Wednesday & Thursday, March 29 & 30

NSTA National Conference on Science Education

SUN • SURF

Science

LOS ANGELES

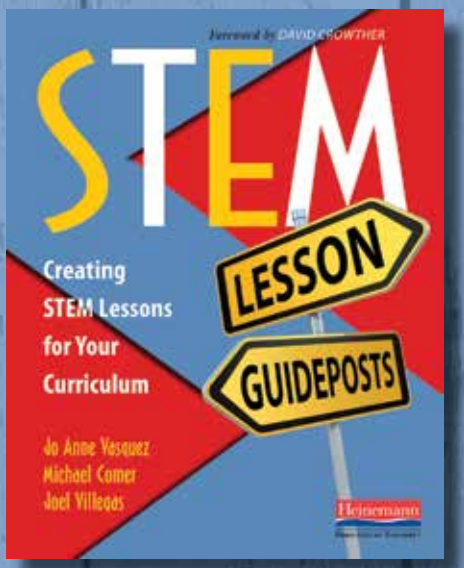
March 30–April 2 2017

VOLUME 1

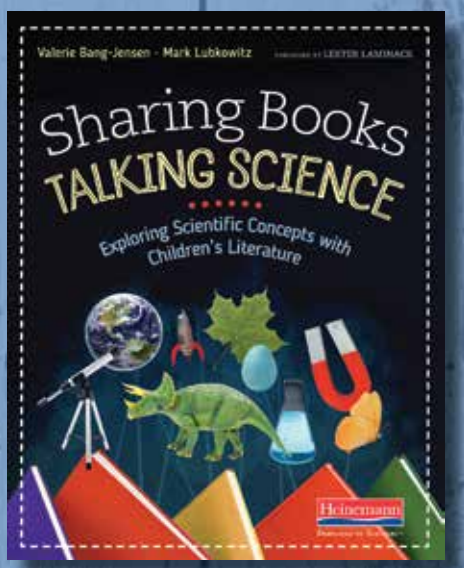
#NSTA17

National Science Teachers Association

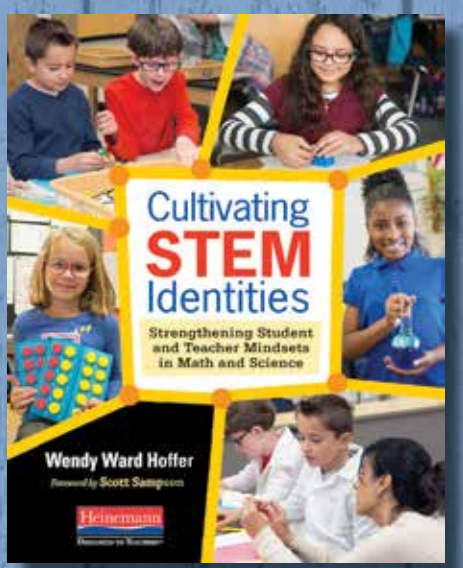
Authentic, Practical Resources for Teachers



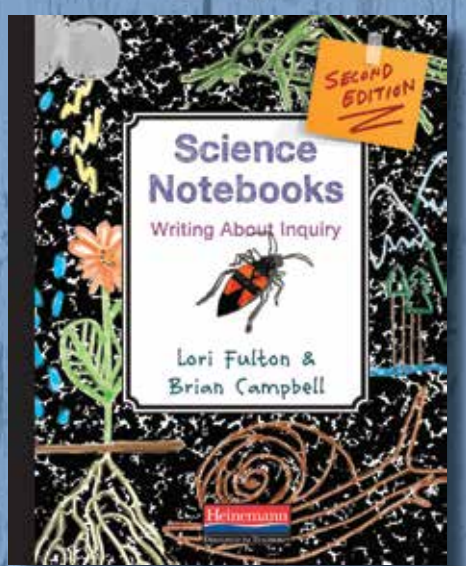
Grades 3–8 • 2017



Grades K–5 • 2017



Grades K–5 • 2016



Grades K–5 • 2014

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11:00am - 12:00pm
STEM Activities: Crash Barrier Design and Engineering Challenge

Free Standards-Based Workshops: Thursday, March 30, 2017

Free giveaways in every workshop!

Room #405

8:00–9:00	True Colors: Spectrometry to Investigate Lights and Colors
9:30–10:30	Exploring Misconceptions: What is pH?
11–Noon	Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws
12:30–1:30	Understanding Photosynthesis: A Lab-based Approach
2:00–3:00	Chemical Formulas: Subscripts and Coefficients Made Easy!
3:30–4:30	Exploring and Modeling Climate Change

Room #407

8:00–9:00	STEM Activities: Easy-to-Teach Robotics
9:30–10:30	From DNA to Protein: A Modeling Approach
11–Noon	STEM Activities: Crash Barrier Design and Engineering Challenge
12:30–1:30	Shockingly Good Electrochemistry: Making and Using Batteries
2:00–3:00	STEM Activities: Untangling Electric Circuits
3:30–4:30	Exploring Misconceptions: Motion Graphs

Booth #1639

see the full workshop descriptions pasco.com/nsta17

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NSTA National Science Teachers Association
NATIONAL CONFERENCE ON SCIENCE EDUCATION
LOS ANGELES
March 30–April 2 2017

NSTA 65th National Conference on Science Education

Sun, Surf & Science

Los Angeles, California • March 30–April 2, 2017

Volume 1 Wed., March 29/Thu., March 30

Although advertisers work hard to follow strict safety procedures, guidelines are constantly evolving. It is important to note that all ad images are simulations, not actual experiments—any safety lapses are extremely unlikely to endanger the participants, who are models rather than actual teachers and students. Therefore, NSTA assumes no responsibility for nor guarantees the accuracy of safety information presented in ads.

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.

Volume 2 Fri., March 31

Science in the Community Featured Presentation (Panel)
Elementary Extravaganza
Meet Me in the Middle Day
NGSS@NSTA Forum
Featured Presentation: Laura Henriques
Featured Presentation: Jacqueline Barber
Featured Panel: The National Academies of Sciences, Engineering, and Medicine
AGU Lecture: Lucy Jones
Science in the Community Session
Science in the Community Share-a-Thon
"Meet and Greet" the Presidents and Board/Council
Science in the Community Forum
Robert H. Carleton Lecture: LaMoine Motz
NSTA Teacher Awards Gala (M-2)
Friday Daily Program

Volume 3 Sat., April 1 /Sun., April 2

NGSS@NSTA Share-a-Thon
Featured Presentation: Veerabhadran Ramanathan
Paul F-Brandwein Lecture: Emma Marris
NSTA/ASE Honors Exchange Lecture: Chris Colclough
Hydrogen Horizon Automotive Challenge
Science in the Community Session
Featured Presentation: Roni Ellington
Featured Presentation: Louie Lopez
Saturday Daily Program
Sunday Daily Program

Volume 4 Exhibitors

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Air & Space Education Pavilion exhibitors
Exhibitor List
Index of Exhibitor Workshops
Index of Advertisers

—Photo courtesy of the Los Angeles Tourism & Convention Board

National Science Teachers Association
1840 Wilson Blvd.
Arlington, VA 22201-3000
703-243-7100
E-mail: *conferences@nsta.org*
www.nsta.org

NSTA Affiliates

Association for Multicultural Science Education (AMSE)
Association for Science Teacher Education (ASTE)
Association of Science-Technology Centers (ASTC)
Council for Elementary Science International (CESI)
Council of State Science Supervisors (CSSS)
National Association for Research in Science Teaching (NARST)
National Middle Level Science Teachers Association (NMLSTA)
National Science Education Leadership Association (NSELA)
Society for College Science Teachers (SCST)

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NSTA and the Los Angeles Planning Committee are extremely grateful to the following companies and associations for their generous contributions to the NSTA Los Angeles National Conference on Science Education.

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Contributors

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The Planetary Society

We at NSTA wish to express our heartfelt thanks to the members of the California Science Teachers Association (CSTA) for the many hours of time they volunteered in planning this conference.

President's Welcome—Connect, Collaborate, Celebrate—Teachers Are the Key

Welcome to Los Angeles, California, the land of sun, surf, and the site of the 2017 National Conference on Science Education. This event, which attracts science educators across the U.S. and around the world, will enhance professional learning experiences and provide collaborative opportunities among the attendees in promoting excellence and innovation in science teaching and learning for all.

The Keynote Speaker for this conference is Andy Weir, a software engineer and the author of the book, *The Martian.* An attendee might even want to continue with space adventures and the innovations of technology with a visit to the California Science Center. Or an educational trip to the Columbia Memorial Space Center might also capture your imagination.

The first of the four strands focuses on *NGSS,* the Next Generation of Science Teaching. Science educators will examine the structure of *NGSS* and investigate strategies to construct and implement a coherent program to include classroom practice skills with formative and summative assessments.

2017: A STEM Odyssey is another strand with workshops and several short courses that engage diverse learners along with career pathways in STEM-related fields.

The third stand explores Science & Literacy Reloaded, emphasizing science with mathematics and language arts. Elementary science will be a vital core discipline when it is seen as an opportunity for authentic language learning to be implemented and integrated with the language arts and mathematics curriculum.

The fourth strand, Mission Possible: Equity for Universal Access, demonstrates that access of science is the right for ALL students of all abilities, genders, languages, socioeconomic status, and geographic locations.

I encourage you to attend as many sessions, short courses, and educational trips that meet your needs. Explore the exciting Exhibit Hall to find new products and services for your classroom. NSTA is providing you with the opportunity to CONNECT, and now you must find the time to COLLABORATE with others. We sincerely hope that you will CELEBRATE your time at this conference. My themes for the year are—Connect, Collaborate, and Celebrate—because you—TEACHERS—ARE THE KEY.

Mary Gromko
2016–2017 NSTA President

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Welcome to Los Angeles: *Sun, Surf & Science*

Tim Williamson

Therese Shanahan

Susan Gomez Zwiep

Welcome to the "City of Angels" 2017 National Science Teachers Association Conference on Science Education.

A fantastic array of events, activities, workshops, and learning opportunities awaits you! Whether this is your first or 100th visit to Southern California, we have it all for you—great people, exciting things to do and see, and gorgeous weather…and most of all, what we hope will be the greatest professional development experience of your career.

The Los Angeles Conference Committee has put together a spectacular program to truly reflect NSTA's emphasis on ways we can help each other grow as science educators. The committee members have worked hard to provide sessions that will highlight emerging issues, build advocacy, link resources to your needs, and renew our professional learning community within the context of high-quality science education. In the workshop sessions, discover new ways to incorporate the *Next Generation Science Standards* into your curriculum by delving into engineering practices and three-dimensional learning. Find out what is next for science assessment and accountability. See what your colleagues are doing to incorporate STEM into their classrooms.

All of this and more are offered in the following four strands during this conference:

- *NGSS:* The Next Generation of Science Teaching
- 2017: A STEM Odyssey
- Science & Literacy Reloaded
- Mission Possible: Equity for Universal Access

But, as with any NSTA conference, the main focus is to give you an opportunity to learn from science teaching colleagues from across the nation and around the world! The conference committee is confident that they have brought you the best of the best!

So, the Sun is shining bright and the sand is warm between your toes! Learn and network with your colleagues, enjoy the glorious opportunities that Los Angeles and Southern California have to offer, and make your experience at NSTA's 2017 Los Angeles Conference on Science Education one to remember. Surf's up!

2017 Los Angeles Conference Committee Leaders
Tim Williamson, Therese Shanahan, and Susan Gomez Zwiep

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Strand Leader: **NGSS:** *The Next Generation of Science Teaching*
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NSTA Conferences Go Green!

The National Science Teachers Association is committed to meeting today's environmental challenges by adopting eco-friendly practices both in our own day-to-day operations and at our conferences, workshops, and other events. In addition, we strongly encourage our contracted conference facilities to follow green practices as well. Here are some of the ways NSTA's conference department has worked to minimize our impact on the environment:

Conference Previews

Gone are the days of bulky, newspaper-style advance programs. Our conference preview is a smaller size and our preview for the area conferences includes highlights for our three area conferences. As an added bonus, this new preview is more environmentally friendly, as it dramatically reduces both our print and mailing requirements.

Online Conference Information and Personal Scheduler

Most of your conference arrangements can now be accomplished online *(www.nsta.org/conferences).* Register and make your housing reservations on the web. Program details are available to you on our website using the Session Browser/Personal Scheduler. Scheduling information on our website is up to date and more complete than that available through a printed piece.

Final Conference Programs by E-Mail/Conference App

All conference pre-registrants are sent an electronic version (PDF) of the final conference program by e-mail approximately one week prior to the conference, further reducing print and shipping requirements. Also, attendees are encouraged to use the NSTA Conference app, which provides all the tools necessary for a successful conference experience.

Recycled Paper and Sustainable Print Services

Conference previews and final conference programs are printed on recycled paper whenever possible. In addition, Freeport Press, the printer for our conference materials, takes its responsibility to the environment seriously and is determined to make its carbon footprint as small as possible. Freeport Press owns and operates a regenerative thermal pollution control unit that removes 98.5% of all VOCs. Through this process, Freeport Press uses the solvents in the printing process to fuel its burner, thus reducing the amount of natural gas consumed. Since Freeport Press uses soy-based inks, its publishers are approved by The American Soybean Association to include the SoySeal in their magazines. Freeport Press has also obtained certification with the Forest Stewardship Council® (FSC) to ensure paper products are being harvested from environmentally responsible sources.

Environmentally Friendly Exhibition Practices

Our conference partner, Hargrove, Inc., offers many green product options and services in the production of our conference exhibitions, including 100% recyclable carpet and padding, recycled exhibit structures, a "reclaimer" that recycles 92% of all solvents the company uses in production of graphics, use of LP natural gas in 75–90% of show-site vehicles, and many biodegradable and recycled products such as trash bags and wastebaskets. Their green efforts are extended operationally with reductions in electricity, heating fuel, and water usage, as well as a move to 100% recyclable and biodegradable products.

Green Initiatives at the Los Angeles Convention Center

The Los Angeles Convention Center's commitment to environmental stewardship has been recognized by numerous organizations, including the U.S. Environmental Protection Agency and the United States Green Building Council. Their recertification as a LEED® Gold certified building in 2015 made them the largest convention center in the U.S. to receive LEED EB:O+M Gold recertification! Current green initiatives include:

- **Energy Conservation and Renewable Energy.** The Convention Center is 36% more energy efficient than the median building in the Entertainment Building–use category. Energy conservation measures include a "cool roof" to keep heat away from the building and LED/CFL lighting.
- **Recycling.** In 2016, the Convention Center had a 75% overall waste diversion rate. Glass, plastic, paper, aluminum, pallets, scrap metal/steel, toner/ink cartridges, wood, and cardboard are among the items recycled. More than 1 million pounds of waste was diverted from the landfill between September 2014 to September 2015 alone.
- **Water.** Some water-conservation measures at the Convention Center include replacing 710 toilets with low GPF units, installing drought-tolerant landscaping, and using water-efficient dishwashers.

"Go Green" at the Los Angeles Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout the Convention Center.
- Recycle or reuse your plastic badge holders—you can either turn them in at the NSTA Registration Counter or use them at future conferences.
- In advance of the conference, presenters are encouraged to post their presentations and handouts on the Session Browser/Personal Scheduler.
- If you prefer to bring handouts to your session, use double-sided printing and/or recycled paper.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the conference.
- Evaluate sessions attended online.

Meeting Location and Times

The conference headquarters hotel is the JW Marriott Los Angeles at L.A. LIVE. Conference registration, the exhibits, and the NSTA Science Store will be located at the Los Angeles Convention Center. Most sessions will be held at the Convention Center and the JW Marriott. The majority of short courses will be held at The Westin Bonaventure Hotel & Suites *(SC-1 will be held at the JW Marriott).*

The conference will begin on Thursday, March 30, at 8:00 AM and end on Sunday, April 2, at 12 Noon *(*Bill Nye to give preconference session on Wednesday evening at 6:00 PM).*

Registration

Registration is required for participation in all conference activities and the exhibits. The lapel badge e-mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities except those for which a separate fee is stated (e.g., short courses, educational trips, networking events, etc.).

The NSTA Registration Area, located in Hall H/J of the Convention Center, will be open during the following hours:

Wed., March 29	5:00–8:00 PM
Thu., March 30	7:00 AM–6:00 PM
Fri., March 31	7:00 AM–5:00 PM
Sat., April 1	7:00 AM–5:00 PM
Sun., April 2	7:30 AM–12 Noon

If you misplace your badge or tickets, present your personal ID at the Badge Reprint Counter in the Registration Area and you will be issued replacements. Only one replacement badge will be issued.

Purchasing Ticketed Events

The Los Angeles Conference Committee has scheduled a variety of ticketed events (e.g., professional learning institutes, short courses, educational trips, and networking events). Each of these events requires a separate fee and ticket. You may purchase tickets, space permitting, in the NSTA Registration Area. See the Conference Program section (starting on page 52) for details. Note that some events may have required advance registration.

Conference Hotels/Housing Bureau

See pages 12–13 for a list of hotels and a map of the downtown area. A Housing Bureau representative will be available at the Information Desk located in Hall H/J during registration hours on Wednesday evening through Saturday to assist with housing questions. You can also reach a Housing Bureau representative by phone at 877-352-6710 or by e-mail at *help@orchideventsolutions.com.*

Airlines/Amtrak

NSTA has made arrangements with several major airlines and Amtrak to offer discounted fares to the Los Angeles conference attendees. Visit *www.nsta.org/LAtravel* for details.

Discounted Rental Cars

The toll-free number to contact the NSTA-designated car rental company is:

Enterprise 800-593-0505 16AH230

Or go to www.enterprise.com *and use "16AH230" in the "Optional: Coupon, Customer, or Corporate Number" box. Click on "search" and enter PIN "NST."*

Ground Transportation to/from Airport

Los Angeles International Airport (LAX) is approximately 18 miles from the Convention Center. Taxi fares from LAX airport are subject to a $4 surcharge. Depending on traffic, taxi fares to the Convention Center average between $61 and $92, depending on traffic.

SuperShuttle LAX *(www.supershuttle.com)* offers a shared-ride van to the Convention Center for $17 one way (rates subject to change). To receive SuperShuttle LAX special rates, use CL3EL in the discount code field. Check with individual hotels on whether they provide airport shuttles. For a listing of LAX ground transportation options, visit *bit.ly/2jcvgO7.*

Getting Around Town

Public transportation in the Downtown Los Angeles area is very accessible. Metro's Blue Line Pico Station platform is located at the intersection adjacent to the Convention Center West Hall (metro.net). In addition, DASH Route F travels the Financial District with stops in front of the Convention Center. Visit *bit.ly/2jBdrEK* for DASH schedule information and to access a map of stops.

TAP (Transit Access Pass) is a plastic card that contains smart chip technology designed to improve customers' transit experience. While not a pass in itself, the TAP card allows you to electronically purchase and load passes and/or stored value (cash) accepted by Metro and/or participating municipal transit agencies throughout Los Angeles County. All fares can be prepaid by using a TAP card, which is $1 at TAP vending machines and onboard buses, or $2 at pass vendor locations. Visit *beta.metro.net* for Metro fare details.

NSTA Shuttle

Shuttle service will be provided to the majority of official NSTA hotels that are not within walking distance of the Convention Center. See facing page for Shuttle Schedule.

Lyft Special Offer

Lyft is offering $15 IN FREE RIDES to attendees of the NSTA Los Angeles National Conference who are new to Lyft! Visit *www.lyft.com/i/15BONUS* to download the free Lyft app and enter the credit code "15BONUS" in the payment section before requesting a Lyft to claim $15 IN FREE RIDES! *Valid for new accounts, $5 off three rides.

Parking

Parking is easy to find at the Convention Center. The closest and most convenient parking lots are the LACC parking garages located right underneath the building. There are two large underground parking lots with elevators and escalators that lead straight into the Convention Center lobby. Both lots charge $15 per day with no in-and-out privileges (*rates subject to change*).

- LACC Parking (West and South Halls) (visit *bit.ly/2joMdC4* to access map)
- L.A. LIVE Parking (visit *www.lalive.com/parking* to access map)
- Map of general downtown parking (visit *bit.ly/2jcHS7r* to access map)

National Science Teachers Association

Shuttle Service to Los Angeles Convention Center

Shuttle service is provided between the Los Angeles Convention Center and the official NSTA hotels listed on this flyer. Please refer to the sign in your hotel lobby for additional information and changes. For questions regarding the shuttle or to make an advance reservation for a wheelchair lift–equipped vehicle, please call the shuttle supervisor with Kushner & Associates at (310) 425-2443 during shuttle hours.

Shuttle provided by KUSHNER & ASSOCIATES Meeting and Convention Transportation 310.274.8819

Hotels and Boarding Locations

ROUTE 1	**Boarding Location**
The L.A. Hotel Downtown	At the Westin Bonaventure
O Hotel	Curbside on Flower St.
The Mayfair	Curbside on 7th St.
The Westin Bonaventure	Curbside on Figueroa St.
ROUTE 2	**Boarding Location**
Millennium Biltmore Hotel	Curbside on Grand Ave.
Sheraton Grand Los Angeles	Curbside on Hope St.
The Standard Downtown L.A.	At the Millennium Biltmore

ROUTE 3	**Boarding Location**
DoubleTree by Hilton L.A. Downtown	Curbside on Los Angeles Blvd.
Kawada Hotel	Curbside on 2nd St.
Omni Los Angeles Hotel at CA Plaza	Curbside on Olive St.
ROUTE 4 ♠	**Boarding Location**
Hilton Los Angeles Airport	West Drive
The Westin Los Angeles Airport	On Century Blvd., outside Daily Grill restaurant

♠ ***Route 4 is on a schedule. Please refer to the hotel lobby sign or Route 4 flyer for specific times***

All hotel shuttles, including Short Courses at Westin Bonaventure board at LACC South Hall Figueroa Dr. entrance

Walk Hotels

The hotels listed in this section are within walking distance of the Los Angeles Convention Center.

Courtyard Los Angeles at L.A. LIVE ◆ Hotel Indigo L.A. Downtown ◆ JW Marriott Los Angeles at L.A. LIVE
Luxe City Center Hotel ◆ Residence Inn Los Angeles at L.A. LIVE

Hours of Shuttle Operation

Peak Service: Shuttles depart every 15–20 minutes **Off-Peak Service:** Shuttles depart every 20–30 minutes

Wednesday, March 29

Professional Learning Institutes Shuttle between Route Hotels and Los Angeles Convention Center	Off-Peak:	8:00 – 11:00 AM
	(No shuttle service:	*11:00 AM – 3:30 PM)*
Conference Shuttle between Los Angeles Convention Center and Route Hotels	Off-Peak:	3:30 – 8:30 PM *

Thursday, March 30

Conference Shuttle between Route Hotels and Los Angeles Convention Center	Peak:	6:30 – 10:30 AM
	(No shuttle service:	*10:30 AM – 4:00 PM)*
Conference Shuttle between Los Angeles Convention Center and Route Hotels	Peak:	4:00 – 8:00 PM *
Short Course Shuttle between Los Angeles Convention Center and Westin Bonaventure	Off-peak:	12:30 – 4:00 PM ◆

Friday, March 31

Conference Shuttle between Route Hotels and Los Angeles Convention Center	Peak:	6:30 – 10:30 AM
	(No shuttle service:	*10:30 AM – 4:00 PM)*
Conference Shuttle between Los Angeles Convention Center and Route Hotels	Peak:	4:00 – 7:00 PM *
Short Course Shuttle between Los Angeles Convention Center and Westin Bonaventure	Off-peak:	10:30 AM – 12 Noon ◆
	Off-peak:	2:30 – 4:00 PM ◆
NSTA Teacher Awards Gala at JW Marriott Shuttle between Route Hotels and JW Marriott.	Off-peak:	7:00 – 9:30 PM ◆◆

Saturday, April 1

Conference Shuttle between Route Hotels and Los Angeles Convention Center	Peak:	6:30 – 10:30 AM
	(No shuttle service:	*10:30 AM – 4:00 PM)*
Conference Shuttle between Los Angeles Convention Center and Route Hotels	Peak:	4:00 – 7:00 PM *
Short Course Shuttle between Los Angeles Convention Center and Westin Bonaventure	Off-peak:	10:30 – 11:30 AM ◆
	Off-peak:	2:30 – 4:00 PM ◆

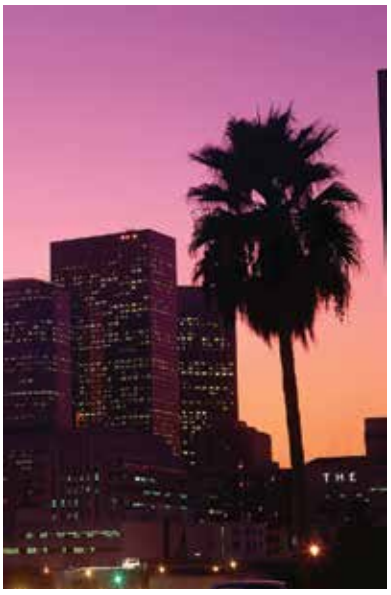
Sunday, April 2

Conference Shuttle between Route Hotels and Los Angeles Convention Center	Off-Peak:	7:30 AM –12:30 PM *

*** This is the time the last shuttle from Los Angeles Convention Center departs for Route Hotels. Last shuttle from hotels depart one hour prior.**

◆ This is the time the last Short Course shuttle from Westin Bonaventure departs for Los Angeles Convention Center.

◆◆ This is the time the last Awards Gala shuttle departs from JW Marriott to Route Hotels.



NSTA Conference Hotels

Numbers correspond to map on facing page.

