nau.edu), Northern Arizona University, Flagstaff

Lindsay Wheeler (lsb4u@virginia.edu) and **Jennifer Maeng** (jlc7d@virginia.edu), University of Virginia, Charlottesville

We will illustrate engineering design practices and provide a hands-on experience with an engineering design format that can be used in high school biology, chemistry, Earth science, and physics classrooms. Handouts!

3D Sound Through the Ages—From Cluckers to Pluckers

(Grades K–5)

103A, Music City Center

Science Focus: ETS1, PS4, CCC, SEP

Patricia Maze (@AMSTI-Athens; patricia.maze@athens.edu) and **Dennis Engle** (dennis.engle@athens.edu), AMSTI-Athens, Ala.

Emily McGahee (@AMSTI-Athens; emily.mcgahae@athens.edu), Athens State University, Athens, Ala.

Travel through the ages as we explore sound waves through inquiry learning with the implementation of the engineering design process and integration of technology.



Constructing Science Explanations Using Reading and Writing Strategies to Support Grades 6–8 Students

(Grades 5–9)

103C, Music City Center

Science Focus: GEN, SEP8

Allyson Nusser (anusser@amnh.org), American Museum of Natural History, New York, N.Y.

Andrea Bonosoro (abonosoro@schools.nyc.gov), J.H.S. 185 Edward Bleeker, Flushing, N.Y.

We will use AMNH-developed resources to help middle school students use reading strategies and writing tasks to construct science explanations.

Daytime Astronomy: Elementary Celestial Navigation*(Grades 5–8)* 104C, Music City Center

Science Focus: ESS, CCC1, SEP3, SEP4, SEP5

Philip Sadler (psadler@cfa.harvard.edu), Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.

Figure out one's latitude and longitude from measurements of the Sun's height using simple quadrants, which we will construct. Leave with all materials to conduct this activity in your grades 5–8 classroom.

Using Density to Teach Earth Science Concepts*(Grades 6–12)* 104D, Music City Center

Science Focus: ESS2.A, ESS2.B

Joshua Roberts (robertsjo@watauga.k12.nc.us), Watauga High School, Boone, N.C.**Sam Fuerst** (samuel_fuerst@dpsnc.net), Northern High School, Durham, N.C.

Help your students understand plate tectonics and isostasy by using water displacement to measure the density of continental (granite) and oceanic (basalt) crust to explain plate interactions.

Stellar Evolution—From Star Formation to Catastrophic Destruction*(Grades 6–12)* 104E, Music City Center

Science Focus: ESS1, PS1, PS2.B, PS2.C, PS3.C, PS4.B, PS4.C, CCC7, SEP2, SEP7, SEP8

Donna Young (dlyoung.nso@gmail.com), Chandra X-Ray Center, Bullhead City, Ariz.

Model star and planet formation and destruction using images from NASA missions, including stellar nurseries, protostars, supernovas, white dwarfs, neutron stars, pulsars, and black holes.

STEM Learning: An Integrated Teaching Model*(Grades 6–College)* 105A, Music City Center

Science Focus: GEN, SEP

Patricia Simmons (patricia_simmons@ncsu.edu), 2011–2012 NSTA President, and North Carolina State University, Raleigh

Come join this interactive session on how teachers can translate and implement science and engineering practices featuring selected STEM concepts for middle school and high school students.

Using Web-Based GIS to Investigate Rain Forest Conservation Issues in the Brazilian Amazon*(Grades 9–12)* 105B, Music City Center

Science Focus: LS2.A, LS2.B, LS2.C, LS4.D, CCC3, CCC4, CCC5, CCC7, SEP1, SEP4, SEP7, SEP8

Carol Burch (cburch129@gmail.com), Hannibal High School, Hannibal, N.Y.**Nancy Trautmann** (nancy.trautmann@cornell.edu), The Cornell Lab of Ornithology, Ithaca, N.Y.**James MaKinster** (makinster@hws.edu), Hobart and William Smith College, Geneva, N.Y.**Michelle Watkins** (michellewatkins@frontiernet.net), Beaver River Central School, Beaver Falls, N.Y.

Join us to investigate real environmental questions and address important concepts from the NGSS and CCSS using online interactive mapping in this Problem-Based Learning activity.

Model My Watershed: Using Local Data to Make Local Decisions*(Grades 6–12)* 106B, Music City Center

Science Focus: GEN, SEP

Nanette Marcum-Dietrich (@TESMMW; ndietrich@millersville.edu), Millersville University, Millersville, Pa.**Melissa Hess** (@hess_missy; melissa_hess@conestogavalley.org), Conestoga Valley Middle School, Lancaster, Pa.**Carolyn Staudt** (@cjstaudt; cstaudt@concord.org), The Concord Consortium, Concord, Mass.**Tara Muenz** (tmuenz@stroudcenter.org), Stroud Water Research Center, Avondale, Pa.

Find out about a free online application that uses national scientific databases and an online hydrological model to let users make accurate decisions about local watershed issues.

An Integration Plan for NGSS and CCSS: Science, Social Studies, and Math*(Grades K–8)* 106C, Music City Center

Science Focus: GEN, SEP

Jim McDonald (@jimscienceguy; jim.mcdonald@cmich.edu), CESI President, and Central Michigan University, Mount Pleasant**Scott Roberts, Samantha Burko, and Jason Artero**, Central Michigan University, Mount Pleasant

We'll examine the opportunities to integrate science, math, and social studies together and propose a format for an integrated unit and provide examples. Handouts!

National Earth Science Teachers Association (NESTA) Shares: Earth System Science Share-a-Thon

(General) *Davidson B, Music City Center*
Science Focus: ESS

Michael Passow (*michael@earth2class.org*), Dwight Morrow High School, Englewood, N.J.

Carla McAuliffe (*carla_mcauliffe@terc.edu*), TERC, Cambridge, Mass.

Join more than 20 NESTA members and other education specialists as they share their favorite Earth system science classroom activities. Many free handouts!

Manipulative Mania: An Engaging, Student-Centered Approach to Biology

(Grades 8–College) *Broadway C, Omni*
Science Focus: LS, SEP2, SEP8

Megan York (*kate.york@utdallas.edu*) and **Katherine Donaldson** (*katie.donaldson@utdallas.edu*), The University of Texas at Dallas, Richardson

Finding direct instruction a drag? Come explore all types of teacher-created, NGSS-focused biology manipulatives. See how to turn “student centered” into “student success.” Leave with sample materials.

Are Three Trials Enough? Analyzing Investigation Data with Large Variation: How Sample Size Can Actually Change “Conclusions”

(Grades 6–8) *Broadway H, Omni*
Science Focus: GEN, SEP4, SEP5, SEP7

Matthew Mirabello (*mmirabello@amnh.org*) and **Jay Holmes** (*jholmes@amnh.org*), American Museum of Natural History, New York, N.Y.

Account for sample size and variation in the data analysis and conclusion of your science investigation. Reduce “false positives” and support richer data interpretation conversations.

Developing Critical Thinking, Reasoning, Inquiry, and Problem Solving Through Literacy

(Grades 6–12) *Broadway K, Omni*
Science Focus: GEN, CCC1, SEP1, SEP4, SEP5, SEP7, SEP8

Ana Cingel (*@AnaCingel*), Virginia Beach (Va.) City Public Schools

Gain literacy strategies for incorporating scientific reasoning, problem solving, communicating, and decision-making into your daily instruction while meeting the CCSS. Examples and literacy integration best practices from one school district’s literacy initiative will be shared.

Using Systems Modeling to Facilitate Student Conceptual Development

(Grades 6–12) *Cumberland 3, Omni*
Science Focus: GEN, CCC4

Daniel Damelin (*ddamelin@concord.org*), The Concord Consortium, Concord, Mass.

Presider: Joseph Krajcik (*krajcik@msu.edu*), CREATE for STEM Institute, Michigan State University, East Lansing
Learn about and use a new student-focused tool that supports students in constructing, testing, and revising dynamic system models to make sense of phenomena.

Create a Hot Air Balloon in Your Physics Class

(Grades 9–12) *Cumberland 6, Omni*
Science Focus: ETS1, PS, SEP1, SEP2, SEP5

Jeff Pettera (*jpette@clschools.org*), Christian Life High School, Rockford, Ill.

Presider: Steve Swed, Christian Life High School, Rockford, Ill.

Using Archimedes’ principle of buoyancy and density, explore how to incorporate STEM principles into making hot air balloons.

Waves in Three Dimensions

(Grades 6–8) *Legends E, Omni*
Science Focus: PS4, CCC1, CCC6, SEP2, SEP5, SEP8

Roy Beven (*rbeven@fdalgo.net*), WSTA President, Bellingham, Wash.

Presider: Jenna Porter (*jmporter@csus.edu*), California State University, Sacramento

Waves have been added as an NGSS disciplinary core idea for the physical sciences as well their applications in technologies for information transfer. Explore how sound can be modeled with middle school mathematics focusing on wave amplitude and energy (MS-PS4-1).

Wake Up Students with Activities on the Genetics of Sleep Cycles

(Grades 9–College) *Legends G, Omni*
Science Focus: LS, CCC4, SEP2, SEP4, SEP6

Hillary Lauren (*@ImpactSciEd*) and **Barbara Hug** (*bhug@illinois.edu*), University of Illinois at Urbana-Champaign

Explore free interactive Project NEURON activities on genetics and health, including a game about cutting-edge research on epigenetics and a student-driven investigative case study.

DuPont Presents: Driving Science

(Grades 9–12)

Music Row 5, Omni

Science Focus: ETS1, CCC1, CCC2

Glenda Pepin (*gpepin@clemson.edu*), Clemson University, Clemson, S.C.

Pamela King (*pamelak@clemson.edu*), Clemson University, Greenville, S.C.

Come learn how to connect science content and engineering design. Join us for this hands-on workshop and investigate standards related to Newton’s laws of motion in the context of real-world applications and connections to motorsports. We’ll examine design processes and teaching strategies that build connections across STEM disciplines.

Science as Human Endeavor: Analyzing Historical Primary Sources from the Library of Congress

(Grades K–12)

Center Ballroom, Renaissance

Science Focus: ETS2.B, SEP

Michael Apfeldorf (*@TeachingLC; mapf@loc.gov*) and

John Smith (*@jftrey; jf.trey.smith@gmail.com*), Library of Congress, Washington, D.C.

Bring to life the practices of scientists, as well as the connections between science and society, with hands-on strategies that engage students with scientific notebooks, letters, photos, and drawings.

CALLING ALL MIDDLE SCHOOL EDUCATORS

SATURDAY, APRIL 2, 2016 | 10:00 AM–4:00 PM | OMNI NASHVILLE

Must be registered for the conference to attend

Join us for a special **“Meet Me in the Middle Day,”** designed just for middle school educators, at **NSTA’s 2016 National Conference in Nashville!**

The day’s events will include a networking session, more than a dozen presentations specifically for middle school educators, and an afternoon share-a-thon featuring more than 100 presenters. You’ll walk away with ideas you can put to use in your classroom next week!

Organized by the
National Middle Level Science Teachers Association (NMLSTA)

Attend for a chance to win an iPad mini and other door prizes!



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INF Focused Field Trips: A Three-Pronged Approach to Planning Meaningful Out-of-School Learning Experiences

(Grades P–12)

East Ballroom, Renaissance

Science Focus: INF

Kyla Cook (kcook@fieldmuseum.org), The Field Museum, Chicago, Ill.

Discover how to enhance and extend classroom learning by planning meaningful focused field trip experiences to integrate and connect learning beyond the classroom walls.

ASTE Session: The 50 Cent Microscope/Foldscope

(General)

Fisk Two, Renaissance

Science Focus: GEN

Judith Bazler, **Letitia Graybill** (lgraybil@monmouth.edu), and **Carleigh Engstrom** (@MissEngstrom; s0822221@monmouth.edu), Monmouth University, West Long Branch, N.J.

Two years ago, Manu Prakash, a professor at Stanford University, invented the foldscope. We are one of 10,000 researchers in more than 130 countries that are exploring the use of these microscopes. We'll share our research on how foldscopes can be used in a classroom and in the field, and how they can be used to satisfy the NGSS.

Close Reading in Science: Applying CCSS ELA

(Grades 3–12)

Music City Ballroom, Renaissance

Science Focus: GEN

David Vernot (dvernot@gmail.com), Butler County Educational Service Center, Hamilton, Ohio

Experience Close Reading strategies as you help students dissect passages from a variety of complex texts, read like a detective, identify tiered vocabulary, and use text-dependent questions.

9:30–10:30 AM Exhibitor Workshop

Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics!

(General)

206 A/B, Music City Center

Science Focus: LS, PS

Sponsor: PASCO scientific

Jason Lee (mrlee3@att.blackberry.net), East Georgia State College—Statesboro

Use PASCO's award-winning Wireless Spectrometer and free Spectrometry software to perform introductory spectroscopy experiments for chemistry, biology, and physics on computers as well as Android tablets and iPads. In this hands-on session, you'll analyze emission spectra, absorbance/transmittance spectra, solution concentration data, and reaction kinetics. Three attendees will win a Spectrometer!

9:50–10:10 AM Presentation

SCST Session: Creating the Chemistry in Cellular Respiration Concept Inventory: Our Progress

(College)

Ryman One, Renaissance

Science Focus: LS, CCC1, CCC2

Lance Forshee (lance.forshee@okstate.edu) and **Donald French** (dfrench@okstate.edu), Oklahoma State University, Stillwater

Come listen to our progress in creating the chemistry in cellular respiration CI, and how you can use this information to inform your teaching!

10:00–11:00 AM Exhibitor Workshop

Build, Program, and Control with K'NEX Education's New Robotics Building System

(Grades 5–10)

108, Music City Center

Science Focus: ETS

Sponsor: K'NEX Education®

Robert Jesberg, K'NEX Education, Hatfield, Pa.

This dynamic hands-on building system teaches students how to apply programming skills to operate various built models. You'll be the student in this workshop, as you write your own computer program to control a vehicle model built out of K'NEX! Space limited: 24 working, 20 observing. Arrive early!

10:00–11:30 AM Exhibitor Workshops**AP Environmental: Using Your Stream to Teach STEM-Based Skills***(Grade 12)**107A, Music City Center*

Science Focus: ESS3.C, ETS1.A, ETS1.B, LS2.A, SEP3, SEP4, SEP5, SEP8

Sponsor: LaMotte Co.

Tim Trumbauer, Chester River Association, Chestertown, Md.

Is the stream behind our school healthy? Don't miss this informative workshop with an actual watershed manager that covers field techniques for collecting and analyzing samples, use of public data, common surface water pollutants, and ways to research potential pollution sources. Upon completion, you will be able to use the Water Quality Index to teach STEM-based skills and successfully implement a water quality component to your AP Environmental curriculum.

Amplify Science for Grades 6–8: Experience Three-Dimensional Teaching and Learning with the Newest Curriculum from The Lawrence Hall of Science*(Grades 6–8)**107B, Music City Center*

Science Focus: GEN, CCC

Sponsor: Amplify

Rebecca Abbott and **Traci Wierman**, The Lawrence Hall of Science, University of California, Berkeley

Experience our field-tested, technology-enhanced, 100% NGSS-designed K–8 curriculum. Built around argumentation, digital simulations, modeling tools, hands-on investigations, and explicit disciplinary literacy instruction, Amplify Science engages students with deep dives into understanding the natural and designed worlds. Focusing on middle school, this workshop provides a sneak peek.

Zombie Apocalypse!*(Grades 6–12)**110A, Music City Center*

Science Focus: LS

Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District

Become part of a zombie apocalypse as brains will be served (while supplies last). Learn about disease-spread modeling using simulations and fun storylines about a zombie outbreak. Applicable for middle school and high school, this workshop is sure to scare you and your little zombies into learning how exciting Hollywood themes can be used to teach science concepts.

New and Emerging Infectious Diseases: Host-Pathogen Relationships Highlight NGSS Core Concepts and the Value of Vaccination*(Grades 9–12)**110B, Music City Center*

Science Focus: LS

Sponsor: Pearson Education

Joseph Levine, Author, Boston, Mass.

Bird flu and other diseases seem to appear out of nowhere. What's going on? Narratives about the science behind these phenomena fascinate students and demonstrate the dynamic and constantly changing relationships between hosts and pathogens. Learn to use these narratives to teach in ways that demonstrate the importance of the NGSS...and the value of evolutionary and ecological concepts in medical practice, public health, and students' lives.

Solving the Mystery of STEM Using Forensic Science*(Grades 5–12)**201A, Music City Center*

Science Focus: GEN

Sponsor: Frey Scientific/School Specialty Science

Kathleen Mills, Waterloo High School, Waterloo, N.Y.

Conduct a number of STEM-focused forensic activities that LINK scientific investigations with analysis and investigative skills to solve multifaceted "cases" involving fingerprint, blood spatter, and document analysis. Apply basic mathematics principles and integrate reading and writing strategies. See how the program uses hands-on strategies to meet the NGSS and state standards.

What to Look for in Physical Science Learning Progressions—Experience FOSS K–5*(Grades K–5)**201B, Music City Center*

Science Focus: PS

Sponsor: Delta Education/School Specialty Science—FOSS

Kathy Long and **Brian Campbell**, The Lawrence Hall of Science, University of California, Berkeley

Are you looking for coherent curricular direction in your elementary science program? Join FOSS curriculum developers to investigate learning progressions in grades K–5 using physical science modules from the new FOSS Next Generation program. Find out about transitioning to the newly released FOSS program modules.

Fantastical Chemistry Demos for All Classrooms

(Grades 3–12) *202A, Music City Center*
Science Focus: PS1.A, PS1.B, PS2.B, PS3.A, PS3.B, PS3.D, PS4.B

Sponsor: Educational Innovations, Inc.

William Richey, Xenia High School, Xenia, Ohio

These super fun and exciting chemistry demonstrations can be used by all teachers at any level to get a classroom of students excited about the amazing world of chemistry. These easy and practical demonstrations can truly show your students what we already know—that science is fun!

Biology for NGSS: A New Approach for a New Program (Grades 9–12)

(Grades 9–12) *202B, Music City Center*
Science Focus: LS

Sponsor: BIOZONE International Ltd.

Richard Allan (*richard@biozone.co.nz*), BIOZONE International Ltd., Hamilton, New Zealand

Find the tools you need to successfully implement the high school life science component of the NGSS program in BIOZONE's newest student workbook. This carefully constructed resource is strongly focused on student inquiry and written from first principles to address all aspects of the NGSS system architecture. Attendees receive free books that support the NGSS.

Genes in Space: Send Your DNA Experiment to the International Space Station (ISS)

(Grades 7–College) *202C, Music City Center*
Science Focus: ESS, LS, CCC, SEP

Sponsor: miniPCR

Sebastian Kraves, miniPCR, Cambridge, Mass.

Join Genes in Space, a STEM competition inviting students in grades 7–12 to launch DNA experiments to space. Students design their own space DNA experiments to solve real-world problems. Ten finalists receive mentoring from Harvard/MIT scientists and donations of miniPCR equipment for their schools...and they get to present at the ISS R&D Conference (San Diego). Winners have their experiment performed in the International Space Station using miniPCR!

Hands-On Activities to Model Habitat Preference and Population Sampling

(Grades K–12) *204, Music City Center*
Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Watch and learn! Create a terrestrial model to observe how pill bugs respond to habitat change. Use inquiry to develop

experiments to observe the habitat preference of bess beetles and millipedes. Then investigate the advantages and disadvantages of different sampling methods to estimate population size in habitats. Nurture students' curiosity!

Early Elementary Engineering with Smithsonian: What's New with STC³?

(Grades K–2) *205A, Music City Center*
Science Focus: ETS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

The engineering element of NGSS poses challenges to already time-pressed elementary teachers. The Smithsonian Science Education Center has developed two curriculum units to help teachers develop engineering and science practices through an engaging storyline made available through our publishing partner, Carolina. Experience a grade 1 unit on sound and a grade 2 unit on erosion. Find out how lower elementary students can use scientific knowledge to solve engineering problems. Yes, you CAN teach lower elementary science and engineering in an integrated way!

Engineer Hands-On Chemistry Fun with a Carolina STEM Challenge®!

(Grades 6–12) *205B, Music City Center*
Science Focus: PS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Bounce and blast your way into hands-on chemistry activities that challenge your middle level and high school students to use their critical-thinking skills. Apply the engineering process while exploring the chemistry of rockets and polymers. See how Carolina makes it easy to incorporate STEM into your classroom.

Gas Exchange

(Grades 6–8) *205C, Music City Center*
Science Focus: LS1.A

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Students have many misconceptions about respiration. In this activity from the SEPUP middle level life science program, participants use an acid-base indicator to determine the relative amount of CO₂ gas in a sample of their exhaled breath. They consider differences in individual response, explore qualitative vs. quantitative measures, and examine the structure of the lungs and their role in the process of respiration.

National Earth Science Teachers Association Events at 2016 Nashville NSTA Conference



All NESTA sessions are in *Music City Center, Davidson B*, unless otherwise indicated

Friday, April 1

- 9:30 – 10:30 am Earth System Science Share-a-Thon
- 11:00 am – noon NESTA and HHMI Share: Multimedia Tools and Resources for Teaching Earth Science
- 12:30 – 1:30 pm NESTA and TERC Share: EarthScope Chronicles: The Newberry Volcano
- 2:00 – 3:00 pm Geology Share-a-Thon
- 3:30 – 4:30 pm Rock, Mineral, and Fossil Raffle
- 6:30 – 8:00 pm NESTA Friends of Earth Science Reception, *Hilton Garden Inn, Skyline Junior Ballroom*

Saturday, April 2

- 9:30 – 10:30 am Astronomy Science Share-a-Thon
- 11:00 am – noon American Geophysical Union Lecture, Dr. Linda Kah, Kenneth Walker Professor at UT-Knoxville, *Music City Center, Grand Ballroom C2*
- 12:30 – 1:30 pm NESTA and CIESIN Share: Exploring a Compendium of Online Resources for Teaching Earth Science
- 2:00 – 3:00 pm Atmosphere and Ocean Share-a-Thon
- 3:30 – 4:30 pm Innovative Ways to Teach about Weather Observation and Weather Hazards
- 5:00 – 6:00 pm NESTA Annual Membership Meeting

NESTA gratefully acknowledges the following organizations as sponsors:



Apply the Science of Energy, Motion, and Friction

(Grades 8–12) 207A, Music City Center

Science Focus: PS

Sponsor: Ward's Science

Samantha Bonelli, VWR Science Education, Rochester, N.Y.

Students design and build cutting-edge vehicles to investigate stored energy from sources such as a rubber bands or mousetraps. The kit components—wood chassis, mousetraps, braking systems, and several types of wheels and gears—allow students to develop a greater number of solutions and apply real-world problem-solving skills to create innovative designs.

Patterns and Processes in Ecology

(Grades 6–12) 207B, Music City Center

Science Focus: LS2, CCC1, CCC4, CCC5, CCC7, SEP2, SEP5

Sponsor: HHMI BioInteractive

Mark Nielsen, Howard Hughes Medical Institute, Chevy Chase, Md.

Ben Smith, Palos Verdes Peninsula High School, Rolling Hills Estates, Calif.

Kim Parfitt, Central High School, Cheyenne, Wyo.

What controls the numbers and distributions of animals in their environment? How do animals interact with other species? How do natural patterns arise in nature? These are some questions that generations of ecologists have been studying. This workshop will feature some of our newest media offerings and ready-to-use classroom resources.

Biology with Vernier

(Grades 9–College) 207C, Music City Center

Science Focus: LS, SEP

Sponsor: Vernier Software & Technology

Rick Rutland (info@vernier.com), Five Star Education Solutions, Stockdale, Tex.

Use Vernier sensors to conduct a variety of biology experiments from our popular lab books in this engaging hands-on workshop. Collect and analyze data using LabQuest 2, Logger Pro computer software, and mobile devices. Explore the wide range of tools from Vernier that promotes understanding of biology concepts.

Physics with Vernier

(Grades 9–College)

207D, Music City Center

Science Focus: PS, SEP

Sponsor: Vernier Software & Technology

David Carter (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors to conduct a variety of physics experiments from our popular lab books in this engaging hands-on workshop. Collect and analyze data using LabQuest 2 and Logger Pro computer software. Explore the wide range of tools that promotes understanding of physics concepts.

Project-Based Learning for High School: Sequencing a Plant Species

(Grades 9–College)

208A, Music City Center

Science Focus: LS3, SEP

Sponsor: Bio-Rad Laboratories

Angela Eeds, Vanderbilt Center for Science Outreach, Nashville, Tenn.

A plant sequencing laboratory project was a great addition to our high school biology program. We adapted a commercial plant-based cloning and sequencing kit to engage our students in Project-Based Learning. With the right scaffolding and support, our students gained valuable biotechnology research skills and experience.

Investigate Photosynthesis and Cellular Respiration with Algae Beads

(Grades 6–College)

208B, Music City Center

Science Focus: LS, SEP

Sponsor: Bio-Rad Laboratories

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

Use algae beads in a colorimetric assay to study both photosynthesis and cellular respiration in authentic inquiry investigations (AP Biology Big Idea 2: Labs 5 and 6). Extend this lab to study the effects of light intensity, light color, temperature, and other organisms on these processes.

Infusing Inquiry and Demonstrations into AP Biology

(Grades 9–12)

209A, Music City Center

Science Focus: LS

Sponsor: Flinn Scientific, Inc.

Meg Griffith, Flinn Scientific, Inc., Batavia, Ill.

Join biologists from Flinn Scientific as we share inquiry strategies and techniques for AP, IB, and advanced-level biology courses. Get tips for managing the inquiry process and see demonstrations to help engage your students with the content. Discover the benefits of FlinnPREP™, an

online supplemental curriculum and assessment resource with engaging video content, animations, and text. Handouts!

Pluto: New Horizons and Beyond

(Grades 6–12)

209B, Music City Center

Science Focus: ESS1.B

Sponsor: Simulation Curriculum Corp.

Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.

Using Simulation Curriculum’s award-winning interactive *Starry Night* and its NGSS-ready lessons, we will learn about Pluto’s history and examine the spectacular results of the New Horizons mission. As we explore Pluto’s relationship to other denizens of the Kuiper Belt, we’ll speculate about New Horizon’s next target.

Debunking the Myths of Project-Based Learning: Yes, We CAN!

(Grades 6–8)

209C, Music City Center

Science Focus: GEN, NGSS

Sponsor: It’s About Time

Amanda Wilson (wilsona36@coe.ufl.edu), It’s About Time, Mount Kisco, N.Y.

Skeptical of Project-Based Learning? Concerned about the time and resources required for Project-Based Learning? Join us in debunking the myths of PBL. We will explore how common concerns are just myths and how PBL can be the teaching style that works for you and your students.

The STEM Design Challenge

(Grades 4–8)

210, Music City Center

Science Focus: INF, PS2, PS3, SEP1, SEP2, SEP3, SEP4

Sponsor: Fisher Science Education

Robert Marshall (robert.marshall@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.

Learn how to create and develop questions about force, energy, and motion for an interactive lab. Then, solve an engineering problem using creative and realistic world processes. Finally, support your understanding with fun and exciting team competition.

Make Science Come to Life

(Grades 1–5)

211, Music City Center

Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore,

create, and share discoveries as they build solutions to real-world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students’ confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

Using Science Magazines to Engage Your Students

(Grades 3–10)

212, Music City Center

Science Focus: GEN, INF, CCC1, CCC2, SEP

Sponsor: Scholastic, Inc.

Mara Grunbaum and **Amy Barth**, Scholastic Inc., New York, N.Y.

Scholastic® classroom magazine editors team up with teachers to show you how you can use science magazines to engage your students while meeting NGSS and English language arts standards. We’ll show you easy ways to integrate science and engineering practices, informational text skills, and exciting current science discoveries that are too new for textbooks.

Making Critical Thinking More Than Just a Cliché Using Three-Dimensional Learning

(Grades 6–8)

214, Music City Center

Science Focus: GEN, NGSS

Sponsor: Activate Learning

Heather Milo (hmilo@activatelearning.com), Activate Learning, Greenwich, Conn.

Come engage in a sequence of investigations where middle school students experience phenomena, construct explanations, and argue from evidence. Teach students to think like scientists as they apply a claim, evidence, reasoning framework to make sense of investigations.

What Works? Science Techbook and Effective Professional Development

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Renee Cartier, Discovery Education, Silver Spring, Md.

Experience Discovery Education’s Science Techbook and learn the secrets to its successful implementation—professional development, of course. Engage in immersive experiences that define effective professional development in science to transform teaching and learning throughout your school.



—Courtesy of Jacob Slaton

Flinn Scientific’s Morning of Chemistry: Taking Over the Music City with Science

(Grades 9–12)

Davidson C, Music City Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Jesse Bernstein, Miami Country Day School, Miami Shores, Fla.

Paul Price, Trinity Valley School, Fort Worth, Tex.

Great demonstrations can heighten interest, make abstract concepts concrete, and provide “aha” moments that replace confusion with understanding. Join Jesse Bernstein and Paul Price as they illustrate some of their favorite chemistry demos. Whether you are a physical science teacher looking for a demo to increase engagement or an AP Chemistry instructor needing a demo to nail a vexing concept, Flinn Scientific’s Morning of Chemistry is a must-see. Handouts!

10:00 AM–12 Noon Meeting

Polar Educators International Open Meeting

Mockingbird 3, Omni

Interested in bringing polar science and climate change education to your audience? Polar Educators International invites you to join in professional networking. For more information, please visit www.polareducator.org.

10:10–10:30 AM Presentation

SCST Session: Building an Extended Inquiry Laboratory to Create a More Authentic Research Experience for First-Year Students

(College)

Ryman One, Renaissance

Science Focus: GEN, CCC1, CCC2

Donald French (dfrench@okstate.edu), Oklahoma State University, Stillwater

First-year students as scientists and journal authors? Instructors as mentors, not graders? How does it work? Come learn about the laboratory experience we created.

10:30 AM–12 Noon Meeting

Urban Science Education Advisory Board Meeting

Gibson Boardroom, Omni

10:30 AM–1:00 PM Meeting

Association of Science Materials Centers (ASMC) Advisors Meeting

Mockingbird 2, Omni

11:00–11:20 AM Presentation

SCST Session: Undergraduate Biology Students’ Conceptions of Extreme Spatial Scales

(College)

Ryman One, Renaissance

Science Focus: LS, CCC1, CCC2

Grant Gardner (grant.gardner@mtsu.edu) and **Martina Ramos**, Middle Tennessee State University, Murfreesboro

We will share data on undergraduate biology students’ absolute and relative spatial scale conceptions as well as their conceptual boundaries.

11:00–11:30 AM Presentations**NGSS for Early Childhood Learners***(Grades P–2)**104B, Music City Center*

Science Focus: PS

Abha Singh (*a-singh@wiu.edu*) and **Lisa Ortmann** (*@LOrtma; ll-ortmann@wiu.edu*), Western Illinois University, Macomb
Science lessons in early childhood can produce powerful outcomes in children as they become at ease with science. Examples will be shared on how to use NGSS three-dimensional learning for K–2 students.

Hybrid PLCs: Building Collaboration Among Teachers in Different Schools*(Grades 6–8)**Broadway J, Omni*

Science Focus: GEN

Laura Robertson (*robertle@etsu.edu*), East Tennessee State University, Johnson City

Lindsay Lester (*lesterl@etsu.edu*), University School, Johnson City, Tenn.

Jennifer Hill (*hillj@wcde.org*), Ridgeview Elementary School, Johnson City, Tenn.

Diana O’Neal (*oneald@wcde.org*), Sulphur Springs Elementary School, Jonesborough, Tenn.

How do highly motivated teachers from different schools collaborate? We formed a hybrid PLC that included face-to-face meetings and online interactions to improve student learning.

Crime Scene Reconstruction: A Culminating Project for Forensic Science*(Grades 9–12)**Cumberland 5, Omni*

Science Focus: GEN, CCC2, SEP4, SEP6, SEP7, SEP8

Jordan Tidrick (*@JordieMcT; jordantidrick@hotmail.com*), North Cobb High School, Kennesaw, Ga.

Use crime scene analysis and reconstruction to end your forensic science class and apply many NGSS science practices. Discussion centers on ideas, examples, and resources.

Evaluate Your Sessions Online!

This year, we’re giving away a Apple iPad mini 2 Wi-Fi tablet to two lucky attendees who complete a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! (See Volume 1, page 17 for details.)

11:00 AM–12 Noon Presentations**Teach STEM Content and Spark Science Career Interest with Free Online Games***(Grades 6–College)**101E, Music City Center*

Science Focus: GEN, NGSS

Kristi Bowling, Rice University Center for Technology in Teaching and Learning, Houston, Tex.

Lynn Lauterbach (*lynnlauterbach@gmail.com*), Retired Teacher, Loveland, Colo.

See how free online games get students involved in science career simulations by solving real-world science problems using the authentic tools and practices of scientists.

CESI Session: Calling All K–5 STEM Competitors*(Grades K–5)**105A, Music City Center*

Science Focus: GEN, CCC

Kelly Price-Colley (*@kpricega; kellyrprice@comcast.net*), NSTA Director, Coordination and Supervision of Science Teaching, and Forsyth County Schools, Cumming, Ga.

Science Olympiad, ExploraVision, the Dupont Essay Challenge, and many more state and national STEM competitions have K–5 divisions. Attend to learn more about how your students can take on the challenge.

Rain Garden Design*(Grades 3–8)**Davidson A2/3, Music City Center*

Science Focus: ESS3, ETS, LS2, CCC2, CCC5, SEP

Melissa Lau (*@saintswife0; melissa.lau@piedmontschools.org*), Piedmont Intermediate School, Piedmont, Okla.

Students engage in creating a rain garden for their school and providing low-maintenance ecologically sound landscaping for the district, as well as encouraging community involvement.

NGSS@NSTA Forum: Supporting Ongoing Changes in Students’ Thinking: The Primer*(Grades K–12)**Grand Ballroom C1, Music City Center*

Science Focus: GEN, SEP2, SEP6, SEP7

Mark Windschitl (*mwind@u.washington.edu*), University of Washington, Seattle

President: Ted Willard (*twillard@nsta.org*), Program Director, NGSS@NSTA, NSTA, Arlington, Va.

A new role for ambitious teachers—empowering students to change how they think about core science ideas through the use of scientific modeling and discourse.

Engaging Students Through Digital Assessment

(Grades 9–12)

Acoustic, Omni

Science Focus: GEN, SEP1, SEP2, SEP4, SEP6, SEP7, SEP8

Caroline Milne (@MrsMilneBiology; cmilne@barrington220.org), **Vanessa Fennig** (@MrsFennig; vfennig@barrington220.org), and **Laura Turngren** (lturngren@barrington220.org), Barrington High School, Barrington, Ill.

This dynamic and interactive session provides a range of digital assessments that are easy to implement and adaptable for the specific needs of your students.

The NSTA Learning Center: A Tool to Develop Pre-service Teachers

(General)

Broadway D, Omni

Science Focus: GEN

Flavio Mendez (flavio_m@nsta.org), Senior Director, Learning Center/SciLinks, NSTA, Arlington, Va.

Al Byers (abyers@nsta.org), Associate Executive Director, Services Division, NSTA, Arlington, Va.

Come learn how to use the NSTA Learning Center as an online textbook when teaching science preservice teachers.

Engaging Students with Literacy Strategies

(Grades 9–12)

Broadway G, Omni

Science Focus: GEN, SEP8

Kellie Dean (kdean@d125.org) and **Caroline Humes** (chumes@d125.org), Adlai E. Stevenson High School, Lincolnshire, Ill.

Science literacy can be a challenge for students. Find out how to create engaging literacy activities that meet the NGSS.

CSSS Session: Panel Discussion: Going Ahead with the NGSS

(Grades P–12)

Cumberland 1, Omni

Science Focus: GEN, CCC1, CCC2, SEP

James Blake (@lpspsi; jblake@lps.org), Lincoln (Neb.) Public Schools

Katie Ramsey (@RamseyKatie; kramsey@gips.org), Grand Island (Neb.) Public Schools

Sara Cooper (@NDE_Science; sara.cooper@nebraska.gov), Nebraska Dept. of Education, Lincoln

Crystal McDowell (@RSDSciRocks; mcdowellcrystal@rsdmo.org) and **Susanne Moar** (moarsusanne@rsdmo.org), Rockwood School District, Eureka, Mo.