1. Courtyard Los Angeles at L.A. LIVE
   901 W. Olympic Blvd.
   213-443-9222

2. DoubleTree by Hilton Los Angeles Downtown
   120 S. Los Angeles St.
   213-629-1200

3. Hilton Los Angeles Airport
   5711 W. Century Blvd.
   310-410-4000

4. Hotel Indigo LA Downtown
   899 Francisco St.
   213-683-4855

5. JW Marriott Los Angeles at L.A. LIVE
   (Headquarters Hotel)
   900 W. Olympic Blvd.
   213-765-8600

6. Kawada Hotel
   200 S. Hill
   213-621-4455

7. The L.A. Hotel Downtown
   333 S. Figueroa St.
   213-322-0111

8. Luxe City Center Hotel
   1020 S. Figueroa St.
   213-748-1291

9. The Mayfair Hotel
   1256 W. 7th St.
   213-632-1200

10. Millennium Biltmore Hotel
    506 S. Grand Ave.
    213-624-1011

11. O Hotel
    819 S. Flower St.
    213-623-9904

12. Omni Los Angeles Hotel at California Plaza
    251 S. Olive St.
    213-617-3300

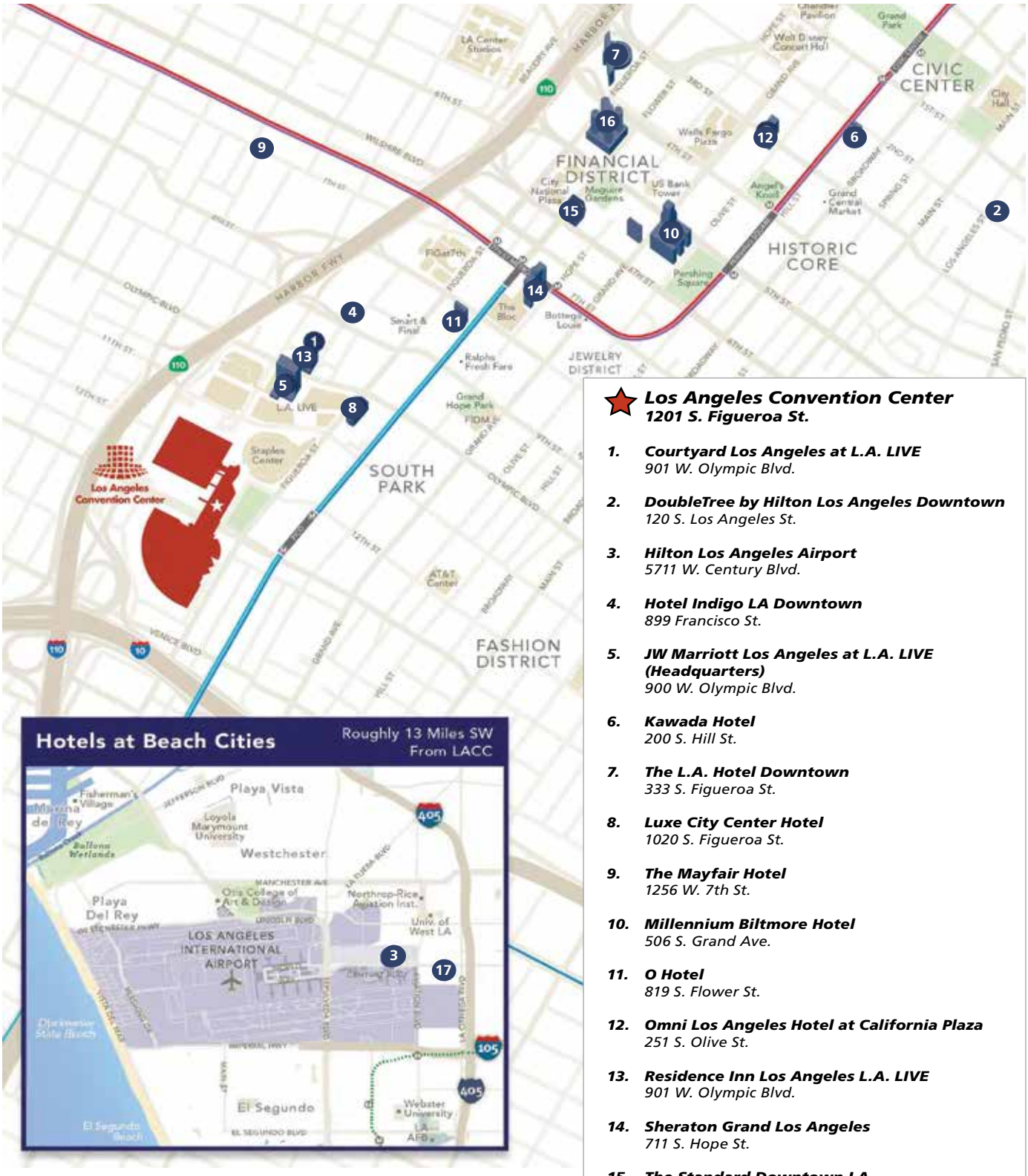
13. Residence Inn Los Angeles at L.A. LIVE
    901 W. Olympic Blvd.
    213-443-9200

14. Sheraton Grand Los Angeles
    711 S. Hope St.
    213-488-3500

15. The Standard Downtown LA
    550 S. Flower St.
    213-892-8080

16. The Westin Bonaventure Hotel & Suites
    404 S. Figueroa St.
    213-624-1000

17. The Westin Los Angeles Airport
    5400 W. Century Blvd.
    310-216-5858



Los Angeles Convention Center
1201 S. Figueroa St.

1. ***Courtyard Los Angeles at L.A. LIVE***
   901 W. Olympic Blvd.
2. ***DoubleTree by Hilton Los Angeles Downtown***
   120 S. Los Angeles St.
3. ***Hilton Los Angeles Airport***
   5711 W. Century Blvd.
4. ***Hotel Indigo LA Downtown***
   899 Francisco St.
5. ***JW Marriott Los Angeles at L.A. LIVE (Headquarters)***
   900 W. Olympic Blvd.
6. ***Kawada Hotel***
   200 S. Hill St.
7. ***The L.A. Hotel Downtown***
   333 S. Figueroa St.
8. ***Luxe City Center Hotel***
   1020 S. Figueroa St.
9. ***The Mayfair Hotel***
   1256 W. 7th St.
10. ***Millennium Biltmore Hotel***
    506 S. Grand Ave.
11. ***O Hotel***
    819 S. Flower St.
12. ***Omni Los Angeles Hotel at California Plaza***
    251 S. Olive St.
13. ***Residence Inn Los Angeles L.A. LIVE***
    901 W. Olympic Blvd.
14. ***Sheraton Grand Los Angeles***
    711 S. Hope St.
15. ***The Standard Downtown LA***
    550 S. Flower St.
16. ***The Westin Bonaventure Hotel & Suites***
    404 S. Figueroa St.
17. ***The Westin Los Angeles Airport***
    5400 W. Century Blvd.

Conference Resources

NSTA Exhibits

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.

The lapel badge e-mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. Maps of the Exhibit Hall and other meeting rooms will be accessible via our Conference app (see pages 15 and 16). See Volume 4 for a complete list of exhibitors and contact information.

Ribbon Cutting. An opening ceremony is scheduled on Thursday at 11:00 AM in Hall H/J of the Convention Center.

Exhibit Hall Hours. Located in Hall H/J of the Convention Center, exhibits will be open for viewing during the following hours:

Thu., March 30	11:00 AM–6:00 PM
Fri., March 31	9:00 AM–5:00 PM
Sat., April 1	9:00 AM–3:00 PM

Did you know that NSTA offers Exclusive Exhibit Hall and exhibitor workshop hours—Thursday, 11:00 AM–12:30 PM? It's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer.

Lead Retrieval. NSTA exhibitors use lead retrieval, a paperless tracking system that allows them to receive fast, accurate information about conference attendees who have visited their booths. With the lead retrieval system, an exhibitor scans your badge as you visit the booth. This allows exhibitors to send information to you while the conference is still fresh in your mind.

Exhibitor Workshops. Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See Volume 4 for a complete list of exhibitor workshops. An index of exhibitor workshops scheduled on Thursday begins on page 163.

NSTA Hub

The NSTA Hub will be THE place in Los Angeles to meet and become part of the group crafting the future of science education. NSTA leaders and staff, *NGSS* curators, Learning Center advisors, and others will all be spending time there, and you can ask us anything! Learn how to join NSTA, ask us about presenting at a conference, find out what NGSS implementation resources we have, learn how to get published in our journals, get information about our teacher awards (earn cash or equipment for your classroom), or find out how you can get more involved with NSTA. Located in South Hall Lobby, mingle with us at the NSTA Hub during registration hours below:

Wednesday	5:00–8:00 PM
Thursday	7:00 AM–6:00 PM
Friday	7:00 AM–5:00 PM
Saturday	7:00 AM–5:00 PM

NCASE and the Air & Space Education Pavilion!

NCASE, the National Coalition for Aviation and Space Education, is here for you—providing a one-stop clearinghouse with an incredible range of resources and information to inspire and challenge your students, leading them to superior achievement in all the STEAM subjects and related careers.

NCASE is a membership organization formed by national aerospace associations, firms, educational groups, and agencies, including the FAA and NASA. Enjoy the website, newsletter, and *NCASE GUIDE*—the single, most comprehensive source of information regarding the wealth of educational materials for educators and students available from more than 50 aviation and space member organizations.

For more information about NCASE's organizational or free educator memberships, visit *www.aviationeducation.org*. See Volume 4 for a listing of participating organizations at the Air & Space Education Pavilion in the Exhibit Hall.

Hydrogen Horizon Automotive Challenge

Look for Horizon Educational in the exhibit hall! They'll be hosting their Hydrogen Horizon Automotive Challenge. This Toyota-funded after-school STEM program has high school students design, build, and race their own 1:10 scale hydrogen-powered RC cars. Twenty teams will battle head-to-head in a four-hour endurance race on Saturday from 9:30 AM to 1:30 PM. Stop by their booth on Thursday and Friday to test-drive a car and learn more about their program and hydrogen fuel cell vehicles in California. Attendees with the best lap times will have an opportunity to win science equipment from Horizon Educational.

The Martian Astronaut and Cargo Drop Challenge

Put on your thinking and creative hat and get HANDS ON with a design-challenge inspired by *The Martian*. Participants will use common household items to create, build, and test their own landing mechanism (e.g. parachute and crate) to drop astronauts or supplies to Mars!

Make it your mission to stop by Booth #2159 in the Exhibit Hall at the hours below:

Thursday	11:00 AM–4:00 PM
Friday	10:00 AM–3:00 PM
Saturday	10:00 AM–1:00 PM

NSTA Science Store

Visit us at the NSTA Science Store to explore a wide selection of resources and gear you'll love! You'll find hundreds of books that uniquely blend accurate science content with sound teaching strategies for science educators of all grade ranges and disciplines. Not only do we have books covering a wide range of topics to help you sharpen your content knowledge and hone your teaching methods, but we also carry a complete line of NSTA gear you can't find anywhere else—such as T-shirts, mugs, and classroom supplies. We offer convenient free shipping for book purchases to addresses within the United States when you place your order on-site at the conference. **Note: Free shipping is not offered to international addresses or for NSTA gear purchases.* We've lined up a number of unique opportunities for conference-goers:

- Exclusive author signings and meet-and-greet opportunities
- Our latest books—including *Problem-Based Learning in the Earth and Space Science Classroom, K–12*; *Big Data, Small Devices: Investigating the Natural World Using Real-Time Data*; *Helping Students Make Sense of the World Using Next Generation Science and Engineering Practices*; and *Picture-Perfect STEM Lessons, K–2: Using Children's Books to Inspire STEM Learning*—and our newest children's books from NSTA Kids, such as *When the Sun Goes Dark, Next Time You See a Cloud*, and *Notable Notebooks: Scientists and Their Writings*
- "I Love Science" and NSTA gear product lines to show your love of science and pride in teaching
- Member discounts of 20% on NSTA Press® items and 10% on books from other publishers
- Daily book and gear specials, product giveaways, and more.

Conference Resources

NSTA International Lounge

The Atrium 1 room at JW Marriott has been reserved as an international lounge. All international guests are welcome to use this lounge as a place to meet or just simply relax while here at the NSTA conference. The lounge will be open Thursday, Friday, and Saturday, 9:00 AM–5:00 PM.

CSTA Booth

The California Science Teachers Association (CSTA) booth (#634) is located in Hall H/J of the Convention Center and will be open during exhibit hours. As the advocate for quality science education in California for more than 50 years, the California Science Teachers Association offers networking, professional development, and representation to assure state policies and legislation support you in inspiring your students. Stop by to network, learn about resources for implementing *NGSS*, and to join CSTA.

Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in at the Presenters/Presiders booth in the Registration Area.

Graduate Credit Opportunity

Los Angeles conference attendees can earn one or two graduate-level credit/s in professional development through Dominican University of California (*dominicancaonline.com*).

Participants must attend the conference, complete the required assignments, and pay a fee of $95 for one credit or $190 for two credits. To learn more about the assignment requirements and registration, visit *bit.ly/2kjnimg. Deadline is April 17, 2017.*

The HHMI Night at the Movies: Sneak Preview of *Amazon Adventure 3D*

Join HHMI BioInteractive in Los Angeles on Thursday, March 30, for a special sneak preview of *Amazon Adventure 3D*, a new IMAX feature film. Witness the epic true story of Henry Walter Bates, who risked his life exploring the Amazon in the 1850s on a burning quest to determine if species change—and ultimately provided "beautiful proof" for Darwin's new theory of the origin of species by natural selection by unraveling the phenomenon of mimicry. See page 161 for details (two screenings).

Lost and Found

All lost-and-found items at the Convention Center will be turned in at the Exhibitor Registration counter. Lost-and-found items at other facilities will be turned in at the facilities' security offices.

NSTA Coordinating Center for People with Special Needs

NSTA makes an effort to provide convenience and accessibility for all persons attending conferences. A Center for Services for People with Special Needs, staffed by local committee volunteers, is located in the NSTA Registration Area. If you need assistance, visit this table during registration hours. NSTA cannot guarantee services for requests not made in advance of the conference.

Wi-Fi at the Convention Center

Free wireless internet intended for light web browsing is available in the lobbies. To access, connect to "Free Internet"; no password is required. Visit *bit.ly/2leVCNN* for information on other wireless options.

First Aid Services/Lactation Room

The First Aid Room is located in South Hall Lobby at the Convention Center. Attendees in need of first aid can use any beige house phone to dial 5136 or call 213-765-4605 to notify the Security Command Center. In addition, this room is available as a lactation room for nursing mothers.

NSTA Conference App

Navigate the conference from the palm of your hand! The NSTA Conference app provides all the tools necessary for a successful conference experience. Features include the ability to view session and workshop listings by time and presenter; maps of the Convention Center, hotels, and the Exhibit Hall; social media plugins; and a note-taking tool. Visit *www.nsta.org/conferenceapp* to download the app. *Note:* Make sure to create a CrowdCompass account when logging in to be able to export any notes taken with the app.

Friday "Meet and Greet"

Be sure to stop by Friday from 12:45 PM to 1:30 PM at the entrance to Exhibit Hall at Hall H/J of the Convention Center for a 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!

NSTA TV

The National Science Teachers Association (NSTA) is partnering with the international film and broadcasting company, WebsEdge, to bring NSTA TV to this year's National Conference on Science Education in Los Angeles.

NSTA TV is an on-site conference television channel featuring a new episode daily, screened around the Convention Center, as well as on a dedicated television channel in selected guest hotel rooms and online.

The TV segments will profile prominent science educators and scientists, highlight the hard work of teachers and organizations committed to elevating the quality of science education in the U.S., and provide an opportunity to learn about new teaching strategies and techniques, and innovative programs and initiatives that are helping to transform science education and learning.

—photo courtesy of Jacob Slaton

You can access NSTA TV at the following hotels:

The L.A. Hotel Downtown	channel 14
Millennium Biltmore Hotel	channel 87
JW Marriott Los Angeles	channel 72

You can also watch NSTA TV online at *www.websedge.com/videos/nsta_tv* on social media or the NSTA website.

Online Session Evaluations and Tracking Professional Development

All attendees can evaluate sessions online while simultaneously tracking their professional development certification (based on clock hours).

Help NSTA's **GREEN** efforts by completing session evaluations online **March 29–April 13, 2017,** while the session is fresh in your mind! During the conference, session evaluations can be completed on the computers at the Presenters/Presiders booth in the Registration Area. **And this year, we're giving away an 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!**

To evaluate a session, attendees should follow these steps:

- Visit the conference session browser and search for part of the session title or presenter's name using the **Find Keyword** search option. *Note:* Our session evaluation system is designed to work from a computer and while it may work on smartphones/tablets, it is not really designed for them.
- Once you find the session you wish to evaluate, simply click the **Evaluate Session** button.
- Enter badge number (if you don't remember your badge number, click "help me find my badge number").
- When finished evaluating the session, click the **Submit Evaluation** button.
- Repeat this process for each session attended.

Concurrent session presenters may also complete evaluations for their own sessions in order to track professional development credit.

A Professional Development Documentation Form is included following page 32 to help attendees keep track of sessions/events attended that are NOT available for online session evaluation. This form can also be used to take notes on sessions attended that are available for online session evaluation.

Beginning **April 25, 2017,** an attendee can view his or her transcript at the NSTA Learning Center *(learningcenter.nsta.org)* by first logging on and then clicking "My Profile" under the Welcome. Here you'll find a "My Certificates" tab, which you can use to access your transcript. Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits, etc.). In addition, the NSTA Learning Center offers professional development experiences (online and face to face) for your long-term growth and professionalism.

Each attendee is responsible for tracking his or her own attendance at such events. The transcript can be printed here and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

Conference Resources

Business Services

Operated by Image Quest Plus, LLC, the Business Service Center at the Convention Center is located on the Concourse Corridor between the South Hall and West Hall Lobby areas. Services include copying and scanning; color and black & white printing; faxing; computer workstations; portable chargers for mobile phones; and on-site FedEx and UPS shipping. For more information, call 213-765-4210, or e-mail *IQ@IQCopy.com*.

Discover Los Angeles Information Desk

The Los Angeles Tourism & Convention Bureau has an Information Desk located in the lobby of South Hall on the ground level, near the main glass door entrance to the building. Hours of operation will be as follows:

Wednesday	4:00–8:00 PM
Thursday	9:00 AM–6:00 PM
Friday	9:00 AM–5:00 PM
Saturday	9:00 AM–5:00 PM

Information about attractions, transportation, and dining options will be available. Staff will be present to answer any questions and offer suggestions on things to do in and around town.

Audiovisual Needs

NSTA will fulfill AV needs originally requested on the program proposals as long as the request is within the limits of equipment that NSTA provides. For any last-minute AV needs, presenters must arrange and pay for their own equipment. Audio Visual Production Solutions, the designated AV company on-site, will be located at:

Conv. Center	#1 Kentia Smaller Show Office
	#2 Room 508A
JW Marriott	Studio 4
Westin Bonaventure	La Cienega

Advice for First-Time Conference Attendees

- *Wear comfortable shoes. You'll be doing a lot of walking!*
- *If you like to collect posters, bring a cardboard tube.*
- *Leave plenty of empty space in your suitcase...in fact, bring an extra large one. You will collect pounds and pounds of literature and stuff.*
- *If you read through the schedule for the day, plan on one or two backups. Sometimes a presenter does not show (for me, it averaged one per conference...not bad) or a room is full or the topic was not really what I needed. Having another one to go to allows you to walk out of a session with a sense of purpose. And when you read the schedule, look around. Ask the people next to you, "Who's a great presenter?"*
- *Give yourself plenty of time to visit the exhibits, but unless you want to stand in a crowd, don't go just as it opens. There will be plenty of handouts to go around. You won't miss anything by going a bit later.*
- *Bring cash or credit cards. You'll end up buying things from some of the vendors.*
- *If you like to network, bring business cards and collect those of presenters and sales reps you want to stay in contact with.*
- *Avoid large lines. Eat lunch at an "odd" hour.*
- *Spoil yourself. Plan at least one great dinner. If you have an extra day before or after, tour the city. But don't take conference time to do that!*
- *Keep all receipts. Remember—this is tax deductible.*
- *Keep the pages from the daily schedules for those workshops you attended. If you have to give a report when you get back to school, you will have all the information. But you might find you have a question, and the presenters' e-mail addresses are listed.*
- *Before you leave, go online to find your state science teachers association, and then contact them to see if they plan to host a hospitality party. It is a nice way to end the day, meet people in your state, get a free munchie or two, and to network.*

(Submitted by William Peltz)

BiomeViewer

climate, plants, animals, and us

A new free app for iPad® from HHMI BioInteractive

Descriptions for every major biome on each continent

Biodiversity data for more than 16,000 species of reptiles, amphibians, and mammals

Gridded historical climate data for the entire planet

BioInteractive.org/BiomeViewer

hhmi | BioInteractive

Download on the App Store

EXHIBIT HALL LEVEL ONE

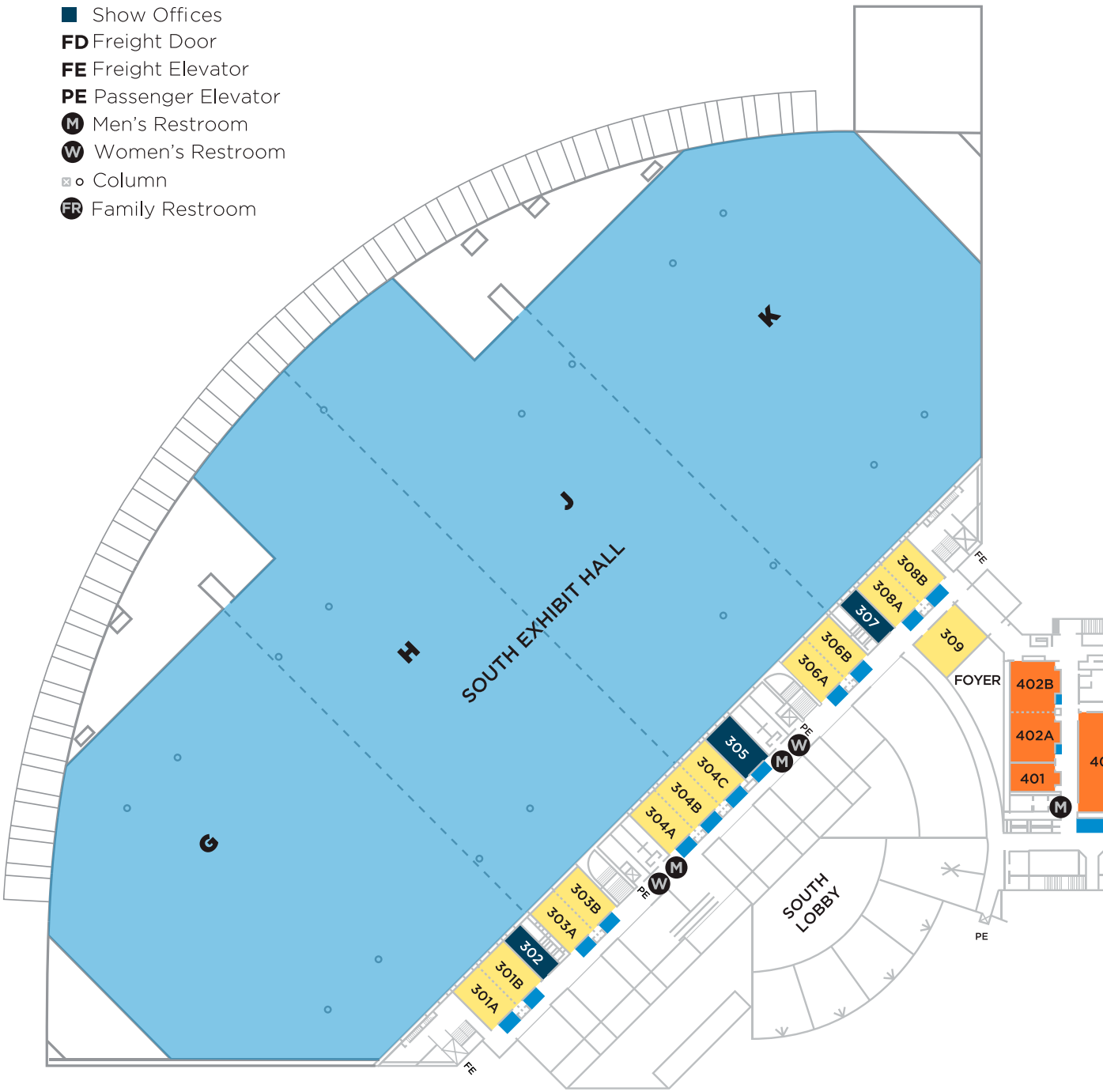
Steps from L.A. LIVE, STAPLES Center and Microsoft Theater, the Los Angeles Convention Center is at the heart of a dynamic urban lifestyle and the city's vibrant commercial center.

Convention Center

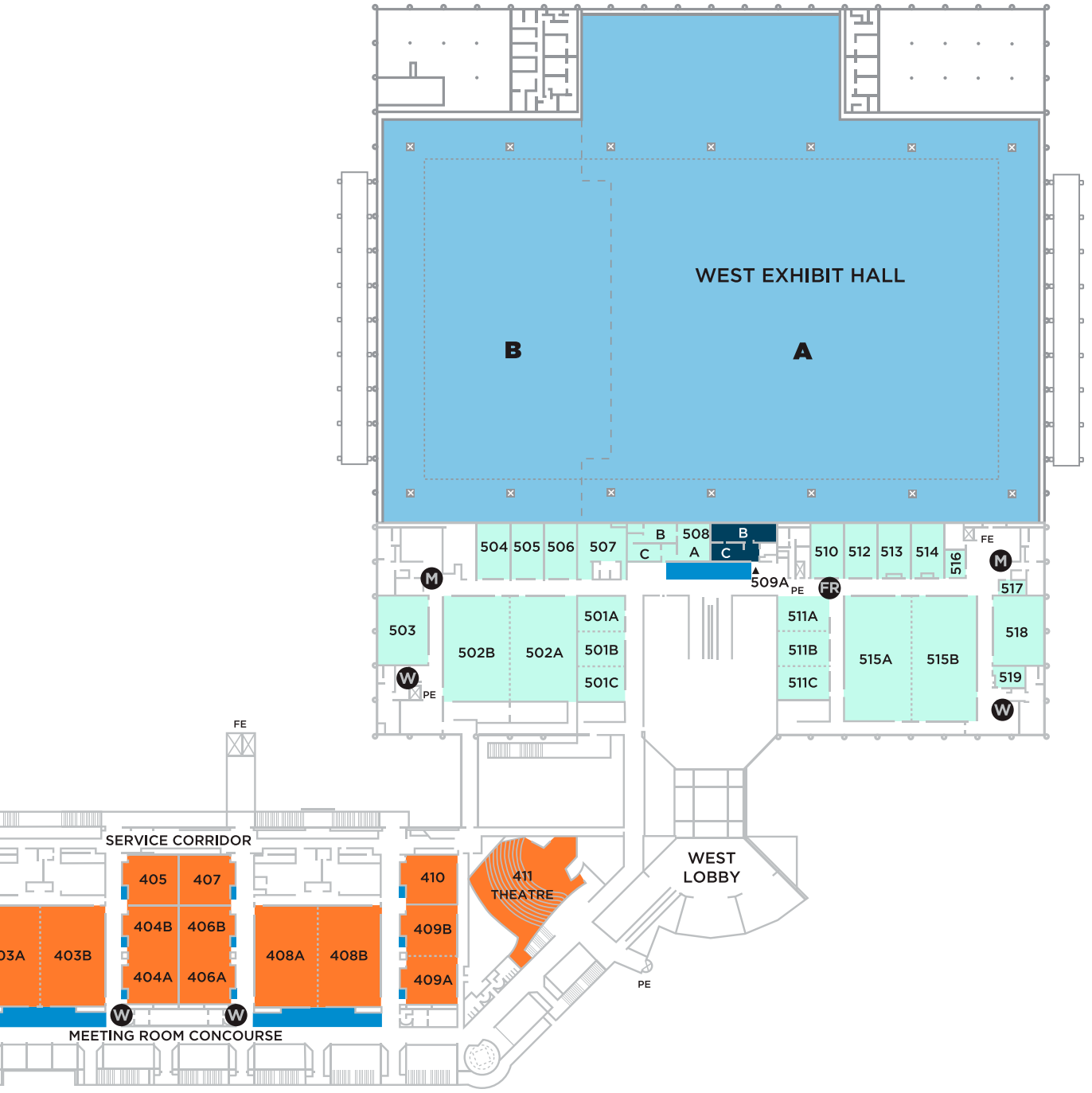
LEVEL TWO MEETING ROOMS

- West Hall Meeting Rooms
- Concourse Meeting Rooms
- South Hall Meeting Rooms
- Pre-function/Registration
- Show Offices

FD Freight Door
FE Freight Elevator
PE Passenger Elevator
(M) Men's Restroom
(W) Women's Restroom
Column
(FR) Family Restroom