Hear the story of NGSS in two different states in a similar situation—state standards are not yet up for revision or NGSS adoption is not a likely outcome. In order to take advantage of the pedagogy and curriculum support associated with the

K–12 Framework and NGSS, some districts have adopted while others have adapted. District and state science supervisors share how they are working through this process together.

Creating an Inquiry-Based Classroom Through the Use of Technology

(Grades 9–12)

Cumberland 6, Omni

Science Focus: LS, CCC1, CCC5, SEP1, SEP3, SEP4, SEP6, SEP8

Barbara Sopiartz (bsopiartz@d230.org) and **Tracy Sukalo** (tsukalo@d230.org), Victor J. Andrew High School, Tinley Park, Ill.

Natacia Campbell (@nataciacampbell; ncampbell@d230.org), NSTA Director, District XII, and Victor J. Andrew High School, Tinley Park, Ill.

Calling all biology teachers needing help incorporating NGSS life science core ideas and technology into their classrooms! Walk away with activities to use in your classroom that address the NGSS and Framework, while creating a student-led environment!

CSI: Chemistry

(Grades 6–10)

Legends D, Omni

Science Focus: PS1, PS3.A, PS3.B, CCC1, CCC2, CCC4, CCC5, SEP1, SEP3, SEP4, SEP5, SEP7, SEP8

Jeremy Siegel (jsiegel@bzaeds.org), Bernard Zell Anshe Emet Day School, Chicago, Ill.

Design engaging murder mysteries and other cases for your classroom while covering NGSS practices and disciplinary core ideas.

The Best In Science Literature—Choosing It, Using It

(General)

Music Row 1, Omni

Science Focus: GEN, SEP8

Suzanne Flynn, Lesley University and Cambridge College, Cambridge, Mass.

Stephanie Selznick (selznics@osceola.k12.fl.us), Bellalago Academy, Kissimmee, Fla.

President: Juliana Texley, NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.

NSTA Recommends has a searchable database of 5,000 materials. Outstanding Science Trade Books has “The Best of the Best” just waiting for you. Come win an OSTB!

The Shell Science Teaching Award: Fueling Success with Students

(Grades K–12)

Music Row 2, Omni

Science Focus: GEN

Lori Lancaster, Oregon Science Teachers Association, Portland

Share your passion and practice by applying for this \$10,000 award. Learn from Shell awardees, finalists, and judging panel members. Get tips for submitting an application and a video so that you can rise to the top of the pack.

The Top 10 Safety Issues in the Science Classroom/Lab You Need to Know!

(General)

Music Row 3, Omni

Science Focus: GEN

Mary Loesing (mloesing@yahoo.com), NSTA Director, District IV, and Connetquot Central School District, Bohemia, N.Y.

Kenneth Roy (@drroysafersci; royk@glastonburyus.org), Glastonbury (Conn.) Public Schools

Brian Wazlaw (briwazlaw@aol.com), Laboratory Safety Consultant, Portsmouth, N.H.

Edward McGrath (edward.mcgrath@redclay.k12.de.us), Red Clay Consolidated School District, Wilmington, Del.

Every science teacher wants their students to be engaged in a safer working/learning environment. Members of the NSTA Safety Advisory Board will discuss important issues in lab safety such as occupancy loads, chemical storage and disposal, field trip safety, and duty of care.

BSCS 

Visit Us Booth 515

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for High School

BSCS Biology: A Human Approach

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NARST Session: Does Your Professional Development Make a Difference? Teachers' Retention of Discipline-Specific Science Content

(Grades 6–College)

Fisk One, Renaissance

Science Focus: ESS, PS

Renee Clary (*rclary@geosci.msstate.edu*), Mississippi State University, Mississippi State, Miss.

Deborah Tucker (*deborahlt@aol.com*), Independent Science Education Consultant, Napa, Calif.

Do you want to maximize your science professional development? Learn how to retain and sustain your professional development gains! Interactive discussions and free resources provided.

INF Science Day Camp: Build Authentic Community Outreach in K–12 Schools

(Grades 4–12)

Music City Ballroom, Renaissance

Science Focus: INF

Michael Towne, Citrus Hill High School, Perris, Calif. Bring K–12 students together with families for a day of science at your school; reap the benefits of genuine outreach and cross-age collaboration.

Scaffolding for Success: Three-Dimensional Learning in Action

(General)

West Ballroom, Renaissance

Science Focus: GEN, NGSS

Zoe Evans (*@zoe_evans*; *zoevans@charter.net*), Villa Rica High School, Villa Rica, Ga.

Julie Olson (*julie.olson@k12.sd.us*), Mitchell High School, Mitchell, S.Dak.

Chris Embry Mohr (*chrisembry.mohr@olympia.org*), Olympia High School, Stanford, Ill.

Jeremy Peacock (*@jeremy_peacock*; *peacock.jeremy@gmail.com*), Northeast Georgia RESA, Winterville Familiar with the NGSS but not sure what it looks like in the classroom? Then join NGSS writers and educators as they provide authentic examples of NGSS in practice.

11:00 AM–12 Noon Hands-On Workshops



NSTA Press® Session: Linking the *Uncovering Student Ideas in Science* Series and *Everyday Science Mysteries* to K–5 Language Literacy

(Grades K–5)

101C, Music City Center

Science Focus: GEN, NGSS

Page Keeley (*@CTSKeeley*; *pagekeeley@gmail.com*), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Joyce Tugel (*jtugel@gmail.com*), Maine Mathematics and Science Alliance, Augusta

Richard Konicek-Moran (*rkonicek@gmail.com*), Professor Emeritus, UMass Amherst, Mass.

Learn about and experience ways K–5 teachers are using the *Uncovering Student Ideas in Science* series and the *Everyday Mystery Stories* to support science learning and the literacy capacities of reading, writing, speaking, and listening.

3D Cellular Respiration: Reducing Confusion Through Collaboration

(Grades 6–12)

103A, Music City Center

Science Focus: LS, CCC, SEP

Heather Barker (*hbarker@lasierra.edu*), La Sierra University, Riverside, Calif.

Cindi Smith-Walters (*cindi.smith-walters@mtsu.edu*), Middle Tennessee State University, Murfreesboro

Join us in a research-based lesson incorporating components of collaborative discourse and scientific argumentation to develop a model of the process of cellular respiration.



Working in Concert: Successful Collaboration with Informal Centers

(Grades P–12)

103B, Music City Center

Science Focus: INF, NGSS

James Ammons, The University of Georgia, Athens Fine-tune your field trip collaboration skills working with local experts from informal science education centers. Opportunity for free treats from Nashville centers!



■ ■ ■ Professional Development to Support Integrated Inquiry-Based Teaching in the Outdoors

(Grades 2–5) *103C, Music City Center*
Science Focus: ESS2.C, ESS2.D, LS2, CCC2, SEP1, SEP3, SEP6, SEP8

Kara Haas (@KaraHaaSciEd; *karahaas@msu.edu*), Michigan State University, Hickory Corners

Irene Bayer (*rbayer@msu.edu*) and **Joseph Krajcik** (*krajcik@msu.edu*), CREATE for STEM Institute, Michigan State University, East Lansing

Look into challenges and ways of using the outdoors to teach science integrated with math and ELA that meet the NGSS in a technology-rich environment.

Interdisciplinary Learning in a 21st-Century Classroom

(Grade 2) *104D, Music City Center*
Science Focus: GEN, NGSS

Jennifer Troncale (*jtroncal@jsu.edu*), Jacksonville State University, Jacksonville, Ala.

Take your students on an Arctic Expedition with this interdisciplinary book study while fostering 21st-century skills. Engage in 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson activities that integrate science, language arts, mathematics, and social studies.

Science Learning at Your Window

(Grades K–8) *104E, Music City Center*
Science Focus: GEN

Lindsay Glasner (@BirdSleuth; *lig27@cornell.edu*), The Cornell Lab of Ornithology, Ithaca, N.Y.

Come get a free window bird feeder and discover how to attract birds and students' interest! Take home activities and ideas to teach science through birds.

That's a Good Question!

(Grades P–8) *105B, Music City Center*
Science Focus: GEN, SEP

Jennifer Hope, McKendree University, Lebanon, Ill.

Science begins with questions! But how does questioning begin? Engage with intriguing phenomena and consider strategies for fostering a classroom culture of questioning.

Biomimicry: The “Natural” Intersection of Biology and Engineering

(Grades 4–8) *106B, Music City Center*
Science Focus: ETS, LS, CCC, SEP

Celeste Nicholas (*celeste.nicholas@gmail.com*), University of Missouri–St. Louis

Jeff Peterson (@petersonjeffrey; *petersonj@centergrove.k12.in.us*), Center Grove Middle School North, Greenwood, Ind. Learn about a middle school unit on biomimicry, in which student designers create products based on nature. Three NGSS dimensions combine “naturally” to deepen learning.

Under the Cover of Children’s Storybooks

(Grades K–6) *106C, Music City Center*
Science Focus: GEN, NGSS

Jennifer Trochez, Gates Street Elementary School, Los Angeles, Calif.

Juliet Kovach-Ham (*hamjulie@hotmail.com*), Ellen Ochoa Learning Center, Cudahy, Calif.

Learn how children’s literature is an inviting way, as well as a great starting point, for integrating science content with ELA standards and to teach engineering practices.

NESTA and HHMI Share: Multimedia Tools and Resources for Teaching Earth System Science

(Grades 7–College) *Davidson B, Music City Center*
Science Focus: ESS

Margaret Holzer (*mholzer@monmouth.com*), Chatham High School, Chatham, N.J.

Michael Passow (*michael@earth2class.org*), Dwight Morrow High School, Englewood, N.J.

Our dynamic planet has undergone vast changes over geologic history. The Howard Hughes Medical Institute (HHMI) BioInteractive program provides free online resources for science teachers and students, including animations, short films, and apps. This NESTA-HHMI workshop investigates our changing Earth while modeling Earth system science classroom practices.

Brick, Puzzles, and the Alphabet = Understanding Chemistry

(Grades 9–12) *Broadway C, Omni*
Science Focus: PS, SEP2

Suzanne Cunningham (*scunning@purdue.edu*), Purdue University, West Lafayette, Ind.

High school students become “Lunatics” as they use bricks, representing carbon, oxygen, and hydrogen to synthesize glucose—resulting in a better visualization of chemical bonds and enzyme specificity.

The Who, What, When, Where, and How of Waves

(Grades 6–8)

Broadway H, Omni

Science Focus: PS

Amy Gilbert (amy.gilbert@douglas.k12.ga.us), Turner Middle School, Lithia Springs, Ga.

Experience an integrated learning cycle on the nature of waves that includes investigating like Newton, making foldables, and reading/writing short stories!

Differentiating Science Practices Through Inquiry-Based Instruction

(Grades 6–12)

Broadway K, Omni

Science Focus: GEN, SEP

Jennifer Maeng (jlc7d@virginia.edu) and **Lindsay Wheeler** (lwb4u@virginia.edu), University of Virginia, Charlottesville

Brooke Whitworth (@bawhit41; brooke.whitworth@nau.edu), Northern Arizona University, Flagstaff

Come learn to structure and differentiate inquiry investigations to support development of students' science practices. Examples of lessons from across content areas will be provided.

NSELA Session: Conductors of Change—How Science Leaders Can Facilitate Harmony Among the Three Components of the NGSS

(Grades 6–12)

Cumberland 2, Omni

Science Focus: GEN, NGSS

Mindy Pearson (@ScienceMindy; mindy.pearson@sdhc.k12.fl.us) and **Michele Detwiler** (michele.detwiler@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.

Science leaders will explore integrating disciplinary core ideas, crosscutting concepts, and science and engineering practices to provide high-quality science instruction and to produce scientifically literate students.

Interactive Notebooks, iPads, and the Flipped Classroom: Supporting Inquiry and Literacy

(Grades 6–12)

Legends C, Omni

Science Focus: GEN

Maryellen Felter, Eastridge High School, Rochester, N.Y. Build an interactive notebook and learn how to use it in a flipped classroom with iPads to support inquiry and literacy.

D.E.S.I.G.N. (Developing Engineering Solutions Inspired by Graphic Novels)

(Grades 4–12)

Legends F, Omni

Science Focus: ETS

William Reitz (wreitz@neo.rr.com), Retired Educator, Stow, Ohio Graphic novels are becoming increasingly popular. Fortunately, their story lines can provide design problems for your students to solve while making NGSS and CCSS connections.

Moving Genes

(Grades 9–College)

Legends G, Omni

Science Focus: LS, CCC6, SEP2

Pamela Petzel Snyder (psnyder5396@gmail.com), Fort Hayes Career Center, Columbus, Ohio

Do you need strategies to make complicated biotechnology techniques more understandable to high school students? Engage in activities that help explain the concepts behind genetic engineering. These materials are part of a grant project funded by the Ohio Soybean Council. Free materials!

DuPont Presents: Tracking the Spread of Infectious Diseases—Human and Animal

(Grades 9–12)

Music Row 5, Omni

Science Focus: LS, CCC1, CCC2

Krista Pontius (@krista_pontius; kpontius@greenwoodsd.org), Greenwood High School, Millerstown, Pa.

Help students understand the spread of diseases in a human or animal population by using this engaging hands-on lab. Model how health organizations trace a disease while teaching important concepts of disease transmission and exponential growth.

Using Socio-Scientific Issues in the Classroom

(Grades 4–12)

Center Ballroom, Renaissance

Science Focus: GEN

Laura Schisler, Crowder College, Neosho, Mo.

Rhoda Goldberg (rhoda.goldberg@cfisd.net), Cypress-Fairbanks ISD, Houston, Tex.

Socio-scientific issues can increase engagement and understanding in your classroom! Write an evidenced-based perspective, participate in learning strategies, and leave with classroom-ready activities and rubrics.

Ready, Set, Read: Creatively Integrating True Reading into Your Science Lab

(Grades 1–12)

East Ballroom, Renaissance

Science Focus: GEN

Gina Gattavara Peterson (ggatta@neisd.net), Nimitz Middle School, San Antonio, Tex.

Julie Stefanick (@JulieSDyess; juliesdyess@gmail.com), League City Intermediate School, League City, Tex.

Veronica Garcia Betancourt (veronica.betancourt@harlandale.net), Harlandale ISD, San Antonio, Tex.

Join us for a highly informative and interactive presentation in which content reading is seamlessly integrated into classroom-ready science labs to further enhance student engagement.

ASTE Session: Using Backwards Design to Identify Instructional Sequences That Prepare Students for NGSS Assessments

(Grades 7–College)

Fisk Two, Renaissance

Science Focus: GEN, CCC1, CCC2

Comfort Ateh (cateh@providence.edu), Providence College, Providence, R.I.

Jay Fogleman ([@fogleman](mailto:fogleman@uri.edu); fogleman@uri.edu), The University of Rhode Island, Kingston

Rudolf Kraus (rkraus@ric.edu), Rhode Island College, Providence

Participants will be engaged in a series of activities that use NGSS assessment tasks to sequence instructional tasks and tools.

**11:00 AM–12 Noon Exhibitor Workshop
Project-Based Activities with Wireless Sensors to Meet Gas Laws and Stoichiometry Chemistry Standards**

(General)

206 A/B, Music City Center

Science Focus: PS, SEP

Sponsor: PASCO scientific

Jason Lee (mrlee3@att.blackberry.net), East Georgia State College–Statesboro

Incorporate science and engineering practices as students develop an understanding of gases and stoichiometric calculations using SPARKvue and Wireless Temperature and Pressure sensors. Project-based STEM activities integrate chemistry concepts that can aid in designing, testing, and evaluating student-built airbags. Twenty-five attendees will win a free wireless sensor!

NSTA District Director and Chapter/Associated Group Social

In honor of Wendell Mohling, enjoy complimentary refreshments while meeting and networking with colleagues and representatives from all of NSTA's 18 districts. Learn more about events, initiatives, and happenings in your district, directly from your representatives, in an informal setting.



Friday, April 1
1:30–2:30 PM
Music City Center Exhibit Hall

NSTA National
Science
Teachers
Association

11:00 AM–12:30 PM Hands-On Workshop

PLI McREL Pathway Session: Curriculum Audit: Where Will You STEMify Your Curriculum?

(Grades K–12)

Legends A, Omni

Science Focus: GEN, CCC

Laura Arndt (laura.arndt1@gmail.com), McREL International, Denver, Colo.

What STEM are we already doing in our curriculum and community? How does this align to our STEM goals? Where are opportunities to integrate more STEM to meet these goals? We will walk through the steps to audit and STEMify your curriculum.

11:20–11:40 AM Presentation

SCST Session: Simple Mechanical Devices to Help Students Learn the Principles of Human Anatomy and Physiology

(Grades 9–College)

Ryman One, Renaissance

Science Focus: ETS, LS, CCC1, CCC2, SEP1, SEP3, SEP4

Murray Jensen (msjensen@umn.edu), SCST President, and University of Minnesota, Twin Cities, Minneapolis

We will show how simple mechanical devices can be used to teach core concepts in human physiology such as active transport and homeostasis.

11:30 AM–12 Noon Presentations

Cut the Cord: How to Become Mobile in Your Classroom

(General)

Cumberland 4, Omni

Science Focus: GEN

Kristen Sarcu (ksarcu@baldwinschool.org), The Baldwin School, Bryn Mawr, Pa.

Use an iPad or smartphone to break away from your whiteboard and become mobile around the classroom.

Who Did It? Inquiry-Based Forensic Serology and DNA Analysis in the Classroom

(Grades 10–College)

Cumberland 5, Omni

Science Focus: LS, SEP

Kimberly Farah, Lasell College, Auburndale, Mass.

Learn the basics of forensic serology and DNA analysis. Solve crime scene scenarios using blood typing, paternity testing, and DNA profiles.

11:30 AM–12:30 PM Exhibitor Workshop

Build, Program, and Control with K’NEX Education’s New Robotics Building System

(Grades 5–10)

108, Music City Center

Science Focus: ETS

Sponsor: K’NEX Education®

Robert Jesberg, K’NEX Education, Hatfield, Pa.

This dynamic hands-on building system teaches students how to apply programming skills to operate various built models. You’ll be the student in this workshop, as you write your own computer program to control a vehicle model built out of K’NEX! Space limited: 24 working, 20 observing. Arrive early!

11:40 AM–12 Noon Presentation

SCST Session: Spatial Ability and STEM Courses—Why Mental Manipulation Matters

(Grades 9–College)

Ryman One, Renaissance

Science Focus: ETS, LS, CCC1, CCC2

Thayne Sweeten, Utah State University Brigham City

Join me as I present original research conducted in engineering and biology courses and explore the relationship between students’ ability to visualize spatially and academic success.

12 Noon–1:30 PM Exhibitor Workshops**Analyzing and Interpreting Data Using TCI's Bring Learning Alive!**

(Grades K–5) *107A, Music City Center*
 Science Focus: GEN, NGSS

Sponsor: Teachers Curriculum Institute

TCI (info@teachtci.com)

Get your students to do more than just read a graph, chart, or statement. Participants will be immersed in a Bring Science Alive classroom where students analyze and interpret data and construct an argument based on research.

Black Holes for Everyone: How You Can Teach Black Holes in Grade 9 Science

(Grades 9–10) *107B, Music City Center*
 Science Focus: ESS

Sponsor: Perimeter Institute for Theoretical Physics

Damian Pope and **Kevin Donkers**, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

How can you incorporate black holes into your grade 9 general science class? We will explore black holes and their connections to stars and the properties of the universe via hands-on student activities.

The Differentiated Classroom in One Package: Teaching Science Inquiry to Modern Learners Using Microsoft Surface and Apps

(Grades 7–12) *110A, Music City Center*
 Science Focus: GEN

Sponsor: Microsoft

Helen Gooch (v-hegooc@microsoft.com), Microsoft Innovative Educator Fellow, Clarksville, Tenn.

This session will demonstrate examples of how students and teachers can use digital inking and Microsoft tools to differentiate learning in an inclusive science classroom. We will showcase how students are able to learn the five features of scientific inquiry and be engaged at a much deeper level.

The Best Test Prep Book Ever for AP Chemistry

(Grades 11–12) *110B, Music City Center*
 Science Focus: PS

Sponsor: Pearson Education

Ed Waterman, Retired Educator, Fort Collins, Colo.

This test prep book concisely summarizes all of the important content in the six Big Ideas and 117 learning objectives. It expands content to include photoelectron spectroscopy (PES), mass spectrometry, and chromatography. Contains hundreds of new and revised practice questions focusing on graphical and tabular data analysis and atomic-molecular representations.

Genetics: Crazy Traits and CPO's New Link™ Learning Module

(Grades 6–12) *201A, Music City Center*
 Science Focus: LS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

CPO's Crazy Traits Link learning module uses STEM and NGSS strategies in a real-time tablet-based learning environment to learn genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity will come alive as you create crazy creatures with a unique kit and study probability, adaptation, dominance, and recession.

Modeling Energy Flow in Ecosystems: Developing Models in Middle School Life Science

(Grades 5–8) *201B, Music City Center*
 Science Focus: LS

Sponsor: Delta Education/School Specialty Science—FOSS
Virginia Reid and **Jessica Penchos**, The Lawrence Hall of Science, University of California, Berkeley

How is matter conserved, and how does energy flow through an ecosystem? Develop these models through hands-on activities. Take home a set of student materials, overview instructional strategies for science practices, and preview online activities and NGSS connections in the newly revised FOSS Populations and Ecosystems Course for middle school.

Cool! Can We Do That Again?!

(Grades 2–9) *202A, Music City Center*
 Science Focus: PS1.A, PS1.B, PS4.A

Sponsor: Educational Innovations, Inc.

Jeffrey Feidler, Consultant, Wilmington, Del.

Tired of hearing “Do we have to do that?!?” from your students? Come check out some of the coolest activities involving polymers, color, and light. Your students will be asking if they can do that again—and again! Door prizes, freebies, and fun!

Sparking Interest with Chemistry

(Grades 9–12)

202B, Music City Center

Science Focus: PS

Sponsor: Houghton Mifflin Harcourt

Jerry Sarquis, Miami University, Oxford, Ohio

A. Mickey Sarquis, Professor Emeritus, Miami University–Middletown, Ohio

Join Mickey and Jerry Sarquis, the authors of *Modern Chemistry* and leaders in chemistry education, for their presentation of hands-on chemistry activities. This interactive workshop will feature classroom activities that you can use to spark your students' interest in chemistry! Learn new tips and tricks using readily available and inexpensive materials. Take home free materials!

Bringing Real Neuroscience and Neural Engineering into Your Classroom

(Grades 6–College)

202C, Music City Center

Science Focus: ETS2, LS1.A, LS1.D, LS4.D, SEP3, SEP4, SEP6, SEP7

Sponsor: Backyard Brains, Inc.

Timothy Marzullo (info@backyardbrains.com), Backyard Brains, Inc., Ann Arbor, Mich.

Would you like to show your students the electrical impulses of hearts, muscles, and neurons? Interested in controlling robots and humans with this same electrical activity? Want to teach comparative electrophysiology between insects, humans, and even plants? Learn and experience live demos of such wonderful science at our workshop.

Introduction to Wisconsin Fast Plants®

(Grades K–12)

204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience the versatility of Wisconsin Fast Plants. These small, quick-growing plants engage students, are ideal classroom tools for all learning levels, and let you integrate plant development, life cycle, environmental effects, genetics, and evolution into your instruction. Learn the basics for successful planting, flower dissection, and pollination.

Modeling Beyond a Flashlight and Beach Ball

(Grades 6–8)

205A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Modeling makes it easier to understand, define, quantify, and visualize the world, or simulate accepted knowledge. Diagrams, simulations, analogies, and mathematical and

graphical representations are some of the many types of models used in the Smithsonian STC³ program. Experience a variety of modeling examples through hands-on lessons.

Top 10 for 2016: Genetics and Biotechnology Discoveries for Your Classroom

(Grades 9–College)

205B, Music City Center

Science Focus: ETS, LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Ever wonder where new biotechnology fits into your curriculum? The current pace of discovery in genetics is so rapid, it's difficult to keep instruction up to date. This presentation and discussion by Dr. Neil Lamb makes recent findings understandable, accessible, and applicable to your classroom. Presented in partnership with HudsonAlpha.

Gene Expression

(Grades 9–12)

205C, Music City Center

Science Focus: LS3

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the new *Science & Global Issues: Biology* program from SEPUP and LAB-AIDS. Activities focus on ways to integrate selective gene expression as a relevant and engaging sustainability issue.

Fracking the CASE

(Grades 8–12)

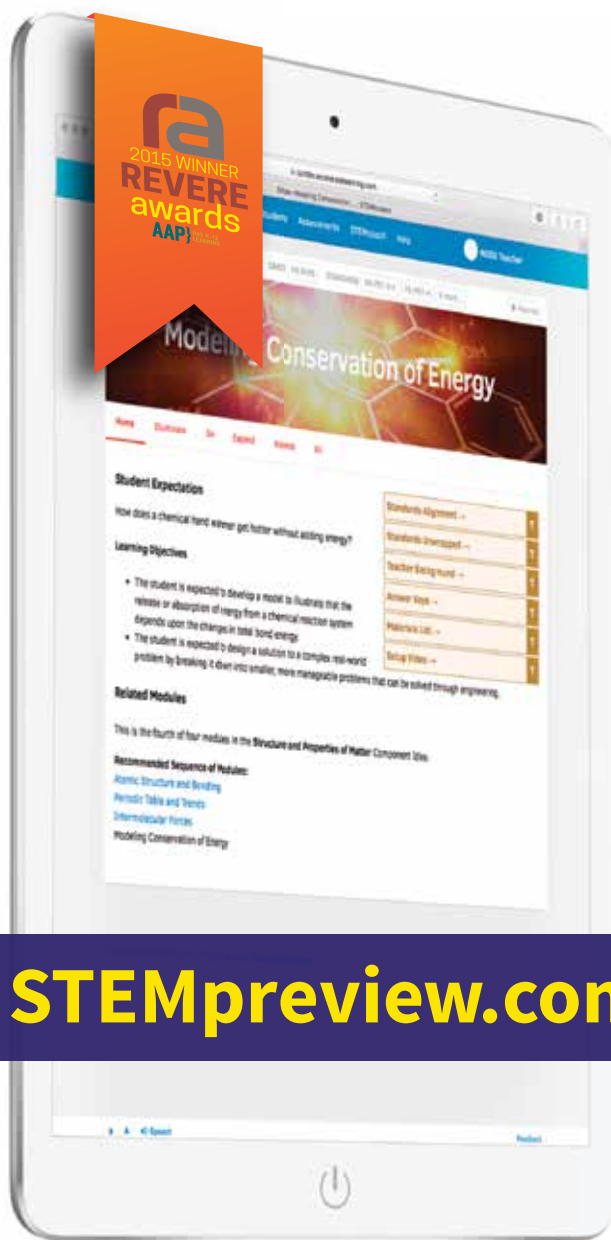
207A, Music City Center

Science Focus: PS

Sponsor: Ward's Science

Michelle Pagani, VWR Science Education, Rochester, N.Y.

The Curriculum for Agricultural Science Education (CASE) uses an inquiry-based, scaffolding science curricula for environmental, agriculture, and technology concepts. Using a lab activity to model a newsworthy topic—fracking—students can understand the implications on the environment and link them to chemical properties of liquids.



A low-cost, award-winning, PreK-12 STEM curriculum, STEMscopes understands what it takes to engage your learners in rigorous STEM learning. Take a test drive today and discover what over 2 million students already love.

- 
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- 
 HANDS-ON
- 
 CROSS-CURRICULAR
- 
 STANDARDS-ALIGNED
- 
 EMBEDDED HELP AND PD

Inquiry-Based Ecology Using a Citizen Science Trail Camera Project

(Grades 7–College) 207B, Music City Center
Science Focus: LS2.A, LS2.C, LS2.D, LS4.D, INF, CCC2, CCC3, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7

Sponsor: HHMI BioInteractive

Bridget Conneely, Howard Hughes Medical Institute, Chevy Chase, Md.

Amy Fassler, Marshfield High School, Marshfield, Wis.

Amanda Briody, Frederick Douglass High School, Croom, Md.

HHMI BioInteractive presents an online citizen science platform where students identify animals in trail camera images to help scientists in Gorongosa National Park, Mozambique. Participants will use a new educator portal to access trail camera data used to investigate ecological questions and teach the process of observation, inquiry, and analysis.

Water Quality with Vernier

(Grades 7–College) 207C, Music City Center
Science Focus: ESS, LS, SEP

Sponsor: Vernier Software & Technology

Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Learn how to use sensors and LabQuest 2, with its Data Matrix Mode and built-in GPS, to study water quality in the field. Try the Optical DO Probe, designed to make dissolved oxygen measurements easy! See how to map your data on Google Maps and ArcGIS using Logger Pro software.

Integrating Chromebook with Vernier Technology

(Grades 3–College) 207D, Music City Center
Science Focus: GEN, NGSS

Sponsor: Vernier Software & Technology

Verle Walters (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Learn how to use Chromebooks with Vernier technology in this workshop featuring experiments from Vernier lab books. See how engaging experiments like “Boyle’s Law” or “Grip Strength Comparison” teach students about data collection and analysis—practices that promote science inquiry and boost test scores.

Flinn Scientific’s STEM Design Challenge™ “Build-It-Yourself” Lab Project

(Grades 9–12) 209A, Music City Center
Science Focus: ETS, SEP

Sponsor: Flinn Scientific, Inc.

Jodi Bauer, Flinn Scientific, Inc., Batavia, Ill.

Integrate STEM scientific inquiry and engineering design principles into your science curriculum. Join Flinn Scientific in a “build-it-yourself” lab project that can actively engage your students and increase their understanding of concepts that cut across scientific disciplines. Interactive demonstrations highlight science and engineering practices such as reasoning based on the evidence. Handouts for all activities!

Feeding the World & Protecting the Environment

(Grades 9–12) 209B, Music City Center
Science Focus: ESS3.C

Sponsor: Nutrients for Life Foundation

Nancy Bridge (nancy.bridge@ocps.net), Olympia High School, Orlando, Fla.

How will we feed nine billion people in 2050 in a sustainable manner? Come learn about sustainable agriculture with fertilizer use and play the new Journey 2050 app. Participants will also receive Nutrients for Life Foundation’s new environmental science resource, Feeding the World & Protecting the Environment...and more!

STEM Fun in the Elementary Classroom

(Grades 2–5) 209C, Music City Center
Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP5

Sponsor: SAE International—A World In Motion Program

Meghan Stoyanoff, SAE International, Warrendale, Pa.

Looking for a way to engage your students with STEM but all out of ideas? Look no further than the award-winning A World In Motion Program. Join us to make a hands-on activity and be entered into a drawing for free classroom kits.

Make Science Come to Life

(Grades 1–5) 211, Music City Center
Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore, create, and share discoveries as they build solutions to real-

world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students' confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

Interactive Case Studies for the Biology Classroom

(Grades 8–College) 212, Music City Center

Science Focus: LS1, LS2, LS3, CCC, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Sponsor: Cogent Education

Denice Esterly, The Walker School, Marietta, Ga.

Tom Robertson (info@coгентeducation.com) and **David Ducrest**, Cogent Education, Atlanta, Ga.

Hear from fellow teachers how the Interactive Case studies engage their students in critical thinking and problem solving, and then experience a Case on your device or one we provide. Developed by scientists in partnership with teachers, the cases are proven to increase learning in NIH and NSF research.

Telling Molecular Stories with David Goodsell's Cellular Landscapes

(Grades 8–College) 214, Music City Center

Science Focus: LS1.A, LS1.D, LS4.D, CCC1, CCC2, CCC3, CCC4, CCC6, SEP1, SEP2

Sponsor: MSOE Center for BioMolecular Modeling

Margaret Franzen (franzen@msoe.edu) and **Gina Vogt** (vogt@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Use these amazing landscapes to explore cell structure and illustrate where in the cell protein synthesis and other important processes occur. You can also tell molecular stories such as “Your Flu Shot in Action,” tracing the production of an antibody protein all the way to its release into circulation.

Bringing NGSS to the Classroom with Discovery Education

(Grades K–12) 401 A/B, Music City Center

Science Focus: GEN, SEP

Sponsor: Discovery Education

Patti Duncan, Discovery Education, Silver Spring, Md.

One of the most important aspects of a quality NGSS curriculum is the opportunity for students to develop science and engineering practices. These types of skills are not explicitly taught, but must be developed by experience. Learn about how the Discovery Education Science Techbook brings these experiences to the forefront.

12 Noon–2:00 PM Networking Opportunity NSELA-ASTE Celebration Luncheon

(By Ticket from NSELA)

Broadway A/B, Omni

The NSELA-ASTE Celebration Luncheon offers a presentation by an exemplary educator/researcher while networking with other national key leaders. The recognition of local science education heroes is the highlight of the luncheon. Visit www.nsela.org for more information and to purchase a ticket; first come, first served.

SEPA Luncheon

(By Invitation Only)

Legends E, Omni

For more information, please visit www.sepamembers.weebly.com.



12:30–1:30 PM SCST Marjorie Gardner Lecture
Assessment of Laboratory Skills Through Badging
 (Grades 10–College) *Ryman One, Renaissance*
 Science Focus: GEN



Marcy Towns, Professor of Chemical Education, Purdue University, West Lafayette, Ind.

How can we assess our students' ability to correctly carry out laboratory procedures when we do not have the time or ability to observe every student in real time? This presentation will highlight a method

by which students can demonstrate their ability to perform a laboratory task and faculty can assess them using an online badging approach.

Trained as a physical chemist, Marcy Towns has had a long-standing interest in physical chemistry. Her research includes developing methods for analyzing online group work in physical chemistry, evaluating the efficacy of physical chemistry modules, and engaging in collaborative projects with mathematics education researchers to document student understanding of physical chemistry (especially the mathematics associated with physical chemistry).

From 1995 to 2006, Dr. Towns was on the faculty of Ball State University, and then joined the faculty at Purdue University in 2006 as part of the largest division of chemistry education in the U.S. In 2013, she received Purdue's most prestigious honor for teaching, the Murphy Award, as well as the chemistry department's the Arthur B. Kelly Award. She has taught general chemistry, physical chemistry, and instrumental analysis. In addition to being a professor of Chemistry, she is associate department head and director of General Chemistry at Purdue University.

12:30–1:30 PM Presentations



NSTA Press® Session: *Doing Good Science in Middle School*

(Grades 6–9)

101C, Music City Center

Science Focus: GEN

Vicki Massey (vickimassey@cox.net), Higley Unified School District #60, Gilbert, Ariz.

Find out what good science instruction looks like at the middle school level by taking a look at the NSTA Press book *Doing Good Science in Middle School*. NGSS and CCSS integration are part of this book and discussion.

INF After-School STEM Is in Demand!

(General)

101D, Music City Center

Science Focus: INF

Anita Krishnamurthi (@ankrishn1; akrishnamurthi@afterschoolalliance.org), Afterschool Alliance, Washington, D.C.

Tiffany Ellis Farmer (tfarmer@adventuresci.org), Adventure Science Center, Nashville, Tenn.

Gerard Kovach (gjkovach@cps.edu), John T. McCutcheon Elementary School, Chicago, Ill.

President: Dennis Schatz (schatz@pacsci.org), NSTA Director, Informal Science, and Pacific Science Center, Seattle, Wash. Parents want their kids in after-school programs, a space that's become a key partner in STEM. Learn more from a recent study, and discover how you can be involved.



Outbreak! Partnering CDC Scientists with Science Teachers

(Grades 7–College)

103B, Music City Center

Science Focus: GEN, CCC1, CCC2, SEP

Kelly Cordeira (scienceambassador@cdc.gov) and **Ralph Cordell** (scienceambassador@cdc.gov), Centers for Disease Control and Prevention, Atlanta, Ga.

After a short introduction to public health, don't be surprised if some attendees "fall ill." Explore CDC (Centers for Disease Control and Prevention) outbreak investigation strategies to identify the culprit and learn how to develop similar scenarios for your classroom.

Up, Up, and Away! An introduction to High-Altitude Ballooning

(General) *104A, Music City Center*
Science Focus: ETS1

James Schreiner (@biologyteacher; jschreiner@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, Ill. Let me share my experience of our first high-altitude balloon launch so you and your classes can take part in this exciting adventure.

Engaging K–5 Students with a Schoolwide STEM Challenge: From Planning to Implementation to a Family STEM Night

(Grades K–5) *104B, Music City Center*
Science Focus: GEN

Brenda Turgeon, Purdue University Calumet, Hammond, Ind.

Find out how to bring STEM to your school with a schoolwide STEM challenge. The culminating activity is a Family STEM night showcasing the yearlong student STEM projects.

CESI Session: Presenting the Best New Children’s Books to Use When Teaching Science in the Elementary Grades

(Grades 1–5) *105A, Music City Center*
Science Focus: GEN, CCC1, CCC2

Jeff A. Thomas (jathomas@usi.edu), University of Southern Indiana, Evansville

Kristin Rearden (krearden@utk.edu) and **Amy Broemmel** (broemmel@utk.edu), The University of Tennessee, Knoxville
Learn about resources for identifying and integrating recently published award-winning elementary science trade books to support the Tennessee Science Curriculum Framework.

NGSS@NSTA Learning

(Grades K–12) *Grand Ballroom C1, Music City Center*
Science Focus: GEN, NGSS

Christopher Harris (christopher.harris@sri.com), SRI International, Menlo Park, Calif.

Joseph Krajcik (krajcik@msu.edu), CREATE for STEM Institute, Michigan State University, East Lansing
President: Ted Willard (twillard@nsta.org), Program Director, NGSS@NSTA, NSTA, Arlington, Va.

This session is designed for science teachers of all grade levels and state and district leaders who want to be introduced to an approach for developing classroom-based next generation science assessments.

Poems, Texts, Hate Mail, and Other Ways to Incorporate Writing Standards into the Science Curriculum

(Grades 9–12) *Acoustic, Omni*
Science Focus: GEN, SEP8

Leslie Forbes (lforbes@doversd.org), Dover High School, Dover, Pa.

Emphasis will be placed on providing examples of successful strategies that allow students to demonstrate their understanding of scientific concepts through engaging writing activities.

NSELA Session: Equity, Leadership, and Change

(General) *Broadway C, Omni*
Science Focus: GEN

Gary Nakagiri (gnakagiri@gmail.com), SETI Institute, Hayward, Calif.

Jerry Valadez (@samacademymaker; jdvsience@yahoo.com), NSTA Director, Multicultural/Equity, and California State University, Fresno

Learn how NSTA and NSELA are supporting the development of new diverse leaders who are committed to equity through STEM. Contribute your ideas to their efforts.

No Child Left Behind—Past, Present, and Future

(General) *Broadway D, Omni*
Science Focus: GEN

Jodi Peterson (@stemedadvocate; jpeterson@nsta.org), Assistant Executive Director, Legislative and Public Affairs, NSTA, Arlington, Va.

Love it or hate it, No Child Left Behind has left its mark on K–12 education. Let’s take a look at the federal education law Congress first passed in 2002 and discuss its effect on science education and what’s ahead.

Using Crime Scenes to Get the Point Across the Curriculum

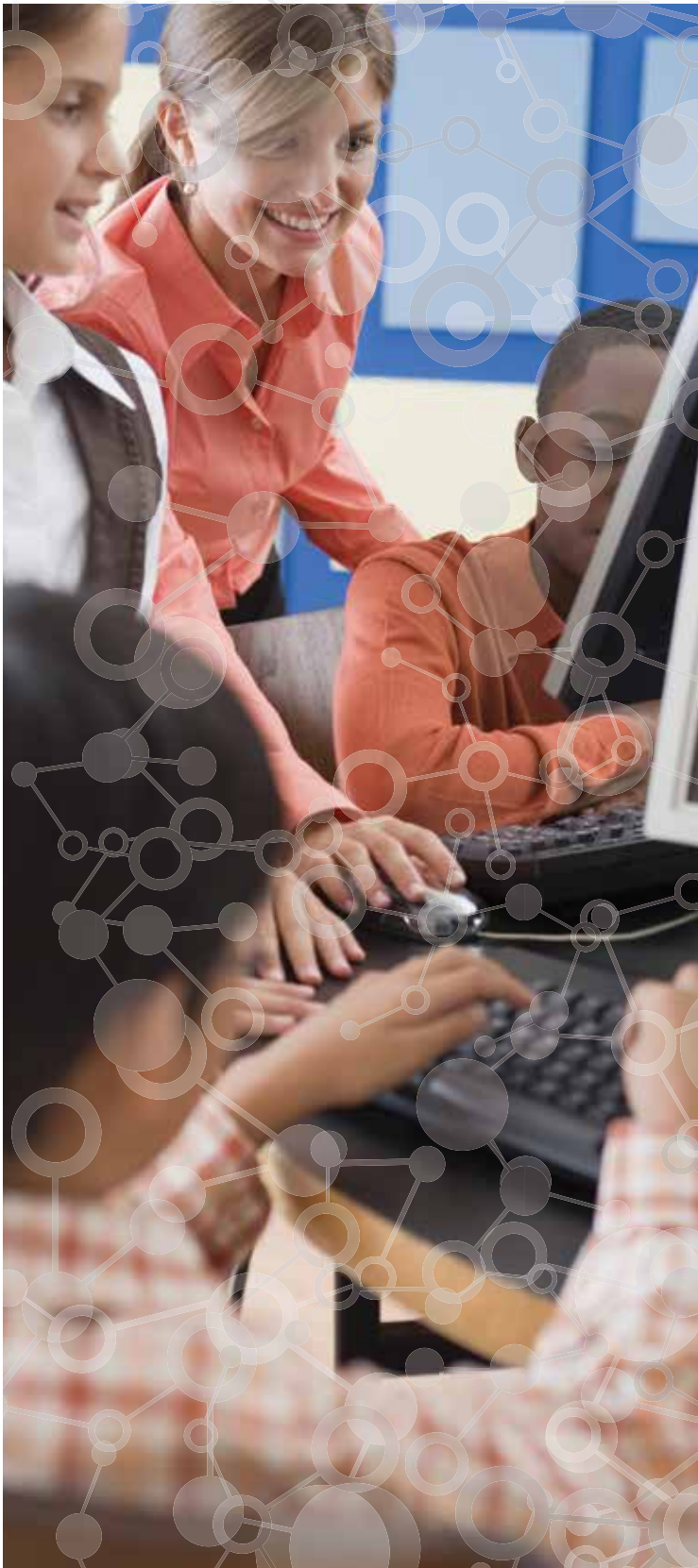
(Grades 6–10) *Broadway G, Omni*
Science Focus: ETS2

Christine Logan-Hollis (@Froggie249427; logan.christine@desoto.k12.mo.us) and **Peggy Boerner-Kirk** (@peggykirk1971; peggykirk1971@gmail.com), De Soto Junior High School, De Soto, Mo.

If you’re not using crime scenes to teach, then your students are missing out! Using forensic science motivates students not only in science, but in English, math, social studies, and art by using various types of technology.



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INF The Role of a 21st-Century Zoo: How We Can Build Youth Environmental Literacy Together

(Grades 6–12)

Cumberland 1, Omni

Science Focus: ETS1.B, INF, LS2, LS4.B, LS4.C, LS4.D, CCC, SEP

Leslie Sadowski-Fugitt (*lsadowski-fugitt@lpzoo.org*), Lincoln Park Zoo, Chicago, Ill.

We will explore how Lincoln Park Zoo couples science inquiry with authentic zoo research tools to empower students to be zoo researchers and conservation leaders.

Applied Genetics: Fast Plant Genetics and Data Analysis for Introductory Life Science

(Grades 7–10)

Cumberland 3, Omni

Science Focus: LS1.B, LS3.A, CCC1, CCC2, CCC4, SEP2, SEP4, SEP5

Michael Ralph (*@ralph0305*; *mralphoe@olatheschools.com*), Olathe East High School, Olathe, Kans.

Shannon Ralph (*@sralph81*; *ralph.shannon@usd443.org*), Dodge City High School, Dodge City, Kans.

Go beyond Punnett squares! See a genetics experiment requiring minimal time that produces data for statistical analysis—without using a single mathematical formula.

Understanding Car Crashes: Saving Lives with STEM Lessons

(Grades 4–12)

Cumberland 4, Omni

Science Focus: GEN, SEP

Griff Jones (*gjones@coe.ufl.edu*), University of Florida, Gainesville

Pini Kalnite, Insurance Institute for Highway Safety, Arlington, Va.

Use free web-based crash-testing videos, classroom STEM activities, and behind-the-scenes tours of a crash research center to integrate STEM practices and promote career awareness.

Tennessee Science Standards Review: K–5 Update and Feedback

(Grades K–5)

Mockingbird 4, Omni

Science Focus: GEN

Laura Encalade (*@LEncalade*; *laura.encalade@tn.gov*), Tennessee Dept. of Education, Nashville

Join us for an update for K–5 teachers on Tennessee’s science standards review process as well as an opportunity for feedback on current drafts.

Science in Media: A Project-Based Learning Activity
(General)

Music Row 1, Omni

Science Focus: GEN

Kelly Devine (*@MsKDevine*) and **Deanna Herman** (*@dherman62*), Notre Dame College Prep, Niles, Ill.

Use a Project-Based Learning activity to increase student awareness of how science and scientists are portrayed in various forms of media content.

Do You Need a New Science Lab?

(Grades 6–12)

Music Row 2, Omni

Science Focus: GEN

Ruth Ruud (*ruudruth61@gmail.com*), Cleveland State University, Cleveland, Ohio

Come learn how to win a Shell Science Lab Makeover (\$20,000 value) for your school. You will have an opportunity to actually begin to complete the application and have your questions answered. The Shell Science Lab Challenge invites middle school and high school science teachers (grades 6–12) in the U.S. and Canada (with special attention to urban and underrepresented groups) to illustrate replicable approaches to science lab instruction using limited school and laboratory resources.

AMSE Session: Rediscovering High-Yield, Underutilized Tools for Culturally Diverse Student Learning

(Grades 3–8)

Music Row 3, Omni

Science Focus: GEN

Veronica Garcia Betancourt (*veronica.betancourt@harlandale.net*), Harlandale ISD, San Antonio, Tex.

Participants are invited to expand their thinking and experience culturally responsive activities designed to build students’ long-term memory retention of science concepts. Select samples will be provided.

INF ASTC Session: Engineering for Animals: A Powerful Way to Engage Students and Teachers in STEM Learning at the Zoo and in the Classroom

(Grades 3–8)

Music Row 4, Omni

Science Focus: ETS, INF, CCC1, CCC2

Kristi Berg (*kristi.berg@state.mn.us*) and **Abby Moore** (*abby.moore@state.mn.us*), Minnesota Zoo, Apple Valley

Learn how the Minnesota Zoo partners with local schools to engage students in authentic STEM learning through our zoo-based engineering design challenges.

NARST Session: Supporting Students to Make Connections Using the Crosscutting Concepts

(Grades 4–9)

Fisk One, Renaissance

Science Focus: GEN, CCC

Sarah Fick (@SarahFick30; ficksj@wfu.edu), Wake Forest University, Winston Salem, N.C.

Anna Arias (aarias588@gmail.com), Illinois State University, Normal

Jonathan Baek (jbaek@hc.wash.k12.mi.us), Honey Creek Community School, Ann Arbor, Mich.

Explore strategies for incorporating the crosscutting concepts into explanation-driven discussions and formative assessments in science classrooms.

Find the Fund\$ for STEM: Grant Writing 101

(Grades P–12)

West Ballroom, Renaissance

Science Focus: GEN

June Teisan (@jlteisan; june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

Do you have Cartier dreams for your students but a dollar store budget? Get tips and tricks for grant writing that can help you craft proposals to fund robust science learning!



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12:30–1:30 PM Hands-On Workshops



Engaging the Natural Curiosities of Children in the Early Years

(Grades P–2/College) 101E, Music City Center
Science Focus: GEN

Frances Hamilton (*franceshamilton87@gmail.com*), The University of Alabama in Huntsville

Investigate ways to tap into students’ natural curiosities to be “little scientists,” even when working on reading and math.

3D Bioengineering Challenges and Middle School Life Science

(Grades 6–8) 103A, Music City Center
Science Focus: ETS1.B, ETS1.C, LS1.A, CCC6, SEP3, SEP4, SEP6

John Howarth (*john_howarth@berkeley.edu*) and **Barbara Nagle** (*bnagle@berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

See examples and get ideas about how to integrate engineering practices into middle school life science through bioengineering activities.

Why/How We Do a Science Camp!

(Grades 2–6) 104C, Music City Center
Science Focus: GEN

Seth Miller (*smiller@lconline.org*) and **Fred Wiechmann** (*fwiechmann@lconline.org*), Lakeland Christian School, Lakeland, Fla.

Our hands-on approach to science provides children with the unique opportunity to conduct engaging experiments, be involved with entertaining activities, and take awe-inspiring field trips daily. Take away ideas, plans, and, resources for your future science camp. Door prizes!

Integrate NGSS and CCSS with a Practical Reading Strategy: Do It, Learn It, Use It!

(Grades K–5) 104D, Music City Center
Science Focus: GEN, SEP8

Caroline Stabile (*@gemsnet10; stokbridge@uri.edu*), **Kelly Shea** (*@kellyshea18; kellyshea@uri.edu*), **Sara Sweetman** (*@gemsnet10; sara_sweetman@uri.edu*), and **Stephanie Good** (*@gemsnet10; stephanie_good@uri.edu*), GEMS-Net Project, The University of Rhode Island, Narragansett

Susan Sabella (*@gemsnet10; ssabella@nssk12.org*), Narragansett Elementary School, Narragansett, R.I.

Extend firsthand science knowledge by targeting a third of CCSS ELA using a practical reading strategy for informational text. Engage in the strategy, view classroom artifacts, and hear from teachers who use it!

INF Engage and Excite with Elementary Science Olympiad

(Grades K–6) 105B, Music City Center
Science Focus: INF

Kelly Price-Colley (*@kpricega; kellyrprice@comcast.net*), NSTA Director, Coordination and Supervision of Science Teaching, and Forsyth County Schools, Cumming, Ga.

Science Olympiad can serve as a structure for family science nights, school science days, and after-school clubs as well as being a popular elementary STEM competition. Come learn more.

Helping Teachers and Students Learn Science Through Picture Books!

(Grades K–8) 106B, Music City Center
Science Focus: GEN, SEP

Douglas Hunnings (*@ETHOS_Douglas; dhunings@elkhart.k12.in.us*), Riverview Elementary School, Elkhart, Ind.

Holly O’Connell (*hoconnell@elkhart.k12.in.us*), Pinewood Elementary School, Elkhart, Ind.

Explore ways to integrate science and ELA with picture books to help students master science concepts, while at the same time enforcing literacy standards!

Lights, Camera, Action! Introducing the Nature of Science and Scientific Inquiry Using Instructional Videos in Grades K–5

(Grades K–5) 106C, Music City Center
Science Focus: GEN, SEP

Catherine Koehler (*@sissianne11; sissianne@aol.com*), Southern Connecticut State University, New Haven

Come engage with strategies for teaching nature of science and scientific inquiry using films like *Finding Nemo*, *Epic*, and *Frozen*.

Constructing Coherent Content Storylines

(Grades K–6) Davidson A2/3, Music City Center
Science Focus: GEN, NGSS

Kimber Hershberger (*kmbhrhersh1109@gmail.com*) and **Carla Zembal-Saul** (*@czem; czem@psu.edu*), Pennsylvania State University, University Park

Judith Kur (*judikur@gmail.com*), Retired Teacher, State College, Pa.

Find out how content storylines linking investigations deepen students’ understanding of science practices and content. Experience the steps for creating your own storylines to guide instruction.

CANCELED

National Earth Science Teachers Association (NESTA) Shares: EarthScope Chronicles—The Newberry Volcano: A Volcano Story

(Grades 7–College)

Davidson B, Music City Center

Science Focus: ESS

Carla McAuliffe (carla_mmcauliffe@terc.edu) and **Erin Bardar** (erin_bardar@terc.edu), TERC, Cambridge, Mass.

Presider: Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

Find out about EarthScope scientists' stories and engage in data-based investigations. Bring a laptop and work along with the presenters exploring these resources.

Engaging in Close Reading of a Text: How to Meet the CCSS While Teaching NGSS Content and Skills

(Grades 6–12)

Broadway K, Omni

Science Focus: GEN, SEP7, SEP8

Lesley Shapiro (lesley.shapiro@ppsd.org), Classical High School, Providence, R.I.

Audrey Miguel (alarmstrong35@gmail.com), St. Rocco School, Johnston, R.I.

NGSS and CCSS keeping you awake? Come learn strategies for integrating CCSS ELA into your instruction so that your students can meet the NGSS.

CSSS Session: Deep Curriculum Alignment—A Pathway to Results

(General)

Cumberland 2, Omni

Science Focus: GEN, CCC1, CCC2

Debra Hall (debra.hall@dpi.nc.gov), **Benita Tipton** (tiptoes722@hotmail.com), and **Jami Inman** (jami.inman@dpi.nc.gov), North Carolina Dept. of Public Instruction, Raleigh

A key to student success is the alignment of standards, curriculum, and the associated assessments. Come explore how to get this daunting task accomplished.

Literacy and Science: Together Is Better

(Grades 6–9)

Cumberland 6, Omni

Science Focus: GEN, CCC, SEP

Lionel Sandner (@LionelSandner; lionel.sandner@gmail.com), Edvantage Interactive, Victoria, B.C., Canada

Sandra Mirabelli (@scilitsandra), Dufferin Peel Catholic District School Board, Mississauga, Ont., Canada

This practical hands-on workshop will engage you in a variety of activities inspired by the cross-curricular integration of skills and habits of mind present in both literacy and science.

Integrating the “M” and the “S” in STEM: An Example Lesson

(Grades 6–10)

Legends C, Omni

Science Focus: GEN, NGSS

Sherri Dennstedt (@dennstedtstem; sdennstedt@cherry-creekschools.org) and **Denise Goldin-Dubois**, Cherry Creek School District #5, Englewood, Colo.

Add this integrated STEM lesson featuring the three dimensions of NGSS, and *Common Core State Standards*, in English language arts and mathematics to your classroom. Design your own experiment and use mathematical models to present your findings as a scientific explanation.

Collaborate, Create, and Challenge: How a District and University Partnership Brought STEM to Elementary

(Grades P–5/College)

Legends F, Omni

Science Focus: ETS, SEP3, SEP6

Michele Wiehagen (michele.wiehagen@sdhc.k12.fl.us) and **Shana Tirado** (shana.tirado@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.

Jeni Davis (jenidavis@usf.edu), University of South Florida, Tampa

The Hillsborough County Public Schools and the University of South Florida partnership developed STEM lessons for the elementary classroom. This workshop will model one STEM lesson and offer many examples.

Teaching Environmental Sustainability with the Model My Watershed Application

(Grades 6–College)

Legends G, Omni

Science Focus: ESS, CCC, SEP2

Susan Gill, Stroud Water Research Center, Avondale, Pa. Model My Watershed is a web-based, interactive, GIS, hydrologic model that allows students and citizens to evaluate the impact of development in their watershed. Let's explore this powerful tool that meets the NGSS.

DuPont Presents: Global Food Security—Creating Solvers for Challenges of the Future

(Grades 9–12) *Music Row 5, Omni*

Science Focus: GEN, CCC1, CCC2

David Black (@davidablack77; dblack3@murraystate.edu), Murray State University, Murray, Ky.

Troy Talford (@troytalford; troy.talford@saukprairieschools.org), Sauk Prairie High School, Prairie du Sac, Wis.

Let us introduce you to an inquiry activity to get students excited about sustainability and their role to feed the nine billion people that will need nourishment by 2050. Experience a fun activity to understand the difference between food that is insecure and food that is secure, which will keep your students active and thinking. A wonderful activity to include in any level of science class!

Fast Modes of Assessment

(General) *Center Ballroom, Renaissance*

Science Focus: GEN

Karen Henman (khenman@brenau.edu), Brenau University, Gainesville, Ga.

Do you spend hours on grading to determine if students are meeting learning goals? Now you can quickly pre or post assess student knowledge through new, easy-to-use online learning tools. It's simple to incorporate these free tools into your lessons immediately. Also, view problem-solving apps showing a virtual world for BYOT in science.

Teaching Evolution Without Tears: Lessons from Darwin Day

(Grades 1–12) *East Ballroom, Renaissance*

Science Focus: LS4

Sarah Sheffield (@chuckdarwinUTK; ssheffi2@vols.utk.edu) and **Jennifer Bauer** (@ChuckDarwinUTK; jbauer5@vols.utk.edu), The University of Tennessee, Knoxville

Kelly Sturner (@Soilgirl18; kmoran@nimbios.org), NIMBioS, Knoxville, Tenn.

This workshop highlights lesson plans created by Darwin Day UT focused on paleontological principles (community development, biodiversity, evolution, and geologic time) according to Tennessee State Standards. *Note:* Handouts and hands-on activities are available for the first 40 participants.

ASTE Session: Activities and Strategies for Teaching Difficult-to-Understand Plant Processes

(Grades 6–College) *Fisk Two, Renaissance*

Science Focus: LS, CCC1, CCC2, SEP6

Stephen Ludwig Thompson (thomp374@mailbox.sc.edu), University of South Carolina, Columbia

I'll share recently published NSTA activities that make plant processes clear and help learners understand how we came to understand the origins of plant matter.

12:30–1:30 PM Exhibitor Workshop

Environmental Science Using Wireless Sensors

(General) *206 A/B, Music City Center*

Science Focus: ESS

Sponsor: PASCO scientific

Ryan Reardon (rreardon71@gmail.com), Shades Valley High School, Birmingham, Ala.

PASCO's new wireless sensors can enhance your environmental science labs! Get hands on with the Wireless Temperature and pH sensors that connect directly to your computer, tablet, or phone and can log data autonomously for environmental monitoring. Twenty-five attendees will win a free wireless sensor!

12:30–2:30 PM Hands-On Workshop

NGSS Toolkit Pathway Session: Using the BSCS Instructional Model to Design Learning Sequences

(Grades 6–College) *Legends B, Omni*

Science Focus: GEN, NGSS

Dora Kastel (@Dora_AMNH; dkastel@amnh.org), American Museum of Natural History, New York, N.Y.

Kathy DiRanna (kdirann@wested.org), K–12 Alliance/WestEd, Huntington Beach, Calif.

Using the BSCS 5E (Engage, Explore, Explain, Elaborate, and Evaluate) Instructional Model, participants will design an NGSS learning sequence that integrates the three dimensions: disciplinary core ideas, practices, and crosscutting concepts.

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Exhibit Hall B

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Saturday	7:30 AM–5:30 PM
Sunday	8:00 AM–12:30 PM

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NSTA National
Science
Teachers
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12:45–1:30 PM Special Session

“Meet and Greet” the Presidents and Board/Council

(General) NSTA Exhibits Entrance, Music City Center

Science Focus: GEN

Be sure to stop by for this special session. Come “meet and greet” with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!



1:00–1:30 PM Presentations

■ ■ ■ Integrating Global STEM Education into All Aspects of the Curriculum

(Grades 4–12) 103C, Music City Center

Science Focus: ESS3, LS2

Courtney Gann, Texas Tech University, Lubbock

Hear how a team of teachers integrated a collaborative global STEM project into multiple areas of the curriculum for a middle school classroom.

A Scientist in the Classroom: A Framework for Learning Using Live Interactive Webcasts

(Grades 5–9) 106A, Music City Center

Science Focus: GEN, NGSS

Colleen Marzecz (marzecz@si.edu) and **Maggy Benson** (benso nm@si.edu), Smithsonian National Museum of Natural History, Washington, D.C.

Devin Reese (reesed@si.edu), Curriculum Developer, Alexandria, Va.

Using the web series “Smithsonian Science How” as a case study, we explore practices and barriers to using interactive webcasts and video in the classroom.

Designing and Implementing Effective Interdisciplinary Instructional Units

(Grades 5–9) Broadway J, Omni

Science Focus: LS1.B

Jennifer Richards (@HandsOn_Class; jennifer.richards@utk.edu), The University of Tennessee Institute of Agriculture, Knoxville

Sondra LoRe (sondra@utk.edu), The University of Tennessee, Knoxville

Integrating topics across disciplines develops higher-order thinking and encourages student engagement. Leave with tools and strategies that empower you to develop your own successful units.

Filmmaking in the Classroom

(Grades 6–12)

Cumberland 5, Omni

Science Focus: GEN, SEP8

Stacia Hottle (@SPEHottle; shottle@tampaprep.org), Tampa Preparatory School, Tampa, Fla.

Bring creativity and critical-thinking skills into the classroom with filmmaking projects. Collaborative thoughtful projects will take your students’ processing skills to the next level.

Using the Science and Engineering Practices in Blended and Online Learning Environments: A Framework for Design

(Grades 6–College)

Music City Ballroom, Renaissance

Science Focus: GEN, NGSS

Cynthia Kern (@Cindy.L.Kern; cindy.l.kern@gmail.com), Quinnipiac University, Hamden, Conn.

Kristoffer Carroll (@RPDPSci; kcarroll@interact.ccsd.net), Southern Nevada Regional Professional Development Program, North Las Vegas

Come join us as we share a research-based lesson framework designed to engage students in the three dimensions of the NGSS in blended and online environments.

1:30–2:30 PM Networking Opportunity**NSTA District Director and Chapter/Associated Group Social in Honor of Wendell Mohling***NSTA Exhibits, Music City Center*

Join us for fresh-baked cookies, brownies, rice krispies treats, and chocolate-dipped strawberries along with coffee and tea while meeting and networking with colleagues and representatives from all of NSTA's 18 districts. Learn more about events, initiatives, and happenings in your district directly from your representatives in an informal setting.


1:30–2:30 PM Exhibitor Workshop**Off to the Races with K'NEX Education's Forces, Energy, and Motion Set!***(Grades 5–9)**108, Music City Center*

Science Focus: PS

Sponsor: K'NEX Education®

Robert Jesberg, K'NEX Education, Hatfield, Pa.

Start your engines! Join the K'NEX® building experience as you build gravity, rubber band, and spring power racers to test physical science concepts. Build models just like your students and investigate, experiment, collect data, graph, and analyze results. We will explore potential and kinetic energy, average speed, and much more.

1:30–4:30 PM Short Course

Geospatial Technology in the STEM Classroom: Integrating Place and Projects for Meaningful Learning Across Content Areas (SC-9)
(Grades 6–12) Tickets Required; \$33 Suite 5A, Sheraton

Science Focus: GEN, CCC1, SEP4, SEP8

Patty Stinger-Barnes (@stingerbarnes; *pstinger@utk.edu*), The University of Tennessee, Knoxville**Brian Smith** (*bsmith@ortn.edu*), Jefferson Middle School, Oak Ridge, Tenn.

For description, see Volume 1, page 56.

1:30–5:00 PM Short Course**Using Games and Modeling to Teach Environmental Science (SC-10)***(Grades 9–12) Tickets Required; \$65 Capitol 2/3, Sheraton*

Science Focus: ESS, SEP2

Kristen Daniels Dotti (*kdotti@vvsaz.org*), Verde Valley School, Sedona, Ariz.

For description, see Volume 1, page 57.

2:00–2:30 PM Presentations**3D A Different Type of PPT: Phenomena, Practices, and Teaching***(Grades 10–12)**103A, Music City Center*

Science Focus: PS, CCC, SEP

Thomas Shiland (*tshi@nycap.rr.com*), Saratoga Springs High School, Saratoga Springs, N.Y.

Examples of how the presentation of simple phenomena in the high school chemistry classroom allows students to develop NGSS science practices and crosscutting concepts.

Scientific Notebooks in a High School Classroom*(Grades 9–12)**Acoustic, Omni*

Science Focus: GEN, SEP2, SEP5, SEP8

Caroline Hadley (*caroline.hadley@wcs.edu*) and **Lauren Angotti** (*lauren.e.angotti@live.com*), Fred J. Page High School, Franklin, Tenn.

Learn how to establish, evaluate, and engage with scientific notebooks at the high school level to implement differentiation, modeling, and reflection.

Blended Learning in the Lab Sciences*(Grades 4–College)**Broadway G, Omni*

Science Focus: GEN, SEP

Teresa Dobler (*tedobler@gmail.com*), Washington Latin Public Charter School, Washington, D.C.

Transform your classroom using free web-based tools. Learn to incorporate collaboration, critical argumentation, and inquiry labs while allowing students to work at their own pace.

Learn to Use Real-Time Data from NOAA in Classroom and Inquiry-Based Learning Activities*(Grades 6–College)**Music City Ballroom, Renaissance*

Science Focus: GEN

Dan Pisut (@danpisut; *dan.pisut@noaa.gov*), NOAA Environmental Visualization Laboratory, Silver Spring, Md.

NOAA View provides teachers with an easy-to-use, free web-based application to access a wealth of Earth systems science data, both in real time, and from the agency's vast archives.

2:00–2:30 PM Exhibitor Workshop

The Change of Seasons

(Grades 5–8)

Booth #1114, Exhibit Hall

Science Focus: ESS

Sponsor: Science First®/STARLAB®

Summer Price (summer.price@sciencefirst.com), Science First/STARLAB, Yulee, Fla.

Using the immersive learning technology of the portable dome and one of the lessons of *Starry Night*, we will demonstrate that the seasons are not generated by the difference in the Earth–Sun distance but by the imaginary axis of Earth, which doesn't stand straight.

2:00–3:00 PM Presentations



NSTA Press® Session: *Models and Approaches to STEM Professional Development*

(General)

101D, Music City Center

Science Focus: GEN, NGSS

Brenda Wojnowski (@BrendaWojnowski; brenda@waieducation.com), WAI Education Solutions, Dallas, Tex.

Celestine Pea, National Science Foundation, Arlington, Va.

Explore practices and strategies for making STEM professional development more effective through a focus on practical application of the PD research base in educational settings.



Let's Go Outside...to the Schoolyard and Beyond

(Grades 6–8)

101E, Music City Center

Science Focus: GEN, SEP3, SEP8

Anne Farley Schoeffler (schoefflera@setoncatholicschool.org), Seton Catholic School, Hudson, Ohio

Explore outdoor education opportunities as well as assessment tools. Plan for a safe, fun science experience. Sample data collection instruments, literacy responses, and artistic responses included.

Inner City Greenhouses: Cross-Curricular Connections and Service Learning Projects

(Grades 10–College)

104A, Music City Center

Science Focus: ETS

Rabieh Hafza (@drhafza; jamalhafza@att.net), Atlanta (Ga.) Public Schools

Hear how an AP physics/AP environmental science teacher used large solar panels and some additional materials to build a solar-powered greenhouse.

Advancing Science Learning: Teaching Elementary Earth Science Concepts Through Engineering Problems

(Grades K–5)

104B, Music City Center

Science Focus: ESS2, ESS3, ETS, CCC, SEP

Kevin Mason (masonk@uwstout.edu) and **Brian McAlister**, University of Wisconsin–Stout, Menomonie

Discover how elementary teachers are using engineering problems to deepen their students' understanding of Earth science concepts and science and engineering practices.

NGSS and Interdisciplinary Lesson Design in Elementary School

(Grades K–5)

106A, Music City Center

Science Focus: GEN, NGSS

Kitchka Petrova (dr.k.petrova@gmail.com), Florida State University, Tallahassee

Engage in activities to design interdisciplinary lessons on specific topics that meet the NGSS.

Going Deeper: Content Literacy Strategies and Instructional Techniques for the Science Educator

(Grades 1–8)

Davidson A2/3, Music City Center

Science Focus: GEN, CCC1, SEP1, SEP8

Mark Weakland (@MarkWeakland; springwatermg@earthlink.net), Reading Specialist, Literacy Consultant, and Author, Hollsopple, Pa.

Help your students more deeply comprehend a variety of science material encountered in many texts. Leave with content literacy strategies and instructional techniques that you can use and integrate before, during, and after science lessons.

Science Inspires

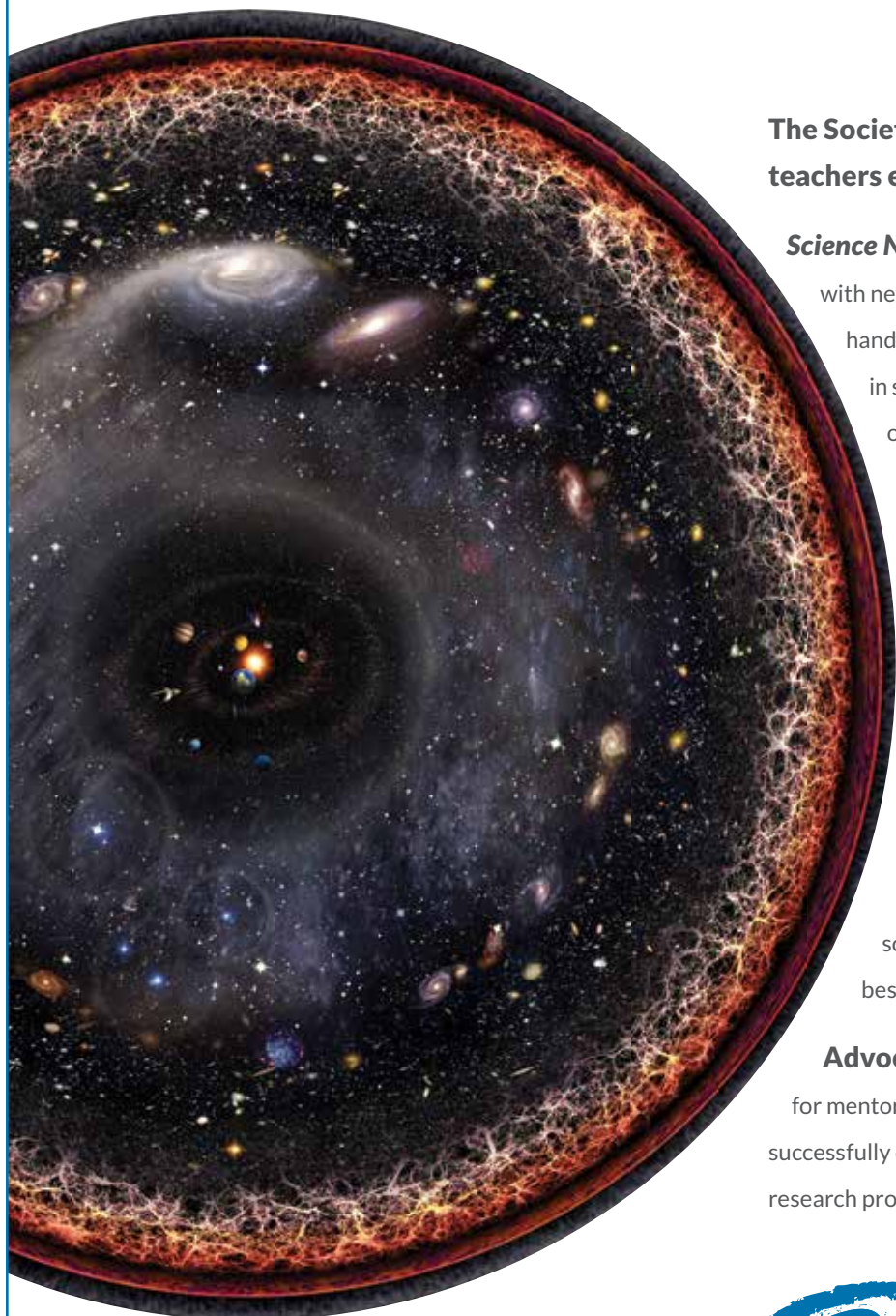
The Society for Science & the Public helps teachers educate and inspire students.

Science News for Students—our free website with news stories, features and ideas for hands-on activities that connect the latest in scientific research to in- and out-of-classroom learning.

Science News in High School—our award-winning magazine delivered to your classroom together with an online educator guide.

Acclaimed education competitions—Intel Science Talent Search (STS), the Intel International Science and Engineering Fair (ISEF), and the Broadcom MASTERS recognize young scientists and teach them how to conduct best-of-class, inquiry-based scientific research.

Advocate Grants—stipends and support for mentors who help under-represented students successfully enter their science or engineering research projects in scientific competitions.