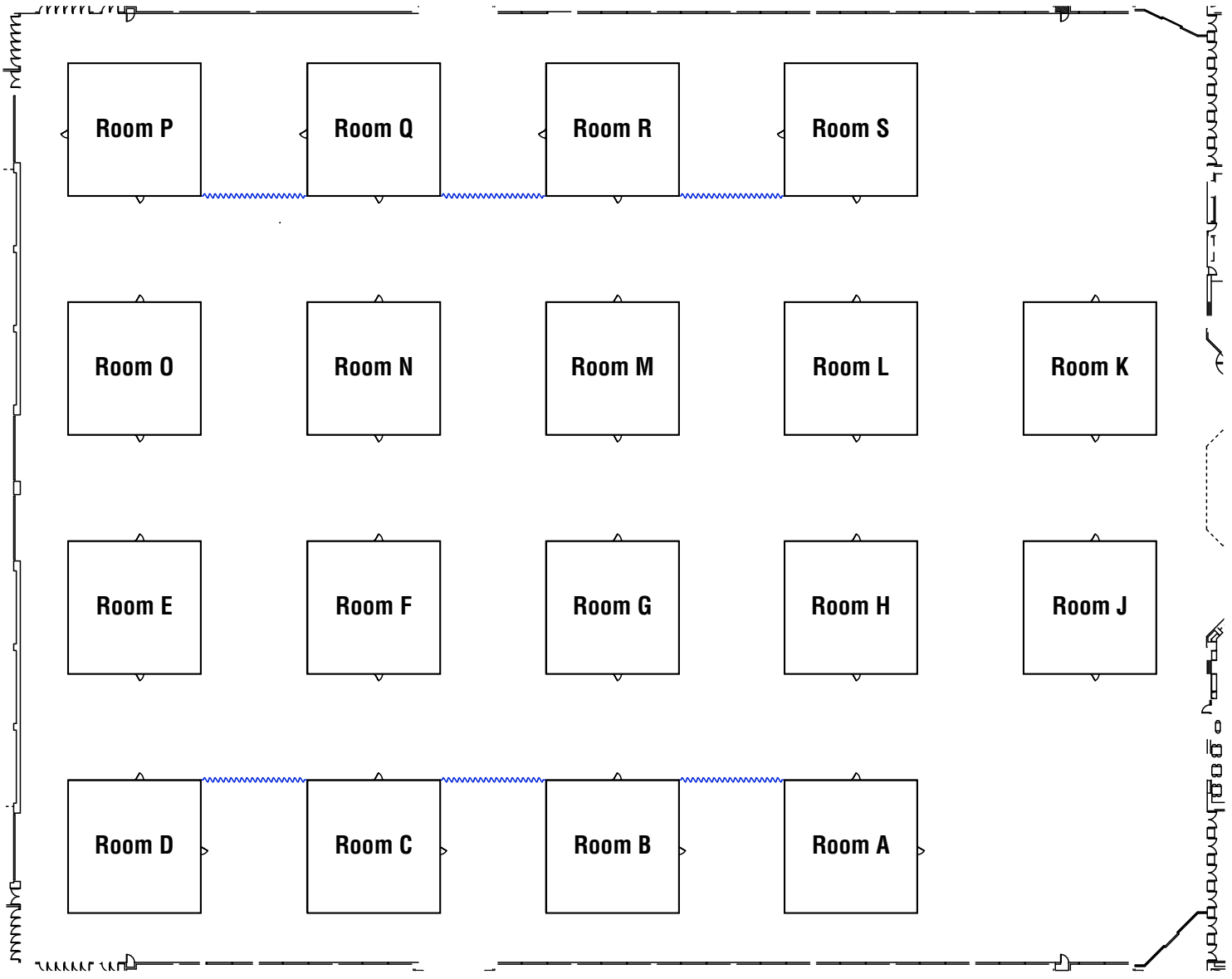


Convention Center



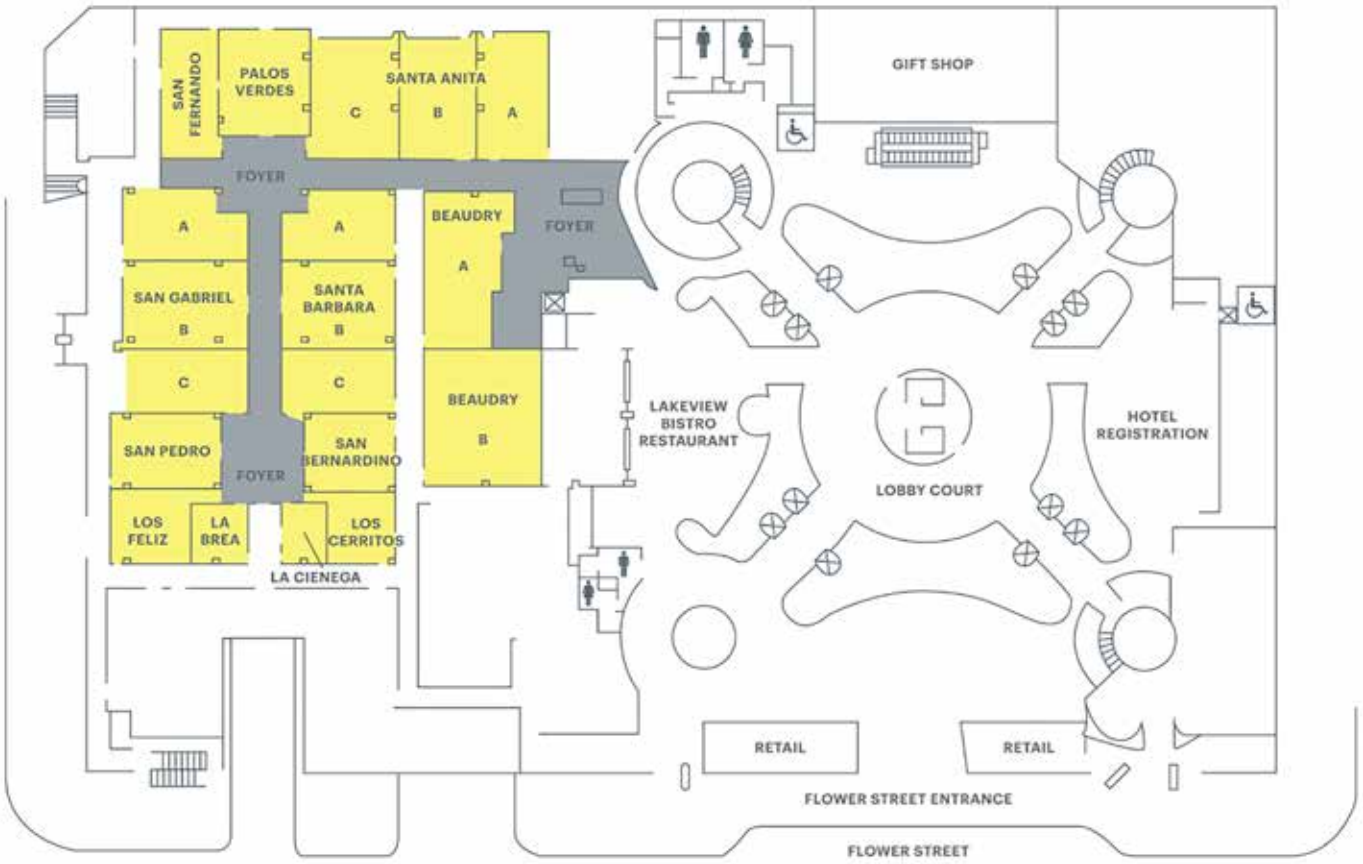
Los Angeles Convention Center

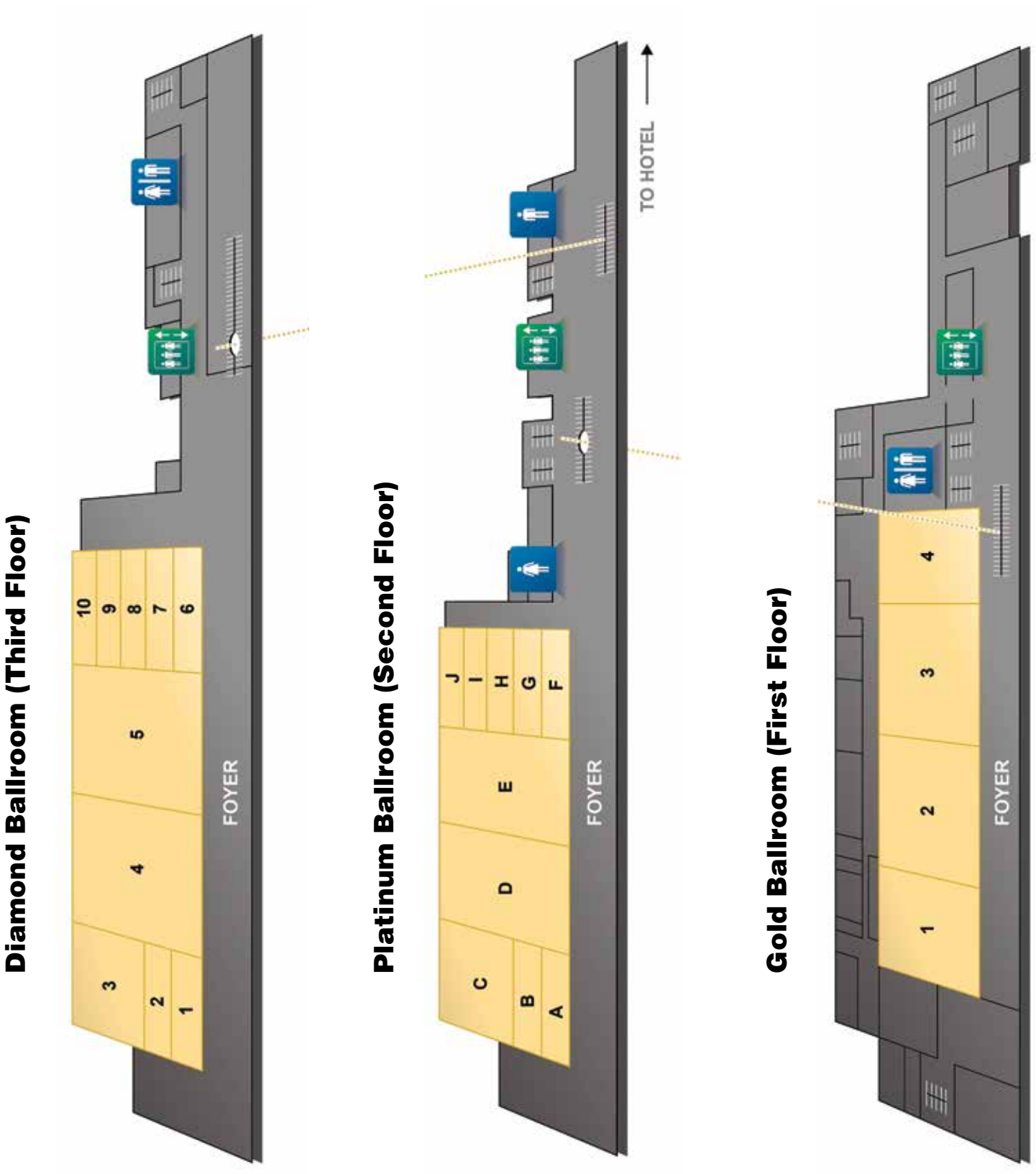
Kentia Hall (Lower Level)



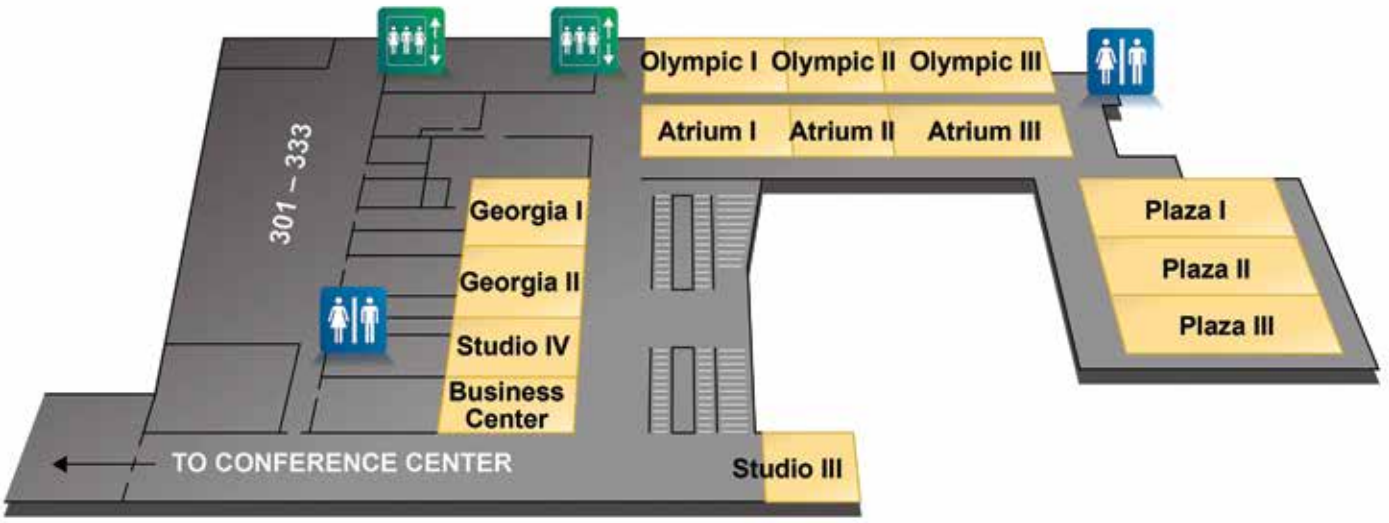
The Westin Bonaventure Hotel & Suites

Lobby Level

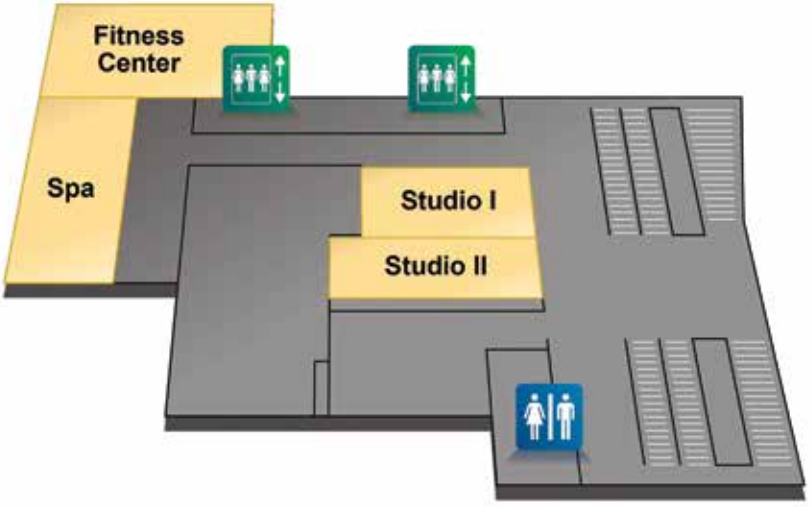



Diamond Ballroom (Third Floor)
10
9
8
7
6
5
4
3
2
1
FOYER
Platinum Ballroom (Second Floor)
TO HOTEL
J
I
H
G
F
E
D
C
B
A
FOYER
Gold Ballroom (First Floor)
4
3
2
1
FOYER

Third Floor



Second Floor



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Shawn Crowder, Administrative Coordinator

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La'Keisha Hines, Accounting Associate
Shantee Young, Accounts Receivable Specialist

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Azi Ambrishami, Administrative Coordinator

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Cindy Thomas, Senior Manager
Vacant, Customer Service Representative, Data Entry/Pub Sales
Kiara Singleton, Customer Service Representative
LaToya Parks, Coordinator, CSR/Data Entry, Publication Sales
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NSTA Officers, Board of Directors, Council, and Alliance of Affiliates

NSTA Mission Statement

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

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Mary Gromko, President
David T. Crowther, President-Elect
Carolyn Hayes, Retiring President
Harold Pratt, Parliamentarian
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Margaret Glass, ASTC Affiliate Representative
James McDonald, CESI Affiliate Representative
Juan-Carlos Aguilar, CSSS Affiliate Representative
Deborah Hanuscin, NARST Affiliate Representative
Mary Lou Lipscomb, NMLSTA Affiliate Representative
Bob Sotak, NSELA Affiliate Representative
Brian Shmaefsky, SCST Affiliate Representative

All cities are subject to change pending final negotiation.

National Conferences on Science Education

Atlanta, Georgia
March 15–18, 2018

St. Louis, Missouri
April 11–14, 2019

Boston, Massachusetts
March 26–29, 2020

Chicago, Illinois
April 8–11, 2021

6th Annual STEM Forum & Expo, *hosted by NSTA*

Gaylord Palms Resort/Kissimmee/Orlando—July 12–14, 2017

Area Conferences on Science Education

2017 Area Conferences

Baltimore, Maryland—October 5–7
Milwaukee, Wisconsin—November 9–11
New Orleans, Louisiana—November 30–December 2

2018 Area Conferences

Reno, Nevada—October 11–13
Gaylord National Harbor, Maryland—November 15–17
Charlotte, North Carolina—November 29–December 1


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Inspire your students and spark innovation with K-12 programs that make science real and relevant. With exciting hands-on activities, inquiry-based learning, and engaging tech-enhanced resources, our programs help teachers excel at delivering NGSS* instruction that empowers future science innovators.
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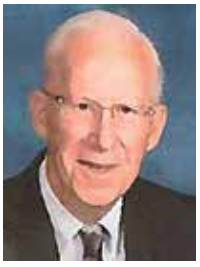
Because learning changes everything.™

National Science Teachers Association

Robert H. Carleton Award

for National Leadership in the Field of Science Education



Edward P. Ortleb
1978–1979 NSTA President
Consultant/Author
St. Louis, Mo.

Presidential Citation

Marie Sullivan
Retired Science Educator
Colorado Springs, Colo.

Angela Award

Catherine Tomasello
Science Student
Homeschool
Land O' Lakes, Fla.

Sylvia Shugrue Award for Elementary School Teachers

Gary Koppelman
Elementary Science Teacher
Blissfield Elementary School
Blissfield, Mich.

National Science Teachers Association

Distinguished Teaching Award

Micah Lauer
Science Teacher
Heritage Middle School
Meridian, Idaho

Jean Tushie
Science Teacher
Eden Prairie High School
Eden Prairie, Minn.

National Science Teachers Association

Distinguished Informal Science Education Award

Elizabeth Mulkerrin
Director of Education
Omaha's Henry Doorly Zoo & Aquarium
Omaha, Neb.

Jerry D. Valadez
Executive Director
SAM Academy and Sanger Community Science Workshop
Fresno, Calif.

Janet Yamaguchi
Vice President of Education
Discovery Cube
Santa Ana, Calif.

This form is for planning purposes only. Do NOT submit to NSTA.

NSTA 2017 Los Angeles National Conference
Professional Learning Documentation Form

All attendees can evaluate concurrent teacher and exhibitor sessions online while simultaneously tracking professional learning certification (based on clock hours). Use this form to keep track of all sessions/events attended during the LA conference. Sessions/events such as exhibit hall visits may not be available for online evaluation. However, these events still qualify for professional learning.

Beginning April 25, 2017, LA transcripts can be accessed at the NSTA Learning Center *(learningcenter.nsta.org)* by logging on with your LA Badge ID# and and first clicking on "My Profile" under the "Welcome." Here you'll find a "Certificates" tab to access your transcript. Keep this form and use it to add the following activities to your LA transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

First Name: _____ **Last Name:** _____ **Badge ID#** _____

Evaluate sessions by accessing the conference session browser: *www.nsta.org/LAbrowser*. You will need your badge number to evaluate sessions. See page 17 of the Vol. 1 conference program for instructions. *Note:* Our session evaluation system is designed to work from a computer and while it may work on smartphones/tablets, it is not really designed for them. ***And don't forget, the more sessions you attend and evaluate, the more chances you have to win an Apple iPad mini 2!***

Sample Questions:

1. I selected this session:
   a. for immediate classroom use.
   b. based on the reputation of the speaker.
   c. to improve my personal pedagogical knowledge/skill.
   d. to improve my science content knowledge.
2. The session met my needs.
3. The information presented was clear and well organized.
4. Safe practices were employed.
5. The session avoided commercial solicitation (n/a for exhibitor workshops and NSTA Press® sessions).
6. The session should be repeated at another NSTA conference.

Sample Responses:
1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree

Wednesday, March 29 8:00 AM–8:00 PM

Start Time	End Time	Activity/Event Title

Thursday, March 30 8:00 AM–10:45 PM

Start Time	End Time	Activity/Event Title

We're giving an Apple iPad mini 2 to two lucky attendees who evaluate sessions that they attend. The more sessions you attend and evaluate, the more chances you have to win!

Friday, March 31, 8:00 AM–8:45 PM

Start Time	End Time	Activity/Event Title

Saturday, April 1, 8:00 AM–6:00 PM

Start Time	End Time	Activity/Event Title

Sunday, April 2 8:00 AM–12 Noon

Start Time	End Time	Activity/Event Title

National Science Teachers Association

Distinguished Service to Science Award

Cherry Brewton
Executive Director
Evans County Community Center
Statesboro, Ga.

Susan Koba
Science Education Consultant
Omaha, Neb.

Norman G. Lederman
Distinguished Professor
Illinois Institute of Technology
Chicago, Ill.

Patricia Simmons
2011–2012 NSTA President
Policy Fellow
AAAS S&T
Arlington, Va.

Morton Sternheim
Professor
UMass Amherst
Amherst, Mass.

P. John Whitsett
2007–2008 NSTA President
Science Education Consultant
Fond du Lac, Wis.

The Maitland P. Simmons Memorial Award for New Teachers

Courtney Asaro
Kristen N. Austion
Kristen Barnes
Stephanie Bender
Genevive Bjorn
Alexis Daniels
Kristen Fleury
Carrie Fong
Hannah Hannah
Rachel M. Hess
Brooke Holloway
Robert A. Jackson
Jayne Kerner
Catherine Krygeris
Katie Lee
Vanessa Logan
DeAndra Meshell Fortenberry
Cori Nelson
Cindy Ok
Paul Orbe
Jennifer Parr
Brianna Reilly
Alexandra N. Schoessler
Allycia Uhrhan
Sabrine Zahran

National Science Teachers Association

Fellow Award

Kathleen B. Horstmeyer
President
SEPA
Chester, Conn.

Fellow Award

Julie A. Luft
Athletic Association Professor of Mathematics and Science Education
University of Georgia
Athens, Ga.

Fellow Award

Victor Sampson
Associate Professor of STEM Education
Director, Center for STEM Education
The University of Texas at Austin
Austin, Tex.

NSTA Teacher Awards Gala
ALL of the teacher awards will be presented in one grand evening. See page 131 for details about this ticketed event.

Northrop Grumman Foundation Excellence in Engineering Education Award

Sponsored by Northrop Grumman Foundation

Mariel Kolker
Science Teacher
Morristown High School
Morristown, N.J.

Wendell G. Mohling Outstanding Aerospace Educator Award

Gary Garber
Science Instructor
Boston University Academy
Boston, Mass.

Ron Mardigian Memorial Biotechnology Explorer Award

Sponsored by Bio-Rad Laboratories

Ben Johnston
Science Teacher
Bob Jones High School
Athens, Ala.

Robert E. Yager Excellence in Teaching Award

Yager Scholar
NSTA District XII
(IL, IA, WI)

Kristin Rademaker
Science Teacher
Harlem High School
Machesney Park, Ill.

NSTA District I
(CT, MA, RI)

Steven Autieri
Science Teacher
Suffield Public Schools
Suffield, Conn.

NSTA District VI
(NC, SC, TN)

Covey Denton
Science Teacher
Greenfield School
Wilson, N.C.

NSTA District VII
(AZ, LA, MS)

Kristen Sumrall
Science Teacher
Lafayette Middle School
Lafayette, Miss.

NSTA District XIII
(NM, OK, TX)

George Hademenos
Physics Teacher
Richardson High School
Richardson, Tex.

NSTA District XVIII
(CANADA)

Ruggero Racca
Science Teacher
Toronto School District
Toronto, Ont., Canada

DuPont Pioneer Excellence in Agricultural Science Education Awards

Middle School Level

Heather Grabarski
Science Teacher
Adams-Friendship Elementary School
Friendship, Wis.

High School Level

Vincent Newman
Agricultural Science Teacher
McArthur High School
Hollywood, Fla.

2016 DuPont Challenge Science Essay Teacher Awardees

Elementary Division

Grand-Prize Winner
Rebecca Kurson
Elementary Teacher
Golda Och Academy
West Orange, N.J.

Grand-Prize Winner
Sarah Pucci
First-Grade Teacher
Lordship Elementary School
Stratford, Conn.

Grand-Prize Winner
Jennifer Domo
SCOPES Academy Director
Unioto Elementary School
Chillicothe, Ohio

Co-applicant
Jaimee Jenikins
Preservice Teacher
Ohio University/Unioto Elementary School
Chillicothe, Ohio

Grand-Prize Winner
Brandi Leggett
Instructional Coach
Rosehill Elementary School
Lenexa, Kans.

Grand-Prize Winner
Travis Myers
Elementary Teacher
Rosehill Elementary School
Lenexa, Kans.

Grand-Prize Winner
Donna Chaback
Elementary Teacher
Allendale Columbia School
Rochester, N.Y.

Grand-Prize Winner
Brianne Prickett
Grade 5 Teacher
Harloe Elementary School
Arroyo Grande, Calif.

Middle Division

Grand-Prize Winner
Kelli Iannacone
Grades 7 and 8 Pre-Engineering Teacher
Timberlane Middle School
Pennington, N.J.

Senior Division

Grand-Prize Winner
Jennifer Seavey
Teacher
Thomas Jefferson High School for Science Technology
Alexandria, Va.

Faraday Science Communicator Award

Paul Adams
Director of FHSU
Science and Mathematics
Education Institute
Fort Hayes State University
Hayes, Kans.

PASCO STEM Educator Awards

Sponsored by PASCO scientific

Middle Level

Brian Soash
Science Teacher and STEM
Program Coordinator
Lee County Middle School
West
Leesburg, Ga.

High School

Shannon Sahabi
Science Teacher
Tom C. Clark High School
San Antonio, Tex.

Steve Sogo
Chemistry Teacher
Laguna Beach High School
Laguna Beach, Calif.

Vernier Technology Awards

Sponsored by Vernier Software & Technology

Elementary Level

Kathryn Eyolfson
STEM Teacher
Coyote Hills Elementary
School
Aurora, Colo.

Middle Level

Carrie Herndon
Science Teacher
Metro East Montessori
School
Granite City, Ill.

Terra McMillan
Science Teacher
Thomson Middle School
Centerville, Ga.

High School Level

Rene Corrales
Science Teacher
STAR Academic Center
Tucson, Ariz.

Hannah Erickson
Science Teacher
Boston Day and Evening
Academy
Roxbury, Mass.

Amy Melby
Science Instructor
Yuma High School
Yuma, Colo.

College Level

Donald Carpenetti
Chemistry Instructor
Craven Community College
Winterville, N.C.

Shell Science Teaching Award

Sponsored by Shell

Awardee

Joel Truesdell
Chemistry Teacher
Kamehameha Schools
Hawaii Campus
Keaau, Hawaii

Finalist

John Gensic
Biology Teacher
Penn High School
Mishawka, Ind.

Finalist

Ryan Monger
Biology and Sustainable Design Teacher
Sultan High School
Sultan, Wash.

SeaWorld Parks & Entertainment Environmental Educator of the Year

Marguerite Murphy
Science Teacher
Camden Hills Regional High School
Rockport, Maine

Shell Urban Science Educators Development Award

Sponsored by Shell

Melissa Collins
Science Teacher
Shelby County Schools
Memphis, Tenn.

Karis Jackson
Science Teacher
Hazelwood Central Middle School
St. Louis, Mo.

Julio Mendez
Science Teacher
Perspectives Charter School
Chicago, Ill.

Arlene Ramos
Science Teacher
High School for Health Professions and Human Services
New York, N.Y.

Sarah Tazghini
Science Teacher
Khalil Gibran International Academy
Brooklyn, N.Y.

Alexandra Valdes
Science Teacher
LEAD Public Schools
Nashville, Tenn.

Crystal Velez
Science Teacher
John F. Kennedy High School
Waterbury, Conn.

2016–2017 Shell Science Lab Challenge, *sponsored by Shell*

Outfitted by Carolina Biological Supply Co.

The Shell Science Lab Challenge, sponsored by Shell and administered by NSTA, encourages teachers (grades 6–12) in the U.S. and Canada, who have found innovative ways to deliver quality lab experiences with limited school and laboratory resources, to share their approaches for a chance to win prizes, including a grand prize school science lab makeover.