UNIVERSAL MAP This diagram, made up of stitched together NASA imagery, is essentially a map of the observable universe. The solar system is at center. The scale changes as you move outward so that the distances depicted toward the edge of the circle are enormous.
Unmismoobjetivo/Wikimedia Commons (CC BY-SA 3.0)



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The NSTA Learning Center: Free Professional Learning Resources and Opportunities for Educators

(General) *Broadway D, Omni*
Science Focus: GEN

Flavio Mendez (*flavio_m@nsta.org*), Senior Director, Learning Center/SciLinks, NSTA, Arlington, Va.

Al Byers (*abyers@nsta.org*), Associate Executive Director, Services Division, NSTA, Arlington, Va.

Lost when it comes to finding online professional learning resources to enhance your content knowledge and skills? With more than 12,000 resources (25% of which are free) and quality PD opportunities to assist educators with core subject content, the Learning Center has the answers! Get free resources and ICE CREAM!

Award-Winning Share-a-Thon: Featuring NSTA Distinguished Teachers

(General) *Broadway E, Omni*
Science Focus: ESS1.B, PS

Tom Lough (*tom.lough@gmail.com*), Retired Educator, Round Rock, Tex.

Paul Adams (*padams@fhsu.edu*), NSTA Director, District XI, and Fort Hays State University, Hays, Kans.

Robert Adkins, SAVE High School, Anchorage, Alaska

James M. Brown (*jmbrown@nycap.rr.com*), Forest Park Elementary School, Albany, N.Y.

Susan German (*@susan_german*; *susangermanscienceteacher@gmail.com*), Hallsville Middle School, Hallsville, Mo.

Karen Ostlund (*@karen_ostlund*; *klostlund@utexas.edu*), 2012–2013 NSTA President, and The University of Texas at Austin

Alan McCormack (*amccorma@mail.sdsu.edu*), 2010–2011 NSTA President, and San Diego State University, San Diego, Calif.

Shirley Sypolt (*ssypolt@hampton.k12.va.us*), Cooper Elementary Magnet School, Hampton, Va.

Liz Meredith (*@meredithscience*; *liz.meredith@omeresanet*), St. Clairsville Middle School, St. Clairsville, Ohio

Julie Taylor (*julie_taylor@eee.org*), Adelanto (Calif.) School District

Come for conversations with NSTA Distinguished Teaching Award winners who share reflections, describe science teaching approaches/experiences, and discuss favorite projects and current interests.

Fostering a Schoolwide STEM Culture Among Staff and Students

(Grades 6–8) *Broadway J, Omni*
Science Focus: GEN

Laura Campion (*lcampion@m322.org*), **Whitney Reizner** (*wreizner@gmail.com*), and **Erica Zigelman** (*ezigelman@m322.org*), Middle School 322, New York, N.Y.

Emphasis will be placed on strategies for gaining true staff and student buy-in for establishing a cross-curricular environment that is conducive to real-world learning beyond the traditional disciplinary boundaries.

How to Talk About Darwin

(Grades 7–College) *Cumberland 1, Omni*
Science Focus: LS3, LS4, SEP4, SEP6, SEP7, SEP8

Gregory Macklem (*gmacklem@nd.edu*), University of Notre Dame, Ind.

Erik Peterson (*elpeterson@ua.edu*), The University of Alabama, Tuscaloosa

Join in a discussion about teaching Darwin and using insights from colleagues and from history of science to improve student understanding of evolution.

Developing Your Professional Learning Network: How Twitter Will Impact Your Science Teaching

(General) *Cumberland 4, Omni*
Science Focus: GEN

Jeremy Ervin (*@drjervin*; *jervin@cedarville.edu*), Cedarville University, Cedarville, Ohio

This interactive session guides the beginner/expert in Twitter—putting professional learning in your own hands, literally and figuratively. Will take >140 characters to do so.

Tennessee Science Standards Review: Middle School Update and Feedback

(Grades 6–8) *Mockingbird 4, Omni*
Science Focus: GEN

Laura Encalade (*@LEncalade*; *laura.encalade@tn.gov*), Tennessee Dept. of Education, Nashville

Join me for an update for middle school teachers on Tennessee's science standards review process as well as an opportunity for feedback on current drafts.

Equity Through STEM*(General)**Music Row 1, Omni*

Science Focus: GEN

Juliana Texley (@juliana.texley; jtexley@att.net), NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.

Jerry Valadez (@samacademymaker; jdvscience@yahoo.com), NSTA Director, Multicultural/Equity, and California State University, Fresno

Begin with a rich STEM environment and your under-achievers will be empowered and enfranchised to soar. Evidence, ammunition, and resources will be shared.

How Our District Uses the Instructional Design Process to Integrate Instruction*(Grades K–12)**West Ballroom, Renaissance*

Science Focus: GEN, CCC, SEP

Sarah Andrews (sandrews@dps61.org), Decatur (Ill.) Public Schools

Teacher groups collaborate on the development of a problem-based curriculum through a very specific straightforward process. We are excited to share this phenomenal process with you.

INF AMSE Session: Creating Positive School/Home Partnerships with Diverse Families*(Grades 6–12)**Music Row 2, Omni*

Science Focus: INF

Veronica Garcia Betancourt (veronica.betancourt@harlandale.net), Harlandale ISD, San Antonio, Tex.

Take a reflective look at school/family relationships as we engage in conversation on how to build strong valuing partnerships with families.

2:00–3:00 PM Hands-On Workshops**NSTA Press® Session: The Power of Questioning: Guiding Student Investigations***(Grades P–6)**101C, Music City Center*

Science Focus: GEN, NGSS

Lisa Nyberg (@docnyberg; lnyberg@csufresno.edu), California State University, Fresno

Julie McGough (mrmagoojulie2@att.net), University of Nebraska–Lincoln

Let students' questions guide the inquiry while integrating collaborative conversations, reading of informational text, and writing. Find out how to use engaging questioning strategies to foster powerful practices, depth of knowledge, and communication of science concepts that teach the CCSS and science standards!

**How to Master Scientists Inside Your Classroom with High Results***(Grades 5–8)**103B, Music City Center*

Science Focus: GEN

Karhonda Porter (@ItsDrKay; karhonda.porter@mnps.org), Rose Park Magnet Math & Science Middle School, Nashville, Tenn.

Come find out how to increase student test scores and student engagement by using partnerships with middle school teachers with local university scientists.

**Authentic Interdisciplinary Learning Through Simulation***(Grades 6–12)**103C, Music City Center*

Science Focus: GEN, NGSS

Jason Dupuis (jason.dupuis@msichicago.org) and **Sophia Shrand** (sophia.shrand@msichicago.org), Museum of Science and Industry, Chicago, Ill.

Learn how interdisciplinary simulation-based learning can increase student engagement, strengthen lesson authenticity, and foster collaboration.

Saving Our Island: Students Creating Change Over Time*(Grades P–5)**104C, Music City Center*

Science Focus: ESS2.C, ESS2.D, ESS3.C, ETS, LS1.A, LS1.B, LS1.C, LS2.A, LS2.B, LS2.C, LS4.B, LS4.C, LS4.D, PS3, CCC2, CCC3, CCC5, CCC6, CCC7, SEP

Naomi Mayer (mayer_naomi@hotmail.com), **Donna Rhodes** (rhodesisland46@gmail.com), and **Natalie Korodaj-Zellers** (nake_o@cox.net), DoDEA Guam Schools

Let's walk you through the steps to replicate and foster the excitement of learning about invasive species and controlling environmental impacts to promote stewardship!

Children’s Literature and the Nature of Science

(Grades P–6) 104D, Music City Center

Science Focus: GEN

Krista Adams (*kadams12@unl.edu*), University of Nebraska–Lincoln

Children’s literature is for more than fact and fiction! Learn how to leverage multi-genre texts to effectively engage students in learning the nature of science.

Probeware and Practices: Partners for Elementary Science

(Grades 4–5) 104E, Music City Center

Science Focus: PS1, PS3, SEP

John Pecore and **Jennifer Mesa** (*jmesa@uwf.edu*), University of West Florida, Pensacola

Engage in upper elementary lessons using science and engineering practices and probeware sensors to explore disciplinary core ideas in physical science.

CESI Session: Biographies: Trade Books That Conceptualize the Nature of Science

(Grades P–5) 105A, Music City Center

Science Focus: GEN, CCC1, CCC2

Julie Thomas (*julie.thomas@unl.edu*), University of Nebraska–Lincoln

Come get your hands on trade books and science activities that help young children understand the nature and work of a scientist.

Modeling and the Three Dimensions of the NGSS in Middle School Genetics

(Grades 6–10) 105B, Music City Center

Science Focus: LS1.B, LS3, CCC2, SEP2

Barbara Nagle (*bnagle@berkeley.edu*) and **Maia Willcox** (*mwillcox@berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

Participate in hands-on genetics activities that integrate the science practice of modeling into a three-dimensional approach supporting the NGSS for heredity.

Idea Builders: Integrating Engineering and Literature

(Grades 3–8) 106B, Music City Center

Science Focus: GEN, SEP

J. Carrie Launius (*@janetcarrie*; *janetcarrie@gmail.com*), Retiring President, Science Teachers of Missouri, St. Louis
Celeste Nicholas (*celeste.nicholas@gmail.com*), University of Missouri–St. Louis

Students create a product using design methods from learning about engineering practices. High-quality trade books illustrate the design processes.

Story Starts with Science: Using Children’s Literature to Enhance Your Science Curriculum Content

(Grades P–6) 106C, Music City Center

Science Focus: GEN, SEP1

Jennifer Williams (*@ScienceJennifer*; *@nolascience*; *jenniferwilliams@newmanschool.org*), Isidore Newman School, New Orleans, La.

Promote understanding of scientific concepts by integrating children’s literature into project-based activities. Experience the seamless blend of “story time” and science as you engage in STEM activities and leave with a bibliography of titles.

National Earth Science Teachers Association (NESTA) Shares: Geology Share-a-Thon

(General) Davidson B, Music City Center

Science Focus: ESS

Michael Passow (*michael@earth2class.org*), Dwight Morrow High School, Englewood, NJ

Carla McAuliffe (*carla_mcauliffe@terc.edu*), TERC, Cambridge, Mass.

Join more than 20 NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

Hollywood Physics

(Grades 9–12) Broadway C, Omni

Science Focus: PS2.A, PS2.B, CCC2

Aaron Osowiecki (*aosowiecki@bostonpublicschools.org*) and **Jesse Southwick** (*jesse.southwick@gmail.com*), Boston Latin School, Boston, Mass.

Come analyze a few action clips to see how you can use Hollywood Physics to assess your own students in a rich and different way. We will share how to use video analysis to assess students’ understanding of forces and motion.

Why Are We the Way We Are? Supporting Middle School Students in Three-Dimensional Learning to Make Sense of Gene and Environmental Interactions

(Grades 6–8) Broadway H, Omni

Science Focus: GEN, NGSS

Deborah Peek-Brown (*dpbrown@msu.edu*), **Joseph Krajcik** (*krajcik@msu.edu*), **Irene Bayer** (*rbayer@msu.edu*), and **Jane Lee** (*leejanej@msu.edu*), CREATE for STEM Institute, Michigan State University, East Lansing

Louise Mead (*lsmead@msu.edu*), BEACON Center for the Study of Evolution in Action, East Lansing, Mich.

Explore Project-Based Learning environments that engage students in three-dimensional learning while investigating the gene and environment interactions that make us who we are.

Talking Points: The Role of Talk in the Science Classroom

(Grades 6–12)

Broadway K, Omni

Science Focus: GEN, SEP4, SEP7, SEP8

Marsha Buck (@sciencediva00; mbuck@k12k.com) and **Erica Johnson** (@MrsEJohnson109; ejohnson@k12k.com),

Ross N. Robinson Middle School, Kingsport, Tenn.

Walk away with 8539th “paired passages” after participating in this fast-paced interactive session that shares a new strategy to engage students in CCSS-focused scientific argument.

The “How Tos” of an X-STREAM Family Night

(Grades P–5)

Cumberland 2, Omni

Science Focus: GEN

Susan Collins (scolli48@kennesaw.edu), Kennesaw State University, Kennesaw, Ga.

Plan an X-STREAM (Science, Technology, Reading, Engineering, Art, Math) Family Night from start to finish. Leave with strategies that will get all school stakeholders involved in a fun-filled science night for families.

Research Goes to School: Nanoscience-Based Activities Transferable from the Professional Development Workshop to the STEM Classroom

(Grades 9–12)

Cumberland 6, Omni

Science Focus: GEN, NGSS

Alex Madsen (@RGSworkshop; madsena@purdue.edu), Purdue University, West Lafayette, Ind.

Alyce Myers (@RGSworkshop; amyers@nm.k12.in.us), North Montgomery High School, Crawfordsville, Ind.

John Gensic (@bioonthego; john.gensic@gmail.com), Penn High School, Mishawaka, Ind.

Join us for hands-on nanoscience-based activities based on the fundamental concepts of nanoscience and how to implement them in the classroom.

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ABCs of 3D Printing: Applications, Builds, and Curriculum

(Grades 3–College) *Legends C, Omni*

Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6

Douglas Thompson (@dmthomp32; douglast@discoveryplace.org), Discovery Place, Inc., Charlotte, N.C.

Curious about 3D printing? Examine the functionality of 3D printers and explore methods in which 3D printing can be used to support classroom instruction. Take home a 3D-printed object for classroom use.

Math as the Language of Science

(Grades 3–10) *Legends F, Omni*

Science Focus: GEN, SEP

Maryann Stimmer (mstimmer@fhi360.org) and **Ben Dworken** (bdworken@fhi360.org), Educational Equity Center at FHI 360, New York, N.Y.

Rachel Chase (rchas@hunter.cuny.edu), Hunter College, New York, N.Y.

Using real-world experiences, learn integrated strategies for science and math mastery. Leave with activities for the classroom that bring together the NGSS and CCSS.

FAB: Fusing Art and Biology to Enhance 21st-Century Skills

(Grades 6–College) *Legends G, Omni*

Science Focus: LS, CCC, SEP

Linda Jones (lcjones@coe.ufl.edu), University of Florida, Gainesville

Learn how to design and implement interactive, small group hands-on art and model design challenges to introduce, develop, and reinforce core biology concepts.

DuPont Presents: Photosynthesis and Respiration—It's a Plant's Life!

(Grades 8–12)

Music Row 5, Omni

Science Focus: LS1, CCC1, CCC2

Rachel Sauvola (@MrsSauvola; rsauvola@newrichmond.k12.wi.us), New Richmond High School, New Richmond, Wis.

Seely Daniels (seely.daniels@pendleton.k12.or.us), Pendleton High School, Pendleton, Ore.

Help your students sprout and grow with a different approach to teaching photosynthesis and cellular respiration. Learn how to captivate students through inquiry activities that can challenge and excite them. Easily implement activities into your current biology or plant science class.

Creating Meaning Through the Crosscutting Concepts

(Grades K–12)

Center Ballroom, Renaissance

Science Focus: GEN, CCC

Jennifer Gottlieb (@jgottlieb2; jgottlieb@troy.k12.mi.us), Troy (Mich.) School District

Sarah Coleman (scoleman@muskegonisd.org), MAISD Regional Mathematics & Science Center, Muskegon, Mich.

The crosscutting concepts are thinking tools that allow students to connect ideas and make sense of phenomena. Come explore ways to embed them into instruction.

What Does It Look Like When NGSS Are Being Implemented?

(Grades K–12)

East Ballroom, Renaissance

Science Focus: GEN, SEP

Dawn O'Connor (dawnno@acoe.org), **Leena Bakshi** (@Leena219; leena219@gmail.com), and **Mena Parmar** (@MenaParmar; mparmar@acoe.org), Alameda County Office of Education, Hayward, Calif.

Looking for a lens into an NGSS-focused classroom? We will examine a toolkit and classroom video followed by discussion on how to support implementation.

ASTE Session: Energize Your STEM Classroom!

(Grades K–8)

Fisk Two, Renaissance

Science Focus: LS2.B, PS3

Jeffery Townsend (scott.townsend@eku.edu), Eastern Kentucky University, Richmond

Jeffrey Peake (jrpeake@iu.edu), Indiana University Bloomington

Energy is a common thread among all levels of the NGSS. We will model how the concept of energy transfers throughout the STEM-based classroom.

2:00–3:00 PM Exhibitor Workshop

Using Wireless Sensors in Enzyme Activity and Cellular Respiration Labs

(General) *206 A/B, Music City Center*
 Science Focus: LS

Sponsor: PASCO scientific

Ryan Reardon (*rreardon71@gmail.com*), Shades Valley High School, Birmingham, Ala.

Conduct hands-on inquiry investigations on enzyme activity and cellular respiration using PASCO wireless sensors and SPARKvue software. See how sensors can transform tedious, qualitative labs into short data-driven learning experiences for standards-based labs for grades 9–12 general, AP®, and IB® courses. Twenty-five attendees will win a free wireless sensor!

2:00–3:30 PM Meeting

SEPA Board Meeting

(By Invitation Only) *Mockingbird 3, Omni*
 For more information, please visit www.sepamembers.weebly.com.



2:00–3:30 PM Presentation

NGSS@NSTA Forum: Designing or Adapting Curriculum and Instruction to Make It Three Dimensional

(Grades K–12) *Grand Ballroom C1, Music City Center*
 Science Focus: GEN, CCC1, CCC2, SEP2, SEP6, SEP7

Brian Reiser (*@reiserbrianj; reiser@northwestern.edu*), Northwestern University, Evanston, Ill.

Michael Novak (*@mnovakccl; mnovak@mgsd70.org*), Park View School, Morton Grove, Ill.

Tricia Shelton (*@tdishelton; tdishelton@gmail.com*), Boone County High School, Florence, Ky.

Mike Fumagalli (*@mfumagalliELHS; mfumagalli@leyden212.org*), East Leyden High School, Franklin Park, Ill.

President: **Ted Willard** (*twillard@nsta.org*), Program Director, NGSS@NSTA, NSTA, Arlington, Va.

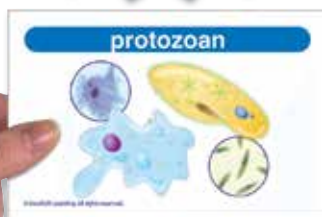
Come learn how to develop a coherent storyline for a unit where instead of students learning about science ideas, they figure them out in order to explain phenomena.

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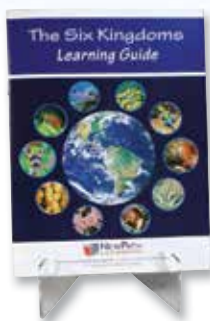
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2:00–3:30 PM Hands-On Workshop

PLI McREL Pathway Session: STEM Models: Where Do I Start and How Do I Decide?

(Grades K–12)

Legends A, Omni

Science Focus: GEN, CCC

Anne Tweed (atweed@mcrel.org), 2004–2005 NSTA President, and McREL International, Denver, Colo.

How do I start a STEM program or school? Every situation is unique. What are the features of different STEM models? What does the research say? How do I choose? I'll start at the beginning and guide you through the process.

2:00–3:30 PM Exhibitor Workshops

MiniOne™ Electrophoresis: Revolutionizing Biotechnology in Real Time

(Grades 7–College)

107A, Music City Center

Science Focus: LS

Sponsor: The MiniOne Electrophoresis

Richard Chan (info@theminione.com), The MiniOne Electrophoresis, San Diego, Calif.

Do an electrophoresis experiment in 30 minutes with the MiniOne! Watch DNA migrate and receive instant feedback to supplement lecture and facilitate learning. The MiniOne offers more hands-on experience for students and less prep time for you. Please bring your smartphone and be ready to take a picture of your results.

Black Holes for High School Physics

(Grades 11–12)

107B, Music City Center

Science Focus: ESS, PS

Sponsor: Perimeter Institute for Theoretical Physics

Damian Pope and **Glenn Wagner**, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

Explore how to teach the fascinating topic of black holes via familiar concepts like forces, gravity, orbits, and potential energy.

Structure and (Fun)ction: Arthropod Body Parts and Evolution

(Grades 6–8)

110A, Music City Center

Science Focus: LS1.A, SEP1, SEP7, SEP8

Sponsor: Celestron

Kristie Reddick (contactus@thebugchicks.com), The Bug Chicks, College Station, Tex.

Using digital microscopes and arthropods, entomologist and educator Kristie Reddick of The Bug Chicks teaches about the evolution of “bug” body parts. Classify, compare, and distinguish between analogous and homologous features. Perfect for novice teachers who want to seriously engage students, or the serious bugdork who wants to dig deeper!



—Courtesy of Jacob Slaton

New Tools, New Insights, and New Ways of Understanding Science with Miller and Levine *Biology*

(Grades 9–12)

110B, Music City Center

Science Focus: LS

Sponsor: Pearson Education

Joseph Levine, Author, Boston, Mass.

Kenneth Miller, Brown University, Providence, R.I.

What does the NGSS really mean? Best-selling *Biology* authors Ken Miller and Joe Levine will walk you through the tools and insights in their new program that supports the NGSS. (Hint: You're doing it already. It's about good teaching.)

CPO Science's New Physics AP1 Link™ Module: Rotational Motion Using the CPO Rollercoaster

(Grades 7–12)

201A, Music City Center

Science Focus: PS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Use CPO Science's Roller Coaster and DataCollector to analyze how mass, radius, and shape affect the linear speed of objects on a ramp. Learn how to evaluate qualitative and quantitative investigations in rotational motion and when each type of investigation is best for your students in an AP1 Physics classroom.

Designing with FOSS: Engineering in Elementary Science*(Grades K–5)**201B, Music City Center*

Science Focus: ETS, SEP

Sponsor: Delta Education/School Specialty Science–FOSS

Brian Campbell, The Lawrence Hall of Science, University of California, Berkeley

FOSS modules provide students with opportunities to engage in engineering experiences to develop solutions to problems using science knowledge and systems thinking. We'll describe and display the opportunities to design with science using a new FOSS grade 3 module. Find out about transitioning to FOSS Next Generation.

Elementary Teacher Survival Kit*(Grades 1–8)**202A, Music City Center*

Science Focus: PS2, PS3.A, PS3.B, PS3.C, SEP1

Sponsor: Educational Innovations, Inc.

Cathy Byrne, Hamilton Avenue School, Greenwich, Conn.**Ken Byrne**, Educational Innovations, Inc., Bethel, Conn.

This hand-on workshop—chock full of easy-to-do science inquiry lessons—enables new and veteran teachers to expand their bag of tricks. Using discrepant events, these activities give students a sense of mystery and awe. Topics include energy, air pressure, scientific method, data collection, and graphing. Door prizes and giveaways!

Science Vocabulary Has Kinetic Energy When It's Moving*(Grades K–12)**202B, Music City Center*

Science Focus: GEN

Sponsor: McGraw-Hill Education

Dinah Zike, *Dinah.com*, San Antonio, Tex.

Learn how to make science terms, phrases, formulas, and key concepts kinesthetic and memorable. In this fast-paced hands-on workshop, participants view and make multiple evidence-based and standards-focused Notebook Foldables and vocabulary manipulatives. Constructed materials can be implemented immediately to enhance daily instruction and organize notebooking activities while providing formative assessment study guides and evaluation tools.

Cool Tools for Sound and Waves*(Grades 6–College)**202C, Music City Center*

Science Focus: PS

Sponsor: Arbor Scientific

Dwight “Buzz” Putnam (*buzzputnam@gmail.com*), Whitesboro High School, Marcy, N.Y.

You will be blown away by these demos by award-winning physics teacher Buzz Putnam. Watch an air wave lift a pile of confetti—without touching it! Hear a spot-on rendition of *Twinkle Twinkle Little Star* using Boomwhackers! Door prizes!

Hands-On Science with Classroom Critters*(Grades K–12)**204, Music City Center*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Add action and excitement to your science class with live organisms! Discover fun, simple hands-on activities with pill/sow bugs, termites, bess bugs, and butterflies that you can use in your labs. Learn about care and handling, as well as easy ways to introduce inquiry. Additional resources available online.

EQuIP Your District for NGSS*(Grades K–8)**205A, Music City Center*

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Making the transition to the new science standards is not as simple as implementing a different curriculum. A process must be designed and implemented for a district to move to the new NGSS—whether they are traditional textbook, inquiry-based, or kit users. Carolina and content partners at the Smithsonian Science Education Center will share outlines of what districts should consider as they make the paradigm shift and of how to evaluate appropriate instructional materials using the EQuIP rubric. Join us for this “How to Get Started” guide, participate in NGSS model lessons, and practice evaluating.

Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher*(Grades 9–12)**205B, Music City Center*

Science Focus: PS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Looking for lab activities that work every time, not just periodically? Explore easy, engaging, safe chemistry activities that are sure to produce a reaction from your students. Whether you're new to chemistry or feeling out of your element, you'll learn new ways to create excitement with hands-on labs and demonstrations.

What Is a Species?

(Grades 9–12)

205C, Music City Center

Science Focus: LS4.D

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

In this activity from the SEPUP high school biology program, participants learn about conditions that lead to speciation, including isolation due to temporal, geographical, and behavioral factors, and more. They then apply this knowledge to determine whether selected animal or plant pairs are in the early, mid, or late stages of speciation.

Grant Writing: Designing for Dollars

(General)

207A, Music City Center

Science Focus: GEN

Sponsor: Ward's Science

Rusti Berent, Ward's Science, West Henrietta, N.Y.

Expand your STEM ideas and turn them into well-designed projects that engage and excite funders. Practice identifying opportunities and matching them with standards-focused science activities. Come with ideas and leave with hands-on tools and sample project proposals to help plan, justify, budget, evaluate, and sustain your project.

Using Primary Literature to Teach Data Literacy

(Grades 9–College)

207B, Music City Center

Science Focus: LS, CCC2, CCC3, SEP4, SEP5, SEP6, SEP7, SEP8

Sponsor: HHMI BioInteractive

Bridget Conneely, Howard Hughes Medical Institute, Chevy Chase, Md.

Bob Kuhn, Centennial High School, Roswell, Ga.

Ann Brokaw, Rocky River High School, Rocky River, Ohio
HHMI BioInteractive presents a new monthly series called “Data Points” that features a figure from primary literature to engage students in the process of interpreting graphs. Participants will analyze graphs and interpret what the data show and what the results mean in the context of the scientific study.

Inquiry-Based Biology with Vernier

(Grades 9–College)

207C, Music City Center

Science Focus: LS, SEP

Sponsor: Vernier Software & Technology

Rick Rutland, Five Star Education Solutions, Stockdale, Tex.

Involving your students in inquiry-based biology can be fun and easy. Many investigations have been designed and tested in our lab book, *Investigating Biology through Inquiry*. In this

engaging hands-on workshop, you will conduct an inquiry-based biology investigation using Vernier sensors with a LabQuest 2 or Logger Pro computer software.

iPad and Wireless Sensors with Vernier

(Grades 3–College)

207D, Music City Center

Science Focus: GEN, SEP

Sponsor: Vernier Software & Technology

Verle Walters (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. This workshop will address data collection with iPads and Vernier technology, including our Go Wireless sensors. Experiments from Vernier lab books will be covered, including “Boyle’s Law” and “Grip Strength Comparison.”

Identify Patient Zero of a Zombie Apocalypse!

(Grades 9–College)

208A, Music City Center

Science Focus: LS2, CCC1, SEP

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Explore the spread of a zombie virus with this hands-on lab using the power of an ELISA assay. The specific nature of antibodies enables the testing of almost any biological molecule that elicits an immune response. Learn how an ELISA can monitor transmission and track the spread of disease!

Upgrade Your Chemotaxis Lab! (Focuses on AP Biology Big Ideas 1–4)

(Grades 9–College)

208B, Music City Center

Science Focus: LS1, LS2, LS3, LS4.C, CCC4, SEP

Sponsor: Bio-Rad Laboratories

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

Integrate genetics and neurobiology while infusing your chemotaxis lab with inquiry. Use *C. elegans* to compare normal and mutant behavior in a classical conditioned learning experiment (think Pavlov’s worms). Explore worm taste preferences in a simple chemotaxis assay, and examine the connection of our worm mutant to human diseases.



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Flinn Scientific's Exploring Chemistry™: Connecting Content Through Experiments

(Grades 9–12)

209A, Music City Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Jillian Saddler, Flinn Scientific, Inc., Batavia, Ill.

Join us as we present interactive activities and demonstrations that showcase the features and benefits of our Exploring Chemistry kits! We will highlight integrated lab and learning activities for some of the major topics in your chemistry curriculum! The experiments, demos, and Process-Oriented Guided Inquiry Learning (POGIL) activities ensure that students will really understand the concepts and get a glimpse of the underlying simplicity and beauty of chemistry!

Project-Based STEM/Engineering

(Grades 5–College)

209B, Music City Center

Science Focus: ETS

Sponsor: WhiteBox Learning

Graham Baughman, WhiteBox Learning, Louisville, Ky. Engage your students in the STEM/Engineering Curriculum for grades 6–12, the complete engineering design process. WhiteBox Learning is a standards- and activity-based turn-key STEM Learning System. Students can research, design, analyze, and simulate their designs, and compete “virtually,” 24/7, all around the world, from any browser. Integrated LMS included as well as hands-on activities.

Biotech Is STEM!

(Grades 9–College)

209C, Music City Center

Science Focus: LS

Sponsor: G-Biosciences

Ellyn Daugherty (ellyn@biotech.com), Biotechnology Educator, Redwood City, Calif.

It is “The Age of Biotechnology.” Learn strategies to plan and implement an innovative STEM biotech curriculum for all students. Ellyn Daugherty, biotechnology educator/author of *Biotechnology: Science for the New Millennium*, shares tools and activities from her curriculum and G-Biosciences, bringing STEM experiences that lead students to do science in adult environments.

A Better Approach to Chemistry

(Grades 7–College)

210, Music City Center

Science Focus: PS

Sponsor: Fisher Science Education

Robert Marshall (robert.marshall@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.

Flip your chemistry lab with innovative STEM solutions that can put the power in your students' hands and make your

operations easier—from chemical inventory management to data logging. Sharpen your lab skills and safety knowledge along the way.

Make Science Come to Life

(Grades 1–5)

211, Music City Center

Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore, create, and share discoveries as they build solutions to real-world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students' confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

A Peek Behind the Curtain: Disney Parks Approach to Physics and Energy

(Grades 6–12)

212, Music City Center

Science Focus: ETS, PS

Sponsor: Disney Youth Programs

Joseph Cardello, Disney Parks Education Facilitator, Anaheim, Calif.

Join us for a peek into how Disney conducts in-park field trips that teach kids how Disney uses mechanical physics and elements, such as light and sound, to create world-class attractions and entertain guests from around the world.

The Many Jobs of Proteins: Enzymes in the Spotlight

(Grades 8–College)

214, Music City Center

Science Focus: LS, CCC1, CCC2, CCC3, CCC4, CCC6, SEP1, SEP2

Sponsor: 3D Molecular Designs

Gina Vogt (vogt@msoe.edu) and **Margaret Franzen** (franzen@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Using 3-D physical representations, students discover that proteins are linear sequences of amino acids that spontaneously fold into complex shapes following basic principles of chemistry. This hands-on workshop explores a specific class of proteins—enzymes—to introduce the concepts of substrate, active site, specificity, and competitive/noncompetitive inhibition.

Personalizing Your Science Instruction*(Grades K–12)* 401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Renee Cartier, Discovery Education, Silver Spring, Md. What is personalized learning and how can you implement it in the science classroom to meet the needs of all learners? In this workshop, participants will explore the different aspects of personalized learning and engage in practical ways to bring this learning to the science classroom.

2:00–4:00 PM Hands-On Workshop**INF Science in the Community Session: Interactive Forum on Science and Art***(General)*

101 A/B, Music City Center

Science Focus: INF, CCC1, CCC2, SEP1

Phyllis Katz (*pkatz15@gmail.com*), Retired Educator, Silver Spring, Md.

Robert Root-Bernstein (*rootbern@msu.edu*), Michigan State University, East Lansing

Laura Conner (*ldconner@alaska.edu*), Geophysical Institute, University of Alaska, Fairbanks

Science through graphic arts, craft, drama, and music can stimulate minds in new and helpful ways. Come STEAM along with us and try these techniques.

2:30–3:00 PM Presentations**3D Creating and Sharing Three-Dimensional NGSS-Focused High School Chemistry Lessons in a Virtual Professional Learning Community***(Grades 9–12)* 103A, Music City Center

Science Focus: PS, CCC, SEP

Kristen Cacciatore (*kcacciatore@boston.k12.ma.us*), East Boston High School, Boston, Mass.

Raymond Stadt (*@rstadt31; rstadt31@comcast.net*), Eisenhower High School, Blue Island, Ill.

A team of six chemistry teachers from around the country collaborate virtually to create and revise NGSS-focused lesson plans and then share them with other teachers.

3:00–4:00 PM Exhibitor Workshop**Build, Program, and Control with K’NEX Education’s New Robotics Building System***(Grades 5–10)*

108, Music City Center

Science Focus: ETS

Sponsor: K’NEX Education®

Robert Jesberg, K’NEX Education, Hatfield, Pa.

This dynamic hands-on building system teaches students how to apply programming skills to operate various built models. You’ll be the student in this workshop, as you write your own computer program to control a vehicle model built out of K’NEX! Space limited: 24 working, 20 observing. Arrive early!

Turning Your Students into Citizen Scientists*(Grades 9–12)* Acoustic, Omni

Science Focus: GEN, SEP

Patrick Murphy, Downers Grove North High School, Downers Grove, Ill.

Emphasis will be placed on how teachers can use common technologies like phones, Google Docs/forms, and ImageJ to produce authentic lab experiences.

Creating Interactive Lessons for the Flipped Classroom*(General)* Broadway G, Omni

Science Focus: GEN, SEP7, SEP8

Nick LaFave (*@nflafave; nick.lafave@clover.k12.sc.us*), Clover High School, Clover, S.C.

Learn easy ways to create interactive instructional videos and online lectures for your students with tools you already know how to use.



3:30–4:00 PM Presentations



NSTA Press® Session: *Beyond the Numbers: Making Sense of Statistics*

(Grades 6–College) 101C, Music City Center
Science Focus: GEN

Edwin Christmann (edwin.christmann@sru.edu), Slippery Rock University of Pennsylvania

Add new learning to your classroom. Let's focus on the NSTA Press book, *Beyond the Numbers: Making Sense of Statistics*.

INF Little Learners, BIG Ideas: Learning on the Go, Community Partnerships for Early Childhood

(Grades P–3) 104B, Music City Center
Science Focus: INF

Allison Bemiss (@LittleInnovator; allison.bemiss@wku.edu), Western Kentucky University, Bowling Green

How do children become innovators? We will take a look at how we successfully partnered with local businesses, a university, the public library, and a regional education cooperative to plan STEAM-themed family nights for young children.

Don't Be a Crash Test Dummy!

(General) Broadway G, Omni
Science Focus: GEN, NGSS

Charles Harmon (distantshores1776@yahoo.com), kNOW Crash Test Dummies, Inc., Whittier, Calif.

Students learn STEM by building safety cars engineered with seat belts, air bags, and roll bars to protect egg drivers in simulated crash experiments.

**3:30–4:30 PM Robert H. Carleton Lecture
Moving Toward NSTA's Vision to Be the Leader in
Science Education**

(General) Davidson A2/3, Music City Center
Science Focus: GEN



Herb Brunkhorst (hkbrunh@csusb.edu), Professor Emeritus of Science Education and Biology, California State University, San Bernardino

President: Linda Gale Stanley, Building the Band: Involving Community Stakeholders Strand Leader; TSTA President; and STEM Coordinator,

Campbell County Schools, Jacksboro, Tenn.

This “lecture” will be a discussion to explore how NSTA becomes the “go to” leader in science education. How does NSTA use its collective expertise, especially that of the classroom teacher of science, to advance science literacy for ALL?

For nearly 50 years, Herbert Brunkhorst has been a nationally recognized leader in science education. He is professor emeritus at California State University San Bernardino. During his many years as a classroom teacher and university faculty member, he has also devoted his time and expertise to a range of science and science education organizations, including serving as president of the Association for the Education of Teachers of Science, member of the Council of Scientific Society Presidents, elected Fellow of the American Association for the Advancement of Science, and Lifetime National Associate of the National Academy of Sciences, to name just a few.

While on the NSTA Board of Directors, he served as director of Preservice Science Teacher Preparation. His record of publishing in science education; presenting sessions at state, national, and international professional conferences; and successfully writing grants is truly exceptional. For his efforts, he has received countless awards, including being honored with the NSTA Robert H. Carleton Award, the Utah Governor's Recognition Award in Science Education, and the California Science Teachers Association's Margaret Nicholson Award for Distinguished Service in Science Education.

3:30–4:30 PM Presentations

Uncovering Student and Teacher Ideas in Science Using Probes

(General) *101D, Music City Center*
 Science Focus: GEN

Douglas Hunnings (@ETHOS_Douglas; *dhunnings@elkhart.k12.in.us*), Riverview Elementary School, Elkhart, Ind.
Susan Disch, ETHOS Science Center, Elkhart, Ind.

Page Keeley (@CTSKeeley; *pagekeeley@gmail.com*), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Hear how teachers and professional developers have used the *Uncovering Student Ideas* series to help improve instruction, in and out of the classroom.

Renewable Energy Dashboard for Student Education
 (Grades 7–12) *104A, Music City Center*

Science Focus: GEN
Christine Gleason (*cgleason@greenhillsschool.org*), Greenhills School, Ann Arbor, Mich.

The Greenhills School Renewable Energy Dashboard monitors, displays, and archives performance data from multiple renewable energy resources for use in middle school and high school student education.

Creativity, Curiosity, and Critical Thinking Combined: Using Nuggets of Science to Model Inquiry
 (Grades 4–7) *106A, Music City Center*

Science Focus: GEN, ECCC

Dia Michels, Science, Naturally!, Washington, D.C.
 Discover strategies to build confidence and encourage curiosity. We'll use science questions and brainteasers to spur deductive reasoning and help kids make connections to real life.

CANCELED

BOOT SCOOTIN' BOOGIE!

Saturday, April 2, 8:00–10:00 PM, at the Frontier Room

Frontier Room (located above the Whiskey Bent Saloon)
 306 Broadway, Nashville, TN 37201 • 615-401-2580

*The Frontier Room of the Whiskey Bent Saloon has a separate entrance, which is located around the corner on 3rd Avenue and up the stairs behind the Saloon.

Open to y'all!

Git yerself over to the **Frontier Room** (directions at left) for an opportunity to network and meet up with your colleagues on the last night of the NSTA conference.

This evening of entertainment will feature...

- **Charity Byars, performing artist and band** as well as line dance lessons and traditional bar foods for sale, including pulled pork sandwiches, sliders, tater tots, etc. (ranging from \$5 to \$15).

*Cash bar with the “*Boot Scootin’ Bourbon*” drink special!



INF STEMSHOT: A Community-Sponsored Rocket Challenge

(Grades 4–College) *Acoustic, Omni*
Science Focus: ETS1, INF, PS2, PS3, CCC1, CCC6, SEP1, SEP3, SEP4

Rico Tyler (*rico.tyler@wku.edu*) and **Lee Ann Smith** (*@smith_shots; leeann.smith@wku.edu*), Western Kentucky University, Bowling Green

Brian Womack (*@brian_womack; brian.womack@grrec.org*), Green River Regional Educational Cooperative, Bowling Green, Ky.

Simone Parker (*@Nalelenye; simone.parker@trigg.kyschools.us*), Trigg County High School, Cadiz, Ky.

Learn how a university and an educational cooperative partnered to design and host an annual team rocket challenge that teaches science and engineering practices.

Zoo Genetics: A Partnership Between Scientist and Teacher

(Grades 7–College) *Broadway D, Omni*
Science Focus: GEN, SEP4, SEP7

Jason Crean (*jcrean@lths.net*), Lyons Township High School South, Western Springs, Ill.

Check out this free genetics curriculum resulting from a partnership between a scientist and teacher with activities that look at real-world conservation issues through simulations.

3D Design and Printing: Basics for Teachers

(Grades 4–10) *Cumberland 1, Omni*
Science Focus: ETS, SEP2

Cary Busby (*@BusbySci; cary@themuseknoxville.org*), The Muse Knoxville, Tenn.

Arm yourself with basic tools, skills, and tips for managing student-led 3D design and printing! Integrate science with technology, engineering, and art.

Demonstrations: Writing and Assessment in the Science Classroom

(Grades 6–12) *Cumberland 3, Omni*
Science Focus: PS1, SEP1, SEP2, SEP4

Kyle Duhon (*kyleduhon@gmail.com*), Prairieville Middle School, Prairieville, La.

Learn how to use demonstrations to assess student understanding of physical science/chemistry topics.

Connecting Content to the Grid

(Grades 6–8) *Cumberland 4, Omni*
Science Focus: ETS

Jessica Minton (*mintonj04@gmail.com*), Riverdale Elementary School (K–8), Germantown, Tenn.

Erin Wills (*ewills1@utk.edu*), The University of Tennessee, Knoxville

Would you like to electrify your classroom? Discover how to energize the content using real-world applications.

CSSS Session: Outstanding Science Trade Books in the Classroom

(Grades K–5) *Legends G, Omni*
Science Focus: GEN, CCC1, CCC2

Linda Schoen-Giddings (*lins326@aol.com*), LSG Educational Consultants, Santa Fe, N.Mex.

Learn how to use Outstanding Science Trade Books in the classroom to teach grade-level standards and integrate CCSS ELA with the NGSS.

Tennessee Science Standards Review: High School Update and Feedback

(Grades 9–12) *Mockingbird 4, Omni*
Science Focus: GEN

Laura Encalade (*@LEncalade; laura.encalade@tn.gov*), Tennessee Dept. of Education, Nashville

Join me for an update for high school teachers on Tennessee's science standards review process as well as an opportunity for feedback on current drafts.

Integrating STEM, STEAM, and Culturally Relevant Teaching into Teacher Preparation Programs to ELLs and Those with Disabilities

(Grades 1–11) *Music Row 1, Omni*
Science Focus: GEN

Steve Showalter and **Patricia Peterson**, Northern Arizona University, Flagstaff

Gerry Madrazo, Jr. (*gerrymadrazo@gmail.com*), 1993–1994 NSTA President, and Science Education Consultant, Gibsonville, N.C.

Explore best practices in STEM/STEAM instruction for English language learners that are integrated into teacher education programs serving culturally/linguistically diverse ELLs and ELLs with disabilities.

Enhancing Student Learning in Science Using Literacy Strategies*(Grades 6–12)**Music Row 2, Omni*

Science Focus: GEN, SEP1, SEP7

Bev DeVore-Wedding (@bdevore; bdevorewedding@gmail.com), NSTA Director, High School Science Teaching, and University of Nebraska–Lincoln

Promoting reading and writing while learning science? Use proven literacy strategies to enhance your students' science knowledge and science literacy for the 21st century.

INF ASTC Session: Catalyzing Energy Education*(Grades 5–12)**Music Row 3, Omni*

Science Focus: INF, CCC1, CCC2

Margaret Glass, Director, Professional Development, ASTC, Washington, D.C.

Sandra Ryack-Bell (sryackbell@mits.org), MITS, Inc. (Museum Institute for Teaching Science), Quincy, Mass. Museum educators connect with teachers and community partners in a new energy education initiative to share effective strategies and resources.

NSELA Session: NGSS Engineering: How to Help Every Teacher Move from Panic to Plan*(Grades 6–College)**Music Row 4, Omni*

Science Focus: ETS1

Ann Hammersly (@ahammer9Ann; ahammersly@susd.org), Chaparral High School, Scottsdale, Ariz.

Encounter examples and strategies for teacher leaders to incorporate engineering ideas into every science classroom. Professional development ideas for all subject areas included.

3:30–4:30 PM Hands-On Workshops**Regurgitation and Argumentation: Teaching Science Practices Using Owl Pellets***(Grades K–5)**101E, Music City Center*

Science Focus: LS, SEP1, SEP3, SEP4, SEP7, SEP8

José Rios (jrios@u.washington.edu), University of Washington Tacoma

According to the NGSS, claims and evidence are integral parts of the science practices. Come explore how you can use owl pellets to teach scientific argumentation.

**Forces and Motion: An Integrated K–8 Hands-On Approach Supporting the NGSS and CCSS ELA***(Grades K–8)**103C, Music City Center*

Science Focus: PS

Laura Robertson (robertle@etsu.edu), **LaShay Jennings** (jenningsjl@etsu.edu), **Huili Hong** (hongh1@etsu.edu), **Karin Keith** (keithkj@etsu.edu), and **Chihche Tai** (cctai59@gmail.com), East Tennessee State University, Johnson City

Explore the benefits of merging experiential science and literacy instruction to deepen students' understanding of force and motion.

3D Using NGSS Tools and Resources in Your Classroom*(Grades K–12)**103A, Music City Center*

Science Focus: GEN, NGSS

Presenters to be announced

Join NGSS writers to discuss ways to use the newest tools and resources from nextgenscience.org to support your NGSS-focused instruction.

**Developing STEM Partnerships You Can't Live Without***(General)**103B, Music City Center*

Science Focus: INF

Eric Hall (@hallscience; eric.hall@dmschools.org) and **Maureen Griffin** (@HHSProflearn; maureen.griffin@dmschools.org), Hoover High School, Des Moines, Iowa

Learn how the structure of your STEM outreach programming can better support quality school-partner interactions using our compelling partnership framework.

Energize Your Elementary Students*(Grades K–5)**104C, Music City Center*

Science Focus: GEN

Linda Fonner (lfonner@k12.wv.us), New Martinsville Elementary School, New Martinsville, W.Va.

Calling K–5 teachers, come engage in energy activities that may be taught across various subject areas. Experiments, skits, lap books, and the arts will be included.

K–5 Science Literacy: How to Make It Work

(Grades K–5) *104D, Music City Center*

Science Focus: GEN, NGSS

Eva Olafson (*olafson_eva@salkeiz.k12.or.us*) and **Susan Luna** (*luna_susan@salkeiz.k12.or.us*), Salem-Keizer School District, Salem, Ore.

Emphasis will be placed on strategies to integrate science content into literacy and math blocks. We will highlight NGSS connections to the CCSS.

Get Ready for the Great American Eclipse!

(Grades 4–9) *104E, Music City Center*

Science Focus: ESS1.A, ESS1.B, CCC1, CCC3, SEP4

Brian Kruse (*@astroteacher8*; *bkruse@astrosociety.org*) and **Linda Shore**, Astronomical Society of the Pacific, San Francisco, Calif.

Discover how to safely view the August 2017 total solar eclipse, and engage in a three-dimensional modeling and data analysis to understand the pattern of eclipses.

CESI Session: Web 2.0 Tools for Science Teaching

(Grades K–8) *105A, Music City Center*

Science Focus: GEN, CCC1, CCC2

Jim McDonald (*@jimsciencetech*; *jim.mcdonald@cmich.edu*), CESI President, and Central Michigan University, Mount Pleasant

Scott Roberts (*sroberts16@hotmail.com*) and **Jason Artero**, Central Michigan University, Mount Pleasant

This workshop will demonstrate Web 2.0 technology tools to create projects for K–8 science teaching and learning. Participants will explore the tools with their laptops or smartphones.

Linking Science and Literacy for Improved Student Outcomes

(Grades K–6) *105B, Music City Center*

Science Focus: GEN

Bill Badders (*@baddersb*; *baddersb@roadrunner.com*), 2013–2014 NSTA President, and Retired Educator, Cleveland Heights, Ohio

Come explore strategies for linking science and literacy that support students' abilities to read, write, and discuss in the context of science and inquiry-based learning using fiction and nonfiction texts. Engage in hands-on examples of how science supports literacy and literacy supports science.

Understanding the Threads: A Three-Dimensional Approach to NGSS Using Hands-On Methods

(Grades 3–8) *106B, Music City Center*

Science Focus: GEN, NGSS

Eric Welker (*eric@raft.net*), RAFT San Jose, Calif.

Learn how to teach three effective hands-on activities correlated to the NGSS performance expectations and explore how to teach them using a three-dimensional approach.

Astronomy Activities for Your Classroom

(Grades K–12) *106C, Music City Center*

Science Focus: ESS1, ESS2, CCC1, CCC3, CCC4

Donald Powers (*DT-Powers@wiu.edu*), Western Illinois University, Macomb

Join me as I spotlight a variety of low-budget hands-on astronomy activities that you can immediately use in your classroom.

National Earth Science Teachers Association (NESTA) Shares: Rock, Mineral, and Fossil Raffle

(General) *Davidson B, Music City Center*

Science Focus: ESS

Michael Passow (*michael@earth2class.org*), Dwight Morrow High School, Englewood, N.J.

President: Parker Pennington IV (*p.o.pennington@gmail.com*), NESTA Board Member, Ann Arbor, Mich.

NESTA offers a chance to win one or more display- and classroom-quality rock, mineral, and fossil specimens, as well as other Earth science–related materials.

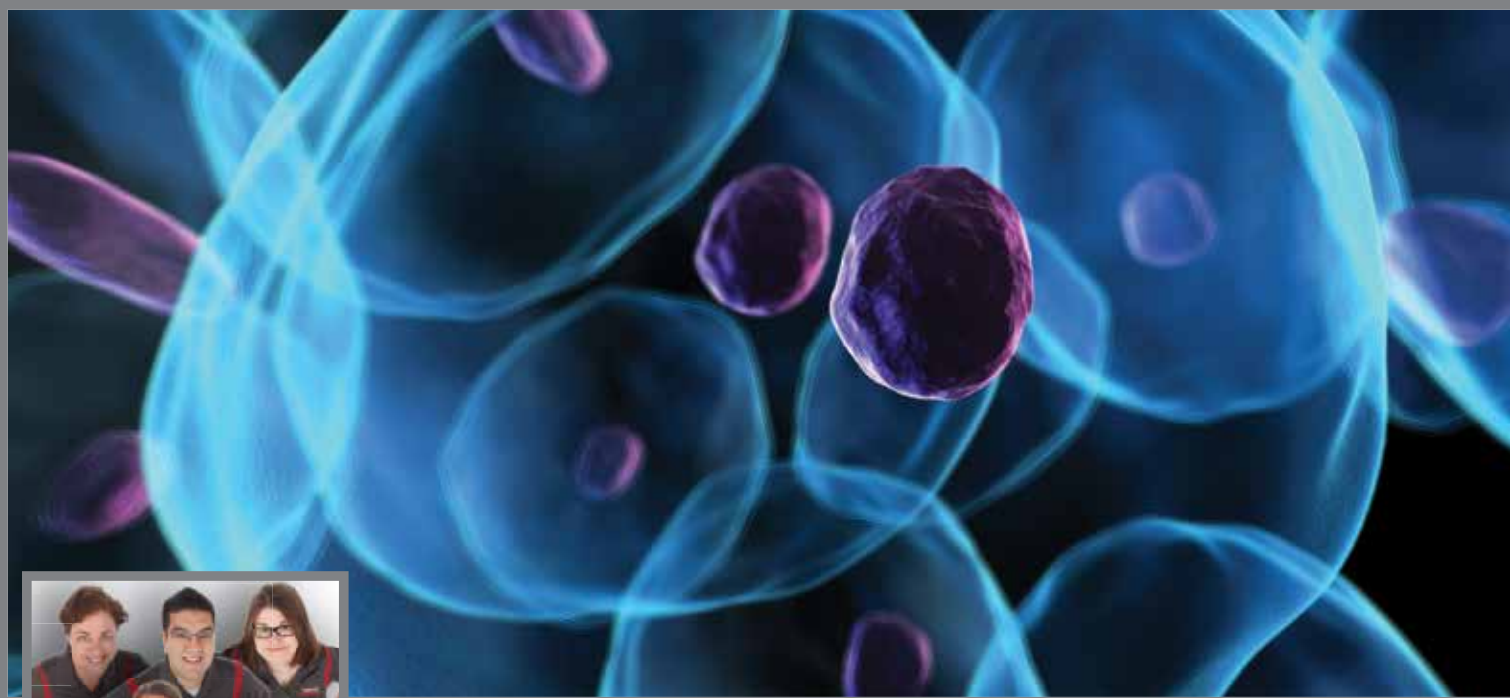
Project ReCharge: Designing Energy Detectives in Your School!

(Grades 6–12) *Broadway C, Omni*

Science Focus: GEN, NGSS

David Crowther (*crowther@unr.edu*), University of Nevada, Reno

Project ReCharge is an NSF-funded project for Energy Education through the University of Nevada, Reno and Envirolution. This PBL energy education program turns your students into energy detectives to save your school money on energy bills. Join me for one of the activities from the program. Handouts!



Discover the Ward's Science Plus Us in person when you attend our hands-on interactive workshops. You'll learn new teaching techniques, experience innovative new products, talk science with our in-house experts, and much more.

2016 Ward's NSTA Workshop Schedule

Hands-On Training with the Ward's Science Plus Us Team

All Workshops are Located in Ward's Science Workshop Room #207A

Thursday, March 31

- 8:00 – 9:30 a.m. Artificial Selection, it's unnatural!
- 10:00 – 11:30 a.m. Forces, Integrations and Energy, Oh My
- 12:00 – 1:30 p.m. Introduction to BioBuilder
- 2:00 – 3:30 p.m. Lift Weight and Produce Electricity with the Power of Wind
- 4:00 – 5:30 p.m. CTE: Real life Forensics Brought to the Classroom, Solving the Case

Friday, April 1

- 8:00 – 9:30 a.m. Outbreaking Bad!!
- 10:00 – 11:30 a.m. Apply the Science of Energy, Motion, and Friction
- 12:00 – 1:30 p.m. Fracking the CASE
- 2:00 – 3:30 p.m. Grant Writing: Designing for Dollars
- 4:00 – 5:30 p.m. Chemistry of Wine

Saturday, April 2

- 8:00 – 9:30 a.m. Vampire Chronicles: Sink Your Teeth into Genetics and Blood Typing
- 10:00 – 11:30 a.m. Grant Writing: Pipelines, Partnerships, and Finding Funding
- 12:00 – 1:30 p.m. Let physics show how cars may really drive themselves in the future with the ERGOBOT!
- 2:00 – 3:30 p.m. Elementary Science Activity Jamboree
- 4:00 – 5:30 p.m. Physics of Music

Stop by Booth #142 to see our latest products and enter to win science prizes!

**ward's
science+**

Using Collaborative Web Tools to Support Three-Dimensional Learning in Earth Science

(Grades 6–8)

Broadway H, Omni

Science Focus: ESS2.D, ETS2.A, CCC2, CCC5, CCC7, SEP6, SEP7, SEP8

Jeremy Peacock (@jeremy_peacock; peacock.jeremy@gmail.com), Northeast Georgia RESA, Winterville

Amy Peacock (@peacock_science; peacocka@clarke.k12.ga.us), Clarke County School District, Athens, Ga.

Joanna Beck (beckjoanna@clarke.k12.ga.us) and **Kathleen Williams** (williamskat@clarke.k12.ga.us), Burney-Harris-Lyons Middle School, Athens, Ga.

Experience a model lesson demonstrating how Google Apps and other online tools can support students as they gather, reason with, and communicate Earth science information.

Design That Matters: Meeting NGSS Through Community Engagement

(Grades 6–12)

Broadway K, Omni

Science Focus: ETS, INF

Jean Trusedell (jtrusede@purdue.edu) and **William Oakes** (oakes@purdue.edu), Purdue University, West Lafayette, Ind. Engaging middle school and high school students in engineering through service-learning is the focus of this hands-on interactive workshop that explains the Engineering Projects in Community Service (EPICS) engineering design process.

Paintballs, Catapults, Art, and Science: A Cross Curriculum STEAM Project-Based Learning Experience

(Grades 8–College)

Cumberland 6, Omni

Science Focus: GEN, NGSS

John Sweeney (jsweeney2002@gmail.com) and **Bridget Botto** (bridget.botto@sfallwolves.org), St. Francis of Assisi Catholic School, Cordova, Tenn.

Use art as a hook to make an emotional connection to math and science. Launch cotton balls dipped in washable paint of different densities to create a work of art while exploring the relationship between mass, density, and projectile motion.

Decoding Starlight—From Photons to Pixels to Images: Using Science and Art

(Grades 6–12)

Legends C, Omni

Science Focus: ESS1, ETS2, PS1, PS2, PS4, CCC4, CCC7, SEP2, SEP4, SEP5, SEP7, SEP8

Donna Young (dlyoung.nso@gmail.com), Chandra X-Ray Center, Bullhead City, Ariz.

Explore a STEAM activity using NASA data to produce a scientific photon intensity image of a supernova remnant and a separate artistic image for public release.

Exploring Perception and the Brain: Hands-On NGSS-Based Investigations from the Exploratorium

(Grades 6–12)

Legends E, Omni

Science Focus: LS1.A, LS1.D, PS4.A, PS4.B, SEP

Eric Muller (emuller@exploratorium.edu), Exploratorium, San Francisco, Calif.

We will explore human perceptual systems and their connections to the brain with make-and-take, easy-to-do, content-rich “Snack” activities.

Sail with Maury into STEM and CCSS

(Grades 6–12)

Legends F, Omni

Science Focus: ESS2.C

Karen Merritt (@karmerritt; karmerritt@aol.com), North Caddo Magnet High School, Vivian, La.

Cindy Birkner (cindy.birkner81@gmail.com), Webber Township High School, Bluford, Ill.

Looking to relate ocean concepts/activities to STEM and CCSS? These participants of the Maury Project have hands-on activities that will do just that.

DuPont Presents: The Science of Keeping Food Fresh

(Grades 9–12)

Music Row 5, Omni

Science Focus: GEN, CCC1, CCC2

Farrah Johnson, Deltona High School, Deltona, Fla.

Joshua Dahlem (joshua.dahlem@desotopsb.com), Stanley High School, Logansport, La.

Discover the chemistry of how food additives make your food safe and preserved. Give your students firsthand experience in analyzing and determining the best method for food preservation. A great activity that mirrors a real-world challenge food scientists tackle.

ASTE Session: Using Hands-On Performance Assessment in K–12 Classrooms

(Grades 3–12)

Fisk Two, Renaissance

Science Focus: GEN, NGSS

Deborah Tucker (deborahlt@aol.com), Independent Science Education Consultant, Napa, Calif.

Grant M. Gardner (@Assessmentserv; grantmgardner@msn.com), Assessment Services, Inc., Pepperell, Mass.

Engage in a hands-on performance task. Explore student mastery of disciplinary core ideas and practices. Use this protocol to develop tasks of your own.

3:30–4:30 PM Exhibitor Workshop**Sensor-Based Labs to Address NGSS Practices for Middle School Life, Earth, and Physical Science***(Grades 6–8) 206 A/B, Music City Center*

Science Focus: ESS, LS, PS, SEP

Sponsor: PASCO scientific

Dan Burns (*dburns@lgsuhsd.org*), Los Gatos High School, Los Gatos, Calif.

Get hands-on experience using SPARKvue software and wireless temperature, pH, pressure, and force acceleration sensors. Explore disciplinary core ideas in middle school science while facilitating science and engineering practices such as developing and using models and constructing explanations based on evidence. Twenty-five attendees will win a free wireless sensor!

3:30–5:00 PM Meeting**SCST Business Meeting***Ryman One, Renaissance***3:30–5:30 PM Hands-On Workshops****CSSS Session: Are Crosscutting Concepts Intentional in Your Classroom? Building CCC Progression K–12***(Grades K–12) Cumberland 2, Omni*

Science Focus: GEN, CCC1, CCC2, SEP

Doug Paulson, Minnesota Dept. of Education, Roseville
Learn how to intentionally use the learning progressions in the crosscutting concepts to strengthen students' skills in the science and engineering practices. Explore the understanding of system at various age levels to see the progression in action.

NGSS Toolkit Pathway Session: Using a Tool and NGSS Performance Expectation Specifications to Develop Assessment Tasks*(Grades 6–College) Legends B, Omni*

Science Focus: GEN, NGSS

James Short (*jshort@amnh.org*), American Museum of Natural History, New York, N.Y.

Use a tool to engage in a process to create assessments aligned to performance expectations based on task specifications.

4:00–4:30 PM Presentations**Living Museum: A Way to Integrate Subjects Across the Curriculum***(Grades K–5)**104B, Music City Center*

Science Focus: GEN, SEP1, SEP2, SEP8

Colleen McCracken (*cm5116@gmail.com*), **Deana Washell** (*dmw11@scasd.org*), **Charlotte Searle** (*crs31@scasd.org*), and **Russell Lorrington** (*rjl20@scasd.org*), Easterly Parkway Elementary School, State College, Pa.

After conducting an integrated inquiry, students became docents sharing their knowledge with a wider audience.

Show Me What You Know!*(Grades 6–12)**Cumberland 5, Omni*

Science Focus: GEN

Kristin Bundren (*@MrsBundren; kbundren@hoover.k12.al.us*) and **Pamela Harman** (*@pamelaharman; pharman@hoover.k12.al.us*), Spain Park High School, Hoover, Ala.

Tammy Dunn (*@HooverSTEM; tdunn@hoover.k12.al.us*), Hoover City Schools, Birmingham, Ala.

Hear about web-based applications to use in your classroom for formative assessments. This will be an interactive session, so bring your device!

4:00–5:00 PM Meeting**NSTA Recommends Meeting***Mockingbird 3, Omni***4:00–5:30 PM Meeting****Tennessee Science Education Leadership Association (TSELA) Meeting***Mockingbird 2, Omni*

President: Ruth Leonard, Sullivan County Schools, Blountville, Tenn.

The annual meeting of the Tennessee Science Education Leadership Association (TnSELA). For details, please contact Ruth Leonard at *ruth.leonard@sullivan.k12.tn.net*.

4:00–5:30 PM Exhibitor Workshops

Build a Robot Using an Android App: FIRST® Tech Challenge Extends STEM Learning Beyond the Middle School and High School Classroom

(Grades 7–12)

107A, Music City Center

Science Focus: ETS, SEP

Sponsor: FIRST

Ken Johnson (kjohnson@firstinspires.org), **Thomas Eng** (teng@firstinspires.org), and **Joshua Wierman** (jwierman@firstinspires.org), FIRST, Manchester, N.H.

Learn how to implement robotics and extend STEM learning. In 90 minutes, you'll build, program, and operate a robot using off-the-shelf Android devices. Engage students in hands-on learning while reinforcing 21st-century skills—all while making science, technology, engineering, and math fun and challenging for students and teachers alike.

“Hard” Doesn’t Mean “Bad”

(Grades 6–9)

107B, Music City Center

Science Focus: GEN

Sponsor: AEOP eCYBERMISSION

Matthew Hartman, eCYBERMISSION Content Manager, and **Cheryl Long**, eCYBERMISSION Outreach Specialist, NSTA, Arlington, Va.

Help your students learn that challenges and even failure can be productive if handled properly. Also, hear about the free online STEM competition eCYBERMISSION and how you and your students can participate.

Getting to Know Creative Coding Through Games and Apps

(Grades 7–10)

110A, Music City Center

Science Focus: GEN

Sponsor: Microsoft

Todd Beard (v-tobear@microsoft.com), Microsoft Innovative Educator Fellow, Detroit, Mich.

This session is an overview of a first-semester course to introduce programming in early secondary grades in a manner that can engage students, no prior experience required! Come gain an understanding of the course through hands-on experience with the curriculum.

Teaching Evolution in a Climate of Controversy—Even with NGSS, the Battles Continue

(Grades 9–12)

110B, Music City Center

Science Focus: LS

Sponsor: Pearson Education

Kenneth Miller, Brown University, Providence, R.I.

Recent struggles over the content of science textbooks high-

light the fact that 90 years after the Scopes Trial, evolution remains a controversial topic. Ken Miller will discuss how educators can deal with it successfully, as well as identify a series of resources that can be used to respond to challenges faced when teaching evolution.

CPO’s Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design

(Grades 6–12)

201A, Music City Center

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

CPO’s Link Wind Turbine learning module lets students learn in a tablet-based learning environment and engineer a wind turbine. Students build, test, and revise their designs. Link uses STEM activities and an NGSS approach, giving students an understanding of how to apply the engineering cycle in science class.

Archaea and the Three Domains: Classification of Life for Middle School

(Grades 5–8)

201B, Music City Center

Science Focus: LS

Sponsor: Delta Education/School Specialty Science—FOSS

Virginia Reid and **Jessica Penchos**, The Lawrence Hall of Science, University of California, Berkeley

Are you most like *E. coli* bacteria, Yellowstone extremophile archaea, or bread mold? Explore cell structures and current classification. Take home a set of student materials, overview instructional strategies for reading and science practices, and preview online activities and NGSS connections in the revised FOSS Diversity of Life Course.

Magnify Your Mind!...with The Private Eye®

(Grades K–12)

202A, Music City Center

Science Focus: GEN, INF

Sponsor: Educational Innovations, Inc.

Kerry Ruef, The Private Eye, Lyle, Wash.

Give your students a wallop of wonder and mystery—using a jeweler’s loupe, everyday objects, and a powerful inquiry process. Students investigate science topics with a fresh perspective and surprise themselves as they write, draw, and theorize at sophisticated levels. Habits of close observation bloom, critical thinking soars, and NGSS and CCSS come to life. Take away this easy hands-on method—and magnify minds! Free starter kit!

Engage Grades 6–8 Students in a Free STEM Competition Associated with Light and Sleep

(Grades 6–8) 202B, Music City Center

Science Focus: GEN

Sponsor: Bright Schools Competition

Sarah Beistel (sbeistel@nsta.org), Program Manager, Science Education Competitions, NSTA, Arlington, Va.

Patty McGinnis (pattymcginnis1@gmail.com), Arcola Intermediate School, Eagleville, Pa.

The goal of the Bright Schools program is to create a learning experience that can help students, parents, and teachers better understand the link between light and sleep. Through the competition, students in grades 6–8 select a topic and one of three exploration options to create an original project.

DNA Crime Lab with miniPCR Technology

(Grades 6–College)

202C, Music City Center

Science Focus: LS, SEP

Sponsor: miniPCR

Sebastian Kraves, miniPCR, Cambridge, Mass.

Curious about DNA? Learn how you can solve a crime mystery using PCR and gel electrophoresis in 90 minutes. The miniPCR DNA Discovery System is safe, affordable, and engaging. Document results with your phone and bring the evidence back home by the end of the workshop!

NSTA 2017 National Conference on Science Education

Los Angeles, CA • March 30 – April 2

SHARE YOUR IDEAS!

Have an idea for an inspiring presentation or workshop on science education? Submit a session proposal today.

Proposal Deadline:
4/15/2016



To submit a proposal, visit

www.nsta.org/conferenceproposals

NSTA National
Science
Teachers
Association

Carolina’s Young Scientist™ Dissections with Carolina’s Perfect Solution® Specimen

(Grades K–5) 204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Transform your students into young scientists when you bring these simple hands-on dissections to your classroom! We will guide you through the dissections of a squid and a frog, promoting classroom discussions of easily observable adaptations and the relationship between structure and function.

Bring Visual Science into K–5 Classrooms—It’s a Game Changer!

(Grades K–5) 205A, Music City Center

Science Focus: GEN, INF

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Spark student interest and improve outcomes! Master teacher Harvey Bagshaw demonstrates engaging science instruction using Tigttag Science real-world STEM videos, interactive content, and a hands-on activity. Harvey’s blend of compelling online learning tools with hands-on fun is guaranteed to delight you and your students! “Watch out! It might get messy.”

Picking Apart the Owl Pellet

(Grades K–6) 205B, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

“Whoop” isn’t fascinated by owl pellets? Use this simple product to teach students about food chains, mammalian anatomy, ecology, and more! Join us for an engaging hands-on workshop as we dissect owl pellets, explore Carolina’s Owl Pellet App, and share ways to incorporate this extremely popular item into your lessons.

Reclaiming the Metal

(Grades 6–8) 205C, Music City Center

Science Focus: PS1.B

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

In this activity from the SEPUP middle level physical science program, participants role-play a scenario involving pretreatment of copper containing liquid wastes from computer circuit board manufacturers. They examine trade-offs of metal replacement and chemical precipitation, techniques actually used in industrial applications, and in so doing, come to understand the science behind complex environmental issues.

Chemistry of Wine

(Grades 9–12)

207A, Music City Center

Science Focus: PS

Sponsor: Ward’s Science

Kelly Smith and **Lisabeth Hoffman**, VWR Science Education, Rochester, N.Y.

Ever wonder what is in that bottle of wine, other than grapes? Sugar content, acid content, and alcohol content are all qualities that are important. Scientific techniques such as refractometry, titration, and performing density measurements with a hydrometer all can be used to determine how much alcohol, sugar, and acid is present. Explore the scientific principles behind determining the perfect blend, and discover how this can be integrated easily into a high school classroom with our hands-on Chemistry of Wine Workshop.

Human Evolution in Living Color

(Grades 9–12)

207B, Music City Center

Science Focus: LS1.A, LS3, LS4, SEP1, SEP4, SEP6, SEP7

Sponsor: HHMI BioInteractive

Laura Bonetta, HHMI BioInteractive, Chevy Chase, Md.

Helen Snodgrass, YES North Forest, Houston, Tex.

Robin Bulleri, Carrboro High School, Carrboro, N.C.

Explore the evidence that the variation in human skin color is an evolutionary adaptation to the varying intensity of ultraviolet radiation in different parts of the world. Our engaging free classroom-ready resources weave together key concepts in biology, human biogeography, genetics, anatomy, and physiology.

Chemistry with Vernier

(Grades 9–College)

207C, Music City Center

Science Focus: PS, SEP

Sponsor: Vernier Software & Technology

Jack Randall (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors to conduct a variety of chemistry experiments from our popular lab books in this engaging hands-on workshop. Collect and analyze data using LabQuest 2 and Logger Pro computer software. Explore the wide range of tools from Vernier that promotes understanding of chemistry concepts.

STEM/Engineering Activities Using Vernier Sensors with Arduino

(Grades 6–12)

207D, Music City Center

Science Focus: ETS, SEP

Sponsor: Vernier Software & Technology

Dave Vernier (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Attend this engaging, hands-on workshop to explore how easy it is to use Vernier sensors with the inexpensive, easy-to-program Arduino microcontroller. Topics include an introduction to Arduino programming, calibrating sensors, and controlling outputs based on sensor readings. Learn how you can use Arduino for great STEM and engineering projects.

Science, Style, and Fun! Genes in a Bottle™ Kit

(Grades 6–College)

208A, Music City Center

Science Focus: LS3, SEP

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Isolate your own DNA and capture your unique essence in stylish helix-shaped necklaces! From biomolecules and cell structure to genetics and the chemistry of life, this workshop is perfect for all education levels, integrating multiple life science standards in a single lesson.

The GMO Debate Rages On!

(Grades 9–College)

208B, Music City Center

Science Focus: LS3

Sponsor: Bio-Rad Laboratories

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

Are GM crops a good thing? Do all countries have the same GM food labeling requirements? Learn more about GMOs and how to test for the presence of GM content in foods. Join a debate and learn how to bring this experience to your classroom.

New Inquiry Investigations for AP Physics 1 from Flinn Scientific

(Grades 9–12)

209A, Music City Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Frazier and **Gus Alvarez**, Flinn Scientific, Inc., Batavia, Ill.

As the first school year of the new AP Physics 1 course, Flinn Scientific is sharing experiments correlated to this new curriculum framework. We will present two of our 16 new guided inquiry physics kit experiments. Each experi-

ment features pre-lab preparation and activities optimized to help you effectively guide students and provide maximum opportunities for inquiry. Handouts.

The REAL Story of the Animal Kingdom on Planet Earth

(Grades 5–8)

209B, Music City Center

Science Focus: LS

Sponsor: Shape of Life

Denise Ryan, Ryan+Forest.Hayes, Soquel, Calif.

Nancy Burnett, Shape of Life, Carmel Valley, Calif.

Learn from a founder of the Monterey Bay Aquarium how sharing the greatest story every told on planet Earth—the evolution of the animal kingdom, through classroom media, can captivate students. Please join Nancy Burnett as she shares her experience and exquisite short videos, readings, illustrations, and amazing free resources for your classroom. All *Shape of Life* short videos are derived from the popular PBS series produced by the Shape of Life team. CCSS and NGSS resources available for all attendees.

The Harnessed Atom: New Project Ideas, Tools, and Resources—Nuclear Science and Energy

(Grades 5–8)

209C, Music City Center

Science Focus: PS1, PS2, PS3, SEP

Sponsor: U.S. Dept. of Energy

Marie Westfall (marie.westfall@orau.org), Oak Ridge Associated Universities, Oak Ridge, Tenn.