To learn how to win a Shell Science Lab Makeover at your school, see Volume 3 for the *"Do You Need a New Science Lab?"* and *"The Shell Science Teaching Award: Fueling Success with Students"* sessions.

In Memory of Al Guenther 1936–2016

Please contact Nancy Guenther at *nguenther13@gmail.com* for information on classroom materials that he wished to donate to teachers and schools.

2017 Shell Science Lab Challenge District Winners

District I
(CT, MA, RI)
Anna Saccoccio
Nathanael Greene Middle School
Providence, R.I.

District II
(ME, NH, VT)
Christine Caputo
Katahdin Program
Raymond, Maine

National Finalist
District III
(DE, DC, MD)
Maria-Rose Cain
St. Martin's School
Gaithersburg, Md.

Grand Prize Winner
District IV
(NJ, NY, PA)
Aja Brown
The Metropolitan Soundview High School
Bronx, N.Y.

District V
(AL, FL, GA, PR, VI)
Melissa Sleeper
Gifford Middle School
Vero Beach, Fla.

District VI
(NC, SC, TN)
Tom Savage
Henderson County Early College High School
Flat Rock,N.C.

National Finalist
District VII
(AR, LA, MS)
Kassie Cusachs
Kenner Discovery Health Sciences Academy
Metairie, La.

District VIII
(KY, VA, WV)
Susan Booth
Jones Middle School
Hampton, Va.

District IX
(MN, ND, SD)
Dorothy Marie Story
Whittier Middle School
Sioux Falls, S.D.

District X
(IN, MI, OH)
Leah LaCrosse
McCormick Junior High School
Huron, Ohio

District XI
(KS, MO, NE)
Ruth Hutson
Blue Valley Middle/High School
Randolph, Kans.

District XII
(IL, IA, WI)
Mauree Haage
Twin Cedars Junior/Senior High School
Bussey, Iowa

District XIII
(NM, OK, TX)
Sabrine Zahran
Garland High School
Garland, Texas

National Finalist
District XIV
(AZ, CO, UT)
L. Rene Corrales
STAR Academic Center
Tucson, Ariz.

District XV
(ID, MT, WY)
Jaysa Fillmore
Cassia High School
Burley, Idaho

District XVI
(CA, HI, NV, Samoa, GU, Terr. of Pacific Islands)
Linda Preminger
Washington Manor Middle School
San Leandro, Calif.

District: XVII
(AK, OR, WA)
Nicholas Krissie
Lincoln Middle School
Oakland, Ore.

National Finalist
District XVIII
(CANADA)
Nicole Anthony
John Polanyi Collegiate Institute
Toronto, Ont.
Canada

VISIT US AT
BOOTH #850

AEOP
ARMY EDUCATIONAL OUTREACH PROGRAM

Through AEOP, the Army continues its long tradition and strong commitment to the advancement of STEM education and literacy. Leveraging its most valuable assets—world-class scientists and engineers and research facilities—AEOP offers our nation's youth and teachers a collaborative, cohesive portfolio of opportunities that effectively engage future workforce generations in meaningful, real-world STEM experiences, competitions and paid internships.

Friday, March 31 Workshops

Location: Los Angeles Convention Center - 150 AB

Gains in the Education of Mathematics and Science: What Can GEMS Do For You?
8:00–9:00am

AEOP RESET: Learning Through the Legacy Cycle
9:30–11:00am

Group Work: Using Student Collaboration in the Middle School Science Classroom
11:30am–1:00pm

What's the Problem? Integrating Engineering into the Science Classroom without Rockets and Bridges
1:30–3:00pm

Friday, March 31 Session

Location: JW Marriott Los Angeles, LA Live - Gold Ballroom Salon 4

How to Implement STEM and NGSS into Your Classroom through the Use of NSTA Competitions
9:30–10:30am

Saturday, April 1 Featured Presentation

Los Angeles Convention Center - Theater (Room 411)

Engaging ALL in STEM
Speaker: Louie Lopez
3:30–4:30pm

Administered by
NSTA National Science Teachers Association

The Planetary Society Lecture

Wednesday, March 29, 6:00–8:00 PM

Bill Nye
CEO, The Planetary Society

Everything All at Once

Based on his upcoming book *Everything All at Once: How Nerds Solve Problems,* Bill will probe the nerd mind-set—solving problems through dogged effort, creativity, and trial and error.

Sponsored by The Planetary Society

(See page 84 for details.)

Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a Thursday morning session specifically intended for first-time conference attendees. This session will help you make the most of your first-time conference experience.

See page 89–90 for details.

Ribbon-Cutting Ceremony

An opening ceremony is scheduled on Thursday at 11:00 AM in the NSTA Exhibits entrance, Hall H of the Convention Center. Musical entertainment is provided by the Cresenta Valley High School Jazz Combo, under the direction of Mathew Schick, Instrumental Music Director.

Wednesday, March 29 (Volume 1)

9:00 AM–4:00 PM	NSTA Professional Learning Institutes (check in between 8:00 and 9:00 AM). 52–54
12 Noon–5:30 PM	Global Conversations in Science Education Conference (M-1) 82–83
6:00–8:00 PM	The Planetary Society Lecture: Bill Nye 84

Thursday, March 30 (Volume 1)

8:00–9:00 AM	First-Timer Conference Attendees' Orientation Is This Your First NSTA Conference? 90
8:00–9:00 AM	Mary C. McCurdy Lecture: Kathy DiRanna 88
8:30 AM–4:30 PM	Teacher Researcher Day. 51
9:15–10:30 AM	General Session: Andy Weir, *sponsored by Penguin Random House* 101
11:00–11:05 AM	Ribbon-Cutting Ceremony/Exhibits Opening 109
11:00 AM–6:00 PM	Exhibits 111
12:30–1:30 PM	Featured Presentation: Heidi Schweingruber, *sponsored by Shell* . . . 117
3:30–4:30 PM	Featured Presentation: Jennifer Long 143
3:30–5:30 PM	Science in the Community Session: Creativity Forum 150
5:30–7:30 PM	*NGSS* Live Chat. 161

Friday, March 31 (Volume 2)

See Conference Highlights, Volume 2, for page numbers.

8:00–10:00 AM	Elementary Extravaganza
8:00–10:00 AM	Science in the Community Session: Models of Intersections…
8:00 AM–4:30 PM	NGSS@NSTA Forum
9:00 AM–5:00 PM	Exhibits
10:15 AM–4:30 PM	Meet Me in the Middle Day
11:00 AM–12 Noon	Featured Presentation: Laura Henriques
12:30–1:30 PM	Science in the Community Featured Presentation (Panel): Moderator: Angela Calabrese Barton
12:30–1:30 PM	Featured Presentation: Jacqueline Barber
12:45–1:30 PM	"Meet and Greet" the NSTA Presidents and Board/Council
2:00–3:00 PM	Featured Panel: The National Academies of Sciences, Engineering, and Medicine
2:00–3:00 PM	AGU Lecture: Lucy Jones
2:00–4:00 PM	Science in the Community Share-a-Thon
3:30–4:30 PM	Robert H. Carleton Lecture: LaMoine Motz
6:00–8:45 PM	NSTA Teacher Awards Gala (M-2)

General Session

Thursday, March 30, 9:15–10:30 AM

Andy Weir
Author of *The Martian*

***The Martian*: The Story Behind the Story**

Andy discusses how he went from computer programmer to bestselling author. *Spoiler:* He did it mostly by mistake.

Also, the first 250 people in line for Andy's session will receive a free classroom-edition copy of *The Martian,* which Andy will personally autograph shortly after his talk.

Speaker sponsored by Penguin Random House.

(See page 101 for details.)

Saturday, April 1 (Volume 3)

See Conference Highlights, Volume 3, for page numbers.

9:00 AM–3:00 PM	Exhibits
9:30–10:30 AM	Featured Presentation: Veerabhadran Ramanathan
9:30–11:00 AM	NGSS@NSTA Share-a-Thon
9:30 AM–1:30 PM	Hydrogen Horizon Automotive Challenge at the Horizon Educational booth in the Exhibit Hall
11:00 AM–12 Noon	Paul F-Brandwein Lecture: Emma Marris
11:00 AM–12:30 PM	High School Hands-On Hodge-Podge Share-a-Thon
12:30–1:30 PM	Featured Presentation: Roni Ellington, *sponsored by Shell*
12:30–2:30 PM	Multicultural/Equity Share-a-Thon
12:30–2:30 PM	Science in the Community Forum: Using Informal Science
2:00–3:00 PM	NSTA/ASE Honors Lecture: Chris Colclough, *sponsored by Association for Science Education*
3:30–4:30 PM	Award-Winning Share-a-Thon: Featuring NSTA Distinguished Teachers
3:30–4:30 PM	Featured Presentation: Louie Lopez

The Los Angeles 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.

NGSS

NGSS: The Next Generation of Science Teaching

Celebrate the vision of three-dimensional teaching and learning in the NRC *Framework* and *Next Generation Science Standards (NGSS)*. This strand provides engaging and collaborative examination of the *NGSS* architecture to allow teachers to implement the changes necessary to construct a coherent program, including classroom practice and instructional sequence, as well as to build student skills. Bundling performance expectations connects the three key dimensions within a progression. This strand will focus on providing opportunities for students to collaborate as they develop and use science and engineering practices, communicate evidence of core scientific understanding, and apply real-world contexts. Alignment of assessments connecting core concepts, science and engineering practices, and crosscutting concepts is essential.

2017: A STEM Odyssey

Students' science learning has changed dramatically from learning in the past. In a STEM environment, students' understanding of the world around them is facilitated through the intentional connections between the four disciplines of science, technology, engineering, and mathematics. STEM curriculum provides research-based instructional strategies that engage diverse learners and highlight career pathways in STEM-related fields. More importantly, STEM provides opportunities for all students to place themselves in a 21st-century world. In this strand, participants will connect and collaborate to increase their understanding and ability to teach STEM-based lessons and instructional sequences.

Science & Literacy Reloaded

With the continued emphasis on mathematics and language arts, elementary teachers have not been encouraged or given opportunities to teach science. This strand will support these teachers in seeing the connections between science and literacy. Elementary science will be re-envisioned as an opportunity for authentic language learning and not just one more thing to squeeze into the curriculum. As students investigate natural phenomena, they collect data to then make claims from their evidence and explain their reasoning, arguing from their evidence. Teachers can then support their students' language and literacy through science notebooks, technical writing, interactive journals, and e-portfolios. This strand will allow teachers to become advocates of literacy in science, blending oral and written communication skills within the science curriculum.

Mission Possible: Equity for Universal Access

Access to science education is not a privilege; it is a right for students of all abilities, genders, languages, socioeconomic status, and geographic locations. A quality science education is essential in closing the skills gap in our current workforce. Science learning must start in early childhood and be sustained through postsecondary education to keep our nation as a leader in innovation. Current challenges provide opportunities for equitable access to science education. Some issues include maximizing student achievement for exceptional students while respecting cultural and linguistic diversity in order to celebrate those differences. The sessions in this strand will focus on pedagogical best practices to enhance learning for ALL.

NGSS: The Next Generation of Science Teaching

Thursday, March 30

8:00–9:00 AM
3-2-1 Lift-Off! NASA's Beginning Engineering Science and Technology (BEST) Curriculum

2:00–3:00 PM
Using the Environment as a Springboard to Real-World 3D Learning

3:00–6:00 PM
Short Course: Lessons Learned: The California *NGSS* K–8 Early Implementation Initiative (By Ticket: SC-2)

Short Course: A Short Course on Analyzing and Adapting Three-Dimensional Assessment Tasks (By Ticket: SC-3)

3:30–4:30 PM
Science and Math Collision Course: Using Phenomena to Teach Matter and Math

5:00–6:00 PM
Analyzing and Interpreting Ice Sheet Data to Determine the Effects of Human Activities on Climate

Friday, March 31

8:00–9:00 AM
Scaffolding to Support Complex Student-Created Explanations of Real-World Phenomena (Secondary Science Classrooms)

9:30–10:30 AM
Starting with the End in Mind: Building an Instructional Unit from *NGSS* Performance Expectations

11:00 AM–12 Noon
NGSS and 3D Implementation: Tools for Elementary Teachers

Featured Presentation: *NGSS*…Now What? (Speaker: Laura Henriques)

12:30–1:30 PM
Phenomena-Questions-Model

2:00–3:00 PM
Using Phenomena to Level the Playing Field in the Elementary Classroom

3:00–6:00 PM
Short Course: *NGSS* : Three Dimensions in Action in a California Early Implementer Classroom (By Ticket: SC-9)

5:00–6:00 PM
Designing Classroom Assessments to Address *NGSS* Performance Expectations

Saturday, April 1

8:00–9:00 AM
Creating Inquiry Lessons Using *NGSS*

9:30–10:30 AM
Yes, Humans Really Do Cause Earthquakes: Hydraulic Fracturing, Wastewater Injection, and Earthquakes

11:00 AM–12 Noon
Analyzing and Adapting Curriculum Materials to Better Support Three-Dimensional Teaching and Learning

12:30–1:30 PM
NGSS 3D Implementation: Tools for Middle School and High School Teachers

2:00–3:00 PM
Using Scientific Phenomena to Understand the Three Dimensions of the *NGSS*

3:30–4:30 PM
The Essentials of High-Quality *NGSS* Implementation for All Students

5:00–6:00 PM
Developing Tools for 3-Dimensional Classroom Assessment

Sunday, April 2

8:00–9:00 AM
Creating Life Science Assessment Tasks that Integrate Three-Dimensional Learning of the *NGSS*

9:30–10:00 AM
EQuIP Rubric: A Formative Assessment Tool in Creating *NGSS* Lessons

2017: A STEM Odyssey

Thursday, March 30

8:00–9:00 AM
The "How Tos" of an X-STREAM Family Night

12:30–1:30 PM
Zombies in the Neighborhood? No Worries. STEM Them!

2:00–3:00 PM
Using PBLs to Teach High School Science

3:30–4:30 PM
Making the Case for STEM Career Pathways in Public Health (Centers for Disease Control and Prevention)

Featured Presentation: Creating Learning Ecologies: Integrating Formal and Informal Spaces (Speaker: Jennifer Long)

Friday, March 31

9:30–10:30 AM
STEM in the Real World: Hands On with NASA Aeronautics

9:45 AM–5:45 PM
Short Course: Stretch Your Legs for Science: An Outdoor STEM Adventure
(By Ticket: SC-7)

11:00 AM–12 Noon
Engineering and Literacy: A Path to Integrated STEM

3:30–4:30 PM
NASA Is with You When You Fly: Flying with Bernoulli

5:00–6:00 PM
Social Studies, ELA, and STEM: Oh My, Integrating It All!

Saturday, April 1

8:00–9:00 AM
The Science Collective: Project-Based Learning as a Multi-Science Teacher

9:30–10:30 AM
STEAMING Along with DaVinci: Integrating Science and Engineering with the Arts in an Elementary Classroom

11:00 AM–12 Noon
Using Robots to Teach Science, Math, Art, and Language Arts

12:30–1:30 PM
Engaging Multilingual Students and Their Families in STEM

2:00–3:00 PM
How to Create a Network and Supply Chain to Support Collaborative Biotechnology Education

3:00–6:00 PM
Short Course: Kids Love Rocks, So Will You: Introducing Physical Science BIG IDEAS
(By Ticket: SC-15)

3:30–4:30 PM
Inquiry—Without Reinventing the Wheel

5:00–5:30 PM
A STEM Approach to Integrate Drones as a Teaching and Technology Tool

Sunday, April 2

9:30–10:00 AM
Using 3D Printers in Your Science Classroom

10:00–10:30 AM
Using 3D Printers in K–3 Boost Student Engagement and Learning

11:00 AM–12 Noon
Early Elementary STEM Curriculum

Science & Literacy Reloaded

Thursday, March 30

8:00–9:00 AM
Charts, Graphs, and Diagrams, Oh My! The World of Visual Learners

12:30–1:30 PM
High-Tech and Low-Tech Strategies for Science and Literacy

2:00–3:00 PM
Rebooting the Connection and Full Integration of Science with the Language Arts: A Natural Pairing Across the Curriculum

3:30–4:30 PM
Fairy Tales, Folk Tales, and Fables Engineering

5:00–6:00 PM
Let's Give Them Something to Talk About: Discourse in the *NGSS* Science Classroom

Friday, March 31

8:00–9:00 AM
Interactive Word Walls: Enhancing Students' Ability to Speak, Read, and Write About Science Experiences

8:00–11:00 AM
Short Course: Writing in Science: A Research-Based Approach That Enhances Learning in Both Domains
(By Ticket: SC-6)

9:30–10:30 AM
Using Science Practices to Support Student Sense-Making of Phenomena

10:30 AM–4:00 PM
Short Course: NSTA Press® Short Course: Phenomenon-Based Learning: Fun, Hands-On, Cooperative Learning of Both Science and Language Arts (By Ticket: SC-8)

11:00 AM–12 Noon
Developing Graphing Skills for All

12:30–1:30 PM
Get Energized: Problem-Based Learning EQUALS Success in Science and Literacy

Featured Presentation: A New Era: Beyond Science and Literacy Integration
(Speaker: Jacqueline Barber)

2:00–3:00 PM
Screencasting in Science

3:30–4:30 PM
Using Lab Notebooks in the Preschool and Elementary Classroom

Saturday, April 1

8:00–9:00 AM
Got Science? Get Literacy!

8:00–11:00 AM
Short Course: Fostering a Science-Driven Language and Literacy Learning Environment
(By Ticket: SC-11)

9:30–10:30 AM
Urban-Based Partnerships to Support the K–6 Foundations of *CCSS ELA* and *NGSS*

11:00 AM–12 Noon
Promoting Elementary Science Literacy in Three Dimensions with the 2017 U.S. Total Solar Eclipse

12:30–1:30 PM
Engaging All Learners in Inquiry Through A Model of Shared Language

4:00–4:30 PM
A Response to Intervention Model for Argument-Based Inquiry: The Importance of Using Student Writing to Find Out What They Really Know

5:00–5:30 PM
Poetry for Young Investigators

Sunday, April 2

8:00–9:00 AM
Removing Literacy Barriers to Rigorous STEM Units

9:30–10:30 AM
Where Will Yoni the Chickadee Raise His Family?

11:00–11:30 AM
Growing a Garden of Science and Literacy

11:30 AM–12 Noon
Science Notebooks Reloaded

Mission Possible: Equity for Universal Access

Thursday, March 30

8:00–9:00 AM
Lessons that Create Equitable Opportunities for All Students

2:00–3:00 PM
Reach ALL Students by Supporting ALL Teachers

3:30–4:30 PM
Using I-Engineering Teacher Tools to Promote Positive Engineering Identity Formation

5:00–6:00 PM
Host a Rockstar Family STEM Event

Friday, March 31

8:00–9:00 AM
Metacognition in Science Classrooms: Improving Student Outcomes by Engaging Them in Their Own Work

9:30–10:30 AM
Environmental Literacy: All About Access!

11:00 AM–12 Noon
Incorporating Global STEM Collaboration into Your Classroom!

12:30–1:30 PM
Shifting Toward Student-Designed Experiments

2:00–3:00 PM
Interactive Science Notebooks: Low-Tech Creations for Higher Level Thinking

3:00–6:00 PM
Short Course: Reaching Extremes! Blending Climate Science and Mathematics to Reach all Learners (By Ticket: SC-10)

3:30–4:30 PM
Bilingual Engineering Adventures for the Whole Family

Engaging At-Risk Students Through Voice and Choice

5:00–6:00 PM
Support Students Who Receive Special Education Services in STEM Education through Engagement in Engineering Challenges

Saturday, April 1

8:00–9:00 AM
Support English Language Learners in STEM Education through Engagement in Engineering Challenges

9:30–10:30 AM
Science Coding: Combining Science and Computational Thinking

11:00 AM–12 Noon
How Engineering Practices Differentiate for Students with Learning Disabilities

12:30–1:30 PM
Equity, Leadership, and Change

Featured Presentation: Reenvisioning STEM Education: Transcending Boundaries to Realize the Vision of Inclusion, Diversity, and Equity in STEM Fields
(Featured Speaker: Roni Ellington)

2:00–3:00 PM
How and Why STEM Career Interest Changes in High School

3:00–6:00 PM
Short Course: Hands-On Mathematics in Science Education (By Ticket: SC-16)

3:30–4:30 PM
Exploring Engineering Design with Elementary and Preservice Teams through Distance Technology: Edible Lunar Vehicle

5:00–6:00 PM
4-H Follow a Researcher™

Sunday, April 2

8:00–9:00 AM
Coding Curriculum for K–6 Students

9:30–10:00 AM
Differentiating for the Differentiated: Lab Experiences for General Level Life Science Students

10:00–10:30 AM
STEM for ALL: Dream IT, Design IT, Develop IT

12th Annual NSTA Global Conversations in Science Education Conference

Enhancing Global Workforce Skills Through Literacy, STEM, and Equity

Wednesday, March 29, 12 Noon–5:30 PM
Diamond Ballroom Salon 4, *JW Marriott at L.A. LIVE*
By Preregistration Only (M-1)

NSTA has planned an afternoon dedicated to sharing science education from an international perspective. This mini-conference begins and ends with plenary talks by distinguished international scholars and includes roundtable discussions on specific topics relevant to the international science educator community and poster presentations providing opportunities for networking and idea exchange. During this event, there will be numerous opportunities for international visitors to network with science educators from various cultures. *For an agenda on Global Conversations Conference events, see pages 82–83.*

Wednesday, March 29

7:00–10:50 AM	W-1 Educational Trip: Middle School (off-site)
7:30–10:45 AM	W-2 Educational Trip: High School (off-site)
12 Noon–5:30 PM	Global Conversations Conference (M-1) Plenary Talks Interactive Panels Roundtable Discussions Poster Session Closing Remarks: Mary Gromko NSTA President

Meet Me in the Middle Day

Friday, March 31, 10:15 AM–4:30 PM
Diamond Ballroom Salons
JW Marriott at L.A. LIVE

Calling all middle school science teachers! Meet Me in the Middle Day is designed just for you. The day will include sessions geared toward middle school, and a share-a-thon with a room full of activities that you can take back to your classroom. Join us and re-energize your teaching. You may even be the lucky winner of an iPad mini or other door prizes. Meet Me in the Middle Day is organized by the National Middle Level Science Teachers Association (NMLSTA) and sponsored by AquaPhoenix Scientific (Kemtec); Carolina Biological Supply Co.; Flinn Scientific; Lab-Aids, Inc.; PASCO scientific; and Shape of Life.

An agenda follows. *Meet Me in the Middle Day events are described throughout Volume 2.*

10:00–10:15 AM	Registration and Welcome
10:15–10:45 AM	Concurrent Sessions
11:00–11:30 AM	Concurrent Sessions
1:00–1:30 PM	Concurrent Sessions
1:45–2:15 PM	Concurrent Sessions
2:30–4:30 PM	Middle Level Share-a-Thon

NGSS@NSTA Forum

151, Convention Center

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

Friday, March 31 *(See Vol. 2 for details)*

8:00–9:00 AM	Designing and Using Classroom Assessments to Support Meaningful *NGSS* Investigations
9:30–10:30 AM	Next Generation Science Assessments (NGSA) Project
11:00 AM–12 Noon	How Do You Know If an Assessment Is Measuring Three-Dimensional Reasoning?
12:30–1:30 PM	How Do We Grade Students in a Three-Dimensional Classroom?
2:00–3:00 PM	Developing a Coherent Assessments System from the Classroom to the Year-End Exam
3:30–4:30 PM	The Next Generation of Statewide Assessments

Saturday, April 1 *(See Vol. 3 for details)*

5:00–6:00 PM	Finding Phenomenal Instructional Resources for High School Life Science *(in West Hall B-5, Conv. Center)*

NGSS Live Chat

Thursday, March 30, 5:30–7:30 PM
Diamond Ballroom Salon 9, JW Marriott

Come to the *NGSS* Live Chat, presented by Ted Willard, Tricia Shelton, and others as they discuss the *NGSS*. Join in live or via Twitter…#NGSSchat.

NGSS@NSTA Share-a-Thon

Saturday, April 1, 9:30–11:00 AM
151, Convention Center

At the NGSS@NSTA Share-a-Thon, 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! *See Vol. 3 for details.*

Science in the Community 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.

Thursday, March 30

3:30–5:30 PM	Creativity Forum: A Serious and Fun Aspect of Science

Friday, March 31 *(See Vol. 2 for details)*

8:00–10:00 AM	Models of Intersections That Connect Informal Institutions with Schools, Students, and Teachers to Support STEM Learning Outside the Classroom
12:30–1:30 PM	Featured Presentation (Panel): The Development of a Positive STEM Identity (Moderator: Angela Calabrese Barton)
2:00–4:00 PM	Science in the Community Share-a-Thon

Saturday, April 1 *(See Vol. 3 for details)*

12:30–2:30 PM	Using Informal Science Experiences to Explore Environmental Issues

NGSS@NSTA Forum

The Best Place to Explore **Assessments** and the **NEXT GENERATION SCIENCE STANDARDS**

Friday, March 31, 2017
Los Angeles Convention Center, 151

Take a deep dive with a special event FREE to all conference attendees!

Join leading national experts as they discuss issues around classroom and large-scale assessments in the context of three-dimensional instruction. Participate in one or more presentations.

8:00 AM–9:00 AM

Designing and Using Classroom Assessments to Support Meaningful NGSS Investigations

Philip Bell, Shelley Stromholt, Deb Morrison

9:30 AM–10:30 AM

Next Generation Science Assessments (NGSA) Project

Joseph Krajcik, Christopher Harris

11:00 AM–12 PM

How Do You Know If an Assessment Is Measuring Three-Dimensional Reasoning?

Jill Wertheim, Cathy Zozakiewicz

12:30 PM–1:30 PM

How Do We Grade Students in a Three-Dimensional Classroom?

James Clark, Samantha Johnson

2:00 PM–3:00 PM

Developing a Coherent Assessment System From the Classroom to the Year-End Exam

Stephen Pruitt

3:30 PM–4:30 PM

The Next Generation of Statewide Assessments

Michelle Center, Peter McLaren, Stephen Pruitt

SHARE-A-THON

Saturday, April 1, 2017
9:30–11:00 AM
Los Angeles Convention Center, 151

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

NGSS@NSTA STEM STARTS HERE

NSTA National Science Teachers Association

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.

Thursday, March 30

8:00–9:00 AM

Argumentation in the Earth and Space Science Classroom

Argument-Driven Inquiry in Biology, Chemistry, and Physics: Lab Investigations for Grades 9–12

12:30–1:30 PM

Uncovering Elementary Students' Ideas About Science Through Literacy Capacities

2:00–3:00 PM

Uncovering K–12 Students' (and Teachers') Ideas About Matter and Energy in the *NGSS*

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

3:30–4:30 PM

Diving into the *NGSS* Disciplinary Core Ideas: How and Why They Are Important for Teaching and Learning

5:00–5:30 PM

Teaching Energy Across the Sciences

Friday, March 31 (Volume 2)

8:00–9:00 AM

Teaching for Conceptual Understanding in Science: Building a Bridge Between Student Ideas and Scientific Knowledge

Doing Good Science in Middle School

Argument-Driven Inquiry in Life Science and Physical Science—Lab Investigations for Grades 6–8

Learn Strategies to Help You Implement the *NGSS* Practices!

9:30–10:30 AM

Formative Assessment Classroom Techniques for Uncovering ALL Students' (and Teachers') Ideas

11:00 AM–12 Noon

Picture-Perfect STEM Lessons: Using Children's Books to Teach Science, Technology, Engineering, and Mathematics

Integrating Engineering Practices into Whole-Class Inquiry Challenges

12:30–1:30 PM

Next Time You See. . .