Pete Xiques (peter.j.xiques@leidos.com), Leidos, Oak Ridge, Tenn.

Join in for free resources to teach integrated energy content and concepts! This interactive workshop on *The Harnessed Atom* curriculum materials for middle school includes lesson plans, project-based lessons, interactive games, hands-on activities, student collaboration ideas, and teacher resources.

Telescopes for Your Classroom

(Grades 4–College)

210, Music City Center

Science Focus: ESS, INF

Sponsor: Fisher Science Education

Robert Marshall (robert.marshall@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.

You love astronomy and want to motivate your students to keep looking up. Where do you start? Learn how different telescope designs help navigate the sky and investigate hands-on learning tools you can implement in your classroom. Then take the learning outside with observing projects and star parties.

Make Science Come to Life

(Grades 1–5)

211, Music City Center

Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore, create, and share discoveries as they build solutions to real-world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students' confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

Leap into the Future with Hands-On Science Teaching

(Grades 5–College)

212, Music City Center

Science Focus: LS

Sponsor: Animalearn

Nicole Green (ngreen@animalearn.org), Animalearn, Jenkintown, Pa.

Examine the use of animals to teach anatomy and explore how by using other options, we can conserve resources, eliminate harmful chemicals, and promote habitat protection. Join us and try the latest alternatives using iPad apps, anatomy and clay, and more! Two participants will win a subscription to Froguts—a \$299 value!

Let's Get into Orbit: Charting a Course to the Stars

(Grades 8–12)

214, Music City Center

Science Focus: ESS, ETS

Sponsor: StellarXplorers

Bill Yucuis (yucuisb@yahoo.com), Retired Educator, Sun City Center, Fla.

Aaron Cannon (acannon@afa.org) and **Stephen Gourley** (stephen.k.gourley@gmail.com), StellarXplorers, Arlington, Va. The Air Force Association (AFA) is currently using STK as part of a national space competition, called StellarXplorers. Students are currently preparing for this year's finals, which will be held at the 2016 Space Symposium in April. Find out how your students can participate in next year's exciting StellarXplorers.

Engaging Students in Authentic Science Experiences Using Digital Tools

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Patti Duncan, Discovery Education, Silver Spring, Md.

In a student-centered learning environment, we want students to ask deep, meaningful questions; collaborate with their peers; arrive at meaningful conclusions; and solve real-world problems. Join us to learn about a variety of digital resources and instructional strategies to engage all students in authentic science experiences.

4:30–6:30 PM Special Session

National Geographic Channel Film Screening: Breakthrough: More Than Human, Directed by Paul Giamatti

Grand Ballroom C2, Music City Center

The fusion of science and technology is making us better, stronger, faster, and smarter. How we think, feel, and experience the world—everything is changing. For more information, please visit www.natgeotv.com/breakthrough.

4:45–5:45 PM Meeting CESI Membership Meeting

105A, Music City Center

Please join us for our annual CESI membership meeting where we will honor awardees, give CESI updates, and hand out door prizes.



—Courtesy of Jacob Slaton

5:00–5:30 PM Presentations

Bringing Science to Life with Safe Online Social Learning

(Grades 6–9)

Cumberland 4, Omni

Science Focus: GEN, CCC

Donna Benson (@MySciLife; dbenson730@gmail.com) and **Ruth Okoye** (@moreruckus2; rokoye@sflinc.org), Source for Learning, Lancaster, Pa.

Discover how middle level students can take on a science “identity” and interact with others in a social learning context using MySciLife® .

STEM in Action: Learning Physics Through Projects

(Grades 11–College)

Music Row 3, Omni

Science Focus: PS2.A, PS2.C, PS3.B, PS3.C, CCC5, SEP1, SEP2, SEP3, SEP4, SEP6, SEP8

Krassi Lazarova (krassil@yahoo.com), Centenary College of New Jersey, Hackettstown

Find out how to use projects to facilitate learning in high school and college introductory physics courses. Hear about five different projects to incorporate into your physics courses: self-propelled vehicle, paper bridge, roller coaster, electric house, and science toys that can be adapted depending on the ability of students to work independently.

5:00–5:45 PM Networking Opportunity

Shell Reception

(By Invitation Only)

Music City Ballroom, Renaissance

“Don’t simply retire from something; have something to retire to.” —Harry Emerson Fosdick

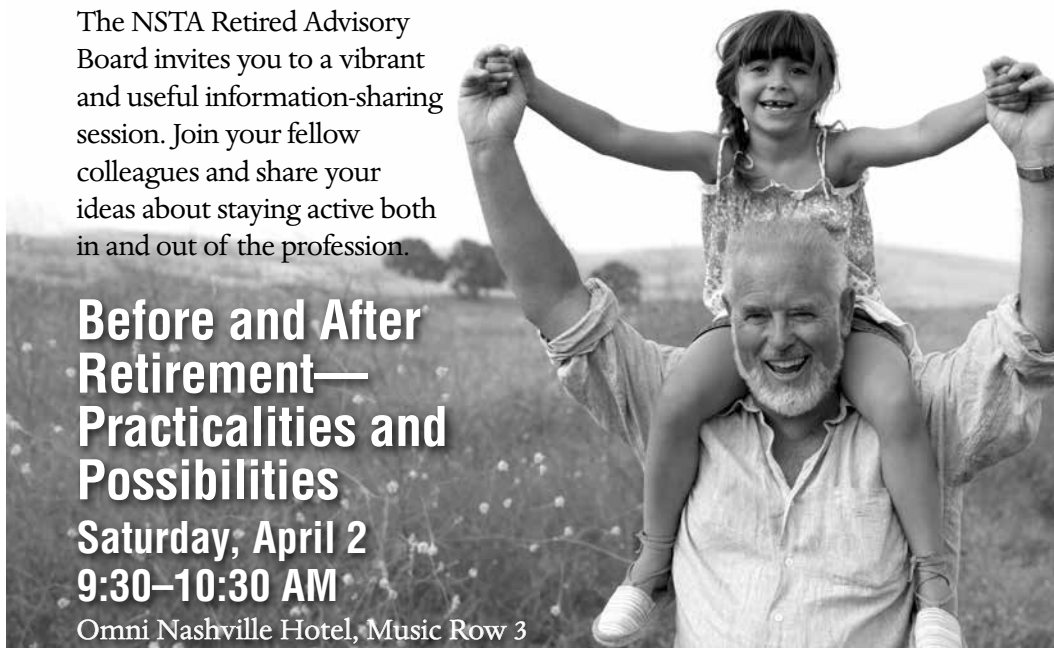
The NSTA Retired Advisory Board invites you to a vibrant and useful information-sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

Before and After Retirement—Practicalities and Possibilities

**Saturday, April 2
9:30–10:30 AM**

Omni Nashville Hotel, Music Row 3

For more information on the Retired Members Advisory Board, contact Linda Smith, chair, at elementary.science.teacher@gmail.com.



5:00–6:00 PM Presentations



NSTA Press® Session: Using Everyday Mysteries to Promote Literacy

(Grades 1–12) *101C, Music City Center*
Science Focus: ETS, CCC1, CCC2

Richard Konicsek-Moran (*rkonicsek@gmail.com*), Professor Emeritus, UMass Amherst, Mass.

Andrea Allen (*@KCSScience*; *andrea.allen@knoxschools.org*), Knox County Schools, Knoxville, Tenn.

Join us as we use the NSTA Press book *Everyday Science Mysteries* to reinforce literacy while teaching science concepts to either struggling or gifted readers.



The Smithsonian, STEM, and Your Classroom

(Grades 5–8) *103B, Music City Center*
Science Focus: GEN

Beth Wilson (*wilsonb@si.edu*), **Martin Kelsey** (*@STEMin30*; *kelsey@si.edu*), and **Matthew Horton** (*STEMin30@si.edu*), Smithsonian National Air and Space Museum, Washington, D.C.

Maggy Benson (*@NMNH*; *bensonm@si.edu*), Smithsonian National Museum of Natural History, Washington, D.C.

Discover the techniques for involving your students in broadcasts and to extend the programming into your classroom.

Competency-Based Teaching Practices in Science

(Grades 6–College) *104A, Music City Center*
Science Focus: GEN, SEP8

John-Patrick Clark (*@jpgclark*; *john.clark@owensboro.kyschools.us*), Owensboro High School, Owensboro, Ky.

Using research-based practices and community partnerships, discover how to plan instruction and use resources along with competency-based strategies to improve student understanding.

Children's Books, STEM, and the Elementary Classroom: One Author's Perspective

(Grades K–5) *104B, Music City Center*
Science Focus: ESS3, LS1, PS2.A, PS2.B

Mark Weakland (*@MarkWeakland*; *springwatermg@earthlink.net*), Reading Specialist, Literacy Consultant, and Author, Hollsopple, Pa.

Join me as I discuss what to look for in nonfiction books, and how books, the NGSS, and science lessons can interact in a classroom.

Using Enduring Understandings to Drive Standards-Based Integrated Units

(Grades K–6) *106A, Music City Center*
Science Focus: GEN

Christine Campanaro, Orange County Public Schools, Orlando, Fla.

This hands-on relevant presentation will teach you how to write integrated units and quality lesson activities across multiple content areas (STEM, ELA, CTE).

Engineering Architecture in the Classroom

(Grades K–8) *Davidson A2/3, Music City Center*
Science Focus: ETS, CCC6, CCC7, SEP

Nicole Gordon (*ngordon@lindberghschools.ws*) and **Michael Kuhn** (*mkuhn@lindberghschools.ws*), Lindbergh Schools, St. Louis, Mo.

Get out of the box to teach structure and function in architecture. Lessons, use of guest speakers, and field trip ideas will be shared. Use creativity, engineering, and science to engage students in planning, building, and design.

The SOFIA Airborne Astronomy Ambassador Program

(Grades 9–12) *Acoustic, Omni*
Science Focus: ESS1.A, INF, CCC, SEP

Babs Sepulveda (*bsepulveda@lusd.net*), Lincoln High School, Stockton, Calif.

I'll describe the SOFIA Airborne Astronomy Ambassador Program and its impact on instruction. Activities that teach about light, handouts, and resources will be shared.

Integrating Multiple Concepts in Biology Using Cyanogenic Clover

(Grades 9–College) *Cumberland 1, Omni*
Science Focus: LS3.B, LS4.B, SEP3, SEP4

Chuck McWilliams (*chuck.mcwilliams@mrhschools.net*), MRH High School, St. Louis, Mo.

Learn how your students can participate in authentic science research involving the cyanogenesis of clover plants growing in their own backyard—supported by Washington University.

Incorporating 3D Printing into the Biology Curriculum*(Grades 12–College)**Legends G, Omni*

Science Focus: LS1, CCC3, CCC6, SEP1, SEP2, SEP3, SEP8

Andrew Vinal (@acvinal; acvinal@gmail.com), Wake Technical Community College, Raleigh, N.C.

Give your biology students a meaningful didactic experience by printing 3-D models of proteins using 3D printing. Emphasis will be placed on projects that explore the structure and function of proteins.

Framing Classroom Instruction to Best Support NGSS Learning*(Grades K–12)**Music Row 1, Omni*

Science Focus: GEN, NGSS

Karen Travers Lynch, Measured Progress, Dover, N.H. NGSS experts affirm properly framing classroom activities is key to NGSS instruction. This session will explore the concept of framing, providing details and implementation support.

Powerful Free Simulations for Three-Dimensional NGSS*(Grades 6–12)**Music Row 2, Omni*

Science Focus: PS, CCC, SEP

Chad Dorsey (@chaddorsey; cdorsey@concord.org), The Concord Consortium, Concord, Mass.

Discover how free NSF-funded molecular simulations and curricula from The Concord Consortium can add all three dimensions of the NGSS to your physics, physical science, and chemistry teaching, with a special emphasis on the science practices. Take away free tips and resources.

INF NSELA Session: Essential Elements of STEM Education: A Large Urban District's Journey to STEM Success*(General)**Music Row 4, Omni*

Science Focus: INF, SEP

Larry Plank (larry.plank@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.

Hear how academic, business, and community partnerships—the ABCs of STEM—support four essential elements for STEM learning in a large urban district.

5:00–6:00 PM Hands-On Workshops**STEM and the Science and Engineering Practices—Your New BFFs***(Grades K–6)**101 A/B, Music City Center*

Science Focus: ETS1, INF, SEP

Rebecca McDowell (@bethechnge; beckymmcdowell@gmail.com), Barrington (Ill.) 220 School District

Join in for an introduction to the engineering design process for newbies. Participate in hands-on exploration of the science and engineering practices...with air blasters!

**Newton's Nightmare: A Magnetic Mystery!***(Grades K–8)**101E, Music City Center*

Science Focus: PS

Stephanie Wendt (@StephanieWendt1) and **Amy Leigh Rogers** (ryan.amyleigh@gmail.com), Tennessee Tech University, Cookeville

Watch as Sir Isaac Newton's theory of gravity is put to the test! Make predictions, test materials, and discover answers that will surprise you.

3D Linking Lessons into a Storyline—Making It Happen*(Grades 5–8)**103A, Music City Center*

Science Focus: GEN

Mary Starr (@starrscience; mary@starrscience.com), Michigan Mathematics and Science Centers Network, Plymouth Conceptual storylines require several features and processes for development. Learn about these and share your questions with others who are using these tools.

Photosynthesis and Cellular Respiration: A Hands-On Approach for Grades 6–12*(Grades 6–12)**103C, Music City Center*

Science Focus: LS1

Laura Robertson (robertle@etsu.edu), **LaShay Jennings** (jenningsjl@etsu.edu), **Scott Honeycutt** (honeycutt@etsu.edu), **Karin Keith** (keithkj@etsu.edu), and **Chihche Tai** (cctai59@gmail.com), East Tennessee State University, Johnson City Integrate the NGSS and CCSS ELA by using a cycle of science and ELA activities to help students learn about the flow of energy between photosynthesis and cellular respiration.

Shake It Up! Engineering for Earthquakes

(Grades 3–6) 104C, Music City Center

Science Focus: ETS, SEP6

Reeda Hart (hartr@nku.edu), Northern Kentucky University, Highland Heights

Experience the science behind earthquakes. Apply those concepts to engineer an earthquake-proof building. Take home a CD of lesson plans and resources.

Assessing the Youngest Learners: Finding the Science in Children's Observations, Questions, and Actions

(Grades P–2) 104D, Music City Center

Science Focus: LS1.B, LS1.D, LS2.A, LS2.C, LS2.D, LS4.C, LS4.D

Caitlin Coe (ccoe@amnh.org), **Ilana April** (iapril@amnh.org), **Natalie Tahsler** (ntahsler@amnh.org), and **Kristen Olson** (kristen.kelly.olson@gmail.com), American Museum of Natural History, New York, N.Y.

“Can a Porcupine Get Hurt by a Cactus?” Learn how to construct meaning from “the darndest things” kids say and do by using a diverse set of assessment tools. Raffle prizes and resources for participants

Teach Me Bridges: A STEAM Unit for Upper Elementary Students

(Grades 3–5) 104E, Music City Center

Science Focus: GEN, NGSS

Kendra Moore, New Market School, New Market, Ala. Learn how to engage students through a free project-based unit that incorporates science, technology, engineering, art, and math into one massive bundle of bridge fun!

Curiosity, Discrepant Events, and Relevance: The Spirit of the Framework and the NGSS

(Grades 3–8) 105B, Music City Center

Science Focus: GEN, NGSS

John Zenchak (jjzenchak@noctrl.edu) and **Mary Jean Lynch** (mlynch@noctrl.edu), North Central College, Naperville, Ill.

Experience the spirit of the NGSS by engaging your curiosity with a unique discrepant event methodology that relates science content to your everyday life.

Drop, Stop, Don't Pop! Launching into Engineering Design

(Grades 4–8)

106B, Music City Center

Science Focus: ETS1, SEP

Dennis Engle (@AMSTI-Athens; dennis.engle@athens.edu) and **Patricia Maze** (@AMSTI-Athens; patricia.maze@athens.edu), AMSTI-Athens, Ala.

Emily McGahee (@AMSTI-Athens; emily.mcgaher@athens.edu), Athens State University, Athens, Ala.

Are you a daredevil? Explore the engineering design process as an engineer working for an amusement park and design the ride of your life!

Academic Literacy for All in Science

(Grades 1–8)

106C, Music City Center

Science Focus: LS

Kathryn Watkins (watkins@unm.edu) and **Deborah Roberts-Harris** (drober02@unm.edu), The University of New Mexico, Albuquerque

Encounter an instructional strategy that supports the development of language skills and dialogue in English as a Second Language students.

The Hydrofracking Boom as a “Teachable Moment” to Explore the Broader Energy Context Within the U.S.

(Grades 6–College)

Cumberland 6, Omni

Science Focus: ESS3

Don Duggan-Haas (dugganhaas@gmail.com), The Paleontological Research Institution, Ithaca, N.Y.

Eric Pyle (pyleej@jmu.edu), NSTA Director, Preservice Teacher Preparation, and James Madison University, Harrisonburg, Va.

Michael Hubenthal (michael.hubenthal@iris.edu), IRIS, Washington, D.C.

Leverage hydrofracking’s “buzz” to teach at the science/society interface. This impartial session introduces underpinning science and strategies for teaching controversial topics. Attendees will receive a copy of the book *The Science Beneath the Surface: A Very Short Guide to the Marcellus Shale*, a piece of Marcellus Shale, and a session handout with links to related resources. *Note:* Only the first 30 participants will receive a copy of the book.

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Putting the Science Literacy Puzzle Pieces All Together!

(Grades 6–12)

Legends E, Omni

Science Focus: GEN, NGSS

Carolyn Pistorius (@drcpistorius; pistorc@uah.edu), **Rhonda Duvall** (rhonda.duvall@uah.edu), and **Reba Turk** (reba.turk@uah.edu), The University of Alabama in Huntsville
Let's take a look at how to get our students more scientifically literate. We will do a hands-on, inquiry-based science lesson and highlight how to add the *CCSS Math and ELA*.

Introducing Nanoscience to All Classrooms

(Grades 6–12)

Legends F, Omni

Science Focus: GEN, SEP1, SEP3, SEP4, SEP7, SEP8

Lisa Del Muro (@delmuro_whsnano; lisa.delmuro@d214.org), Wheeling High School, Wheeling, Ill.

Tanya Katovich (@tkatovich; tkatovich@d211.org), Hoffman Estates High School, Hoffman Estates, Ill.

Colleen Buzby (@buzbyrocks; colleen.buzby@gmail.com), Bridgewater-Raritan High School, Bridgewater, N.J.

Elizabeth Potter-Nelson (@mrspotternelson; e.potternelson@gmail.com), Antioch Community High School, Antioch, Ill.

There are 10 “things” every student should know about nanotechnology. Join us for innovative ways to integrate “these” things into your school curriculum.

DuPont Presents: Adding Some Color to Science

(Grades 9–12)

Music Row 5, Omni

Science Focus: PS, CCC1, CCC2, SEP4

Tiffany Kauffman (@MrsTiffanyK; tkauffman@seymour-school.net), Seymour High School, Seymour, Mo.

JaMonica Marion (@msjjmarion; jjmarion@cps.edu), Chicago High School for Agricultural Sciences, Chicago, Ill.
Come discover pH is where it is at when it comes to flower color. This is a great hands-on activity that quickly demonstrates this awesome color change! Your students will love getting to the down and dirty of soil pH.

5:00–7:00 PM Networking Opportunity

APAST Business Meeting and Social

(By Invitation Only)

Broadway B, Omni

Stop by, enjoy refreshments, and catch up with fellow PAEMSTers. This is an excellent opportunity to find out what's happening. Get more involved with APAST! For additional information, please visit www.apast.org.

5:30–6:00 PM Presentations

“Twittering” with My Grade 8 Science Classes

(Grades 7–9)

Cumberland 4, Omni

Science Focus: GEN, SEP8

PJ Godwin (@godwinchem; pjgodwin@asfa.k12.al.us), Alabama School of Fine Arts, Birmingham

See how Twitter was used as an additional tool in my grade 8 science classroom!

Including Hands-On Instruction in a Science Lecture Course for Undergraduate Education Majors: Lessons Learned

(College)

Music Row 3, Omni

Science Focus: PS, SEP3

Rachel Fiore (rfiore1@gsu.edu), **Ben McGimsey** (mcgimsey@phy-astr.gsu.edu), and **John Wilson** (wilson@phy-astr.gsu.edu), Georgia State University, Atlanta

Learn the labs we do and the strategies we use to bring labs into a lecture hall physical science course.

#askNSTA

How can I find funds to attend an NSTA conference?

Where can I find free articles tailored to my grade level and subject area?

What does NSTA have for student teachers?

What are the Next Generation Science Standards?

The #askNSTA Lounge is *the* place in Nashville to learn more about NSTA Membership and become part of the group who is crafting the future of science education!

#NSTA16

Come by booth #934 in the Exhibit Hall and
ASK US ANYTHING!

NSTA National
Science
Teachers
Association

5:30–7:00 PM Networking Opportunity
Learning Center Reception

(By Invitation Only)

Broadway E, Omni

6:00–8:00 PM Networking Opportunity
National Middle Level Science Teachers Association
Members' 25th Anniversary Celebration

(By Invitation Only)

Legends D, Omni

For more information, please visit <http://nmlsta.ning.com>.

6:00–8:45 PM Networking Opportunity
NSTA Teacher Awards Gala (M-3)

(Ticket Required; \$80)

M-3

East/Center Blrm., Renaissance

Come enjoy a fabulous evening celebrating with this year's teacher award recipients! ALL of the teacher awards will be presented in one grand evening. Join your colleagues in recognition of this year's winners. Evening attire is requested to honor our teacher award recipients. A limited number of tickets are available for this social event.

NSTA is grateful to Northrop Grumman Foundation for sponsoring this event.

6:30–8:00 PM Networking Opportunity
NESTA Friends of Earth Science Reception

Skyline Junior Ballroom, Hilton Garden Inn

Join us for a nice Earth science networking opportunity. Appetizers, refreshments, and awards, including the AGI Edward Roy Award. Visit old friends; make new ones. Visit www.nestanet.org for more information.

7:00–9:00 PM Networking Opportunity
SCST Poster Session and Dessert Social

Fisk, Renaissance

9:00 PM–12 Midnight Networking Opportunity
President's Mixer

West Ballroom, Renaissance

DJ and Cash Bar



—Courtesy of Jacob Slaton



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BOOTH # 255

Attend our Workshops (see program):

Utilize Robots to Engage Students with Hands-On, Project-Based Learning (Elementary/Middle School)

Thursday, March 31 » Music City Center, Room 110A » 10:00 – 11:30am

Build a Robot using an Android App – FIRST® Tech Challenge Extends STEM Learning Beyond the Classroom (Middle/High School)

Friday, April 1 » Music City Center, Room 107A » 4:00 – 5:30pm

TCI™ **Booth 256**



Session 1

Date: Thursday, Mar 31

Time: 2:00-3:30 PM

Room: Music City Center,
108

**Inspire Students
to Jump to the
Inquiry Arc**

Session 2

Date: Friday, Apr 1

Time: 12:00-1:30 PM

Room: Music City Center,
108

**Analyzing and Interpreting
Data Using *TCI's Bring
Science Alive!***



Session 3

Date: Saturday, Apr 2

Time: 10:00-11:30 AM

Room: Music City Center,
108

**Modeling the Earth, Sun
and Other Stars with
*Bring Science Alive!***

teachtci.com

Friday, April 1

Science in the Community Breakfast (M-2 Ticket Required: \$18) Broadway E, Omni..... 7:30–8:00 AM	SCST Business Meeting Ryman One, Renaissance 3:30–5:00 PM
AMSE Alice J. Moses Breakfast By Invitation Only, <i>sponsored by Pearson</i> Legends F, Omni 7:30–9:30 AM	NSTA Recommends Meeting Mockingbird 3, Omni 4:00–5:00 PM
Aerospace Programs Advisory Board Meeting Gibson Boardroom, Omni.....8:30–10:30 AM	Tennessee Science Education Leadership Association (TSELA) Meeting Mockingbird 2, Omni 4:00–5:30 PM
NSTA International Lounge Mockingbird 1, Omni9:00 AM–5:00 PM	National Geographic Channel Film Screening: <i>Breakthrough: More Than Human</i> , directed by Paul Giamatti Grand Blrm. C2, Music City Center 4:30–6:30 PM
Development Advisory Board Meeting Executive Brdrm., Music City Center9:30–10:30 AM	CESI Membership Meeting 105A, Music City Center 4:45–5:45 PM
Polar Educators International Open Meeting Mockingbird 3, Omni 10:00 AM–12 Noon	Shell Reception By Invitation Only Music City Ballroom, Renaissance 5:00–5:45 PM
Urban Science Education Advisory Board Meeting Gibson Boardroom, Omni.....10:30 AM–12 Noon	APAST Business Meeting and Social By Invitation Only Broadway B, Omni..... 5:00–7:00 PM
Association of Science Materials Centers (ASMC) Advisors Meeting Mockingbird 2, Omni10:30 AM–1:00 PM	Learning Center Reception By Invitation Only Broadway E, Omni..... 5:30–7:00 PM
NSELA/ASTE Celebration Luncheon (Tickets Required Through NSELA) Broadway A/B, Omni..... 12 Noon–2:00 PM	National Middle Level Science Teachers Association Members' 25th Anniversary Celebration By Invitation Only Legends D, Omni 6:00–8:00 PM
SEPA Luncheon By Invitation Only Legends E, Omni..... 12 Noon–2:00 PM	NSTA Teacher Awards Gala (M-3 Ticket Required: \$80) East/Center Blrm., Renaissance..... 6:00–8:45 PM
“Meet and Greet” the Presidents and Board/Council Exhibits (Hall B) Entrance, Music City Center ...12:45–1:30 PM	NESTA Friends of Earth Science Reception Skyline Jr. Ballroom, Hilton Garden Inn 6:30–8:00 PM
NSTA District Director and Chapter/Associated Group Social in Honor of Wendell Mohling Hall B, Music City Center 1:30–2:30 PM	SCST Poster Session and Dessert Social Fisk, Renaissance 7:00–9:00 PM
SEPA Board Meeting By Invitation Only Mockingbird 3, Omni 2:00–3:30 PM	President’s Mixer West Ballroom, Renaissance 9:00 PM–12 Mid.



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STEM

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

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July 27–29, 2016

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Come prepared to learn tactics that work, build your professional learning network, connect with effective outreach programs and partnerships, discover new resources, and build a strong curriculum.

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#STEMforum

NSTA National
Science
Teachers
Association

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*MCC stands for Music City Center

3D Molecular Designs (Booth #516)

Friday, Apr 1	2:00–3:30 PM	214, MCC	The Many Jobs of Proteins: Enzymes in the Spotlight (p. 86)
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Activate Learning (Booth #1204)

Friday, Apr 1	10:00–11:30 AM	214, MCC	Making Critical Thinking More Than Just a Cliché Using Three-Dimensional Learning (p. 47)
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AEOP eCYBERMISSION (Booth #1046)

Friday, Apr 1	4:00–5:30 PM	107B, MCC	“Hard” Doesn’t Mean “Bad” (p. 96)
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Amplify (Booth #308)

Friday, Apr 1	8:00–9:30 AM	107B, MCC	Amplify Science for Grades K–5: Experience Three-Dimensional Teaching and Learning with the Newest Curriculum from The Lawrence Hall of Science (p. 23)
Friday, Apr 1	10:00–11:30 AM	107B, MCC	Amplify Science for Grades 6–8: Experience Three-Dimensional Teaching and Learning with the Newest Curriculum from The Lawrence Hall of Science (p. 43)

ANATOMY IN CLAY® Learning System (Booth #926)

Friday, Apr 1	8:00–9:30 AM	212, MCC	Human Anatomy Lab: Building from the Inside Out (p. 27)
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Animalearn (Booth #924)

Friday, Apr 1	4:00–5:30 PM	212, MCC	Leap into the Future with Hands-On Science Teaching (p. 100)
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Arbor Scientific (Booth #743)

Friday, Apr 1	8:00–9:30 AM	202C, MCC	Cool Tools for Light and Color (p. 24)
Friday, Apr 1	2:00–3:30 PM	202C, MCC	Cool Tools for Sound and Waves (p. 83)

Backyard Brains, Inc. (Booth #156)

Friday, Apr 1	12 Noon–1:30 PM	202C, MCC	Bringing Real Neuroscience and Neural Engineering into Your Classroom (p. 58)
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Bedford, Freeman, & Worth Publishers (Booth #744)

Friday, Apr 1	8:00–9:30 AM	214, MCC	<i>Living By Chemistry</i> : What Shape Is That Smell? (p. 28)
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Bio-Rad Laboratories, Inc. (Booth #152)

Friday, Apr 1	8:00–9:30 AM	208A, MCC	How to Use Pop Culture in Your Life Science Class (p. 27)
Friday, Apr 1	8:00–9:30 AM	208B, MCC	Preparing Tomorrow’s Scientists: Issues in Inquiry-Based Life Science Education (p. 27)
Friday, Apr 1	10:00–11:30 AM	208A, MCC	Project-Based Learning for High School: Sequencing a Plant Species (p. 46)
Friday, Apr 1	10:00–11:30 AM	208B, MCC	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 46)
Friday, Apr 1	2:00–3:30 PM	208B, MCC	Upgrade Your Chemotaxis Lab! (Focuses on AP Biology Big Ideas 1–4) (p. 84)
Friday, Apr 1	2:00–3:30 PM	208A, MCC	Identify Patient Zero of a Zombie Apocalypse! (p. 84)
Friday, Apr 1	4:00–5:30 PM	208A, MCC	Science, Style, and Fun! Genes in a Bottle™ Kit (p. 99)
Friday, Apr 1	4:00–5:30 PM	208B, MCC	The GMO Debate Rages On! (p. 99)

BIOZONE International Ltd. (Booth #840)

Friday, Apr 1	10:00–11:30 AM	202B, MCC	Biology for NGSS: A New Approach for a New Program (Grades 9–12) (p. 44)
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Bright Schools Competition (Booth #1045)

Friday, Apr 1	4:00–5:30 PM	202B, MCC	Engage Grades 6–8 Students in a Free STEM Competition Associated with Light and Sleep (p. 97)
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Carolina Biological Supply Co. (Booth #118)

Friday, Apr 1	8:00–9:30 AM	205A, MCC	Pushing and Pulling Your Teachers to NGSS (p. 26)
Friday, Apr 1	8:00–9:30 AM	205B, MCC	Partners in Crime: Forensic Fingerprinting with the Professionals (p. 26)
Friday, Apr 1	8:00–9:30 AM	204, MCC	Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens (p. 24)
Friday, Apr 1	9:00–10:30 AM	Grand Blrm. C2, MCC	Beyond The Flipped Classroom: A Pedagogical Pilgrimage (p. 33)
Friday, Apr 1	10:00–11:30 AM	204, MCC	Hands-On Activities to Model Habitat Preference and Population Sampling (p. 44)
Friday, Apr 1	10:00–11:30 AM	205B, MCC	Engineer Hands-On Chemistry Fun with a Carolina STEM Challenge®! (p. 44)
Friday, Apr 1	10:00–11:30 AM	205A, MCC	Early Elementary Engineering with Smithsonian: What’s New with STC3? (p. 44)
Friday, Apr 1	12 Noon–1:30 PM	205A, MCC	Modeling Beyond a Flashlight and Beach Ball (p. 58)
Friday, Apr 1	12 Noon–1:30 PM	204, MCC	Introduction to Wisconsin Fast Plants® (p. 58)
Friday, Apr 1	12 Noon–1:30 PM	205B, MCC	Top 10 for 2016: Genetics and Biotechnology Discoveries for Your Classroom (p. 58)
Friday, Apr 1	2:00–3:30 PM	205B, MCC	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 83)
Friday, Apr 1	2:00–3:30 PM	205A, MCC	EQuIP Your District for NGSS (p. 83)
Friday, Apr 1	2:00–3:30 PM	204, MCC	Hands-On Science with Classroom Critters (p. 83)
Friday, Apr 1	4:00–5:30 PM	205A, MCC	Bring Visual Science into K–5 Classrooms—It’s a Game Changer! (p. 98)
Friday, Apr 1	4:00–5:30 PM	205B, MCC	Picking Apart the Owl Pellet (p. 98)
Friday, Apr 1	4:00–5:30 PM	204, MCC	Carolina’s Young Scientist™ Dissections with Carolina’s Perfect Solution® Specimen (p. 98)

Celestron (Booth #1218)

Friday, Apr 1	2:00–3:30 PM	110A, MCC	Structure and (Fun)ction: Arthropod Body Parts and Evolution (p. 82)
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Cogent Education (Booth #922)

Friday, Apr 1	12 Noon–1:30 PM	212, MCC	Interactive Case Studies for the Biology Classroom (p. 61)
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CPO Science/School Specialty Science (Booth #420)

Friday, Apr 1	8:00–9:30 AM	201A, MCC	CPO's Link™ Learning Module Optics with Light and Color: Use Light to Learn About Light (p. 24)
Friday, Apr 1	12 Noon–1:30 PM	201A, MCC	Genetics: Crazy Traits and CPO's New Link™ Learning Module (p. 57)
Friday, Apr 1	2:00–3:30 PM	201A, MCC	CPO Science's New Physics AP1 Link™ Module: Rotational Motion Using the CPO Rollercoaster (p. 82)
Friday, Apr 1	4:00–5:30 PM	201A, MCC	CPO's Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design (p. 96)

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Pearson

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Delta Education/School Specialty Science–FOSS (Booth #322)

Friday, Apr 1	8:00–9:30 AM	201B, MCC	What Does Argumentation Look Like in an Elementary Classroom? (p. 24)
Friday, Apr 1	10:00–11:30 AM	201B, MCC	What to Look for in Physical Science Learning Progressions—Experience FOSS K–5 (p. 43)
Friday, Apr 1	12 Noon–1:30 PM	201B, MCC	Modeling Energy Flow in Ecosystems: Developing Models in Middle School Life Science (p. 57)
Friday, Apr 1	2:00–3:30 PM	201B, MCC	Designing with FOSS: Engineering in Elementary Science (p. 83)
Friday, Apr 1	4:00–5:30 PM	201B, MCC	Archaea and the Three Domains: Classification of Life for Middle School (p. 96)

Dinah.com (Booth #1246)

Friday, Apr 1	8:00–9:30 AM	202B, MCC	Observing and Inferring in the Science Classroom: New Tips, Tools, and a Twist from Dinah Zike’s Notebooking Central (p. 24)
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Discovery Education (Booth #642)

Friday, Apr 1	8:00–9:30 AM	401 A/B, MCC	10 Creative Ways to Read, Write, and Think Like a Scientist (p. 28)
Friday, Apr 1	10:00–11:30 AM	401 A/B, MCC	What Works? Science Techbook and Effective Professional Development (p. 47)
Friday, Apr 1	12 Noon–1:30 PM	401 A/B, MCC	Bringing NGSS to the Classroom with Discovery Education (p. 61)
Friday, Apr 1	2:00–3:30 PM	401 A/B, MCC	Personalizing Your Science Instruction (p. 87)
Friday, Apr 1	4:00–5:30 PM	401 A/B, MCC	Engaging Students in Authentic Science Experiences Using Digital Tools (p. 100)

Disney Youth Programs (Booth #844)

Friday, Apr 1	2:00–3:30 PM	212, MCC	A Peek Behind the Curtain: Disney Parks Approach to Physics and Energy (p. 86)
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Educational Innovations, Inc. (Booths #1026/ #1126)

Friday, Apr 1	8:00–9:30 AM	202A, MCC	What the Heck Happened?!? (p. 24)
Friday, Apr 1	10:00–11:30 AM	202A, MCC	Fantastical Chemistry Demos for All Classrooms (p. 44)
Friday, Apr 1	12 Noon–1:30 PM	202A, MCC	Cool! Can We Do That Again?!? (p. 57)
Friday, Apr 1	2:00–3:30 PM	202A, MCC	Elementary Teacher Survival Kit (p. 83)
Friday, Apr 1	4:00–5:30 PM	202A, MCC	Magnify Your Mind!...with The Private Eye® (p. 96)