2:00–3:00 PM

The Power of Investigating: Guiding Authentic Assessments

Learning to Read the Earth and Sky, Explorations Supporting the NGSS

Flowers to Fruit: Putting Botany Back into Your Curriculum

3:30–4:30 PM

How Scientific Learning Communities Promote Equity and Access through Whole-Class Inquiry

Big Data, Small Devices

Outdoor Science with Birds, Books, and Butterflies

Saturday, April 1 (Volume 3)

8:00–9:00 AM

Planning Three-Dimensional Formative Assessments with the Feedback Loop

9:30–10:30 AM

Solar Science = *NGSS*-Focused Solar Astronomy Experiences + Preparation for the All American Total Solar Eclipse

11:00 AM–12 Noon

Outdoor Science: A Practical Guide

12:30–1:30 PM

Bringing the S-T-E-M Together in Early Childhood Using Science and Engineering Practices

Be a Winner! A Science Teacher's Guide to Writing Successful Grant Proposals

Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry, K–5

2:00–3:00 PM

Inside or Out: The Perfect Place for Connecting Outdoor Science and Children's Tradebooks

3:30–4:30 PM

Everyday Engineering

Sunday, April 2 (Volume 3)

8:00–9:00 AM

Problem-Based Learning in the Classroom, K–12

9:30–10:30 AM

Helping Your Students (and You!) Achieve Basic Data Literacy

Teacher Researcher Day

Thursday, March 30, 8:30 AM–4:30 PM

Platinum D, JW Marriott at L.A. LIVE

Teacher researchers are curious about their students' learning and ask questions to try to better understand what is happening in their classrooms. They also share their findings with colleagues in their schools and elsewhere. Teacher Researcher Day is for both new and experienced teacher researchers. The full day of activities includes a poster session and presentations on topical issues. These sessions provide opportunities to meet teacher researchers and learn about their studies in a wide variety of contexts. An agenda follows. *Teacher Researcher Day events are described throughout the daily program.*

8:30–9:30 AM	Poster Session for Teacher Researchers	12:30–1:30 PM	Concurrent Sessions
9:30–11:00 AM	Panel Discussion: *Young Scientists*	1:30–2:00 PM	Informal Conversations about Teacher Research
11:00 AM–12 Noon	Concurrent Sessions	2:00–3:00 PM	Concurrent Sessions
12 Noon–12:30 PM	Come Be a Part of the Science Inquiry Group Network	3:00–3:30 PM	Informal Conversations about Teacher Research
		3:30–4:30 PM	Collaborative Leadership Planning Meeting

NSTA Professional Learning Institutes

Wednesday, March 29
9:00 AM–4:00 PM

Professional Learning Institutes (PLIs) are focused, content-based programs that explore key topics in significant depth. PLIs are presented by experts in science/STEM education, professional learning, standards implementation, assessment, curriculum, and resources/materials development. Institutes require conference registration. Check in between 8:30 and 9:00 AM.

Disciplinary Core Ideas: Reshaping Teaching and Learning (PLI-1)

Joseph Krajcik, CREATE for STEM Institute, Michigan State University, East Lansing
Ravit Golan Duncan, Rutgers Graduate School of Education, New Brunswick, N.J.
Ann Rivet, Teachers College, Columbia University, New York, N.Y.
Level: K–12
Science Focus: GEN, NGSS
Location: Platinum Blrm. Salon A
JW Marriott

Like all enthusiastic teachers, you want your students to see the connections between important sciences concepts so they can grasp how the world works now—and maybe even make it work better in the future. But how exactly do you help them learn and apply these core ideas? Attendees will explore ways to reshape their approach to teaching and their students' way of learning. Building on the foundation provided by *A Framework for K–12 Science Education*, which informed the development of the *Next Generation Science Standards*, we will discuss the cores ideas across the four disciplines of *NGSS* through the exploration of diverse phenomena.

Helping Students Make Sense of the World Using Next Generation Science and Engineering Practices (PLI-2)

Brian Reiser, Northwestern University, Evanston, Ill.
Christina Schwarz, Michigan State University, East Lansing
Cynthia Passmore, University of California at Davis
Level: K–12
Science Focus: GEN, NGSS
Location: Platinum Blrm. Salon B
JW Marriott

This session focuses on the role of science and engineering practices in the key shifts that underlie *NGSS*, transforming classrooms from places in which students "learn about" science ideas to ones where students "figure out" how phenomena work in order to build science knowledge. We will work with three-dimensional *NGSS* activities and experience science and engineering practices as learners. Then we will analyze examples of student work and video cases of teachers and students engaged in these same activities to see the practices in action in classrooms. Attendees

will explore how storylines can be structured to elicit student questions about phenomena that elicit science and engineering practices in sensemaking, and how teachers support students' practices through classroom discourse by examining multiple examples drawn from elementary, middle school, and high school *NGSS* classrooms. A copy of the new NSTA Press® book *Helping Students Make Sense of the World Using Next Generation Science and Engineering Practices* will be included.

Uncovering Students' and Teachers' Ideas with Three-Dimensional Formative Assessment Probes and Techniques (PLI-3)

Page Keeley, 2008–2009 NSTA President and The Keeley Group, Fort Myers, Fla.
Joyce Tugel, Maine Mathematics and Science Alliance, Augusta
Level: Grades K–12
Science Focus: GEN, NGSS
Location: Platinum Blrm. Salon C
JW Marriott

Using K–12 examples from life, physical, and earth and space sciences, learn how to use formative assessment to support three-dimensional learning in the classroom or professional learning setting. This session will take participants through a process using the Uncovering Student Ideas in Science formative assessment probes and formative assessment classroom techniques (FACTs) to elicit students' (and teachers') ideas and use science practices and crosscutting concepts to support their thinking. Participants will also develop their own probe using a feedback cycle. A copy of the new NSTA Press® book *Uncovering Student Ideas in Earth and Environmental Science: 32 New Formative Assessment Probes* will be included.

Argument-Driven Inquiry: Transforming Laboratory Experiences so Students Can Use Core ideas, Crosscutting Concepts, and Science Practices to Make Sense of Natural Phenomena (PLI-4)

Victor Sampson and **Ashley Murphy,** The University of Texas at Austin
Level: 6–12
Science Focus: GEN, NGSS
Location: Platinum Blrm. Salon D
JW Marriott

This session is an introduction to a new approach to lab instruction called Argument-Driven Inquiry (ADI). ADI is an innovative instructional model that is based on current research about how people learn science and is designed to foster the development of science proficiency. ADI gives students an opportunity to learn how to use the core ideas, science practices, and crosscutting concepts of science to make sense of natural phenomena. As part of the session, participants will receive an NSTA Press® book about ADI. The book includes information about ADI, instructional materials (including reproducible lab handout and checkout questions for students) and teacher notes.

Moving Standards into Practice: Five Tools and Processes for Translating the *NGSS* into Instruction and Classroom Assessment (PLI-5)

Jody Bintz and **Brooke Bourdélat-Parks,** BSCS, Colorado Springs, Colo.
Dora Kastel, American Museum of Natural History, New York, N.Y.
Kathy DiRanna, K–12 Alliance/WestEd, Los Alamitos, Calif.
Jo Topps, K–12 Alliance/WestEd, San Francisco, Calif.
Level: Grades K–12
Science Focus: GEN, NGSS
Location: Platinum Blrm. Salon F
JW Marriott

The *Next Generation Science Standards (NGSS)* challenge teachers to think deeply about learning and teaching with the goal of developing a clear vision of science education that is coherent, focused, and rigorous. This PLI will share a set of tools and processes that can help deepen teachers' knowledge and enable them to translate the *NGSS* into instructional sequences that engage students in using science and engineering practices and that highlight the crosscutting concepts. The Five Tools and Processes are designed to help professional development leaders work with science teachers on curriculum, instruction, and assessment as they achieve this vision.

***NGSS* Pathway Sessions**

All sessions are located in Platinum Blrm. Salon G. See daily program for Thursday sessions and Volume 2 for details on Friday sessions.

Thursday, March 30

8:00–11:00 AM
Using the *NGSS* to Plan a Unit of Instruction

12:30–2:30 PM
Using Performance Expectations to Plan for Classroom Assessments

Friday, March 31

8:00–10:00 AM
Using the 5E Instructional Model to Develop a Conceptual Flow

11:00 AM–12 Noon
Using the 5E Instructional Model to Design Learning Sequences

12:30–1:30 PM
Using Evidence of Learning Specifications to Develop Performance Tasks

District-Level Administrators: You Are Not Alone in the *NGSS* Universe! (PLI-6)

Eric Brunsell, University of Wisconsin Oshkosh
David Crowther, NSTA President-Elect, 2016–2017 and University of Nevada, Reno
Kelly Price-Colley, Forsyth County Schools, Cumming, Ga.
John Putnam, Ted Willard, and **Flavio Mendez,** NSTA, Arlington, Va.
Level: Grades K–12
Science Focus: GEN, NGSS
Location: Platinum Blrm. Salon G
JW Marriott

When facing paradigm shifts in STEM education policy, district-level administrators often face challenges in providing professional development, aligning curriculum, and implementing new science standards. NSTA empathizes with your needs and has developed this PLI especially for you. Come share solutions with your peers while walking away with tangible resources, tools, and ideas from leading NSTA authors and experts.

Equity in Science Education (PLI-7)

Jerry Valadez, SAM Academy, Inc., Sanger, Calif.
Gary Nakagiri, Alameda County Office of Education, Hayward, Calif.
Level: General
Science Focus: GEN, NGSS
Location: Platinum Blrm. Salon J
JW Marriott

This session will address key principles of equity and diversity in STEM education, including Appendix D of the *NGSS:* "All Standards, All Students: Making the *Next Generation Science Standards* Accessible to All Students." Participants will learn about many of the assumptions, values, and practices that hinder the learning of students of color, and use proven strategies to enhance their own cultural competency, diversity awareness, and perspectives on racism and prejudice. Be prepared to share, learn, and meet other "equity-minded" colleagues as we develop supportive alliances and tools to assist us in providing a more equitable—and effective—STEM educational system. Participants will receive a copy of *Ripples of Hope: Building Relationships for Educational Change* by Julian Weissglass.

***Picture-Perfect STEM Lessons*, K–5: Using Children's Books to Inspire STEM Learning (PLI-8)**

Karen Ansberry and **Emily Morgan,** Picture-Perfect Science, West Chester, Ohio
Level: Grades K–5
Science Focus: GEN
Location: Diamond Blrm. Salon 9/10
JW Marriott

Authors and former elementary teachers Karen Ansberry and Emily Morgan know teachers are short on time…so they've integrated STEM and reading in a natural way to help you teach both subjects at once. In this interactive workshop, participants will take part in several model lessons, learn the benefits and cautions of using children's picture books in STEM, become familiar with the BSCS 5E learning model, and learn how to incorporate literacy into standards-based science lessons. A copy of the new NSTA Press® book *Picture-Perfect STEM Lessons* will be provided to each attendee.

Incorporate STEM into your classroom with eCYBERMISSION!

eCYBERMISSION is a national web-based STEM competition, free to students in grades 6–9.

Teams compete for awards up to **$9,000** per student in U.S. Savings Bonds.

Teachers can **APPLY** for **MINI-GRANTS** to support implementation of student projects.

Visit booth #850 for more information on eCYBERMISSION and mini-grant applications.

netop ARMY EDUCATIONAL OUTREACH PROGRAM | eCYBERMISSION ACCEPT THE CHALLENGE U.S. ARMY

Administered by NSTA National Science Teachers Association

Admission to NSTA short courses is by ticket only. Tickets, if still available, can be purchased at the Ticket Sales Counter in the NSTA Registration Area.

For the majority of short courses, except for SC-1, SC-7, and SC-14, it is recommended that you take a shuttle to the Westin Bonaventure hotel (11 blocks from the Convention Center). Please check the shuttle schedule on page 11 for times. Shuttles will depart from the Figueroa Drive entrance of the Convention Center.

The Instructional Leader's Guide to *NGSS* (SC-1)

Joyce Tugel *(jtugel@gmail.com),* Maine Mathematics and Science Alliance, Augusta
Peter McLaren *(@*PeterJMcLaren; *mclarenpeterj@gmail.com),* Next Gen Education, LLC, North Kingstown, R.I.
Science Focus: GEN, NGSS
Level: K–12
Date/Time: Thursday, March 30, 12:30–4:30 PM
Location: Gold Ballroom Salon 4, JW Marriott
Ticket Price: $32

The *Next Generation Science Standards (NGSS)* are changing how science is taught. Instructional leaders (whether department chairs, content coaches, principals, or curriculum coordinators) are essential to the success of teachers as they make this important shift. This comprehensive four-hour short course provides an overview of the *NGSS*, the fundamentals of three-dimensional instruction, and a view of what an *NGSS*-based classroom looks like. Participants will also receive a copy of *NSTA's Quick-Reference Guide to the NGSS, K–12*. With these tools in hand, instructional leaders will be able to guide their teachers on a path toward successful implementation of the new standards.

JW Marriott Los Angeles at L.A. LIVE, 900 W. Olympic Blvd., is two blocks from the Los Angeles Convention Center.

—*Photo courtesy of Monterey Bay Aquarium*

Did you know that most marine pollution is litter that starts out on land? Many Laysan albatross chicks die each year because their bellies are full of bottle caps, toothbrushes, and other plastic, such as above found in stomach contents. Learn more at **SC-5: Ocean Plastic Pollution: Issues and Solutions**.

NGSS Lessons Learned: The California *NGSS* K–8 Early Implementation Initiative (SC-2)

Kathy DiRanna *(kdirann@wested.org),* K–12 Alliance/WestEd, Los Alamitos, Calif.
Science Focus: GEN, NGSS
Level: Grades K–8
Date/Time: Thursday, March 30, 3:00–6:00 PM
Location: San Gabriel A, Westin
Ticket Price: $31

Leading *NGSS* implementation? This short course is for you! The California *NGSS* K–8 Early Implementation Initiative is an Alliance@WestEd project working with eight districts and two charter organizations to implement *NGSS* district/charter-wide in grades K–8. This short course is designed for teacher leaders, administrators, and professional development providers to share lessons learned from the Initiative. Administrators and teachers leaders from the Initiative will tell their story of their journey toward full implementation districtwide.

NGSS A Short Course on Analyzing and Adapting Three-Dimensional Assessment Tasks (SC-3)

Katie Van Horne (@dizzvh; *katie.vanhorne@colorado.edu*), University of Colorado Boulder
Science Focus: GEN, NGSS
Level: Grades 1–12
Date/Time: Thursday, March 30, 3:00–6:00 PM
Location: Santa Anita B, Westin
Ticket Price: $33

In this short course, we will consider how assessment can be used to support three-dimensional teaching and learning. Participants will be guided through an analysis of com-

mon assessment tasks to identify components and qualities of these tasks that support assessment of practices, crosscutting concepts, and core ideas. Tasks will be adapted to assess a bundle of performance expectations, such as defining what you will assess, brainstorming scenarios to elicit student understanding, using task formats to develop multicomponent tasks, and imagining a range of possible student responses to develop rubrics. Finally, we will support participants in planning a cycle of implementation, analysis, and revision to refine their tasks and in planning how they will incorporate tasks effectively into their instruction. While not required, a laptop/tablet is recommended. **Note:* No Wi-Fi service provided.

A PEEC into Evaluating *NGSS* Instructional Materials Programs (SC-4)

Matthew Krehbiel (@ksscienceguy; *mkrehbiel@achieve.org*), Achieve, Inc., Washington, D.C.
Science Focus: GEN, NGSS
Level: Grades K–12
Date/Time: Friday, March 31, 8:00–11:00 AM
Location: San Gabriel A, Westin
Ticket Price: $28

Are you selecting instructional materials for your classroom, building, or district? If you're looking for materials designed for the *NGSS*, the Primary Evaluation of Essential Criteria (PEEC) is the tool for you. Lots of materials make claims about the degree to which they are "aligned" to *NGSS*, but the new version of PEEC uses the criteria of the EQuIP Rubric for Science to dig deep in evaluating whether or not materials are really designed for the innovations of the *NGSS*. This short course will familiarize you with PEEC and how to use it for evaluating claims of *NGSS* alignment. Please bring a laptop/tablet with PEEC and *NGSS* appendices downloaded. Visit *bit.ly/2gSNljf* for links to supporting documents.

Ocean Plastic Pollution: Issues and Solutions (SC-5)

Mary Whaley *(mwhaley@mbayaq.org),* Monterey Bay Aquarium, Monterey, Calif.
Science Focus: ESS3, PS1.A, CCC2, CCC6
Level: Grades 6–8
Date/Time: Friday, March 31, 8:00–11:00 AM
Location: Santa Anita A, Westin
Ticket Price: $43

Enrich your classroom with *NGSS*-based activities surrounding plastic pollution issues and solutions. Activities will highlight plastic's physical and chemical properties including density and buoyancy. Emphasis will be not just looking at the impacts of prolific plastic use but also exploring solutions to plastic pollution, alternatives to single-use plastics, and empowering students to tackle environmental problems without experiencing ecofatigue. This short course will include strategies to encourage critical thinking about environmental issues and methods to help students gain awareness and examination of everyday resources and uses. Empower your students to become part of the plastic pollution solution! Door prizes and resources!

—Photo courtesy of BirdSleuth

—SC-7: Stretch Your Legs for Science: An Outdoor STEM Adventure

Writing in Science: A Research-Based Approach That Enhances Learning in Both Domains (SC-6)

Betsy Rupp Fulwiler (*bruppfulwiler@comcast.net*), Educational Consultant, Seattle, Wash.
Science Focus: GEN, NGSS
Level: Grades K–6
Date/Time: Friday, March 31, 8:00–11:00 AM
Location: Santa Anita C, Westin
Ticket Price: $32

Explore research-based strategies for using scaffolding to increase diverse elementary students' achievement in science and writing, as described in *NGSS* and *CCSS ELA*. Learn how to use word banks, graphic organizers, and writing frames so that students learn how to think, talk, and write (e.g., scientific observations, comparisons, data interpretation, explanations) as scientists do. This approach has been found to be highly effective with all students, including those who are learning English or have special needs. We will engage in discussions, modeling, shared mini lessons, and view a video of an actual classroom. Handout with blackline masters and annotated student notebook entries for grades K–6 students included. For more information, visit *www.writinginscience.com*.

Stretch Your Legs for Science: An Outdoor STEM Adventure (SC-7)

Jennifer Fee *(jms327@cornell.edu)*, The Cornell Lab of Ornithology, Ithaca, N.Y.
Science Focus: LS, INF, CCC, SEP
Level: Grades 4–8
Date/Time: Friday, March 31, 9:45 AM–5:45 PM
Location: Off-site: Madrona Marsh Preserve, 40 minute bus ride
Ticket Price: $108

This short course will include basic information and hands-on activities to help build bird identification skills through the eBird global citizen-science project. We'll offer participants the unique opportunity to see birds up close (everyone's new binoculars will bring wild birds closer) at a wonderful reserve. We will take a 60–90 minute bird walk within Madrona Marsh, described as "an island of wilderness in the city" and the last remaining vernal marsh in LA County. We'll submit and explore eBird data, creating educators who understand how to use citizen science to engage students in authentic STEM learning. Take home materials (a BirdSleuth "Most Wanted Birds" kit, a pair of high-quality binoculars, bird feeder, and several apps)—all of which will help you easily implement citizen-science projects in your classroom.

Note: Be sure to dress for the weather. Lunch included. For more information, visit *www.birdsleuth.org*.

This short course trip will depart from the Pico Drive entrance of the Los Angeles Convention Center. Please arrive 15 minutes prior to the departure time.

NSTA Press® Short Course: Phenomenon-Based Learning: Fun, Hands-On, Cooperative Learning of Both Science and Language Arts (SC-8)

Matt Bobrowsky (@DrMattB; *expert_education@rocketmail.com*), Delaware State University, Dover
Science Focus: ETS2, PS1.A, PS2, PS3.B, PS3.C, PS4.A, PS4.B, CCC1, CCC2, CCC3, CCC4, CCC5, CCC6, SEP
SOLD OUT
Level: Grades 3–12
Date/Time: Friday, March 31, 10:30 AM–4:00 PM
Location: Santa Anita B, Westin
Ticket Price: $100

Experience the kind of learning that propelled Finland to international leadership in education—not by memorizing facts but by using scientific exploration, discovery, and literacy. Phenomenon-Based Learning (PBL) promotes both science practices and content knowledge, while also developing literacy skills. With PBL, you teach broader concepts and useful thinking and performance skills (as with the *NGSS* and *CCSS*) rather than asking students to simply memorize facts and formulas. Participants will engage in hands-on activities and will leave with a copy of one of the NSTA Press® PBL books along with one or two of the fascinating gizmos that go with the book.

NGSS

NGSS: Three Dimensions in Action in a California Early Implementer Classroom (SC-9)

Karen Cerwin (*kcerwin@wested.org*), K–12 Alliance/WestEd, San Francisco, Calif.
Christina Miramontes, *(ciramontes@psusd.us),* and **Alyssa Nemecekova Fairfield**, Palm Springs Unified District Offices, Palm Springs, Calif.
Science Focus: GEN, NGSS
Level: Grades 3–5
Date/Time: Friday, March 31, 3:00–6:00 PM
Location: Santa Anita A, Westin
Ticket Price: $55

In this short course, experience a hands-on upper elementary "learning sequence" that bundles performance expectations in a conceptual flow designed to provide a framework for linking science and *CCSS ELA*. The integrations are being practiced by California Early Implementer *NGSS* teachers. This sample conceptual flow uses bundled performance expectations

—Photo courtesy of Carmen Mallard-SeeMallardMedia

—SC-10: Reaching Extremes! Blending Climate Science and Mathematics to Reach All Learners

providing a model for how an upper elementary teacher (grades 3–5) can build the learning sequence for three dimensional science and use the science as a context for reading, writing, listening, and speaking. In addition to the in-depth experience with matter (grade 5), sequences for conceptual flows in physical science for grade 3 (forces) and grade 4 (energy and waves) will be shared as starting points for upper elementary grades.

Reaching Extremes! Blending Climate Science and Mathematics to Reach All Learners (SC-10)

Teri Cox and **Dennis C. Pevey,** eSTEM Public Charter School, Little Rock, Ark.
Science Focus: ESS2.D
Level: Grades 3–8
Date/Time: Friday, March 31, 3:00–6:00 PM
Location: Santa Anita C, Westin
Ticket Price: $98

Come explore the connections between climate science and mathematics! In this short course, participants will engage in STEM projects using coding, microcontrollers, sensor technology, and more to engage all students. Get practical tools for meeting the needs of SPED, ELL, gifted, and economically or culturally diverse learners. No previous coding experience required. Bring a laptop to connect to the internet.

Fostering a Science-Driven Language and Literacy Learning Environment (SC-11)

Diana Velez *(dvelez@berkeley.edu)*, The Lawrence Hall of Science, Berkeley, Calif.
Claudio Vargas *(claudio.vargas@ousd.org)*, Oakland Unified School District, Oakland, Calif.
Science Focus: PS1.A, PS3.A, CCC2, CCC5, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8
Level: Grades 3–8
Date/Time: Saturday, April 1, 8:00–11:00 AM
Location: San Gabriel A, Westin
Ticket Price: $31

Authentic communication is the best way to learn language and content. In this short course, learn to strategically include integrated and designated language acquisition instruction into three-dimensional science lessons. Engage in a hands-on science and language learning experience, and receive a toolkit for developing science/language acquisition lessons that meet the rigors of the *NGSS*, the National Framework for English Language Proficiency Standards, and the California ELD standards.

Hands-On/Minds-On STEM: An Integrated Engineering Design Challenge (SC-12)

Christie Pearce *(cpearce@ocde.us)* and **Kristin Thomsen** *(kthomsen@ocde.us)*, and **Leslie Corbett,** Orange County Dept. of Education, Costa Mesa, Calif.

Science Focus: ETS, SEP

Level: Grades K–8 SOLD OUT

Date/Time: Saturday, April 1, 8:00–11:00 AM

Location: Santa Anita A, Westin

Ticket Price: $55

This is an introductory short course for those educators interested in moving toward an integrative STEM approach to learning. Experience an engaging and academic hands-on engineering design challenge, effortlessly applying the 5 C's (creativity, critical thinking, communication, collaboration, and citizenship), as well as understanding how hands-on engineering design challenges address the *CCSS* and *NGSS*. In teams, participants will build their version of a fun zip line with provided materials. Follow-up activities include incorporating science and math concepts in their zip line descriptions and filming their zip line in action. Technology will be embedded throughout this short course in a variety of ways to scaffold learning, communicate ideas, as well as create and share each team's recording. To conclude, facilitators will break down the challenge by engaging participants in a conversation about how STEM teaching allows all learners to be successful. Bring your laptop/tablet to connect to the internet.

Elementary Curriculum Development for the *NGSS*: How to Integrate the Three Dimensions of Learning into an Elementary Classroom (SC-13)

David Jacob *(djacob@pnwboces.org)*, Putnam/Northern Westchester BOCES, Yorktown Heights, N.Y.

Science Focus: GEN, NGSS

Level: Grades K–5

Date/Time: Saturday, April 1, 8:00–11:00 AM

Location: Santa Anita B, Westin

Ticket Price: $58

This short course is a practical guide to unpacking the three dimensions of learning intended by the *NGSS*. We will explore the Understanding by Design model as an approach to curriculum development for elementary classrooms by using the performance expectations to inform assessment development. Then we will organize lessons that support those assessments, using a unit organization plan. This short course is designed to engage teachers who are actively involved in the curriculum development process to implement the *NGSS* in their classrooms. Participants will review grade-specific *NGSS* documents and NSTA resources to ensure that the content, the practices, and the crosscutting concepts are fused together into student learning opportunities appropriate for the science concepts. Participants will develop practical performance assessment outlines and lessons to help achieve specific PEs. Not required but recommended that you bring a copy of the *NGSS*, the K–12 *Framework*, and a laptop/tablet connected to the internet. For more information, visit *www.pnwboces.org/Science21* .

NGSS Meets the Outdoors: Teaching Elementary Science Outside (SC-14)

Kara Haas (@KaraHaaSciEd; *karahaas@msu.edu)*, W.K. Kellogg Biological Station, Michigan State University, Hickory Corners

Renee Bayer (*rbayer@msu.edu*), CREATE for STEM Institute, Michigan State University, East Lansing

Science Focus: GEN, NGSS

Level: Grades 1–5

Date/Time: Saturday, April 1, 8:00–11:00 AM

Location: Off-site, Grand Hope Park

Ticket Price: $13

Join us as we walk to Grand Hope Park, a roughly 20-minute walk. In the outdoors, students can practice science in a variety of ways, such as observe, raise questions, and collect data through hands-on activities. They can get to know their environment, appreciate it, and develop responsibility and commitment to protect it. However, teachers face many challenges in this area due to insufficient content knowledge and inadequate pedagogical content knowledge that develops through accumulating experiences in teaching in informal settings. In this short course, participants will practice inquiry-based learning in a local urban park in collaborative, place-based, technology-rich investigations. They will explore the Heads-on, Hands-on, Hearts-on framework in instruction. Small and large group discussions will explore applications, challenges, and ideas for schoolyard improvements in the school setting. *Note:* Be sure to wear good walking shoes along with having water and sunscreen as we will be walking to a nearby park. It is helpful, but not required, that you bring a smartphone/tablet and binoculars. Visit *bit.ly/2h3ACJk* for more details.

Meet your short course trip leader for the walk at the Pico Drive entrance of the Los Angeles Convention Center. Please arrive 15 minutes prior to 8:00 AM.

Kids Love Rocks and So Will You: Introducing Physical Science BIG IDEAS (SC-15)

Bob Williams, Consultant, Belmont, Tex.
Mary Hobbs, (*maryhobbs@utexas.edu*), The University of Texas at Austin
Science Focus: GEN
Level: PreK–K
Date/Time: Saturday, April 1, 3:00–6:00 PM
Location: San Gabriel A, Westin
Ticket Price: $58

Rocks and other natural objects are wonderful resources to teach children observation, sorting, measuring, and communication skills in the context of Science BIG IDEAS. Three of those BIG IDEAS—properties of matter, properties of Earth materials, and characteristics of organisms—are the major science topics addressed in this short course. This short course is designed for those who work with young learners or who provide professional development to preK–K teachers. Activities and assessments to be presented were designed during four years of NSF-funded research looking at what young children know and can do in science. Participants will receive materials including sorting sets, books, and equipment appropriate to the teaching of the lessons.

Hands-On Mathematics in Science Education (SC-16)

Johannes Strobel (@DefiantSTEM; *strobelj@missouri.edu*), University of Missouri, Columbia
Olivia Hua (*olivia.hua@mail.mcgill.ca*), McGill University, Montreal, Que., Canada
Science Focus: ETS, LS, PS, CCC1, CCC3, SEP1, SEP2, SEP3, SEP4, SEP5
Level: Grades 1–5
Date/Time: Saturday, April 1, 3:00–6:00 PM
Location: Santa Anita B, Westin
Ticket Price: $30

This short course focuses on four modules that showcase an integrated STEM process in which mathematics takes central stage. The modules follow a similar frame and rhythm and fully meet the *NGSS* and *CCSS Mathematics*. The mathematics is necessary to construct a design decision and check how well the proposed solutions meet criteria and constraints. Collaborative aspects between math and science will be discussed, and participants will leave with a pathway to incorporate mathematics into other STEM units.

Photo courtesy of Olivia Bobrowsky

— SC-8: NSTA Press® Short Course: Phenomenon-Based Learning: Fun, Hands-On, Cooperative Learning of Both Science and Language Arts

JOIN US

6TH ANNUAL STEM

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

Forum & Expo

HOSTED BY NSTA

Kissimmee/Orlando

July 12–14, 2017

This dynamic event brings together educators and organizations who are actively implementing STEM programs in their schools or districts.

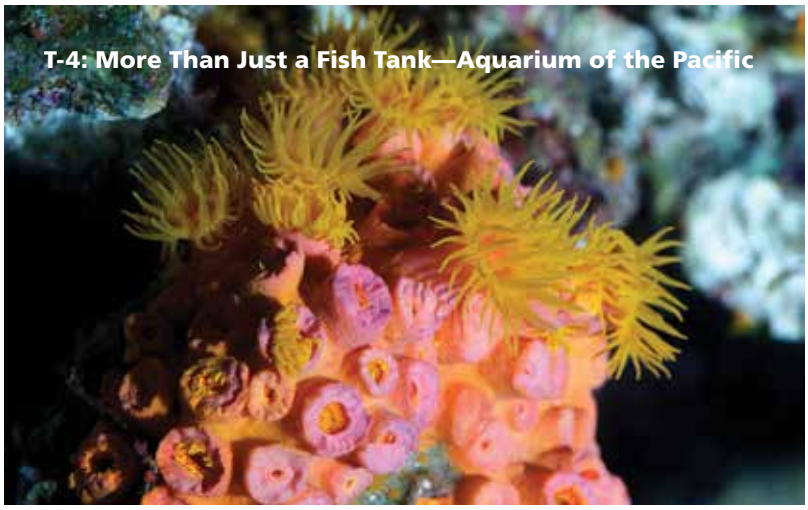
Come prepared to learn tactics that work, build your professional learning network, connect with effective outreach programs and partnerships, discover new resources, and build a strong curriculum.

For information and to register, visit
www.nsta.org/stemforum

#STEMforum

NSTA National Science Teachers Association

Tickets for educational trips can be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your trip leader at the Pico Drive entrance of the Convention Center at least 15 minutes prior to departure time (except for W-1 and W-2).



—Courtesy of Aquarium of the Pacific

Global Conversations, Welcome to My Classroom: Middle School **$35;** *by preregistration only*

W-1 Wednesday, March 29 7:00–11:50 AM

Welcome to My Classroom is a program sponsored by the International Advisory Board intended primarily for our international participants to view a science classroom. This year's program is cosponsored by Alfred B. Nobel Charter Middle School, located in Northridge, and Francisco Bravo Senior High Medical Magnet School, located in Los Angeles. Participants have the option of visiting the middle school (W-1) or the high school (W-2).

W-1 participants will tour Alfred B. Nobel Charter Middle School, which is a Science Technology Math Magnet Center providing instruction in all academic areas, promoting learning and enrichment in the fields of math, science, and technology—fields foundational to all future learning.

Global Conversations, Welcome to My Classroom: High School **$35;** *by preregistration only*

W-2 Wednesday, March 29 7:30–11:45 AM

Welcome to My Classroom is a program sponsored by the International Advisory Board intended primarily for our international participants to view a science classroom. This year's program is cosponsored by Alfred B. Nobel Charter Middle School, located in Northridge, and Francisco Bravo Senior High Medical Magnet School, located in Los Angeles. Participants have the option of visiting the middle school (W-1) or the high school (W-2).

W-2 participants will tour the Francisco Bravo Senior High Medical Magnet School. The high school works in partnership with USC Health Sciences Campus to offer students a variety of opportunities to explore the health professions and provide educational resources within the medical and allied health communities.

NASA Jet Propulsion Laboratory Tours

$35; *by preregistration only*

BOTH SOLD OUT

T-1 Thursday, March 30 8:30 AM–12:45 PM

T-3 Thursday, March 30 12 Noon–4:15 PM

The Jet Propulsion Laboratory is a place where science, technology, and engineering intermix in unique ways: to produce iconic robotic space explorers sent to every corner of the solar system, to peer deep into the Milky Way galaxy and beyond, and to keep a watchful eye on our home planet. Tour participants will receive an overview of the Laboratory's activities and accomplishments by watching "*Journey to the Planets and Beyond*." There will also be opportunities to visit the von Karman Visitor Center, the Space Flight Operations Facility, and the Spacecraft Assembly Facility. See how scientists at JPL conduct research and help develop instruments and missions to characterize and understand the atmosphere, land, and oceans on our home planet to make better predictions of future changes. *Note:* The tour involves a considerable amount of walking so wear comfortable shoes.

Special Note: JPL requires that all U.S. citizens, 18 years of age or older, present official, government issued photo identification (driver's license or passport) before being allowed entry. All non-U.S. Citizens 18 years of age or older must present a passport or resident visa (green card) before being allowed entry.

LA's Teaching Aquarium: Cabrillo Marine Aquarium
$40

SOLD OUT

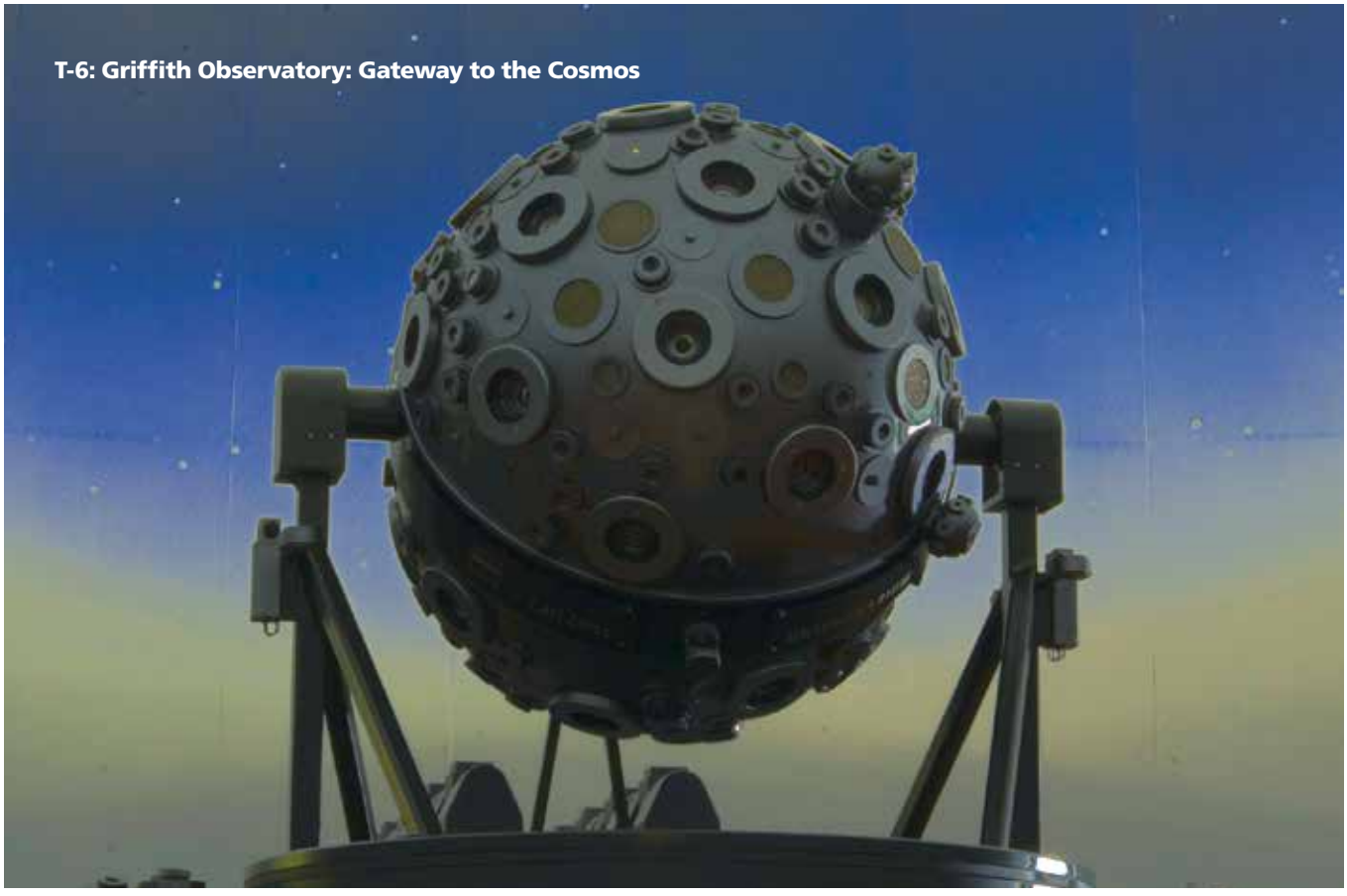
T-2 Thursday, March 30 11:30 AM–6:15 PM

Come tour one of the most requested school field trips in the Los Angeles area. Located just steps from the ocean, Cabrillo Marine Aquarium is part of the City of Los Angeles Recreation and Parks Department. Join Cabrillo Marine Aquarium staff educators as they share "LA's Teaching Aquarium's" most popular programs for schools and see why CMA is a trusted resource that inspires exploration, respect, and conservation of southern California marine life. Our tour includes the Exploration Center, Aquatic Nursery and Research Lab, and Cabrillo Beach tide pools. Be sure to dress casual and in layers (could be cool at the beach!), bring sunscreen, and a hat for our tour of the Cabrillo Coastal Park ocean habitats within easy walking distance. Wear pants and closed-toed shoes appropriate for tide pooling. Don't forget to bring your camera. *Note:* This trip is for adults only.

More Than Just a Fish Tank—Aquarium of the Pacific
$33

T-4 Thursday, March 30 12:15–5:00 PM

More than just a Fish Tank—the Aquarium of the Pacific is a think tank! This guided tour includes behind-the-scenes access, conversations about data and Earth systems science, as well as opportunities to explore the Aquarium on your own. Learn about educator resources, discuss complex topics, and experience the wonder of the Pacific Ocean. We will check out the Aquarium's Ocean Science Center and NOAA's Science On a Sphere®, a six-foot spherical display presenting images about Earth in a unique and captivating way. From sea surface temperature, satellite tracks, ocean currents, primary productivity, and more, the Science on a Sphere data sets connect Aquarium guests to larger systems beyond the animal collection. Through a facilitated discussion, participants will consider how we know what we know about the planet, and how to connect an animal collection to big stories about our world. Aquarium staff will guide participants through a behind-the-scenes tour of our facility to share how habitats are maintained, how food is prepared, and how 12,000 animals live in the Aquarium of the Pacific.



—Courtesy of Griffith Observatory.

F-1: Science and *Endeavour* Up Close at California Science Center

—*Courtesy of California Science Center*

Get Hands On at Discovery Cube Los Angeles $33

T-5 Thursday, March 30 1:45–4:45 PM

CANCELED

Discovery Cube's mission is to inspire and educate young minds through engaging science-based programs and exhibits to create a meaningful impact on the communities we serve. Plan for hands-on experiences at the unique, innovative, and award-winning exhibits developed by and on display at Discovery Cube LA. Explore the multimedia role-playing exhibits, such as the Discovery Market, which uses computers, scanning guns, animated characters, and self-selected shopping lists to learn about nutrition and eco-friendly behaviors. Investigate the 1,000 square-foot house using electronic tablets, a GPS system, and mechanical devices, to learn how to save water and power. Become a member of the LA Kings hockey team while learning the physics and math behind this incredibly fast sport…and much more! Other amenities include Bean Sprouts restaurant and a gift shop. Be sure to wear comfortable shoes. For more information about Discovery Cube Los Angeles, visit *www.discoverycube.org/la*.

Griffith Observatory: Gateway to the Cosmos $40

T-6 Thursday, March 30 6:00–10:45 PM

SOLD OUT

When Griffith Observatory opened in 1935, it was one of the first institutions in the U.S. dedicated to public science and possessed the third planetarium in the U.S. Today, visitors can look through telescopes, explore exhibits, see live shows in the Samuel Oschin Planetarium, and enjoy spectacular views of Los Angeles and the Hollywood Sign. The observatory is split up into six sections: The Wilder Hall of the Eye, the Ahmanson Hall of the Sky, the W.M. Keck Foundation Central Rotunda, the Cosmic Connection, the Gunther Depths of Space Hall, and the Edge of Space Mezzanine. In addition, a complimentary 24-minute film narrated by Leonard Nimoy typically runs at the beginning of every hour. There is also a gift shop open daily until 9:00 PM.

On our trip, we will explore the Observatory, star gaze, as well as watch the 8:30 PM *Centered in the Universe* show (which is included in the ticket price). While the Observatory does have a café, it will not be able to accommodate the volume of people participating on the trip. It is recommended that you eat before departing on the trip. You may not bring food and drinks to the Observatory as they are not allowed in the building and there are no picnic facilities.

NSTA wishes to thank the National Earth Science Teachers Association (NESTA) for sponsoring, in part, this educational trip.

Science and *Endeavour* Up Close at California Science Center $34

F-1 Friday, March 31 9:00 AM–1:15 PM

SOLD OUT

Experiencethe excitement of the California Science Center, the most attended museum in the nation outside of New York and Washington, D.C. From the moving tranquility of our 188,000-gallon kelp forest exhibit to the wonder inspired by the travels of the Space Shuttle Endeavour, our world-class exhibits are helping educators inspire the next generation of scientists, innovators, and explorers. Come enjoy a guided tour by Science Center education staff and then have free time to explore the exhibits. Meals are not included, however a food court is located on-site.

The Columbia Memorial Space Center: Exploring 21st-Century STEM at a Historic NASA Site $36

F-2 Friday, March 31 9:30 AM–1:30 PM

Experience STEM learning at a site where NASA sent humans to the moon! The Columbia Memorial Space Center's mission is to ignite a community of creative and critical thinkers. We are located on the site where NASA designed and developed the *Apollo* missions to the moon and all of the space shuttles. Our space-age facility houses Southern California's only Challenger Learning Center and LA's only public Robotics Lab. This educational trip will walk you through the history of the site and give you hands-on experience in how the Space Center is transforming its history as a spring board into 21st-century STEM learning for all ages.

Tuesday, March 28

NSELA Board of Directors Meeting
By Invitation Only, visit *www.NSELA.org*
Olympic 1, JW Marriott.....8:00 AM–6:00 PM

Wednesday, March 29

NSELA Leadership Summit Breakfast
By Invitation Only, visit *www.NSELA.org*
Georgia 1/2, JW Marriott..... 7:30–8:30 AM

Discover the *NGSS* Train-the-Trainer Workshop 1
By Separate Registration Only
Gold Blrm. Salon 2, JW Marriott.....8:00 AM–5:00 PM

Discover the *NGSS* Train-the-Trainer Workshop 2
By Separate Registration Only
Gold Blrm. Salon 3, JW Marriott.....8:00 AM–5:00 PM

NSELA Leadership Summit
By Registration Through NSELA, *www.NSELA.org*
Plaza 1/2, JW Marriott ..... 8:00 AM–5:45 PM

Science Education for Students with Disabilities Preconference Meeting
By Registration Through SESD
Plaza 3, JW Marriott ..... 9:00 AM–4:00 PM

NSELA Leadership Summit Luncheon
Visit *www.NSELA.org* for more information.
Georgia 1/2, JW Marriott..... 11:30 AM–1:30 PM

12th Annual NSTA Global Conversations in Science Education Conference
By Preregistration Only (Ticket Required: M-1)
Diamond Blrm. Salon 4, JW Marriott.....12 Noon–5:30 PM

Science Education for Students with Disabilities (SESD) Board Meeting
Plaza 3, JW Marriott ..... 4:00–6:00 PM

Uncontrolled Variables: *A Science Fair Story* World Documentary Film Premiere
Petree Hall C, Conv. Center .....4:30–5:30 PM

NSTA New Science Teacher Academy Reception
By Invitation Only
Atrium 3, JW Marriott ..... 4:30–6:30 PM

NSELA/CSSS Reception
By Invitation Only, visit *www.NSELA.org*
Diamond Blrm. Salon 3, JW Marriott..... 6:00–8:00 PM

International Advisory Board Meeting
Atrium 1, JW Marriott.....7:30–8:30 PM

Disney Youth Programs Presents Disneynature *Born in China*
By separate registation, visit *bit.ly/2kF1i3e*
Off-site, Regal LA Live..... 8:30–10:00 PM

Thursday, March 30

NSELA Membership Breakfast
By Invitation Only, visit *www.NSELA.org*
Diamond Blrm. Salon 6, JW Marriott ..... 7:30–8:30 AM

Discover the *NGSS* Train-the-Trainer Workshop 1
By Separate Registration Only
Gold Blrm. Salon 2, JW Marriott.....8:00 AM–5:00 PM

Discover the *NGSS* Train-the-Trainer Workshop 2
By Separate Registration Only
Gold Blrm. Salon 3, JW Marriott.....8:00 AM–5:00 PM

NSELA Annual Membership Meeting
By Invitation Only
Diamond Blrm. Salon 6, JW Marriott ..... 8:30–10:00 AM

Science Safety Advisory Board Meeting
Studio 1, JW Marriott.....8:30–11:00 AM

NSTA International Lounge
Atrium 1, JW Marriott.....9:00 AM–5:00 PM

Awards and Recognitions Committee Meeting
Olympic 2, JW Marriott..... 12:30–2:30 PM

Coordination and Supervision of Science Teaching Committee Meeting
Diamond Blrm. Salon 4/5/Group 9, JW..... 12:30–2:30 PM

Informal Science Education Committee Meeting
Diamond Blrm. Salon 4/5/Group 10, JW ..... 12:30–2:30 PM

Journal of College Science Teaching Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 4, JW..... 12:30–2:30 PM

Multicultural/Equity in Science Education Committee Meeting
Diamond Blrm. Salon 4/5/Group 8, JW..... 12:30–2:30 PM

NSTA Reports Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 5, JW..... 12:30–2:30 PM

Preservice Teacher Preparation Committee Meeting
Diamond Blrm. Salon 4/5/Group 7, JW..... 12:30–2:30 PM

Professional Development in Science Education Committee Meeting
Diamond Blrm. Salon 4/5/Group 6, JW ... 12:30–2:30 PM

Science & Children Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 1, JW ... 12:30–2:30 PM

Science Scope Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 2, JW..... 12:30–2:30 PM

The Science Teacher Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 3, JW ... 12:30–2:30 PM

Aerospace Programs Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 11, JW .....1:00–2:30 PM

Urban Science Education Informal Meet Up
Diamond Blrm. Salon 9, JW Marriott..... 2:00–4:00 PM

College Science Teaching Committee Meeting
Diamond Blrm. Salon 4/5/Group 4, JW .... 3:00–4:30 PM

High School Science Teaching Committee Meeting
Diamond Blrm. Salon 4/5/Group 3, JW ... 3:00–4:30 PM

Middle Level Science Teaching Committee Meeting
Diamond Blrm. Salon 4/5/Group 2, JW .... 3:00–4:30 PM

NGSS Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 9, JW .... 3:00–4:30 PM

Nominations Committee Meeting
Olympic 2, JW Marriott..... 3:00–4:30 PM

Preschool–Elementary Science Teaching Committee Meeting
Diamond Blrm. Salon 4/5/Group 1, JW .... 3:00–4:30 PM

Research in Science Teaching Committee Meeting
Diamond Blrm. Salon 4/5/Group 5, JW .... 3:00–4:30 PM

Retired Members Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 6, JW ... 3:00–4:30 PM

Science Matters Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 10, JW .. 3:00–4:30 PM

Special Needs Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 7, JW .... 3:00–4:30 PM

Technology Advisory Board Meeting
Diamond Blrm. Salon 4/5/Group 8, JW ... 3:00–4:30 PM

AMSE Board of Directors Meeting
By Invitation Only. Visit *amsek16.org.*
Atrium 2, JW Marriott ..... 3:00–6:00 PM

CESI Board Meeting
By Invitation Only
508C (Boardroom), Conv. Center ..... 3:00–6:00 PM

APAST Board of Directors Meeting
By Invitation Only
401, Conv. Center.....4:00–6:00 PM

Outstanding Science Trade Books Committee Meeting
By Invitation Only
Studio 1, JW Marriott.....4:30–5:30 PM

NSTA Board and Council Meet & Greet
By Invitation Only
Atrium 3, JW Marriott ..... 4:30–6:00 PM

NSTA Young Professional and New Teacher Reception
Diamond Blrm. Salon 6, JW Marriott ..... 4:30–6:00 PM

STEM Outstanding Trade Books Meeting
By Invitation Only
Olympic 2, JW Marriott.....4:45–5:45 PM

Alliance of Affiliates Networking Social
By Invitation Only
Platinum Blrm. Salon H, JW Marriott .....5:00 –6:00 PM

NMLSTA Board Meeting
By Invitation Only
Atrium 1, JW Marriott..... 5:15–6:45 PM

Teaming Up for STEM Sharing Session
By Invitation Only
Platinum Blrm. Salon G, JW Marriott ..... 5:30–6:30 PM

CESI Dinner and Membership Meeting
By Ticket through CESI, preregistration only (*www.cesiscience.org*)
Off-site, Miro Restaurant..... 5:30–7:30 PM

NGSS Live Chat
Participate in person or via Twitter using #NGSSchat
Diamond Blrm. Salon 9, JW Marriott..... 5:30–7:30 PM

HHMI Night at the Movies: Sneak Preview of *Amazon Adventure 3D* by HHMI BioInteractive
Separate registration (6 p.m. and 8 p.m. screenings)
Off-site, Regal LA Live..... 6:00–7:30 PM/8:00–9:30 PM

Friday, March 31

AMSE Alice J. Moses Annual Breakfast
By Invitation Only, visit *www.amsek16.org,*
Platinum Blrm. Salon C, JW Marriott..... 7:30–9:30 AM

Development Advisory Board Meeting
By Invitation Only
Olympic 2, JW Marriott.....9:30–10:30 AM

NSTA International Lounge
Atrium 1, JW Marriott.....9:00 AM–5:00 PM

Urban Science Education Advisory Board Meeting
Studio 2, JW Marriott.....10:30 AM–12 Noon

AMSE General Membership Meeting
Visit *amsek16.org* for additional information.
Platinum Blrm. Salon C, JW Marriott .... 10:30 AM–12:30 PM

NMLSTA Board and Membership Meeting
By Invitation Only
Diamond Blrm. Salon 8, JW Marriott.... 11:45 AM–12:15 PM

Society of Elementary Presidential Awardees (SEPA) Luncheon
By Invitation Only, visit *www.sepamembers.weebly.com*.
Atrium 3, JW Marriott..... 12 Noon–2:00 PM

"Meet and Greet" the NSTA Presidents and Board/Council
Entrance to Exhibit Hall, Hall H ..... 12:45–1:30 PM

Society of Elementary Presidential Awardees (SEPA) Meeting
By Invitation Only, visit *www.sepamembers.weebly.com*.
Studio 2, JW Marriott..... 2:00–3:30 PM

Chapter and Associated Group Leader Roundtable
Atrium 3, JW Marriott ..... 3:00–4:00 PM

SCST Business Meeting
Georgia 1, JW Marriott..... 3:30–5:00 PM

APAST Members Social
By Invitation Only
Georgia 2, JW Marriott..... 4:00–6:00 PM

NSTA Recommends Meeting
Studio 1, JW Marriott.....4:30–5:30 PM

Shell Reception
By Invitation Only
Gold Blrm. Salon 1, JW Marriott..... 5:00–5:45 PM

Teaming Up for STEM Sharing Session
By Invitation Only
Platinum Blrm. Salon F, JW Marriott..... 5:30–6:30 PM

Learning Center Reception
By Invitation Only
Gold Blrm. Salon 4, JW Marriott.....5:30–7:00 PM

NSTA Teacher Awards Gala
(Ticket required: M-2)
Gold Blrm. Salon 2/3, JW Marriott..... 6:00–8:45 PM

NESTA Friends of Earth Science Reception
Platinum Blrm. Salon C, JW Marriott ..... 6:30–8:00 PM

SCST Poster Session and Dessert Social
Platinum Blrm. Salon I/J, JW Marriott..... 7:00–9:00 PM

Saturday, April 1

APAST Breakfast/Business Meeting
By Invitation Only
Diamond Blrm. Salon 1, JW Marriott.....7:00–9:00 AM

NSTA Past Presidents' Breakfast
By Invitation Only
Gold Blrm. Salon 4, JW Marriott..... 7:30–8:15 AM

Teaming Up for STEM: Team Discussion and Planning Meeting
By Invitation Only
Diamond Blrm. Salon 4, JW Marriott..... 8:00–10:00 AM

Past Presidents Advisory Board Meeting
Gold Blrm. Salon 4, JW Marriott.....8:15–9:15 AM

Shell Panel Meeting
By Invitation Only
Georgia 1, JW Marriott.....8:30–10:30 AM

Elementary Science Teaching Methods Meeting–ASTE
For details, visit *farwestaste.wordpress.com.*
Olympic 2, JW Marriott..... 9:00–10:00 AM

NSTA International Lounge
Atrium 1, JW Marriott.....9:00 AM–5:00 PM

NSTA Standing Committee, Advisory Board and Panel Chairs Meeting
By Invitation Only
Olympic 2, JW Marriott..... 1:00–2:00 PM

NSTA Council Roundtable
By Invitation Only
Atrium 2, JW Marriott ..... 2:00–4:00 PM

Sunday, April 2

Life Members' Morning Social
By Invitation Only
Olympic 1, JW Marriott ..... 7:30–8:30 AM

The NSTA Alliance of Affiliates (AoA) includes nine science education organizations working together with NSTA to advance their mutual missions by providing advice and recommendations on science education policy, creating public position statements on key legislative issues, and designing programs and professional development for members (both affiliate and NSTA). The AoA facilitates communication and collaboration among affiliates by working with the NSTA Board and Council and other NSTA-related units, including Division Committees and Chapters and Associated Groups.