FIRST® (Booth #255)

Friday, Apr 1	4:00–5:30 PM	107A, MCC	Build a Robot Using an Android App: FIRST Tech Challenge Extends STEM Learning Beyond the Middle School and High School Classroom (p. 96)
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Fisher Science Education (Booth #544)

Friday, Apr 1	8:00–9:30 AM	210, MCC	Is Cancer in My DNA? (p. 27)
Friday, Apr 1	10:00–11:30 AM	210, MCC	The STEM Design Challenge (p. 47)
Friday, Apr 1	2:00–3:30 PM	210, MCC	A Better Approach to Chemistry (p. 86)
Friday, Apr 1	4:00–5:30 PM	210, MCC	Telescopes for Your Classroom (p. 99)

Flinn Scientific, Inc. (Booth #333)

Friday, Apr 1	8:00–9:30 AM	209A, MCC	Fantastic Physical Science Demonstrations from Flinn Scientific (p. 27)
Friday, Apr 1	10:00–11:30 AM	209A, MCC	Infusing Inquiry and Demonstrations into AP Biology (p. 46)
Friday, Apr 1	10:00–11:30 AM	Davidson C, MCC	Flinn Scientific’s Morning of Chemistry: Taking Over the Music City with Science (p. 48)
Friday, Apr 1	12 Noon–1:30 PM	209A, MCC	Flinn Scientific’s STEM Design Challenge™ “Build-It-Yourself” Lab Project (p. 60)
Friday, Apr 1	2:00–3:30 PM	209A, MCC	Flinn Scientific’s Exploring Chemistry™: Connecting Content through Experiments (p. 86)
Friday, Apr 1	4:00–5:30 PM	209A, MCC	New Inquiry Investigations for AP Physics 1 from Flinn Scientific (p. 99)

Frey Scientific/School Specialty Science (Booth #521)

Friday, Apr 1	10:00–11:30 AM	201A, MCC	Solving the Mystery of STEM Using Forensic Science (p. 43)
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G-Biosciences (Booth #1005)

Friday, Apr 1	2:00–3:30 PM	209C, MCC	Biotech Is STEM ! (p. 86)
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HHMI BioInteractive (Booth #822)

Friday, Apr 1	8:00–9:30 AM	207B, MCC	Welcome to the Anthropocene: Free Teaching Resources for a New Era (p. 26)
Friday, Apr 1	10:00–11:30 AM	207B, MCC	Patterns and Processes in Ecology (p. 46)
Friday, Apr 1	12 Noon–1:30 PM	207B, MCC	Inquiry-Based Ecology Using a Citizen Science Trail Camera Project (p. 60)
Friday, Apr 1	2:00–3:30 PM	207B, MCC	Using Primary Literature to Teach Data Literacy (p. 84)
Friday, Apr 1	4:00–5:30 PM	207B, MCC	Human Evolution in Living Color (p. 98)

Houghton Mifflin Harcourt (Booth #1240)

Friday, Apr 1	12 Noon–1:30 PM	202B, MCC	Sparking Interest with Chemistry (p. 58)
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It’s About Time (Booth #1140)

Friday, Apr 1	8:00–9:30 AM	209C, MCC	Project-Based Inquiry Science™ (PBIS): Creating “Coherence and Science Storylines” for Middle School Science—Grades 6–8 (p. 27)
Friday, Apr 1	10:00–11:30 AM	209C, MCC	Debunking the Myths of Project-Based Learning: Yes We CAN! (p. 47)

K’NEX Education® (Booth #607)

Friday, Apr 1	8:30–9:30 AM	108, MCC	Forensic DNA Activities and More with K’NEX Education’s DNA, Replication, and Transcription Set (p. 31)
Friday, Apr 1	10:00–11:00 AM	108, MCC	Build, Program, and Control with K’NEX Education’s New Robotics Building System (p. 42)
Friday, Apr 1	11:30 AM–12:30 PM	108, MCC	Build, Program, and Control with K’NEX Education’s New Robotics Building System (p. 56)
Friday, Apr 1	1:30–2:30 PM	108, MCC	Off to the Races with K’NEX Education’s Forces, Energy, and Motion Set! (p. 73)

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K'NEX Education®, continued

Friday, Apr 1	3:00–4:00 PM	108, MCC	Build, Program, and Control with K'NEX Education's New Robotics Building System (p. 87)
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LAB-AIDS®, Inc. (Booth #915)

Friday, Apr 1	8:00–9:30 AM	205C, MCC	Photosynthesis and Respiration Shuffle (p. 26)
Friday, Apr 1	10:00–11:30 AM	205C, MCC	Gas Exchange (p. 44)
Friday, Apr 1	12 Noon–1:30 PM	205C, MCC	Gene Expression (p. 58)
Friday, Apr 1	2:00–3:30 PM	205C, MCC	What Is a Species? (p. 84)
Friday, Apr 1	4:00–5:30 PM	205C, MCC	Reclaiming the Metal (p. 98)

LaMotte Co. (Booth #1015)

Friday, Apr 1	10:00–11:30 AM	107A, MCC	AP Environmental: Using Your Stream to Teach STEM-Based Skills (p. 43)
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LEGO Education (Booths #341 / #358)

Friday, Apr 1	10:00–11:30 AM	211, MCC	Make Science Come to Life (p. 47)
Friday, Apr 1	12 Noon–1:30 PM	211, MCC	Make Science Come to Life (p. 60)
Friday, Apr 1	2:00–3:30 PM	211, MCC	Make Science Come to Life (p. 86)
Friday, Apr 1	4:00–5:30 PM	211, MCC	Make Science Come to Life (p. 100)

McGraw-Hill Education (Booth #1345)

Friday, Apr 1	8:00–9:30 AM	107A, MCC	Science Is NOT a Spectator Sport! (p. 23)
Friday, Apr 1	2:00–3:30 PM	202B, MCC	Science Vocabulary Has Kinetic Energy When It's Moving (p. 83)

Measured Progress (Booth #304)

Friday, Apr 1	8:00–9:30 AM	209B, MCC	Engage with NGSS Using STEM Gauge™ (p. 27)
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Microsoft (Booth #1335)

Friday, Apr 1	12 Noon–1:30 PM	110A, MCC	The Differentiated Classroom in One Package: Teaching Science Inquiry to Modern Learners Using Microsoft Surface and Apps (p. 57)
Friday, Apr 1	4:00–5:30 PM	110A, MCC	Getting to Know Creative Coding Through Games and Apps (p. 96)

The MiniOne™ Electrophoresis (Booth #816)

Friday, Apr 1	2:00–3:30 PM	107A, MCC	MiniOne™ Electrophoresis: Revolutionizing Biotechnology in Real Time (p. 82)
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miniPCR (Booth #1333)

Friday, Apr 1	10:00–11:30 AM	202C, MCC	Genes in Space: Send Your DNA Experiment to the International Space Station (ISS) (p. 44)
Friday, Apr 1	4:00–5:30 PM	202C, MCC	DNA Crime Lab with miniPCR Technology (p. 97)

MSOE Center for BioMolecular Modeling (Booth #518)

Friday, Apr 1	12 Noon–1:30 PM	214, MCC	Telling Molecular Stories with David Goodsell's Cellular Landscapes (p. 61)
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Nutrients for Life Foundation (Booth #1226)

Friday, Apr 1	12 Noon–1:30 PM	209B, MCC	Feeding the World & Protecting the Environment (p. 60)
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PASCO scientific (Booth #622)

Friday, Apr 1	8:00–9:00 AM	206 A/B, MCC	Engineering Bumpers and NGSS: Hands-On Physics with PASCO's New Wireless Smart Cart! (p. 23)
Friday, Apr 1	9:30–10:30 AM	206 A/B, MCC	Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics! (p. 42)
Friday, Apr 1	11:00 AM–12 Noon	206 A/B, MCC	Project-Based Activities with Wireless Sensors to Meet Gas Laws and Stoichiometry Chemistry Standards (p. 55)
Friday, Apr 1	12:30–1:30 PM	206 A/B, MCC	Environmental Science Using Wireless Sensors (p. 70)
Friday, Apr 1	2:00–3:00 PM	206 A/B, MCC	Using Wireless Sensors in Enzyme Activity and Cellular Respiration Labs (p. 81)
Friday, Apr 1	3:30–4:30 PM	206 A/B, MCC	Sensor-Based Labs to Address NGSS Standards for Middle School Life, Earth, and Physical Science (p. 95)

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8:00–10:00 Engineering Bumpers and NGSS: Hands-on Physics with PASCO's new Wireless Smart Cart. **6 attendees will win a Smart Cart!**

9:30–10:30 Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration and Reaction Kinetics. **3 attendees will win a Wireless Spectrometer!**

11–Noon Project-based Activities with Wireless Sensors to Meet Gas Laws and Stoichiometry Chemistry Standards. **25 attendees will win a wireless sensor!**

12:30–1:30 Environmental Science using PASCO's Wireless Sensors. **25 attendees will win a wireless sensor!**

2:00–3:00 Using Wireless Sensors in Enzyme Activity and Cellular Respiration Labs. **25 attendees will win a wireless sensor!**

3:30–4:30 Sensor-based Labs to Address NGSS for Middle School Life, Earth and Physical Sciences. **25 attendees will win a wireless sensor!**

**Are you ready to
unleash imagination?**

Room #206 A/B



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Pearson Education (Booth #612)

Friday, Apr 1	8:00–9:30 AM	110B, MCC	Take Your Students On a Quest! A Real-World Problem-Based Learning Project That Incorporates All Three Dimensions of NGSS (p. 24)
Friday, Apr 1	10:00–11:30 AM	110B, MCC	New and Emerging Infectious Diseases: Host-Pathogen Relationships Highlight NGSS Core Concepts and the Value of Vaccination (p. 43)
Friday, Apr 1	12 Noon–1:30 PM	110B, MCC	The Best Test Prep Book Ever for AP Chemistry (p. 57)
Friday, Apr 1	2:00–3:30 PM	110B, MCC	New Tools, New Insights, and New Ways of Understanding Science with <i>Miller and Levine Biology</i> (p. 82)
Friday, Apr 1	4:00–5:30 PM	110B, MCC	Teaching Evolution in a Climate of Controversy—Even with NGSS, the Battles Continue (p. 96)

Perimeter Institute for Theoretical Physics (Booth #1219)

Friday, Apr 1	12 Noon–1:30 PM	107B, MCC	Black Holes for Everyone: How You Can Teach Black Holes in Grade 9 Science (p. 57)
Friday, Apr 1	2:00–3:30 PM	107B, MCC	Black Holes for High School Physics (p. 82)

SAE International—A World In Motion Program (Booth #609)

Friday, Apr 1	12 Noon–1:30 PM	209C, MCC	STEM Fun in the Elementary Classroom (p. 60)
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Scholastic, Inc. (Booth #414)

Friday, Apr 1	10:00–11:30 AM	212, MCC	Using Science Magazines to Engage Your Students (p. 47)
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Science First®/STARLAB® (Booth #1114)

Friday, Apr 1	2:00–2:30 PM	Booth #1114, Exh, Hall	The Change of Seasons (p. 74)
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Shape of Life (Booth #1121)

Friday, Apr 1	4:00–5:30 PM	209B, MCC	The REAL Story of the Animal Kingdom on Planet Earth (p. 99)
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Simulation Curriculum Corp. (Booth #834)

Friday, Apr 1	10:00–11:30 AM	209B, MCC	Pluto: New Horizons and Beyond (p. 47)
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StellarXplorers (Booth #1022)

Friday, Apr 1	4:00–5:30 PM	214, MCC	Let's Get into Orbit: Charting a Course to the Stars (p. 100)
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Teachers Curriculum Institute (Booth #256)

Friday, Apr 1	12 Noon–1:30 PM	107A, MCC	Analyzing and Interpreting Data Using TCI's Bring Learning Alive! (p. 57)
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Texas Instruments (Booth #108)

Friday, Apr 1	8:00–9:30 AM	110A, MCC	One Small Step...to Mars! (p. 23)
Friday, Apr 1	10:00–11:30 AM	110A, MCC	Zombie Apocalypse! (p. 43)

U.S. Department of Energy Office of Nuclear Energy (Booth #1253)

Friday, Apr 1	4:00–5:30 PM	209C, MCC	<i>The Harnessed Atom: New Project Ideas, Tools, and Resources—Nuclear Science and Energy</i> (p. 99)
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Vernier Software & Technology (Booth #134)

Friday, Apr 1	8:00–9:30 AM	207C, MCC	Renewable Energy with KidWind and Vernier (p. 26)
Friday, Apr 1	8:00–9:30 AM	207D, MCC	Advanced Physics with Vernier (p. 26)
Friday, Apr 1	10:00–11:30 AM	207D, MCC	Physics with Vernier (p. 46)
Friday, Apr 1	10:00–11:30 AM	207C, MCC	Biology with Vernier (p. 46)
Friday, Apr 1	12 Noon–1:30 PM	207D, MCC	Integrating Chromebook with Vernier Technology (p. 60)
Friday, Apr 1	12 Noon–1:30 PM	207C, MCC	Water Quality with Vernier (p. 60)
Friday, Apr 1	2:00–3:30 PM	207C, MCC	Inquiry-Based Biology with Vernier (p. 84)
Friday, Apr 1	2:00–3:30 PM	207D, MCC	iPad and Wireless Sensors with Vernier (p. 84)
Friday, Apr 1	4:00–5:30 PM	207D, MCC	STEM/Engineering Activities Using Vernier Sensors with Arduino (p. 99)
Friday, Apr 1	4:00–5:30 PM	207C, MCC	Chemistry with Vernier (p. 98)

Ward's Science (Booth #142)

Friday, Apr 1	8:00–9:30 AM	207A, MCC	Outbreaking Bad! (p. 26)
Friday, Apr 1	10:00–11:30 AM	207A, MCC	Apply the Science of Energy, Motion, and Friction (p. 46)
Friday, Apr 1	12 Noon–1:30 PM	207A, MCC	Fracking the CASE (p. 58)
Friday, Apr 1	2:00–3:30 PM	207A, MCC	Grant Writing: Designing for Dollars (p. 84)
Friday, Apr 1	4:00–5:30 PM	207A, MCC	Chemistry of Wine (p. 98)

WhiteBox Learning (Booth #458)

Friday, Apr 1	2:00–3:30 PM	209B, MCC	Project-Based STEM/Engineering (p. 86)
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Schedule at a Glance Earth and Space Science

*MCC stands for Music City Center

Earth and Space Science

8:00–9:00 AM	5–9	Fisk Two, Renaissance	ASTE Session: Are You Smarter Than a Rocket Scientist? Design a Spaceship (p. 22)
8:00–9:00 AM	5–12	103C, MCC	Filters Aren't Only for Coffee! How to Blend Multiple Curricular Materials Together into a Seamless STEM Unit on Water Quality and Filtration (p. 20)
8:00–9:00 AM	5–10	103B, MCC	Bring New Life to the Geosciences: Opportunities for Connecting Student Learning to Real-World Applications (p. 20)
8:00–9:00 AM	6–12	106B, MCC	Climate Change: Extremes or Norms? (p. 20)
8:00–9:00 AM	7–12	106A, MCC	Evidence-Based Reasoning and the Big Bang Theory in the Classroom (p. 17)
8:00–9:00 AM	5–10	104E, MCC	NASA: Putting the EM Spectrum Together (p. 20)
8:00–9:00 AM	P–C	Broadway E, Omni	Featured Presentation: When the Sky Goes Dark: The All-American Total Eclipse of the Sun (p. 16)
8:00–9:30 AM	6–12	110A, MCC	One Small Step...to Mars! (p. 23)
8:00–9:30 AM	6–12	207B, MCC	Welcome to the Anthropocene: Free Teaching Resources for a New Era (p. 26)
9:30–10:30 AM	6–C	Broadway J, Omni	Pi in the Sky (p. 36)
9:30–10:30 AM	9–12	101E, MCC	Exploring Engineering Practices (p. 38)
9:30–10:30 AM	6–12	104E, MCC	Stellar Evolution: From Star Formation to Catastrophic Destruction (p. 39)
9:30–10:30 AM	5–8	104C, MCC	Daytime Astronomy: Elementary Celestial Navigation (p. 39)
9:30–10:30 AM	6–12	104D, MCC	Using Density to Teach Earth Science Concepts (p. 39)
9:30–10:30 AM	K–C	Davidson B, MCC	National Earth Science Teachers Association (NESTA) Shares: Earth System Science Share-a-Thon (p. 40)
10:00–11:30 AM	12	107A, MCC	AP Environmental: Using Your Stream to Teach STEM-Based Skills (p. 43)
10:00–11:30 AM	6–12	209B, MCC	Pluto: New Horizons and Beyond (p. 47)
10:00–11:30 AM	7–C	202C, MCC	Genes in Space: Send Your DNA Experiment to the International Space Station (ISS) (p. 44)
11:00 AM–12 Noon	2–5	103C, MCC	Professional Development to Support Integrated Inquiry-Based Teaching in the Outdoors (p. 53)
11:00 AM–12 Noon	3–8	Davidson A2/3, MCC	Rain Garden Design (p. 49)
11:00 AM–12 Noon	6–C	Fisk One, Renaissance	NARST Session: Does Your Professional Development Make a Difference? Teachers' Retention of Discipline-Specific Science Content (p. 52)
11:00 AM–12 Noon	7–C	Davidson B, MCC	NESTA and HHMI Share: Multimedia Tools and Resources for Teaching Earth System Science (p. 53)
12 Noon–1:30 PM	9-10	107B, MCC	Black Holes for Everyone: How You Can Teach Black Holes in Grade 9 Science (p. 57)
12 Noon–1:30 PM	9–12	209B, MCC	Feeding the World & Protecting the Environment (p. 60)
12 Noon–1:30 PM	7–C	207C, MCC	Water Quality with Vernier (p. 60)
12:30–1:30 PM	K–C	206 A/B, MCC	Environmental Science Using Wireless Sensors (p. 70)
12:30–1:30 PM	7–C	Davidson B, MCC	National Earth Science Teachers Association (NESTA) Shares: EarthScope Chronicles—The Newberry Volcano: A Volcano Story (p. 69)
12:30–1:30 PM	6–C	Legends G, Omni	Teaching Environmental Sustainability with the Model My Watershed Application (p. 69)
1:00–1:30 PM	4–12	103C, MCC	Integrating Global STEM Education into All Aspects of the Curriculum (p. 72)
2:00–2:30 PM	5–8	Booth #1114, Exhibit Hall	The Change of Seasons (p. 74)
2:00–3:00 PM	1–C	Broadway E, Omni	Award-Winning Share-a-thon: Featuring NSTA Distinguished Teachers (p. 76)
2:00–3:00 PM	K–5	104B, MCC	Advancing Science Learning: Teaching Elementary Earth Science Concepts Through Engineering Problems (p. 74)
2:00–3:00 PM	P–5	104C, MCC	Saving Our Island: Students Creating Change Over Time (p. 77)
2:00–3:00 PM	K–C	Davidson B, MCC	National Earth Science Teachers Association (NESTA) Shares: Geology Share-a-Thon (p. 78)
2:00–3:30 PM	11–12	107B, MCC	Black Holes for High School Physics (p. 82)
3:30–4:30 PM	6–12	Legends F, Omni	Sail with Maury into STEM and CCSS (p. 94)
3:30–4:30 PM	6–8	Broadway H, Omni	Using Collaborative Web Tools to Support Three Dimensional Learning in Earth Science (p. 94)
3:30–4:30 PM	K–12	106C, MCC	Astronomy Activities for Your Classroom (p. 92)
3:30–4:30 PM	K–C	Davidson B, MCC	National Earth Science Teachers Association (NESTA) Shares: Rock, Mineral, and Fossil Raffle (p. 92)
3:30–4:30 PM	4–9	104E, MCC	Get Ready for the Great American Eclipse! (p. 92)

3:30–4:30 PM	6–12	Legends C, Omni	Decoding Starlight—From Photons to Pixels to Images: Using Science and Art (p. 94)
3:30–4:30 PM	6–8	206 A/B, MCC	Sensor-Based Labs to Address NGSS Practices for Middle School Life, Earth, and Physical Science (p. 95)
4:00–5:30 PM	4–C	210, MCC	Telescopes for Your Classroom (p. 99)
5:00–6:00 PM	K–5	104B, MCC	Children’s Books, STEM, and the Elementary Classroom: One Author’s Perspective (p. 102)
4:00–5:30 PM	8–12	214, MCC	Let’s Get into Orbit/Charting a Course to the Stars (p. 100)
5:00–6:00 PM	6–C	Cumberland 6, Omni	The Hydrofracking Boom as a “Teachable Moment” to Explore the Broader Energy Context Within the U.S. (p. 104)
5:00–6:00 PM	9–12	Acoustic, Omni	The SOFIA Airborne Astronomy Ambassador Program (p. 102)

Engineering, Technology, and the Application of Science

8:00–8:20 AM	6–C	Ryman One, Renaissance	SCST Session: Completing the Circle: Using Innovative Co-Teaching Collaborations to Unite University Scientists, Science Teachers, and Their Middle School Students (p. 15)
8:00–9:00 AM	5–12	103C, MCC	Filters Aren’t Only for Coffee! How to Blend Multiple Curricular Materials Together into a Seamless STEM Unit on Water Quality and Filtration (p. 20)
8:00–9:00 AM	1–8	104D, MCC	Engaging Families in STEM (p. 20)
8:00–9:00 AM	K–12	206 A/B, MCC	Engineering Bumpers and NGSS: Hands-On Physics with PASCO’s New Wireless Smart Cart! (p. 23)
8:00–9:00 AM	6–8	Broadway H, Omni	Bumpers Save Lives (p. 21)
8:00–9:00 AM	5–9	Fisk Two, Renaissance	ASTE Session: Are You Smarter Than a Rocket Scientist? Design a Spaceship (p. 22)
8:00–9:00 AM	9–12	Music Row 5, Omni	DuPont Presents: The Science of Packaging (p. 22)
8:00–9:30 AM	7–C	207C, MCC	Renewable Energy with KidWind and Vernier (p. 26)
8:20–8:40 AM	C	Ryman One, Renaissance	SCST Session: STEM Research Experiences for Preservice Science Teachers (p. 30)
8:40–9:00 AM	C	Ryman One, Renaissance	SCST Session: Creating an Authentic Research Experience in a General Biology Lab Using the Experience of Publishing (p. 32)
9:30–10:30 AM	1–12	Music Row 3, Omni	Safer STEM Activities Through Collaboration! (p. 38)
9:30–10:30 AM	K–5	103A, MCC	Sound Through the Ages—From Cluckers to Pluckers (p. 38)
9:30–10:30 AM	9–12	Music Row 5, Omni	DuPont Presents: Driving Science (p. 41)
9:30–10:30 AM	K–12	Center Blrm., Renaissance	Science as Human Endeavor: Analyzing Historical Primary Sources from the Library of Congress (p. 41)
9:30–10:30 AM	K–12	101C, MCC	NSTA Press® Session: <i>It’s Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12</i> (p. 38)
9:30–10:30 AM	1–12	104A, MCC	Using Technology to Engage Parents and Differentiated Instruction (p. 35)
9:30–10:30 AM	6–C	Broadway J, Omni	Pi in the Sky (p. 36)
9:30–10:30 AM	9–12	101E, MCC	Exploring Engineering Practices (p. 38)
10:00–11:00 AM	5–10	108, MCC	Build, Program, and Control with K’NEX Education’s New Robotics Building System (p. 42)
10:00–11:30 AM	12	107A, MCC	AP Environmental: Using Your Stream to Teach STEM-Based Skills (p. 43)
10:00–11:30 AM	K–2	205A, MCC	Early Elementary Engineering with Smithsonian: What’s New with STC3? (p. 44)
11:00AM–12 Noon	3–8	Davidson A2/3, MCC	Rain Garden Design (p. 49)
11:00AM–12 Noon	4–12	Legends F, Omni	D.E.S.I.G.N. (Developing Engineering Solutions Inspired by Graphic Novels) (p. 54)
11:00AM–12 Noon	4–8	106B, MCC	Biomimicry: The “Natural” Intersection of Biology and Engineering (p. 53)
11:20–11:40 AM	9–C	Ryman One, Renaissance	SCST Session: Simple Mechanical Devices to Help Students Learn the Principles of Human Anatomy and Physiology (p. 56)
11:30AM–12:30 PM	5–10	108, MCC	Build, Program, and Control with K’NEX Education’s New Robotics Building System (p. 56)
11:40AM–12 Noon	9–C	Ryman One, Renaissance	SCST Session: Spatial Ability and STEM Courses—Why Mental Manipulation Matters (p. 56)
12 Noon–1:30 PM	6–C	202C, MCC	Bringing Real Neuroscience and Neural Engineering into Your Classroom (p. 58)
12 Noon–1:30 PM	9–12	209A, MCC	Flinn Scientific’s STEM Design Challenge™ “Build-It-Yourself” Lab Project (p. 60)
12 Noon–1:30 PM	9–C	205B, MCC	Top 10 for 2016: Genetics and Biotechnology Discoveries for Your Classroom (p. 58)
12:30–1:00 PM	8–12	Cumberland 5, Omni	Teaching Through the Lens of Nanotechnology (p. 62)

Schedule at a Glance Engineering, Technology, and the Application of Science

12:30–1:00 PM	5–8	106A, MCC	From the Goopy to the Digital: Multimodal Learning with Light and the Eye (p. 62)
12:30–1:30 PM	P–5,C	Legends F, Omni	Collaborate, Create, and Challenge: How a District and University Partnership Brought STEM to Elementary (p. 69)
12:30–1:30 PM	3–8	Music Row 4, Omni	ASTC Session: Engineering for Animals: A Powerful Way to Engage Students and Teachers in STEM Learning at the Zoo and in the Classroom (p. 66)
12:30–1:30 PM	K–C	104A, MCC	Up, Up, and Away! An introduction to High-Altitude Ballooning (p. 64)
12:30–1:30 PM	P–12	Cumberland 1, Omni	The Role of a 21st-Century Zoo: How We Can Build Youth Environmental Literacy Together (p. 66)
12:30–1:30 PM	6–10	Broadway G, Omni	Using Crime Scenes to Get the Point Across the Curriculum (p. 64)
12:30–1:30 PM	6–8	103A, MCC	Bioengineering Challenges and Middle School Life Science (p. 68)
2:00–3:00 PM	10–C	104A, MCC	Inner City Greenhouses: Cross-Curricular Connections and Service Learning Projects (p. 74)
2:00–3:00 PM	K–5	104B, MCC	Advancing Science Learning: Teaching Elementary Earth Science Concepts Through Engineering Problems (p. 74)
2:00–3:00 PM	P–5	104C, MCC	Saving Our Island: Students Creating Change Over Time (p. 77)
2:00–3:30 PM	K–5	201B, MCC	Designing with FOSS: Engineering in Elementary Science (p. 83)
2:00–3:30 PM	6–12	212, MCC	A Peek Behind the Curtain: Disney Parks Approach to Physics and Energy (p. 86)
2:00–3:30 PM	5–C	209B, MCC	Project-Based STEM/Engineering (p. 86)
3:00–4:00 PM	5–10	108, MCC	Build, Program, and Control with K’NEX Education’s New Robotics Building System (p. 87)
3:30–4:30 PM	6–8	Broadway H, Omni	Using Collaborative Web Tools to Support Three Dimensional Learning in Earth Science (p. 94)
3:30–4:30 PM	4–C	Acoustic, Omni	STEMSHOT: A Community-Sponsored Rocket Challenge (p. 90)
3:30–4:30 PM	6–12	Legends C, Omni	Decoding Starlight—From Photons to Pixels to Images: Using Science and Art (p. 94)
3:30–4:30 PM	6–8	Cumberland 4, Omni	Connecting Content to the Grid (p. 90)
3:30–4:30 PM	6–C	Music Row 4, Omni	NSELA Session: NGSS Engineering: How to Help Every Teacher Move from Panic to Plan (p. 91)
3:30–4:30 PM	4–10	Cumberland 1, Omni	3D Design and Printing: Basics for Teachers (p. 90)
3:30–4:30 PM	6–12	Broadway K, Omni	Design That Matters: Meeting NGSS Through Community Engagement (p. 94)
4:00–5:30 PM	6–12	201A, MCC	CPO’s Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design (p. 96)
4:00–5:30 PM	6–12	207D, MCC	STEM/Engineering Activities Using Vernier Sensors with Arduino (p. 99)
4:00–5:30 PM	7–12	107A, MCC	Build a Robot Using an Android App: FIRST® Tech Challenge Extends STEM Learning Beyond the Middle School and High School Classroom (p. 96)
4:00–5:30 PM	8–12	214, MCC	Let’s Get into Orbit/Charting a Course to the Stars (p. 100)
5:00–6:00 PM	K–6	101 A/B, MCC	STEM and the Science and Engineering Practices, Your New BFFs (p. 103)
5:00–6:00 PM	K–8	Davidson A2/3, MCC	Engineering for Architecture (p. 102)
5:00–6:00 PM	4–8	106B, MCC	Drop, Stop, Don’t Pop! Launching into Engineering Design (p. 104)
5:00–6:00 PM	1–12	101C, MCC	NSTA Press® Session: Using Everyday Mysteries to Promote Literacy (p. 102)
5:00–6:00 PM	3–6	104C, MCC	Shake It Up! Engineering for Earthquakes (p. 104)

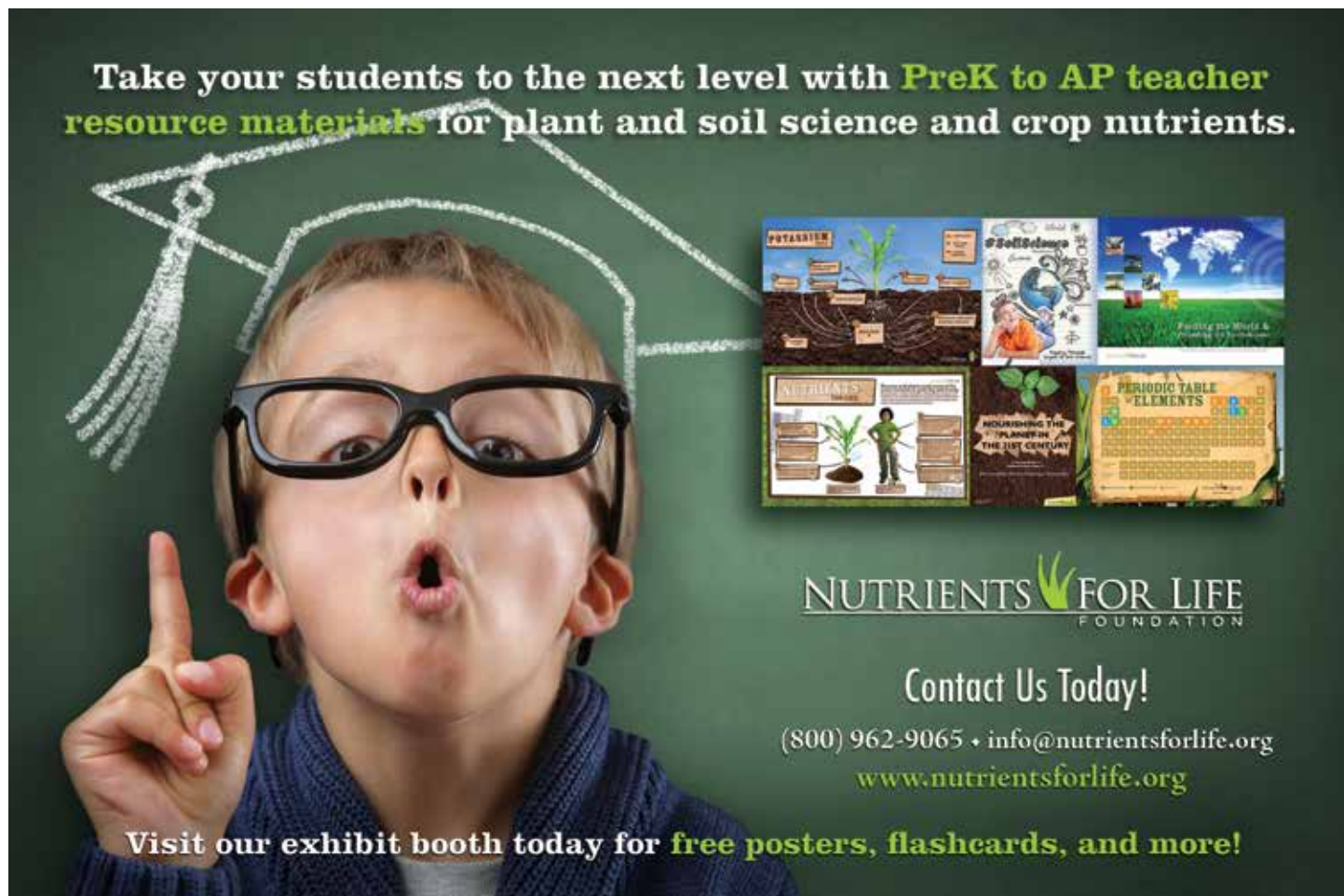
General Science Education

8:00–8:30 AM	6–C	101E, MCC	Data Is Not a Four-Letter Word! Use NOAA Resources to Build Student Proficiency in Data Analysis (p. 15)
8:00–9:00 AM	6–12	Fisk One, Renaissance	NARST Session: Engaging in the Formative Assessment Design Cycle for the NGSS (p. 19)
8:00–9:00 AM	K–8	Davidson A2/3, MCC	Using NGSS in a non-NGSS State (p. 18)
8:00–9:00 AM	K–C	Cumberland 1, Omni	NSELA Session: Building School and District Capacity for Understanding Student Thinking Through Formative Assessment (p. 18)
8:00–9:00 AM	P–6	105A, MCC	Na...No Seams: Methods for Seamless Integration of Nanoscience into State-Standard Curriculum (p. 20)
8:00–9:00 AM	1–12	Music Row 4, Omni	CSSS Session: How Do I Demonstrate That My Students Are Showing Growth? (p. 19)
8:00–9:00 AM	6–12	101C, MCC	NSTA Press® Session: Engaging Students in Predict, Observe, Explain Sequences in Your Science Classroom (p. 20)

Schedule at a Glance General Science Education

8:00–9:00 AM	K–C	Music Row 1, Omni	Professional Development Models: Showcasing and Sustaining Meaningful Practices and Collaborative Approaches Focusing on STEM and the NGSS for Teacher Leaders and PD Providers (p. 19)
8:00–9:00 AM	K–12	Grand Blrm. C1, MCC	NGSS@NSTA Forum: How Should Districts and Schools Focus Professional Development When Starting to Implement NGSS? (p. 18)
8:00–9:00 AM	1–12	Center Blrm., Renaissance	Success on a Global Scale (p. 22)
8:00–9:00 AM	3–C	Legends D, Omni	The World of Google in Science (p. 19)
8:00–9:00 AM	6–12	Cumberland 6, Omni	Out with the Old, In with the New (p. 18)
8:00–9:00 AM	6–8	Cumberland 4, Omni	Ignite Science Writers (p. 18)
8:00–9:00 AM	7–C	Broadway C, Omni	Get Connected! Promoting Collaboration during Hands-On Science Lessons with Free Online Tools (p. 21)
8:00–9:00 AM	7–C	Music City Blrm., Renaissance	Teaching Science Through a Public Health Lens (p. 19)
8:00–9:00 AM	K–12	West Blrm., Renaissance	Creating and Evaluating Resources for Lessons That Fit the NGSS (p. 19)
8:00–9:30 AM	3–12	202B, MCC	Observing and Inferring in the Science Classroom: New Tips, Tools, and a Twist from Dinah Zike’s Notebooking Central (p. 24)
8:00–9:30 AM	K–5	107B, MCC	Amplify Science for Grades K–5: Experience Three-Dimensional Teaching and Learning with the Newest Curriculum from The Lawrence Hall of Science (p. 23)
8:00–9:30 AM	6–8	209C, MCC	<i>Project-Based Inquiry Science</i> TM (PBIS): Creating “Coherence and Science Storylines” for Middle School Science—Grades 6–8 (p. 27)

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Schedule at a Glance General Science Education