Alliance of Affiliates

Thursday, March 30

5:00–6:00 PM	Alliance of Affiliates Networking Social By Invitation Only	Platinum Blrm. Salon H, JW Marriott

Friday, March 31

9:30–10:30 AM	Becoming a Science Teacher Leader	Atrium 3, JW Marriott

Association for Multicultural Science Education (AMSE)

President: Sharon Delesbore

Thursday, March 30

8:00–9:00 AM	Engineering Through Aquaculture Technology for Women	Platinum Blrm. Salon A, JW Marriott
12:30–1:30 PM	Opening the Gateway to Success Using Case Studies to Help Implement Scientific Concepts for Diverse Learners	Platinum Blrm. Salon A, JW Marriott
2:00–3:00 PM	Empowering and Rewarding Educators of the Economically Disadvantaged Students	Platinum Blrm. Salon A, JW Marriott
3:00–6:00 PM	AMSE Board of Directors Meeting By Invitation Only	Atrium 2, JW Marriott

Friday, March 31

7:30–9:30 AM	AMSE Alice J. Moses Breakfast By Invitation Only	Platinum Blrm. Salon C, JW Marriott
9:30–10:30 AM	Creating Positive School-Home Partnerships Using Culturally Responsive Practices	Platinum Blrm. Salon A, JW Marriott
10:30 AM–12:30 PM	AMSE General Membership Meeting Visit *amsek16.org*.	Platinum Blrm. Salon C, JW Marriott
2:00–3:00 PM	Science Teachers Promoting Culturally Relevant Education: A Panel Discussion	Platinum Blrm. Salon A, JW Marriott
3:30–4:30 PM	The *NGSS* and Student Collaboration—Structures and for Equitable Access to Academic Conversations	Diamond Blrm. Salon 9, JW Marriott

Association for Multicultural Science Education (AMSE), continued

Saturday, April 1

8:00–9:00 AM	Moving Equity Forward in Science Classrooms: Strategies for Developing Justice-Centered Science Teacher Learning Communities	Platinum Blrm. Salon A, JW Marriott
9:30–10:30 AM	George W. Carver Conversations Series on Diversity and Equity	Platinum Blrm. Salon A, JW Marriott
11:00 AM–12 Noon	Unpacking the Wonders of a Tropical Excursion in Belize: An Educator's Perspective	Platinum Blrm. Salon A, JW Marriott
3:30–4:30 PM	Diversity and Equity: Changing Classroom Assessment Practices to Support Science Achievement	Platinum Blrm. Salon A, JW Marriott

Association for Science Teacher Education (ASTE)

President: Malcolm Butler

Thursday, March 30

8:00–9:00 AM	Three-Dimensional Science Instruction Using the Learning Cycle Approach	Georgia 2, JW Marriott
12:30–1:30 PM	Engaging Students with Dynamic Models: Peruvian Food Chain Jenga	Georgia 2, JW Marriott
2:00–3:00 PM	Crafting Coherent Conceptual Storylines: Lessons in Designing Lessons	Georgia 2, JW Marriott
3:30–4:30 PM	*NGSS* Activities for Middle School Teachers	Georgia 2, JW Marriott

Friday, March 31

8:00–9:00 AM	Introducing Nanotechnology into the Chemistry Classroom	Atrium 2, JW Marriott
9:30–10:30 AM	What Can I Do and How Do I Get There? Trajectories of Science Teacher Learning	Olympic 1, JW Marriott
11:00 AM–12 Noon	Bridging Policy and Practice—Science Teacher Education for the Next Generation	Olympic 1, JW Marriott
12:30–1:30 PM	Using Web GIS and Google Earth to Investigate Environmental Issues	Platinum Blrm. Salon A, JW Marriott
5:00–6:00 PM	Science Investigations with Read Alouds	Olympic 1, JW Marriott

Saturday, April 1

9:00–10:00 AM	Elementary Science Teaching Methods Meeting–ASTE Visit *farwestaste.wordpress.com*	Olympic 2, JW Marriott

Association of Science-Technology Centers (ASTC)

President: Anthony Rock

Thursday, March 30

8:00–9:00 AM	Linking In-School and Out-of-School STEM Learning: Examples of Programs Featured in Connected Science Learning	Atrium 3, JW Marriott
12:30–1:30 PM	Collaborations! Professional Development Connecting Local Resources with Teachers	Atrium 3, JW Marriott

Saturday, April 1

8:00–9:00 AM	Integrating Real-World Science, *NGSS* Three Dimensions of Learning,and Technology To Promote Critical Thinking, Collaboration, and Communication	Olympic 3, JW Marriott
9:30–10:30 AM	Neuroscience and Society: Conversations Connecting Brain Development and Social Constructs	Olympic 3, JW Marriott
11:00 AM–12 Noon	Telling the Stories of Science/ *Narración de Las Historias de la Ciencia*	Olympic 3, JW Marriott
12:30–1:30 PM	Mobile MAIA Science Lab: Using Dinosaurs and Cattle to Engage in Science and Math Concepts	Olympic 3, JW Marriott

Council for Elementary Science International (CESI)

President: James T. McDonald

Thursday, March 30

12:30–2:30 PM	Using Toys to Teach Physics Share-a-thon	151, Conv. Center
3:00–6:00 PM	CESI Board Meeting (By Invitation Only)	508C (Boardroom), Conv. Center
5:30–7:30 PM	CESI Dinner and Membership Meeting By Ticket Through CESI (*www.cesiscience.org*) by preregistration.only.	Off-site, Miro Restaurant

Friday, March 31

11:00 AM–12 Noon	Write to Do It: Jazzing Up Literacy with Science Olympiad	West Hall B-2, Conv. Center
12:30–1:30 PM	Using Fictional Picture Books to Do Science: How Is It Possible?	West Hall B-2, Conv. Center
2:00–3:00 PM	Classifying Objects: How Scientists and Other People Classify Things	West Hall B-2, Conv. Center
3:30–4:30 PM	Web 2.0 Tools for Science Teaching	West Hall B-2, Conv. Center
5:00–6:00 PM	Modeling Evidence Circles and Formative Assessment to Develop Three Dimensional Learning	Kentia Hall H, Conv. Center

Saturday, April 1

8:00–10:00 AM	Using Toys to Teach Physics Share-a-thon	152 ,Conv. Center
12:30–1:30 PM	Combining Science with Art to Understand How We See Color—Using Negative Art for a Positive Effect	West Hall B-2, Conv. Center

Council of State Science Supervisors (CSSS)

President: Ellen Ebert

Wednesday, March 29

6:00–8:00 PM	NSELA/CSSS Reception By Invitation Only, visit *www.NSELA.org*	Diamond Blrm. Salon 3, JW Marriott

Thursday, March 30

8:00–9:00 AM	We've Adopted *NGSS*, How Do We Know It's Making a Difference?	Olympic 3, JW Marriott
12:30–1:30 PM	Using the Crosscutting Concepts as the Basis for Competency-Based Learning	Olympic 3, JW Marriott
2:00–3:00 PM	Three-Dimensional Lessons Based in Simple Natural Phenomena	Atrium 3, JW Marriott
3:30–4:30 PM	Communication for Science Education Leaders (Yes, That Means You!)	Olympic 3, JW Marriott
3:30–5:30 PM	Having Classroom Instruction and Formative Assessment Meet the *NGSS* Performance Expectations	Platinum Blrm. Salon F, JW Marriott
5:00–6:00 PM	Creating STEM Mentor Networks to Increase STEM Teacher Retention	Platinum Blrm. Salon A JW Marriott

Friday, March 31

2:00–4:00 PM	*NGSS* for State Science Supervisors	Olympic 1, JW Marriott

National Association for Research In Science Teaching (NARST)

President: Mei-Hung Chiu

Thursday, March 30

8:00–9:00 AM	Do Practitioners and Researchers Agree on the Issues? A Critical Perspective on the Practice-Research Gap in Science Education	Atrium 2, JW Marriott
2:00–3:00 PM	Science, Education, and Ability: The Exclusion We Co-Create	Olympic 3, JW Marriott
3:30–4:00 PM	Peer-Led Team Learning: Improving Achievement, Recruitment, and Retention for Underrepresented Minorities in Postsecondary Biology	Platinum Blrm. Salon A JW Marriott
4:00–4:30 PM	Engaging Students with Primary Literature Improves Nature of Science Conceptions and Confidence in Reading Science	Platinum Blrm. Salon A JW Marriott

Friday, March 31

8:00–9:00 AM	Shifting Conceptions: Identifying and Understanding Teachers' Conceptual Models of Integrated STEM Education	Platinum Blrm. Salon A JW Marriott
9:30–10:30 AM	Making Science Real—Supporting English Language Learners in Argumentation and Explanation through Authentic Tasks	Atrium 2, JW Marriott
11:00 AM–12 Noon	Promoting Student Participation in Science Practices: Strategies for Formative Assessment and Science Classroom Talk	Atrium 2, JW Marriott
12:30–1:30 PM	Using Multiple Models and Crosscutting Concepts to Support Students' Three-Dimensional Knowledge About Water Systems	Diamond Blrm. Salon 2 JW Marriott

2:00–3:00 PM	Making Sense of STEM Education in K–12 Contexts and the Implications for Professional Development	Atrium 2, JW Marriott
5:30–6:00 PM	Opportunities to Learn Science: A Case Study of Science Classrooms in Successful/Diverse Texas High Schools	Georgia 1, JW Marriott

National Middle Level Science Teachers Association (NMLSTA)

President: Mary Lou Lipscomb

Thursday, March 30

5:15–6:45 PM	NMLSTA Board Meeting By Invitation Only	Atrium 1, JW Marriott

Friday, March 31

10:15 AM–4:30 PM	Meet Me in the Middle Day See page 47, as well as Vol. 2	Diamond Blrm. Salons, JW Marriott
11:45 AM–12:15 PM	NMLSTA Board and Membership Meeting By Invitation Only	Diamond Blrm. Salon 8, JW Marriott

National Science Education Leadership Association (NSELA)

President: Keri Randolph

Tuesday, March 28

8:00 AM–6:00 PM	NSELA Board of Directors Meeting By Invitation Only, visit *www.NSELA.org*	Olympic 1, JW Marriott

Wednesday, March 29

7:30–8:30 AM	NSELA Leadership Summit Breakfast By Invitation Only, visit *www.NSELA.org*	Georgia 1/2, JW Marriott
8:00 AM–5:45 PM	NSELA Leadership Summit By Registration Through NSELA	Plaza 1/2, JW Marriott
11:30 AM–1:30 PM	NSELA Leadership Summit Luncheon By Invitation Only, visit *www.NSELA.org*	Georgia 1/2, JW Marriott
6:00–8:00 PM	NSELA/CSSS Reception By Invitation Only, visit *www.NSELA.org*	Diamond Blrm. Salon 3, JW Marriott

Thursday, March 30

7:30–8:30 AM	NSELA Membership Breakfast By Invitation Only, visit *www.NSELA.org*	Diamond Blrm. Salon 6, JW Marriott
8:30–10:00 AM	NSELA Annual Membership Meeting By Invitation Only	Diamond Blrm. Salon 6, JW Marriott
12:30–1:30 PM	Tools for Science Leaders	Diamond Blrm. Salon 6, JW Marriott

National Science Education Leadership Association (NSELA), continued

Friday, March 31

8:00–9:00 AM	STEM Lesson Guideposts: Mapping STEM Lessons into Your Curriculum	Diamond Blrm. Salon 2, JW Marriott
9:30–10:30 AM	Introducing Teachers and Administrators to the *NGSS*	Diamond Blrm. Salon 2, JW Marriott
11:00 AM–12 Noon	Professional Development Tips and Strategies to Optimize Student STEM Learning	Diamond Blrm. Salon 2, JW Marriott
2:00–3:00 PM	Making Sense of Science: A System for Systems Thinking	Diamond Blrm. Salon 2, JW Marriott
3:30–4:30 PM	Teaching a Culturally Responsive Pedagogy in Science	Diamond Blrm. Salon 2, JW Marriott

Saturday, April 1

8:00–9:00 AM	Engineering Cafe	Atrium 3, JW Marriott
9:30–10:30 AM	Got Science? Get Literacy!	Atrium 3, JW Marriott
11:00 AM–12 Noon	Leadership Strategies for Ensuring Each Student Has a STEM Future	Atrium 3, JW Marriott
3:30–4:30 PM	Uncovering Teacher Misconceptions Through the Use of Formative Assessment Strategies	Plaza 3, JW Marriott

Society for College Science Teachers (SCST)

President: Tarren Shaw

Thursday, March 30

8:00–9:00 AM	How Are We Implementing Vision and Change in the College Science Classroom?	Georgia 1, JW Marriott
12:30–1:00 PM	Changes in Students' Perceptions and Motivation During Course-Embedded Freshman Research Experiences	Georgia 1, JW Marriott
1:00–1:30 PM	Research Experiences Throughout the Curriculum: A High-Impact Practice for Enhancing Student Success	Georgia 1, JW Marriott
2:00–2:30 PM	Exploring Genetic Ancestry and Personal Identity in U.S. Ethnic Minority College Biology Students	Georgia 1, JW Marriott
2:30–3:00 PM	"I Don't Fit In Here"	Georgia 1, JW Marriott
3:30–4:00 PM	Testing the Testing Effect: Modifying Summative Assessment to Enhance Student Learning	Georgia 1, JW Marriott
4:00–4:30 PM	Examining the Progression of Student-Developed Hypotheses in an Inquiry Biology Laboratory Course (IBLC)	Georgia 1, JW Marriott
5:00–5:30 PM	Using Museums to Broaden the Science Practices and Increase Engagement	Georgia 1, JW Marriott
5:30–6:00 PM	A Science Sales Pitch: Increase Student Buy-In to Increase Classroom Engagement	Georgia 1, JW Marriott

Friday, March 31

8:00–8:30 AM	Go Online to Teach College Science!	Georgia 1, JW Marriott
8:30–9:00 AM	The Merit Fellows Program: Lessons Learned from an NSF S-STEM Project	Georgia 1, JW Marriott
9:30–10:00 AM	Can the History of Science Facilitate Climate Change Education and Climate Literacy? Lessons from Glacial Theory?	Georgia 1, JW Marriott
10:00–10:30 AM	How Do We Know What to Teach? Working Backward to Build a Stronger Curriculum	Georgia 1, JW Marriott
11:00–11:30 AM	The University of Findlay Learning Bus: Bringing *NGSS* to You!	Georgia 1, JW Marriott
11:30 AM–12 Noon	Introducing STEAM into the College Science Curriculum	Georgia 1, JW Marriott
12:30–1:30 PM	Outstanding Undergraduate Science Teacher Award 2015 Presentation	Georgia 1, JW Marriott
2:00–3:00 PM	Outstanding Undergraduate Science Teacher Award 2016 Presentation	Georgia 1, JW Marriott
3:30–5:00 PM	SCST Business Meeting	Georgia 1, JW Marriott
7:00–9:00 PM	SCST Poster Session and Dessert Social	Platinum Blrm. Salon I/J, JW Marriott

Three Dimensions of the *Next Generation Science Standards (NGSS)*

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

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
PS1: Matter and Its Interactions PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1.C: Nuclear Processes **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 **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 **PS4: Waves and Their Applications in Technologies for Information Transfer** PS4.A: Wave Properties PS4.B: Electromagnetic Radiation PS4.C: Information Technologies and Instrumentation	**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 **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 **LS3: Heredity: Inheritance and Variation of Traits** LS3.A: Inheritance of Traits LS3.B: Variation of Traits **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	**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 **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 **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	**ETS1: Engineering Design** ETS1.A: Defining and Delimiting an Engineering Problem ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution **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

NSTA Book Club Membership

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www.nsta.org/bookclub

NSTA National Science Teachers Association

—courtesy of California Science Center

This spacesuit is one of the many unique artifacts about air and space to discover at the California Science Center.

7:30–8:30 AM Networking Opportunity

NSELA Leadership Summit Breakfast

(By Invitation Only) *Georgia 1/2, JW Marriott*

Visit *www.NSELA.org* for more information.

8:00 AM–5:00 PM Meetings

Discover the *NGSS* Train-the-Trainer Workshop 1

(By Separate Registration Only) *Gold Blrm. Salon 2, JW Marriott*

Visit *www.nsta.org/conferences/ngss3.aspx* for details.

Discover the *NGSS* Train-the-Trainer Workshop 2

(By Separate Registration Only) *Gold Blrm. Salon 3, JW Marriott*

Visit *www.nsta.org/conferences/ngss3.aspx* for details.

8:00 AM–5:45 PM Meeting

NSELA Leadership Summit

(By Registration Through NSELA) *Plaza 1/2, JW Marriott*

The NSELA Leadership Institute (NLI) offers a rich array of experiences that focus on key topics in leadership and science education. Join us and network with other national, regional, and district leaders for an informative day. The Leadership Summit is followed by an evening of connecting with your colleagues at the NSELA/CSSS Reception.Visit *www.NSELA.org* for more information on registering.

9:00 AM–4:00 PM Professional Learning Institutes

***Picture-Perfect STEM Lessons,* K–5: Using Children's Books to Inspire STEM Learning (PLI-8)**

(Grades K–5) *Diamond Ballroom Salon 9/10, JW Marriott*

Science Focus: GEN

By Preregistration Only

Karen Ansberry and **Emily Morgan,** Picture-Perfect Science, West Chester, Ohio

For description, see page 54.

Disciplinary Core Ideas: Reshaping Teaching and Learning (PLI-1)

(Grades K–12) *Platinum Ballroom Salon A, JW Marriott*

Science Focus: GEN, NGSS

By Preregistration Only

Joseph Krajcik, CREATE for STEM Institute, Michigan State University, East Lansing

Ravit Golan Duncan, Rutgers University, New Brunswick, N.J.

Ann Rivet, Teachers College, Columbia University, New York, N.Y.

For description, see page 52.

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.

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 170, 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 76 for a complete list of the *NGSS* codes used in this program.

Strands

The Los Angeles 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 42.

***NGSS:* The Next Generation of Science Teaching**

2017: A STEM Odyssey

Science & Literacy Reloaded

Mission Possible: Equity for Universal Access

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.

Helping Students Make Sense of the World Using Next Generation Science and Engineering Practices (PLI-2)
(Grades K–12) *Platinum Ballroom Salon B, JW Marriott*
Science Focus: GEN, SEP
By Preregistration Only
Brian Reiser, Northwestern University, Evanston, Ill.
Christina Schwarz, Michigan State University, East Lansing
Cynthia Passmore, University of California, Davis
For description, see page 52.

Uncovering Students' and Teachers' Ideas with Three-Dimensional Formative Assessment Probes and Techniques (PLI-3)
(Grades K–12) *Platinum Ballroom Salon C, JW Marriott*
Science Focus: GEN, NGSS
By Preregistration Only
Page Keeley, 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.
Joyce Tugel, Maine Mathematics and Science Alliance, Augusta
For description, see page 53.

Argument-Driven Inquiry: Transforming Laboratory Experiences so Students Can Use Core Ideas, Crosscutting Concepts, and Science Practices to Make Sense of Natural Phenomena (PLI-4)
(Grades 6–12) *Platinum Ballroom Salon D, JW Marriott*
Science Focus: GEN, NGSS
By Preregistration Only
Victor Sampson and **Ashley Murphy,** The University of Texas at Austin
For description, see page 53.

Moving Standards into Practice: Five Tools and Processes for Translating the *NGSS* into Instruction and Classroom Assessment (PLI-5)
(Grades K–12) *Platinum Ballroom Salon F, JW Marriott*
Science Focus: GEN, NGSS
By Preregistration Only
Jody Bintz and **Brooke Bourdélat-Parks,** BSCS, Colorado Springs, Colo.
Dora Kastel, American Museum of Natural History, New York, N.Y.
Kathy DiRanna, K–12 Alliance/WestEd, Los Alamitos, Calif.
Jo Topps, K–12 Alliance/WestEd, San Francisco, Calif.
For description, see page 53.

District-Level Administrators: You Are Not Alone in the *NGSS* Universe! (PLI-6)
(Grades K–12) *Platinum Ballroom Salon G, JW Marriott*
Science Focus: GEN, NGSS
By Preregistration Only
Eric Brunsell, NSTA Director, Professional Development in Science Education, and University of Wisconsin Oshkosh
David Crowther, NSTA President-Elect and University of Nevada, Reno
Kelly Price-Colley, Forsyth County Schools, Cumming, Ga.
John Putnam, Assistant Executive Director, Professional Programs, NSTA, Arlington, Va.
Ted Willard, Program Director, NGSS@NSTA, NSTA, Arlington, Va.
Flavio Mendez, Assistant Executive Director, Learning Center, NSTA, Arlington, Va.
For description, see page 54.

Equity in Science Education (PLI-7)
(General) *Platinum Ballroom Salon J, JW Marriott*
Science Focus: GEN, NGSS
By Preregistration Only
Jerry Valadez, NSTA Director, Multicultural/Equity in Science Education, and SAM Academy, Sanger, Calif.
Gary Nakagiri, Alameda County Office of Education, Hayward, Calif.
For description, see page 54.

9:00 AM–4:00 PM Meeting

Science Education for Students with Disabilities Preconference Meeting
(By Registration Through SESD) *Plaza 3, JW Marriott*
Science educators, special education teachers, parents, and administrators—come learn and share information and strategies on teaching science to students with disabilities. For more information, please contact Rachel Zimmerman-Brachman at *rache.zimmerman-brachman@jpl.nasa.gov* or visit *www.nsta.org/disabilities.*

11:30 AM–1:30 PM Networking Opportunity

NSELA Leadership Summit Luncheon
(By Invitation Only) *Georgia 1/2, JW Marriott*
Visit *www.NSELA.org* for more information.

National Earth Science Teachers Association Events at the 2017 NSTA National Conference in Los Angeles

*We have a number of exciting sessions! To find our sessions, enter **NESTA** as the keyword when searching events online at NSTA's session browser for the conference. On Friday, March 31 and Saturday, April 1, we have a series of sessions all in Petree Hall D of the Los Angeles Convention Center. Don't miss out on our Share-a-Thons and the events below!*

www.nestanet.org

Friday, March 31

2:00 – 3:00 p.m. **American Geophysical Union (AGU) Lecture: The Fault Lies Not in Our Stars. Speaker: Dr. Lucy Jones**

Seismology shows us that on human time scales, the timing of big earthquakes is random and the best way to manage the risk is to consider it probabilistically. Most people do not really believe in randomness—trying to find patterns even when they don't exist and then expecting scientists to find the real cause and remove randomness from the equation. Dr. Jones will probe how science education can do a better job of empowering everyone to understand and use hazards information.

Los Angeles Convention Center, Petree Hall C

6:30 – 8:00 p.m. **NESTA Friends of Earth Science Reception**
JW Marriot Hotel L.A., Platinum Ballroom Salon C

Saturday, April 1

5:00 – 6:00 p.m. **NESTA's exciting Rock, Mineral, and Fossil Raffle!**
Los Angeles Convention Center, Petree Hall D

NESTA gratefully acknowledges the following organizations as sponsors:

12 Noon–5:30 PM 12th Annual NSTA Global Conversations in Science Education Conference

Enhancing Global Workforce Skills Through Literacy, STEM, and Equity
Diamond Ballroom Salon 4, JW Marriott
By Preregistration Only

NSTA has planned an afternoon dedicated to sharing science education from an international perspective. This mini-conference begins and ends with plenary talks by distinguished international scholars and includes roundtable discussions on specific topics relevant to the international science educator community and poster presentations providing opportunities for networking and idea exchange.

NSTA is extremely grateful to Northrop Grumman Foundation and Council of ElementaryScience International for their generous support and contributions to this event.

12 Noon **Lunch**

12:10 PM **Welcome and Introductions**
Mary Gromko, NSTA President, Colorado Springs, Colo., U.S.
Antoinette Schlobohm, 2016–2017 NSTA International Advisory Board Chair, and Ardenwood Elementary School, Fremont, Calif., U.S.

12:25 PM **Opening Speaker**
New Global Approaches to Literacy
Speaker: Jim McDonald, CESI President, and Central Michigan University, Mount Pleasant, U.S.
This plenary session will discuss reading/literacy strategies that allow teachers to provide better support for their students. The strategies will include explanations in science, asking better questions, and using argumentation to connect evidence with scientific data. Handouts will be provided, and we will go through at least one of the strategies.

12:45 PM **Presentation Session 1**

A New Look at Science Education in Early Childhood: The Most Critical Stage in Learning
Speaker: Sue Dale Tunnicliffe, ICASE, CASTME, and University College of London, U.K.

Converting Research Papers into Children's Books
Speaker: Stuart Fleischer, The Walworth Barbour American International School in Israel, Even Yehuda

Questioning Science with Fictional Picture Books
Speakers: Sue Dale Tunnicliffe, University College of London, U.K., and Catherine Bruguiere, University of Lyon, France

1:30 PM **Participant Break and Roundtable Discussion 1**

1:45 PM **Presentation Session 2**

Using Student Research Projects to Create Scientific and Cultural Collaborations
Speaker: George Wolfe, Loudoun Academy of Science, Sterling, Va., U.S.

Toward an Understanding of Indigenous Perspectives Through The Eyes of Preservice Science Education Students
Speaker: Gregory Smith, Charles Darwin University, Casuarina, Australia

Improving Science Education by Introducing "Core Science Teachers" to Local Cities in Japan
Speaker: Yasushi Ogura, Saitama University, Saitama City, Saitama, Japan

Evaluating Scenarios That Promote Student Science-Related Career Awareness in the MultiCo Project
Speakers: Miia Rannikmäe, Regina Soobard, and Jack Holbrook, University of Tartu, Estonia; and Tuula Keinonen, University of Eastern Finland, Joensuu

Including Integrated Science and Mathematics Activities in Olympiad Events with Increased Parental Involvement
Speakers: Xiaoxin Lyu and MinJung Lee, Teachers College, Columbia University, New York, N.Y., U.S.

3:15 PM **Poster Presentations and Participant Break**

12 Noon–5:30 PM 12th Annual NSTA Global Conversations in Science Education Conference, cont.

3:45 PM **Presentation Session 3**

Enhancing Gender Awareness in STEM Education
Speaker: Gultekin Cakmakci, Hacettepe University, Ankara, Turkey

Pedagogy-Adopting Drama Techniques: Enabling Children to Aspire to a Career in a STEM Context
Speaker: Deb McGregor, Oxford Brookes University, Oxford, U.K.

Using STEM Projects to Foster Global Collaboration
Speakers: Susan Paulsen, Morgan Hill (Calif.) Unified School District, U.S.; Heather Wygant, Santa Clara (Calif.) Unified School District, U.S.; and Yujiro Fujiwara, Christian Academy in Japan, Tokyo

Science Club: A Collective Impact Model for Building STEM Skills and Identity in After-School Programs
Speaker: Michael Kennedy, Northwestern University, Evanston, Ill., U.S.

Igniting Student Interest and Creative Thinking Skills with Episodes from *Harry Potter*
Speaker: Alan McCormack, 2010–2011 NSTA President, and Professor Emeritus, San Diego State University, San Diego, Calif., U.S.

5:00 PM **Roundtable Discussion 2**

5:15 PM **Closing Remarks**
Mary Gromko, NSTA President, Colorado Springs, Colo., U.S.

Global Conversations in Science Education Conference Poster Sessions

3:15 PM

Apply and Evaluate a Global Collaborative Research on Ocean Trash
Qing Gao and **Rebecca Hite,** Texas Tech University, Lubbock, U.S.

Development Studies in Science Education Related to Equity and Gender: International Perspectives and Recommendations
Teresa J. Kennedy, The University of Texas at Tyler, U.S.
Cheryl Sundberg, ICASE and Ronin Institute, Montclair, N.J., U.S.

Effect of International Trips on Students' Academic Achievement in Basic High School Chemistry in Monterrey, Mexico
Rosa L. Tinajero, Americaasia, Mexico
Martha P. Pérez, Universidad de Monterrey, Mexico

Enhancing Middle School Science Learning Through Exploration Curriculum and Service Learning
Chih-Che Tai, East Tennessee State University, Johnson City, U.S.
Mao-Cheng Lin, Guang Wu Junior High School, Taiwan

The University of Texas at Tyler Innovation Academy Instructional Coaching Model for STEM Learning
Michael R.L. Odell and **Teresa J. Kennedy,** The University of Texas at Tyler, U.S.