8:00–9:30 AM	K–5	201B, MCC	What Does Argumentation Look Like in an Elementary Classroom? (p. 24)
8:00–9:30 AM	6–C	205B, MCC	Partners in Crime: Forensic Fingerprinting with the Professionals (p. 26)
8:00–9:30 AM	8–C	Broadway F, Omni	High School Hands-On Hodge-Podge Share-a-Thon (p. 23)
8:00–9:30 AM	K–12	401 A/B, MCC	10 Creative Ways to Read, Write, and Think Like a Scientist (p. 28)
8:00–9:30 AM	K–12	107A, MCC	Science Is NOT a Spectator Sport! (p. 23)
8:00–9:30 AM	6–8	209B, MCC	Engage with NGSS Using STEM Gauge™ (p. 27)
8:00–9:30 AM	K–2	205A, MCC	Pushing and Pulling Your Teachers to NGSS (p. 26)
8:00–9:30 AM	K–8	110B, MCC	Take Your Students On a Quest! A Real-World Problem-Based Learning Project That Incorporates All Three Dimensions of NGSS (p. 24)
8:00–10:00 AM	P–6	Grand Blrm. A, MCC	Elementary Extravaganza (p. 28)
8:00–10:00 AM	P–6	Grand Blrm. A, MCC	Elementary Extravaganza (p. 28)
8:00–11:00 AM	6–C	Legends B, Omni	NGSS Toolkit Pathway Session: Using the BSCS Instructional Model to Design Learning Sequences (p. 28)
8:20–8:40 AM	C	Ryman One, Renaissance	SCST Session: STEM Research Experiences for Preservice Science Teachers (p. 30)
8:30–9:00 AM	7–12	Acoustic, Omni	Integrating Literacy Techniques without Sacrificing Content (p. 30)
8:30–10:30 AM	P–C	Broadway A/B, Omni	Exemplary Science Programs (ESP) Meeting Current Reform Efforts (p. 32)
9:00–10:30 AM	K–C	Legends A, Omni	McREL Pathway Session: GreenSTEM: Transforming Your Existing Lessons to Be Community Relevant and Project Based (p. 32)
9:00–10:30 AM	6–12	Grand Blrm. C2, MCC	Beyond The Flipped Classroom: A Pedagogical Pilgrimage (p. 33)
9:30–10:30 AM	6–12	106B, MCC	Model My Watershed: Using Local Data to Make Local Decision (p. 39)
9:30–10:30 AM	6–12	Cumberland 5, Omni	Forensics on the Fly (p. 36)
9:30–10:30 AM	K–C	Broadway G, Omni	Differentiation with Explain Everything (p. 36)
9:30–10:30 AM	6–C	Legends D, Omni	Hollywood BAD Science (p. 37)
9:30–10:30 AM	5–9	Fisk One, Renaissance	NARST Session: Implementing STEM Design Challenges at the Middle School Level (p. 38)
9:30–10:30 AM	6–12	Cumberland 3, Omni	Using Systems Modeling to Facilitate Student Conceptual Development (p. 40)
9:30–10:30 AM	K–C	Davidson A2/3, MCC	Teachers' Voices in Building STEM Education Ecosystems and in STEM Leadership (p. 36)
9:30–10:30 AM	K–C	Music Row 1, Omni	Effective Professional Development Approach for Teachers and Districts (p. 37)
9:30–10:30 AM	6–8	Music Row 4, Omni	NSELA Session: Bring the Practice into Your Science Classrooms! (p. 38)
9:30–10:30 AM	1–C	Fisk Two, Renaissance	ASTE Session: The 50 Cent Microscope/Foldscope (p. 42)
9:30–10:30 AM	P–C	Music Row 2, Omni	Authors Needed! Share Your Teaching Ideas in an NSTA Journal (p. 37)
9:30–10:30 AM	K–6	106A, MCC	Use Art to Increase Scientific Literacy in Elementary Students with Special Needs (p. 35)
9:30–10:30 AM	3–12	Music City Blrm., Renaissance	Close Reading in Science: Applying CCSS ELA (p. 42)
9:30–10:30 AM	K–8	106C, MCC	An Integration Plan for NGSS and CCSS: Science, Social Studies, and Math (p. 39)
9:30–10:30 AM	6–12	Broadway K, Omni	Developing Critical Thinking, Reasoning, Inquiry, and Problem Solving through Literacy (p. 40)
9:30–10:30 AM	P–11	West Blrm., Renaissance	Developing Teachers into Master Educators and Leaders: National Board Certification (p. 38)
9:30–10:30 AM	K–12	Broadway D, Omni	How to Implement STEM and the NGSS into Your Classroom Through the Use of NSTA Competitions (p. 36)
9:30–10:30 AM	K–12	Grand Blrm. C1, MCC	NGSS@NSTA Forum: Using Three-Dimensional Standards to Plan Instruction and Assessment (p. 36)
9:30–10:30 AM	6–C	105A, MCC	STEM Learning: An Integrated Teaching Model (p. 39)
9:30–10:30 AM	6–8	Cumberland 4, Omni	Using Student-Created Digital Products in a Technology-Rich Science Learning Environment (p. 36)
9:30–10:30 AM	6–8	Broadway H, Omni	Are Three Trials Enough? Analyzing Investigation Data with Large Variation: How Sample Size an Actually Change “Conclusions” (p. 40)
9:30–10:30 AM	5–9	103C, MCC	Constructing Science Explanations Using Reading and Writing Strategies to Support Grades 6–8 Students (p. 38)
9:30–10:30 AM	P–C	102 A/B, MCC	Featured Presentation: The Tinker.Make.Innovate. Program (p. 35)
10:00–11:30 AM	K–12	401 A/B, MCC	What Works? Science Techbook and Effective Professional Development (p. 47)
10:00–11:30 AM	5–12	201A, MCC	Solving the Mystery of STEM Using Forensic Science (p. 43)
10:00–11:30 AM	1–5	211, MCC	Make Science Come to Life (p. 47)
10:00–11:30 AM	6–8	209C, MCC	Debunking the Myths of Project-Based Learning: Yes We CAN! (p. 47)

Schedule at a Glance General Science Education

10:00–11:30 AM	6–8	107B, MCC	Amplify Science for Grades 6–8: Experience Three-Dimensional Teaching and Learning with the Newest Curriculum from The Lawrence Hall of Science (p. 43)
10:00–11:30 AM	6–8	214, MCC	Making Critical Thinking More Than Just a Cliché Using Three-Dimensional Learning (p. 47)
10:00–11:30 AM	3–10	212, MCC	Using Science Magazines to Engage Your Students (p. 47)
10:10–10:30 AM	C	Ryman One, Renaissance	SCST Session: Building an Extended Inquiry Laboratory to Create a More Authentic Research Experience for First-Year Students (p. 48)
11:00–11:30 AM	9–12	Cumberland 5, Omni	Crime Scene Reconstruction: A Culminating Project for Forensic Science (p. 49)
11:00–11:30 AM	6–8	Broadway J, Omni	Hybrid PLCs: Building Collaboration Among Teachers in Different Schools (p. 49)
11:00 AM–12 Noon	9–12	Broadway G, Omni	Engaging Students with Literacy Strategies (p. 50)
11:00 AM–12 Noon	4–12	Center Blrm., Renaissance	Using Socio-Scientific Issues in the Classroom (p. 54)
11:00 AM–12 Noon	2	104D, MCC	Interdisciplinary Learning in a 21st-Century Classroom (p. 53)
11:00 AM–12 Noon	1–12	East Blrm., Renaissance	Ready, Set, Read: Creatively Integrating True Reading into Your Science Lab (p. 54)
11:00 AM–12 Noon	6–12	Legends C, Omni	Interactive Notebooks, iPads, and the Flipped Classroom: Supporting Inquiry and Literacy (p. 54)
11:00 AM–12 Noon	K–8	104E, MCC	Science Learning at Your Window (p. 53)
11:00 AM–12 Noon	9–12	Acoustic, Omni	Engaging Students through Digital Assessment (p. 50)
11:00 AM–12 Noon	K–6	106C, MCC	Under the Cover of Children’s Storybooks (p. 53)
11:00 AM–12 Noon	K–12	Grand Blrm. C1, MCC	NGSS@NSTA Forum: Supporting Ongoing Changes in Students’ Thinking: The Primer (p. 49)
11:00 AM–12 Noon	P–8	105B, MCC	That’s a Good Question! (p. 53)
11:00 AM–12 Noon	K–5	101C, MCC	NSTA Press® Session: Linking the <i>Uncovering Student Ideas in Science</i> Series and <i>Everyday Science Mysteries</i> to K–5 Language Literacy (p. 52)
11:00 AM–12 Noon	P–C	Broadway D, Omni	The NSTA Learning Center: A Tool to Develop Preservice Teachers (p. 50)
11:00 AM–12 Noon	P–C	Music Row 1, Omni	The Best In Science Literature—Choosing It, Using It (p. 50)
11:00 AM–12 Noon	6–12	Cumberland 2, Omni	NSELA Session: Conductors of Change—How Science Leaders Can Facilitate Harmony Among the Three Components of the NGSS (p. 54)
11:00 AM–12 Noon	P–12	Cumberland 1, Omni	CSSS Session: Panel Discussion: Going Ahead with the NGSS (p. 50)
11:00 AM–12 Noon	7–C	Fisk Two, Renaissance	ASTE Session: Using Backwards Design to Identify Instructional Sequences That Prepare Students for NGSS Assessments (p. 55)
11:00 AM–12 Noon	K–5	105A, MCC	CESI Session: Calling All K–5 STEM Competitors (p. 49)
11:00 AM–12 Noon	P–C	Music Row 3, Omni	The Top 10 Safety Issues in the Science Classroom/Lab You Need to Know! (p. 51)
11:00 AM–12 Noon	K–12	Music Row 2, Omni	The Shell Science Teaching Award: Fueling Success with Students (p. 51)
11:00 AM–12 Noon	6–C	101E, MCC	Teach STEM Content and Spark Science Career Interest with Free Online Games (p. 49)
11:00 AM–12 Noon	K–C	West Blrm., Renaissance	Scaffolding for Success: Three-Dimensional Learning in Action (p. 52)
11:00 AM–12 Noon	6–12	Broadway K, Omni	Differentiating Science Practices Through Inquiry-Based Instruction (p. 54)
11:00 AM–12:30 PM	K–12	Legends A, Omni	McREL Pathway Session: Curriculum Audit: Where Will You STEMify Your Curriculum? (p. 56)
11:30 AM–12 Noon	K–C	Cumberland 4, Omni	Cut the Cord: How to Become Mobile in Your Classroom (p. 56)
12 Noon–1:30 PM	K–5	107A, MCC	Analyzing and Interpreting Data Using TCI’s Bring Learning Alive! (p. 57)
12 Noon–1:30 PM	1–5	211, MCC	Make Science Come to Life (p. 60)
12 Noon–1:30 PM	K–12	401 A/B, MCC	Bringing NGSS to the Classroom with Discovery Education (p. 61)
12 Noon–1:30 PM	2–5	209C, MCC	STEM Fun in the Elementary Classroom (p. 60)
12 Noon–1:30 PM	7–12	110A, MCC	The Differentiated Classroom in One Package: Teaching Science Inquiry to Modern Learners Using Microsoft Surface and Apps (p. 57)
12 Noon–1:30 PM	3–C	207D, MCC	Integrating Chromebook with Vernier Technology (p. 60)
12 Noon–1:30 PM	6–8	205A, MCC	Modeling Beyond a Flashlight and Beach Ball (p. 58)
12:30–1:00 PM	5–9	Broadway J, Omni	Instagram, Insta Assessment! Social Media-Inspired Classroom Assessment (p. 62)
12:30–1:00 PM	P–C	Music City Blrm., Renaissance	50 Free Tech Tools for the Science Classroom (p. 62)
12:30–1:00 PM	6–11	103C, MCC	Developing 21st-Century Reasoning Skills Through an Authentic Interdisciplinary STEM Research Experience (p. 62)
12:30–1:30 PM	K–5	104D, MCC	Integrate NGSS and CCSS with a Practical Reading Strategy: Do It, Learn It, Use It! (p. 68)
12:30–1:30 PM	P–12	West Blrm., Renaissance	Find the Fund\$ for STEM: Grant Writing 101 (p. 67)
12:30–1:30 PM	K–8	106B, MCC	Helping Teachers and Students Learn Science Through Picture Books! (p. 68)
12:30–1:30 PM	1–C	Center Blrm., Renaissance	Fast Modes of Assessment (p. 70)

Schedule at a Glance General Science Education

12:30–1:30 PM	K–5	106C, MCC	Lights, Camera, Action! Introducing the Nature of Science and Scientific Inquiry Using Instructional Videos in Grades K–5 (p. 68)
12:30–1:30 PM	4–12	Cumberland 4, Omni	Understanding Car Crashes: Saving Lives with STEM Lessons (p. 66)
12:30–1:30 PM	9–12	Acoustic, Omni	Poems, Texts, Hate Mail, and Other Ways to Incorporate Writing Standards into Science Curriculum (p. 64)
12:30–1:30 PM	K–5	104B, MCC	Engaging K–5 Students with a Schoolwide STEM Challenge: From Planning to Implementation to a Family STEM Night (p. 64)
12:30–1:30 PM	K–12	Grand Blrm. C1, MCC	NGSS@NSTA Forum: Assessing Three-Dimensional Learning (p. 64)
12:30–1:30 PM	1–C	Broadway D, Omni	No Child Left Behind—Past, Present, and Future (p. 64)
12:30–1:30 PM	6–12	Music Row 2, Omni	Do You Need a New Science Lab? (p. 66)
12:30–1:30 PM	9–12	Music Row 5, Omni	DuPont Presents: Global Food Security— Creating Solvers for Challenges of the Future (p. 70)
12:30–1:30 PM	1–5	105A, MCC	CESI Session: Presenting the Best New Children’s Books to Use When Teaching Science in the Elementary Grades (p. 64)
12:30–1:30 PM	3–8	Music Row 3, Omni	AMSE Session: Rediscovering High-Yield, Underutilized Tools for Culturally Diverse Student Learning (p. 66)
12:30–1:30 PM	P–C	Cumberland 2, Omni	CSSS Session: Deep Curriculum Alignment—A Pathway to Results (p. 69)
12:30–1:30 PM	K–C	Broadway C, Omni	NSELA Session: Equity, Leadership, and Change (p. 64)
12:30–1:30 PM	2–6	104C, MCC	Why/How We Do a Science Camp! (p. 68)
12:30–1:30 PM	6–9	101C, MCC	NSTA Press® Session: <i>Doing Good Science in Middle School</i> (p. 63)
12:30–1:30 PM	P–2/C	101E, MCC	Engaging the Natural Curiosities of Children in the Early Years (p. 68)
12:30–1:30 PM	6–9	Broadway H, Omni	Literacy and Science: Together Is Better (p. 69)
12:30–1:30 PM	6–12	Broadway K, Omni	Engaging in Close Reading of a Text: How to Meet the CCSS while Teaching NGSS Content and Skills (p. 69)
12:30–1:30 PM	6–10	Legends C, Omni	Integrating the “M” and the “S” in STEM: An Example Lesson (p. 69)
12:30–1:30 PM	K–6	Davidson A2/3, MCC	Constructing Coherent Content Storylines (p. 68)
12:30–1:30 PM	1–C	Music Row 1, Omni	Science in Media: A Project-Based Learning Activity (p. 66)
12:30–1:30 PM	4–9	Fisk One, Renaissance	NARST Session: Supporting Students to Make Connections Using the Crosscutting Concepts (p. 67)
12:30–1:30 PM	7–C	103B, MCC	Outbreak! Partnering CDC Scientists with Science Teachers (p. 63)
12:30–1:30 PM	K–5	Mockingbird 4, Omni	Tennessee Science Standards Review: K–5 Update and Feedback (p. 66)
12:30–1:30 PM	10–C	Ryman One, Renaissance	SCST Session: Marjorie Gardner Lecture: Assessment of Laboratory Skills Through Badging (p. 63)
12:30–2:30 PM	6–C	Legends B, Omni	NGSS Toolkit Pathway Session: Using the BSCS Instructional Model to Design Learning Sequences (p. 70)
12:45–1:30 PM	P–C	Exhibits (Hall B) Entrance	“Meet and Greet” the Presidents and Board/Council (p. 72)
1:00–1:30 PM	6–C	Music City Blrm., Renaissance	Using the Science and Engineering Practices in Blended and Online Learning Environments: A Framework for Design (p. 72)
1:00–1:30 PM	5–9	106A, MCC	A Scientist in the Classroom: A Framework for Learning Using Live Interactive Webcasts (p. 72)
1:00–1:30 PM	6–12	Cumberland 5, Omni	Filmmaking in the Classroom (p. 72)
2:00–2:30 PM	9–12	Acoustic, Omni	Scientific Notebooks in a High School Classroom (p. 73)
2:00–2:30 PM	6–C	Music City Blrm., Renaissance	Learn to Use Real-Time Data from NOAA in Classroom and Inquiry-Based Learning Activities (p. 73)
2:00–2:30 PM	4–C	Broadway G, Omni	Blended Learning in the Lab Sciences (p. 73)
2:00–3:00 PM	P–5	Cumberland 2, Omni	The “How Tos” of an X-STREAM Family Night (p. 79)
2:00–3:00 PM	P–6	104D, MCC	Children’s Literature and the Nature of Science (p. 78)
2:00–3:00 PM	K–12	West Blrm., Renaissance	How Our District Uses the Instructional Design Process to Integrate Instruction (p. 77)
2:00–3:00 PM	P–6	101C, MCC	NSTA Press® Session: <i>The Power of Questioning: Guiding Student Investigations</i> (p. 77)
2:00–3:00 PM	P–C	Broadway D, Omni	The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 76)
2:00–3:00 PM	6–12	Broadway K, Omni	Talking Points: The Role of Talk in the Science Classroom (p. 79)
2:00–3:00 PM	3–C	Legends C, Omni	ABCs of 3D Printing: Applications, Builds, and Curriculum (p. 80)
2:00–3:00 PM	1–8	Davidson A2/3, MCC	Going Deeper: Content Literacy Strategies and Instructional Techniques for the Science Educator (p. 74)

Schedule at a Glance General Science Education

2:00–3:00 PM	3–8	106B, MCC	Idea Builders: Integrating Engineering and Literature (p. 78)
2:00–3:00 PM	P–C	Music Row 1, Omni	Equity Through STEM (p. 77)
2:00–3:00 PM	P–5	105A, MCC	CESI Session: Biographies: Trade Books That Conceptualize the Nature of Science (p. 78)
2:00–3:00 PM	K–5	106A, MCC	NGSS and Interdisciplinary Lesson Design in Elementary School (p. 74)
2:00–3:00 PM	6–8	Broadway J, Omni	Fostering a Schoolwide STEM Culture Among Staff and Students (p. 76)
2:00–3:00 PM	K–12	Center Blrm., Renaissance	Creating Meaning through the Crosscutting Concepts (p. 80)
2:00–3:00 PM	3–10	Legends F, Omni	Math as the Language of Science (p. 80)
2:00–3:00 PM	K–12	East Blrm., Renaissance	What Does It Look Like When NGSS Are Being Implemented? (p. 80)
2:00–3:00 PM	P–C	Cumberland 4, Omni	Developing Your Professional Learning Network: How Twitter Will Impact Your Science Teaching (p. 76)
2:00–3:00 PM	P–6	106C, MCC	Story Starts with Science: Using Children’s Literature to Enhance Your Science Curriculum Content (p. 78)
2:00–3:00 PM	9–12	Cumberland 6, Omni	Research Goes to School: Nanoscience-Based Activities Transferable from the Professional Development Workshop to the STEM Classroom (p. 79)
2:00–3:00 PM	6–8	Broadway H, Omni	Why Are We the Way We Are? Supporting Middle School Students in Three-Dimensional Learning to Make Sense of Gene and Environmental Interactions (p. 78)
2:00–3:00 PM	5–8	103B, MCC	How to Master Scientists Inside Your Classroom with High Results (p. 77)
2:00–3:00 PM	6–12	103C, MCC	Authentic Interdisciplinary Learning Through Simulation (p. 77)
2:00–3:00 PM	6–8	Mockingbird 4, Omni	Tennessee Science Standards Review: Middle School Update and Feedback (p. 76)
2:00–3:00 PM	P–C	101D, MCC	NSTA Press® Session: <i>Models and Approaches to STEM Professional Development</i> (p. 74)
2:00–3:00 PM	6–8	101E, MCC	Let’s Go Outside...to the Schoolyard and Beyond (p. 74)
2:00–3:30 PM	K–8	205A, MCC	EQuIP Your District for NGSS (p. 83)
2:00–3:30 PM	K–12	401 A/B, MCC	Personalizing Your Science Instruction (p. 87)
2:00–3:30 PM	K–C	207A, MCC	Grant Writing: Designing for Dollars (p. 84)
2:00–3:30 PM	9–12	209A, MCC	Flinn Scientific’s Exploring Chemistry™: Connecting Content through Experiments (p. 86)
2:00–3:30 PM	3–C	207D, MCC	iPad and Wireless Sensors with Vernier (p. 84)
2:00–3:30 PM	K–12	Legends A, Omni	McREL Pathway Session: STEM Models: Where Do I Start and How Do I Decide? (p. 82)
2:00–3:30 PM	K–12	202B, MCC	Science Vocabulary Has Kinetic Energy When It’s Moving (p. 83)
2:00–3:30 PM	1–5	211, MCC	Make Science Come to Life (p. 86)
2:00–3:30 PM	K–12	Grand Blrm. C1, MCC	NGSS@NSTA Forum: Designing or Adapting Curriculum and Instruction to Make It Three Dimensional (p. 81)
2:30–3:00 PM	9–12	Acoustic, Omni	Turning Your Students into Citizen Scientists (p. 87)
2:30–3:00 PM	P–C	Broadway G, Omni	Creating Interactive Lessons for the Flipped Classroom (p. 87)
3:30–4:00 PM	6–C	101C, MCC	NSTA Press® Session: <i>Beyond the Numbers: Making Sense of Statistics</i> (p. 88)
3:30–4:00 PM	P–C	Broadway G, Omni	Don’t Be a Crash Test Dummy! (p. 88)
3:30–4:30 PM	G	101D, MCC	Uncovering Student and Teacher Ideas in Science Using Probes (p. 89)
3:30–4:30 PM	K–5	Legends G, Omni	CSSS Session: Outstanding Science Tradebooks in the Classroom (p. 90)
3:30–4:30 PM	9–12	Mockingbird 4, Omni	Tennessee Science Standards Review: High School Update and Feedback (p. 90)
3:30–4:30 PM	P–C	Davidson A2/3, MCC	Robert H. Carleton Lecture: Moving Toward NSTA’s Vision to Be the Leader in Science Education (p. 88)
3:30–4:30 PM	K–5	104D, MCC	K–5 Science Literacy: How to Make It Work (p. 92)
3:30–4:30 PM	6–12	Music Row 2, Omni	Enhancing Student Learning in Science Using Literacy Strategies (p. 91)
3:30–4:30 PM	9–12	Music Row 5, Omni	DuPont Presents: The Science of Keeping Food Fresh (p. 94)
3:30–4:30 PM	K–8	105A, MCC	CESI Session: Web 2.0 Tools for Science Teaching (p. 92)
3:30–4:30 PM	3–12	Fisk Two, Renaissance	ASTE Session: Using Hands-On Performance Assessment in K–12 Classrooms (p. 94)
3:30–4:30 PM	K–6	105B, MCC	Linking Science and Literacy for Improved Student Outcomes (p. 92)
3:30–4:30 PM	7–C	Broadway D, Omni	Zoo Genetics: A Partnership Between Scientist and Teacher (p. 90)
3:30–4:30 PM	1–11	Music Row 1, Omni	Integrating STEM, STEAM, and Culturally Relevant Teaching into Teacher Preparation Programs to ELLs and Those with Disabilities (p. 90)
3:30–4:30 PM	K–12	103A, MCC	Using NGSS Tools and Resources in Your Classroom (p. 91)
3:30–4:30 PM	8–C	Cumberland 6, Omni	Paintballs, Catapults, Art, and Science: A Cross Curriculum STEAM Project-Based Learning Experience (p. 94)

Schedule at a Glance General Science Education

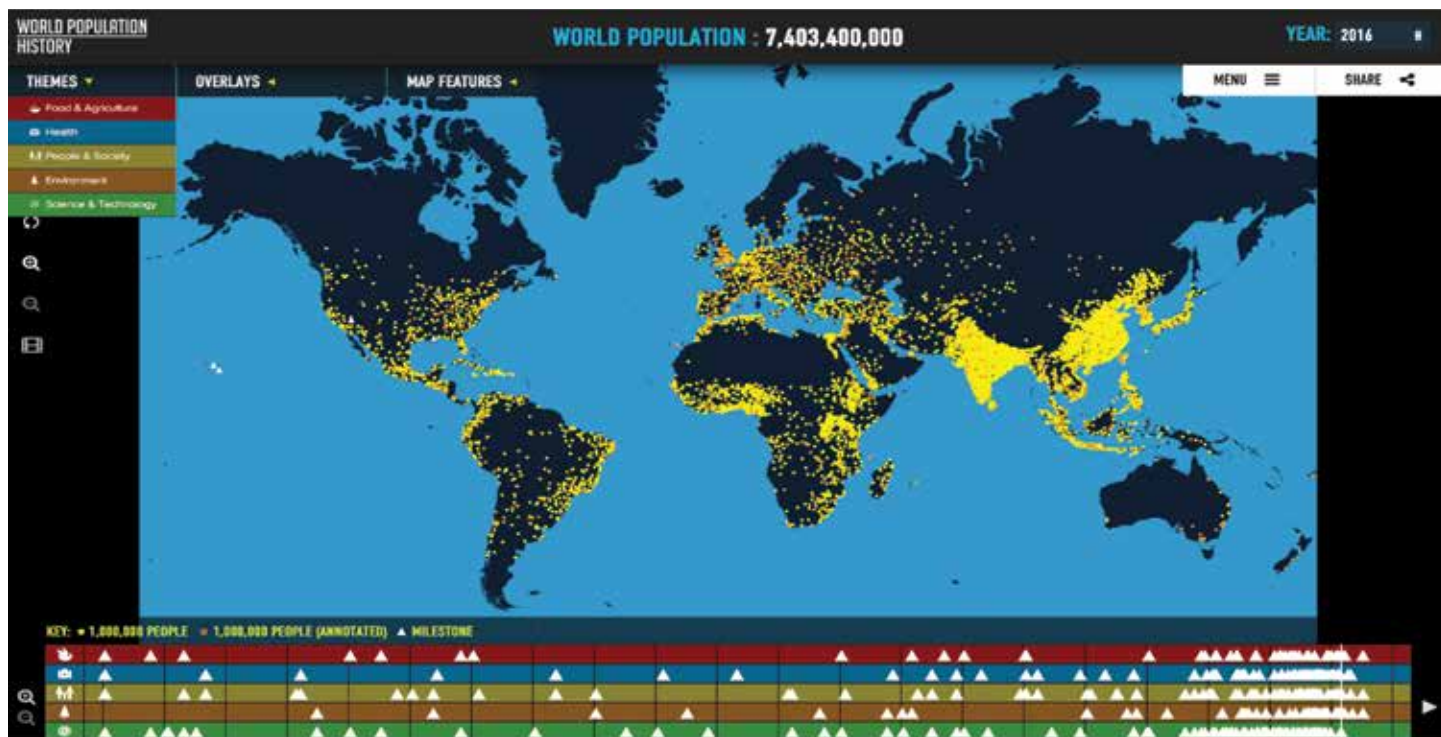
3:30–4:30 PM	K–5	104C, MCC	Energize Your Elementary Students (p. 91)
3:30–4:30 PM	7–12	104A, MCC	Renewable Energy Dashboard for Student Education (p. 89)
3:30–4:30 PM	3–8	106B, MCC	Understanding the Threads: A Three Dimensional Approach to NGSS Using Hands-On Methods (p. 92)
3:30–4:30 PM	4–7	106A, MCC	Creativity, Curiosity, and Critical Thinking Combined: Using Nuggets of Science to Model Inquiry (p. 89)
3:30–5:30 PM	6–C	Legends B, Omni	NGSS Toolkit Pathway Session: Using a Tool and NGSS Performance Expectation Specifications to Develop Assessment Tasks (p. 95)
3:30–5:30 PM	K–12	Cumberland 2, Omni	CSSS Session: Are Crosscutting Concepts Intentional in Your Classroom? Building CCC Progression K–12 (p. 95)
4:00–4:30 PM	6–12	Cumberland 5, Omni	Show Me What You Know! (p. 95)
4:00–4:30 PM	K–5	104B, MCC	Living Museum: A Way to Integrate Subjects Across the Curriculum (p. 95)
4:00–5:30 PM	6–9	107B, MCC	“Hard” Doesn’t Mean “Bad” (p. 96)
4:00–5:30 PM	1–5	211, MCC	Make Science Come to Life (p. 100)
4:00–5:30 PM	K–5	205A, MCC	Bring Visual Science into K–5 Classrooms—It’s a Game Changer! (p. 98)
4:00–5:30 PM	K–12	202A, MCC	Magnify Your Mind!... with The Private Eye® (p. 96)
4:00–5:30 PM	K–12	401 A/B, MCC	Engaging Students in Authentic Science Experiences Using Digital Tools (p. 100)
4:00–5:30 PM	7–10	110A, MCC	Getting to Know Creative Coding Through Games and Apps (p. 96)
4:00–5:30 PM	6–8	202B, MCC	Engage Grades 6–8 Students in a Free STEM Competition Associated with Light and Sleep (p. 97)
5:00–5:30 PM	6–9	Cumberland 4, Omni	Bringing Science to Life with Safe Online Social Learning (p. 101)
5:00–6:00 PM	5–8	103A, MCC	Linking Lessons into a Storyline—Making It Happen (p. 103)
5:00–6:00 PM	K–12	Music Row 1, Omni	Framing Classroom Instruction to Best Support NGSS Learning (p. 103)
5:00–6:00 PM	6–12	Legends F, Omni	Introducing Nanoscience to All Classrooms (p. 106)
5:00–6:00 PM	6–C	104A, MCC	Competency-Based Teaching Practices in Science (p. 102)
5:00–6:00 PM	3–8	105B, MCC	Curiosity, Discrepant Events, and Relevance: The Spirit of the <i>Framework</i> and the NGSS (p. 104)
5:00–6:00 PM	3–5	104E, MCC	Teach Me Bridges: A STEAM Unit for Upper Elementary Students (p. 104)
5:00–6:00 PM	K–6	106A, MCC	Using Enduring Understandings to Drive Standards-based Integrated Units (p. 102)
5:00–6:00 PM	1–8	106C, MCC	Academic Literacy for All in Science (p. 104)
5:00–6:00 PM	6–12	Legends E, Omni	Putting the Science Literacy Puzzle Pieces All Together! (p. 106)
5:00–6:00 PM	5–8	103B, MCC	The Smithsonian, STEM, and Your Classroom (p. 102)
5:30–6:00 PM	7–9	Cumberland 4, Omni	“Twittering” with My Grade 8 Science Classes (p. 106)

Informal Science Education

7:30–8:00 AM	G	Broadway E, Omni	M-2: Science in the Community Breakfast (p. 15)
8:00–9:00 AM	K–C	Broadway J, Omni	K–12 Science Resources and Programs from University STEM Centers (p. 18)
8:00–9:00 AM	1–8	104D, MCC	Engaging Families in STEM (p. 20)
8:00–9:00 AM	P–K	East Blrm., Renaissance	Empowering Communities by Engaging Caregivers: Developing Partnerships in Informal Learning Settings (p. 22)
8:00–9:00 AM	P–C	Broadway E, Omni	Featured Presentation: When the Sky Goes Dark: The All-American Total Eclipse of the Sun (p. 16)
9:00–10:30 AM	6–12	Grand Blrm. C2, MCC	Beyond The Flipped Classroom: A Pedagogical Pilgrimage (p. 33)
9:15–11:15 AM	P–C	Broadway E, Omni	Science in the Community Share-a-Thon (p. 34)
9:30–10:30 AM	P–12	Cumberland 1, Omni	ASTC Session: Carnegie STEM Excellence Pathway: Journey to STEM Success (p. 36)
9:30–10:30 AM	P–12	East Blrm., Renaissance	Focused Field Trips: A Three-Pronged Approach to Planning Meaningful Out-of-School Learning Experiences (p. 42)
9:30–10:30 AM	K–6/C	103B, MCC	See How an NSTA Student Chapter Is Impacting K–6 Science Learning Through an Informal Education Program (p. 35)
9:30–10:30 AM	K–C	Davidson A2/3, MCC	Teachers’ Voices in Building STEM Education Ecosystems and in STEM Leadership (p. 36)
10:00–11:30 AM	3–10	212, MCC	Using Science Magazines to Engage Your Students (p. 47)

Schedule at a Glance Informal Science Education

10:00–11:30 AM	4–8	210, MCC	The STEM Design Challenge (p. 47)
11:00AM–12 Noon	P–12	103B, MCC	Working in Concert: Successful Collaboration with Informal Centers (p. 52)
11:00AM–12 Noon	4–12	Music City Blrm., Renaissance	Science Day Camp: Build Authentic Community Outreach in K–12 Schools (p. 52)
12 Noon–1:30 PM	7–C	207B, MCC	Inquiry-Based Ecology Using a Citizen Science Trail Camera Project (p. 60)
12:30–1:30 PM	1–C	101D, MCC	After-School STEM Is in Demand! (p. 63)
12:30–1:30 PM	3–8	Music Row 4, Omni	ASTC Session: Engineering for Animals: A Powerful Way to Engage Students and Teachers in STEM Learning at the Zoo and in the Classroom (p. 66)
12:30–1:30 PM	P–12	Cumberland 1, Omni	The Role of a 21st-Century Zoo: How We Can Build Youth Environmental Literacy Together (p. 66)
12:30–1:30 PM	K–6	105B, MCC	Engage and Excite with Elementary Science Olympiad (p. 68)
2:00–3:00 PM	6–12	Music Row 2, Omni	AMSE Session: Creating Positive School/Home Partnerships with Diverse Families (p. 77)
2:00–4:00 PM	K–C	101 A/B, MCC	Science in the Community Session: Interactive Forum on Science and Art (p. 87)
3:30–4:00 PM	P–3	104B, MCC	Little Learners, BIG Ideas: Learning on the Go, Community Partnerships for Early Childhood (p. 88)
3:30–4:30 PM	5–12	Music Row 3, Omni	ASTC Session: Catalyzing Energy Education (p. 91)
3:30–4:30 PM	4–C	Acoustic, Omni	STEMSHOT: A Community-Sponsored Rocket Challenge (p. 90)
3:30–4:30 PM	6–12	Broadway K, Omni	Design That Matters: Meeting NGSS Through Community Engagement (p. 94)
3:30–4:30 PM	K–C	103B, MCC	Developing STEM Partnerships You Can't Live Without (p. 91)
4:00–5:30 PM	4–C	210, MCC	Telescopes for Your Classroom (p. 99)
4:00–5:30 PM	K–5	205A, MCC	Bring Visual Science into K–5 Classrooms—It's a Game Changer! (p. 98)
4:00–5:30 PM	K–12	202A, MCC	Magnify Your Mind!...with The Private Eye® (p. 96)
5:00–6:00 PM	K–6	101 A/B, MCC	STEM and the Science and Engineering Practices, Your New BFFs (p. 103)
5:00–6:00 PM	9–12	Acoustic, Omni	The SOFIA Airborne Astronomy Ambassador Program (p. 102)



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Schedule at a Glance Informal Science Education

5:00–6:00 PM K–C Music Row 4, Omni NSELA Session: Essential Elements of STEM Education: A Large Urban District’s Journey to STEM Success (p. 103)

Life Science

8:00–8:30 AM	9–C	Broadway D, Omni	The Pitfalls and Successes of Teaching Biotechnology and Statistics (p. 16)
8:00–9:00 AM	5–12	103C, MCC	Filters Aren’t Only for Coffee! How to Blend Multiple Curricular Materials Together into a Seamless STEM Unit on Water Quality and Filtration (p. 20)
8:00–9:00 AM	9–C	Legends G, Omni	Moving Peer Instruction (PI) and Process-Oriented Guided Inquiry Learning (POGIL) from College to High School Biology Classrooms (p. 22)
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