Making Cultural Connections Through Global Collaboration and STEM Projects
Susan Paulsen, Morgan Hill (Calif.) Unified School District, U.S.
Heather Wygant, Santa Clara (Calif.) United School District, U.S.
Yujiro Fujiwara, Christian Academy in Japan, Tokyo

Preparing K–12 Leaders for Global STEM Education
Walter Smith, Carol Cao, and **Heather Wygant,** Texas Tech University, Lubbock, U.S.

Present Status and Issues of Korean Science Gifted Education: Evaluation of Second Plan for Discovery and Development of the Science Gifted
Bongwoo Lee, Dankook University, Yongin-si, Gyeonggi-do, South Korea
Heekyong Kim, Kangwon University, Chuncheon-si, Gangwon-do, South Korea

Public Engagement with Science at Science Centers in Turkey
Gultekin Cakmakci, Hacettepe University, Ankara, Turkey
Uygar Kanli and **Fitnat Koseoglu,** Gazi University, Ankara, Turkey

Summer STEAM at Sakya: Multi-Age Bilingual Science Enrichment in Southern India
Shauneen Giudice, Delmar Middle and Senior High School, Delmar, Del., U.S.

The Development of Turkish Science Teachers' Inquiry-Based Teaching Skills: Experiences from PROFILES and The Ark of Inquiry (AoI) Projects
Bulent Cavas, Dokuz Eylul University, Izmir, Turkey

Use of Creative Activities in Teaching High School Chemistry
Martha P. Pérez and **Oralia Ramírez,** Universidad de Monterrey, Mexico

Using Concept Mapping for Teaching and Assessment in Science Classroom
Priit Reiska and **Aet Möllits,** Tallinn University, Tallin, Estonia

4:00–6:00 PM Meeting

Science Education for Students with Disabilities (SESD) Board Meeting

Plaza 3, JW Marriott

The annual business meeting of Science Education for Students with Disabilities, an associated group with NSTA, is open to everyone—please join us! For additional information, please visit *www.nsta.org/disabilities.*

4:30–5:30 PM Film Screening

***Uncontrolled Variables: A Science Fair Story* World Documentary Film Premiere**

Petree Hall C, Convention Center

Join us for the world premiere of *Uncontrolled Variables: A Science Fair Story,* a film by Dale Carpenter and Bill McComas. It's an inspiring and informative new film documenting the lives of students and teachers as they prepare for and compete in the science fair.

4:30–6:30 PM Networking Opportunity

NSTA New Science Teacher Academy Reception

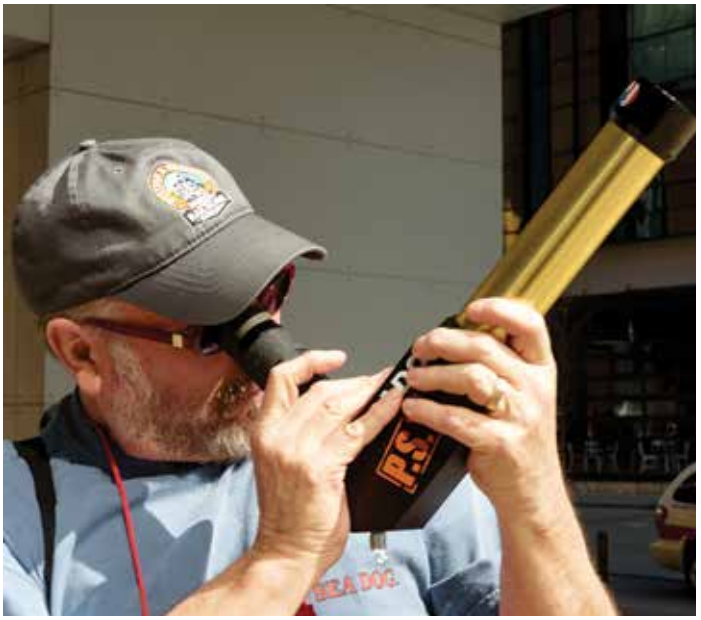
(By Invitation Only) *Atrium 3, JW Marriott*

6:00–8:00 PM Networking Opportunity

NSELA/CSSS Reception

(By Invitation Only) *Diamond Ballroom Salon 3, JW Marriott*

Visit *www.NSELA.org* for more information.



6:00–8:00 PM The Planetary Society Lecture

The Planetary Society Lecture: Everything All at Once

(General) *West Hall B, Convention Center*

Science Focus: GEN

Sponsored by The Planetary Society

Bill Nye (@BillNye), CEO, The Planetary Society, Pasadena, Calif.

Based on his upcoming book *Everything All at Once: How Nerds Solve Problems,* Bill Nye will probe the nerd mind-set—solving problems through dogged effort, creativity, and trial and error.

Scientist, comedian, teacher, and author, Bill Nye became a household name with his innovative, fast-paced television series, Bill Nye the Science Guy. *His mission for many years is to turn on the general public, and kids in particular, to the "way cool" wonders of science.*

Bill is currently CEO of The Planetary Society. As a student at Cornell University, Bill was introduced to the wonders of astronomy in a class taught by Carl Sagan himself, one of the original founders of The Planetary Society. So for Bill it was like coming full circle.

His most recent publications, the New York Times*–bestselling* Undeniable: The Science of Creation, *and* Unstoppable: Harnessing Science to Change the World, *are Bill's efforts to continue his mission of changing the world through science education.*

7:30–8:30 PM Meeting

International Advisory Board Meeting

Atrium 1, JW Marriott

8:30–10:00 PM Film Screening

Disney Youth Programs Presents Disneynature *Born in China*

Regal LA Live (off-site)

Join Disney Youth Programs for an exclusive screening of Disneynature's new film *Born in China,* narrated by John Krasinski. Take an epic journey into the wilds of China and follow the adventures of three animal families—the majestic panda, the savvy golden monkey, and the elusive snow leopard.

Screening is complimentary and seating is limited (first come, first served).Visit *bit.ly/2kF1i3e* to register for this event.

Note: Regal LA Live is located at 1000 West Olympic Boulevard. Transportation is on your own to the theater, which is located fairly close to both the Convention Center and main conference hotels.

Visit NSTA's SCIENCE STORE

South Lobby

Travel Light with FREE Shipping for Online Orders!

STORE HOURS

Wednesday, March 29	4:00 PM–7:00 PM
Thursday, March 30	7:30 AM–5:00 PM
Friday, March 31	7:30 AM–5:30 PM
Saturday, April 1	7:30 AM–4:00 PM
Saturday, April 2	8:00 AM–12:30 PM

Offering the latest resources for science teachers, including new releases and bestsellers!

- Fun NSTA-branded gear—unique hats, shirts, mugs, and more
- Everyone enjoys member pricing: 20% off bestseller NSTA Press® titles
- Traveling light? Ask about our NSTA gift cards – great gift ideas!

Download the conference app or follow #NSTA17 for special giveaways, contests, and more throughout the conference!

Visit www.nsta.org/store to make a purchase today, or call 800-277-5300.

NSTA National Science Teachers Association

—courtesy of Mike Weiss

7:30–8:30 AM Networking Opportunity

NSELA Membership Breakfast

(By Invitation Only) *Diamond Ballroom Salon 6, JW Marriott*

Visit *www.NSELA.org* for more information.

8:00–8:30 AM Presentations

Using Memes, Puns, Jokes, and Comics in the Science Classroom

(Grades 6–College) *Diamond Ballroom Salon 8, JW Marriott*

Science Focus: GEN

CANCELED

Emily Doty *(edoty@mcpss.com)* and **Ashlee Kimpel** *(akimpel@mcpss.com),* Citronelle High School, Citronelle, Ala.

LOL! Find out how and why to incorporate memes, puns, jokes, and comics into your science classroom.

Can You Explain? / *¿Puedes Explicar?*

(Grades 2–10) *Platinum Ballroom Salon H, JW Marriott*

Science Focus: GEN, SEP1, SEP3, SEP4, SEP7

Susan Levin *(susanlevin@wpcsd.k12.ny.us),* Eastview Middle School, White Plains, N.Y.

Nena Restrepo Gil *(nenachloe@gmail.com)*, George Washington Elementary School, White Plains, N.Y.

How does teaching science through Teaching Scientific Inquiry Model and the Socratic Seminar impact the ability of emergent bilinguals to express conceptual ideas? Join us and find out.

Exploring the World as a Scientist with AMS DataStreme Courses

(General) *Platinum Ballroom Salon I, JW Marriott*

Science Focus: ESS, SEP

Wendy Abshire (@AMSeducation; *wabshire@ametsoc.org),* American Meteorological Society, Washington, D.C.

Learn how to bring your science lesson to life with real-world data. The American Meteorologicial Society has been doing it for 25 years!

Problem-Posing SSI (Socio-Scientific Issues): Making Science Personal for Diverse Learners

(Grades 9–12) *Plaza 1, JW Marriott*

Science Focus: LS1.A, LS1.C, LS3, SEP1, SEP3, SEP4, SEP7, SEP8

S. Taylor Wichmanowski *(stw7278@gmail.com),* Chung-Ang University, Dongjak-gu, Seoul, South Korea

Discussion centers on action research using socio-scientific issues (SSI) in urban science classrooms to improve student engagement and develop critical thinking and scientific reasoning skills.

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 170, 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 76 for a complete list of the *NGSS* codes used in this program.

Strands

The Los Angeles 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 42.

NGSS ***NGSS:* The Next Generation of Science Teaching**

2017: A STEM Odyssey

Science & Literacy Reloaded

Mission Possible: Equity for Universal Access

The following icons will be used throughout this program.

NSTA Press® Sessions

PLI **Professional Learning Institutes**

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

8:00–9:00 AM Mary C. McCurdy Lecture

Born to Be a Scientist

(Grades P–5) *Theatre (411), Convention Center*

Science Focus: GEN

Kathy DiRanna (@K12Alliance; @EarlyImplement; *kdirann@wested.org),* Statewide Director, K–12 Alliance/WestEd, Los Alamitos, Calif.

Presider: Jill Grace, Regional Director, K–12 Alliance/WestEd, San Marcos, Calif.

They come asking why. Our job is to continue to promote their questions and wonder about their world. Elementary teachers are key to keeping the joy of discovery and learning open and available to each and every student. Celebrate your role in facilitating their education!

Kathy DiRanna has helped shape California's science reform efforts for the past 30 years and she continues to be an advocate for the reform efforts by actively serving on state committees for the implementation of NGSS *and through the California Mathematics and Science Partnership Program. Nationally, she has also served as the mentor coordinator for the National Academy of Science and Mathematics Education, as well as on a variety of advisory boards.*

Currently, Kathy is the statewide director of WestEd's K–12 Alliance, a professional development organization focused on improving science education in grades K–12 through content, instructional strategies, assessment, and leadership. She is director of the CA NGSS *K–8 Early Implementation Initiative and has co-authored several publications, including* Assessment-Centered Teaching: A Reflective Practice *and* The Data Coach's Field Guide: Unleashing the Power of Collaborative Inquiry.

8:00–9:00 AM Presentations

NARST-Sponsored Session: Do Practitioners and Researchers Agree on the Issues? A Critical Perspective on the Practice-Research Gap in Science Education

(Grades P–12) *Atrium 2, JW Marriott*

Science Focus: GEN, SEP

Catherine Bhathena *(cdfull34@iupui.edu),* Indiana University–Purdue University Indianapolis

This session will engage participants in identifying issues in science education and discovering how practitioners and researchers can collaborate to address these issues from a critical perspective.

INF **ASTC-Sponsored Session: Linking In-School and Out-of-School STEM Learning: Examples of Programs Featured in Connected Science Learning**

(Grades 4–12) *Atrium 3, JW Marriott*

Science Focus: GEN, INF

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

The peer-reviewed journal *Connected Science Learning* highlights programs that bridge in-school and out-of-school STEM learning. Come learn about the programs featured in the new journal.

Coaching Teachers from 1D to 3D Learning

(Grades 1–12) *Diamond Ballroom Salon 1, JW Marriott*

Science Focus: ETS, SEP3, SEP4, SEP6, SEP7, SEP8

Holly Rosa *(hrosa@bostonpublicschools.org),* Boston (Mass.) Public Schools

Hillary Paul Metcalf *(paulh@chelseaschools.com),* Chelsea High School, Chelsea, Mass.

Join us as we share our approach to helping teachers transform 1D content-driven units into 3D project-based units!

STEaM: Combining Physical Science with the Arts and Literature

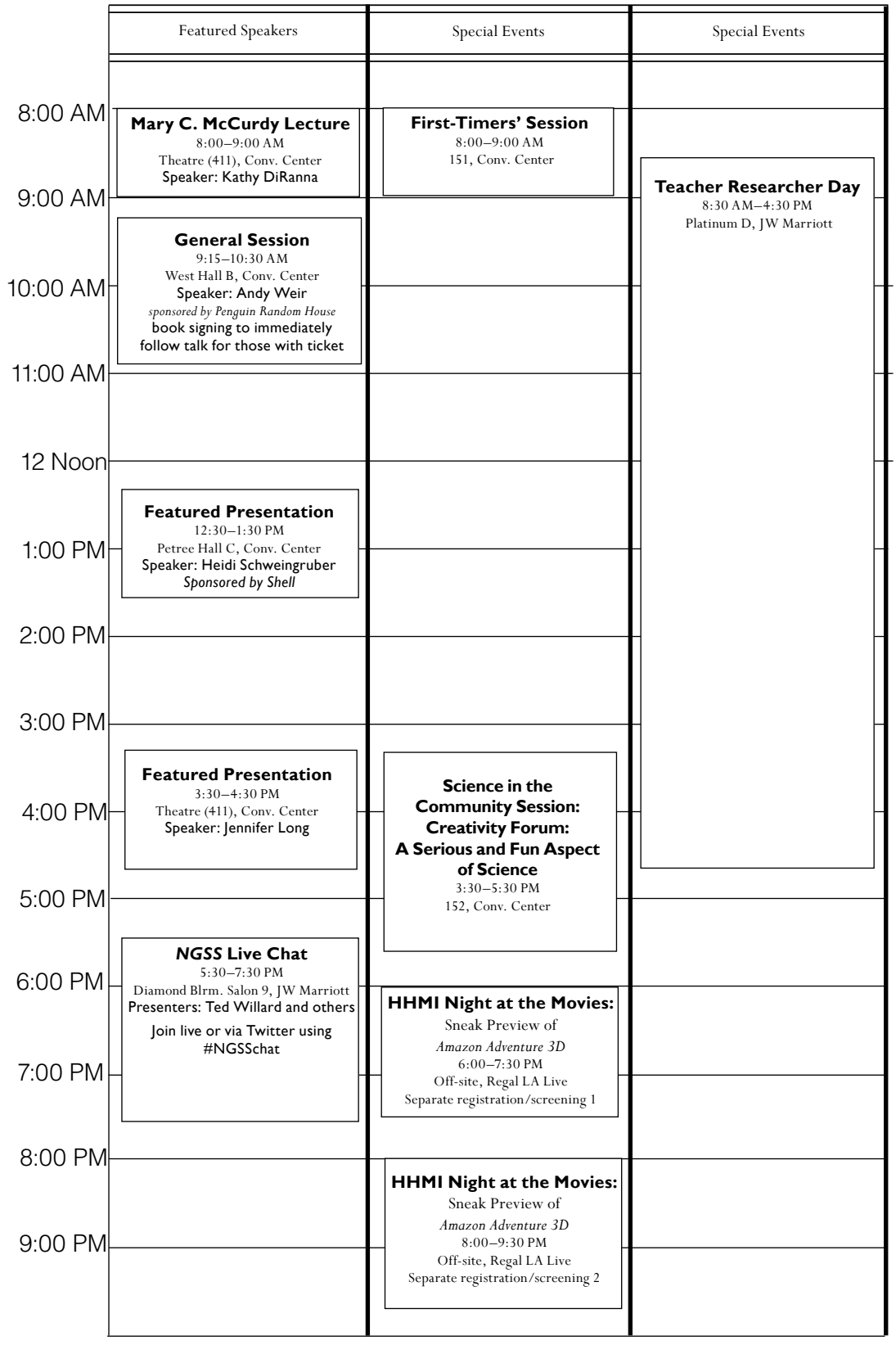
(General) *Diamond Ballroom Salon 2, JW Marriott*

Science Focus: PS2, PS3, PS4, SEP8

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

Quantoons combines intricate cartoons of physics phenomenon by *MAD magazine* and Garbage Pail Kids artist Tomas Bunk with literary quotes and physics descriptions. The arts and science for all.

Thursday, March 30



SCST-Sponsored Session: How Are We Implementing Vision and Change in the College Science Classroom?
(Grades 9–College) *Georgia 1, JW Marriott*
Science Focus: GEN, NGSS
Tarren Shaw *(tjshaw@ou.edu),* The University of Oklahoma, Norman
Kerry Cheesman *(kcheesma@capital.edu),* Capital University, Columbus, Ohio
Donald French *(dfrench@okstate.edu),* Oklahoma State University, Stillwater
Join us for a moderated discussion of best practices in college science teaching.

CSSS-Sponsored Session: We've Adopted *NGSS;* How Do We Know It's Making a Difference?
(Grades K–12) *Olympic 3, JW Marriott*
Science Focus: GEN, SEP
Kevin Anderson (@wisdpiscience; *mrkja@yahoo.com;* Wisconsin Dept. of Public Instruction, Madison
Hear about a system of assessments (formative, survey, interim, summative) to support educators in evaluating whether their *NGSS* implementation is reaching their goals and vision for science education.

AMSE-Sponsored Session: Engineering Through Aquaculture Technology for Women
(Grades 6–College) *Platinum Ballroom Salon A, JW Marriott*
Science Focus: ETS
Lovelle Ruggiero *(lovelleruggiero@mac.com),* Consultant/Content Specialist, New Rochelle, N.Y.
Recirculating aquaculture (fish farming) could be an indirect way to introduce engineering to women and underserved populations, while addressing science concepts and engineering practices.

Using Statistical Analysis of the PTC Gene as a Means to Study Mendelian Principles and Evolutionary Trends
(Grades 9–College) *Platinum Ballroom Salon J, JW Marriott*
Science Focus: LS, SEP
Steven Oszust *(steveoszust@mybihs.org),* The Brooklyn International High School, Brooklyn, N.Y.
Through hands-on investigation of the PTC gene, students will develop a deeper understanding of Mendelian genetics and evolutionary trends in human populations.

Students' Views on the Nature of Science: Can Philosophy of Science Help Us?
(Grades 9–College) *Plaza 2, JW Marriott*
Science Focus: ETS2.B, SEP
Marcel Grdinic *(mgrdinic@glenbrook225.org),* Glenbrook North High School, Northbrook, Ill.
Incorporate readings and discussions in the philosophy of science to improve students' views of the nature of science.

Is This Your First NSTA Conference? First-Timer Conference Attendees' Orientation
(General) *151, Convention Center*
Science Focus: GEN
NSTA Board and Council
Feeling overwhelmed by all there is to see and do at an NSTA conference on science education? Join us for an interactive exploration through the program, the conference app, and NSTA's social media. By the end of the session, you will know just how to get the most from your conference experience in addition to building new networks with science colleagues.

Snapshot of a Perfectly Integrated Curriculum in K–4
(Grades K–4) *501C, Convention Center*
Science Focus: GEN, NGSS
Tami Eggensperger (@tamieggs; *tami.eggensperger@cps.k12.ar.us),* Cabot (Ark.) Public Schools
Leave with strategies to implement the *NGSS* practices and student-led inquiry through notebooking that is worth more than a thousand words. For student engagement and lasting understanding, we are using NSTA Press® *Picture Perfect Science* as the foundation for our curriculum.

Teachers Helping Teachers: Teaching Socially Contentious Scientific Topics
(Grades 6–12) *506, Convention Center*
Science Focus: ESS3.D, LS
Claire Adrian-Tucci (@NCSEteach; *claire.adrian.tucci@gmail.com),* National Center for Science Education, Oakland, Calif.
In this session, teachers will share how they approach socially contentious scientific topics such as climate change and evolution to avoid challenges, tension, and misconceptions.

Disciplinary Literacy and Reading in the Content Area of Science: Yes! You Can Do Both as an Elementary Teacher!
(Grades 1–5) *513, Convention Center*
Science Focus: GEN, NGSS
Michele Hollingsworth Koomen *(mkoomen@gac.edu),* Gustavus Adolphus College, Saint Peter, Minn.
Build your foundation in understanding of what we mean by both reading in a content area like science and disciplinary literacy in science for elementary classrooms.

Enhancing Science Through Culturally Responsive Teaching
(Grades K–8) *Kentia Hall L, Convention Center*
Science Focus: GEN, SEP1, SEP3, SEP7
Kianga Thomas *(krthomas@nsu.edu)* and **Arthur Bowman** *(awbowman@nsu.edu),* Norfolk State University, Norfolk, Va.
Emphasis will be placed on strategies to enhance culturally responsive teaching science classrooms. Attention will be given to creating an inquiry environment to maximize learning for diverse populations.

Engaging At-Risk Students in Chemistry: Project-Based Learning Closes the Gap
(Grades 9–12) *Kentia Hall O, Convention Center*
Science Focus: PS, SEP1, SEP2, SEP3, SEP8
Julie Lockhart (@TeacherSync; *jlockha1@houstonisd.org),* Energy Institute High School, Houston, Tex.
An inner-city high school chemistry teacher discusses using Project-Based Learning as a vehicle for engaging at-risk students with complex, abstract concepts.

Bring the Ocean into Your Classroom with National Marine Sanctuaries
(Grades 6–12) *Kentia Hall P, Convention Center*
Science Focus: ESS3.A
Claire Fackler (@sanctuaries; *claire.fackler@noaa.gov),* NOAA Office of National Marine Sanctuaries, Santa Barbara, Calif.
Learn about free STEM educational resources and hands-on field experiences to increase ocean and climate literacy with your students. Receive free materials!

8:00–9:00 AM Hands-On Workshops

NSTA Press® Session: Argumentation in the Earth and Space Science Classroom

(Grades 5–12) *Diamond Ballroom Salon 3, JW Marriott*

Science Focus: ESS, SEP7

Sharon Schleigh *(sharonpschleigh@gmail.com),* East Carolina University, Greenville, N.C.

Come learn how to engage in scientific argumentation to support teaching in your classroom. Sample activities from the leading NSTA books provided.

Engineering: Blow the Roof Off!

(Grades 3–8) *Diamond Ballroom Salon 7, JW Marriott*

Science Focus: ESS3.B, ETS1, CCC2, SEP7

Karen Ostlund (@karen_ostlund; *klostlund@utexas.edu),* 2012–2013 NSTA President, and The University of Texas at Austin

Strong winds generated by hurricanes and tornados can lift the roof off a house. Use a model for the engineering design process that integrates the *NGSS* 3 Ds to design a better roof.

Using a Free Online Tool to Support Students in Developing Models

(Grades 6–12) *Diamond Ballroom Salon 10, JW Marriott*

Science Focus: GEN, CCC2, CCC4, SEP2, SEP4

Tom Bielik *(tbielik@msu.edu)* and **Li Ke** (@LiKe_MSU; *keli1@msu.edu),* Michigan State University, East Lansing

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

Joseph Krajcik (@krajcikjoe; *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.

ASTE-Sponsored Session: Three-Dimensional Science Instruction Using the Learning Cycle Approach

(Grades 5–12) *Georgia 2, JW Marriott*

Science Focus: GEN, SEP

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

Engage in a learning experience to understand the usefulness of the learning cycle approach for three-dimensional science instruction.

STEM Infographic Use, Analysis, and Production for Higher Scientific Literacy in the Classroom

(Grades 4–12) *Gold Ballroom Salon 1, JW Marriott*

Science Focus: GEN, CCC, SEP2, SEP4, SEP5, SEP8

Rob Lamb (@lambchop1198; *rob@clstl.org),* Pattonville High School, Maryland Heights, Mo.

Experience how to incorporate infographics into the science classroom as a way of increasing scientific literacy. Several lessons will be discussed along with takeaway resources.

Finding Your Voice Without Shouting: Seeking Successful Support for Science Education

(Grades K–12) *Olympic 1, JW Marriott*

Science Focus: GEN

Rebecca Hite (@Sciencebecca; *rebecca.hite@ttu.edu),* Texas Tech University, Lubbock

Pat Shane *(pshane@unc.edu),* 2009–2010 NSTA President and Educational Consultant, Chapel Hill, N.C.

Carla Billups (@cmbillups; *cmbillups12@gmail.com),* Buncombe County Schools, Asheville, N.C.

Have your voice heard—this session includes how to frame issues, use data to support positions, craft short "elevator speeches," leverage social media, and use effective communication strategies when you want to be heard.

Successful STEM-Rich Making Practices That Benefit Underserved Students

(General) *Platinum Ballroom Salon B, JW Marriott*

Science Focus: ETS

Jerry Valadez *(jdvscience@yahoo.com),* NSTA Director, Multicultural/Equity in Science Education, and SAM Academy, Sanger, Calif.

Ana López *(anaglopez4@gmail.com),* Central Valley Science Project, Sanger, Calif.

Jean Pennycook *(jean.pennycook@gmail.com), Penguin Science.com,* Fresno, Calif.

Experience STEM and MAKING activities and learn how the California Community Science Workshops' successful program model creates STEM and environmental learning environments accessible to all kids.

Silent Labs: Movie Making in a Science Classroom
(Grades 1–12) *Platinum Ballroom Salon E, JW Marriott*
Science Focus: GEN, SEP1, SEP2, SEP4, SEP6, SEP8
Maggie Mabery (@MaggieMabery; *mabery.maggie@tusd.org),* Hickory Elementary School, Torrance, Calif.
Design authentic science assessments where students use iPad and iMovie to problem solve. Explore a variety of ideas for how to integrate original video into everyday science classes. Engage in a sample performance activity using iMovie.

NSTA Press® Session: Argument-Driven Inquiry in Biology, Chemistry, and Physics—Lab Investigations for Grades 9–12
(Grades 9–12) *Platinum Ballroom Salon F, JW Marriott*
Science Focus: LS, PS1, PS2, PS3, CCC, SEP
Victor Sampson (@victorsampson; *victor.sampson@gmail.com),* The University of Texas at Austin
Jonathon Grooms (@drjongrooms; *jgrooms@gwu.edu),* The George Washington University, Washington, D.C.
Come discover Argument-Driven Inquiry and how it can help students learn how to use the three dimensions of the *NGSS*—crosscutting concepts, disciplinary core ideas, and science and engineering practices—to explain natural phenomena. In this session, participants will learn about the stages of the ADI instructional model, how it was designed to address the shortcomings of current laboratory experiences, and how it supports the *NGSS.*

From Activity to Inquiry—Analytical Approach to Inquiry-Based Learning from the Students' Perspective
(Grades 9–12) *Plaza 3, JW Marriott*
Science Focus: PS
Mindy Chappell (@femme_instruite; *mindyjc2@gmail.com),* North Grand High School, Chicago, Ill.
Estefania Espinosa *(estefania3spinosa315@gmail.com),* Dominican University, River Forest, Ill.
Elizabeth Herrera (@eliza13521; *eliza13521@gmail.com),* The University of Illinois at Chicago
Learn from us in this hands-on workshop as we share with you how a group of high school AP chemistry students in a predominately Latino public school in the near Westside suburbs of Chicago developed a simple lab activity into a cross-curricular, inquiry-based experiment on their own.

Charts, Graphs, and Diagrams, Oh My! The World of Visual Learners
(Grades P–12) *502A, Convention Center*
Science Focus: GEN, SEP1, SEP2, SEP4, SEP7, SEP8
Samantha Bradbury (@R10science; *samantha.bradbury@region10.org),* Texas Regional Collaborative and Region 10 ESC, Richardson
Susan Sayen *(ssayen@wisd.org),* Texas Regional Collaborative and Howard Junior High School, Waxahachie
Find out how students can use visuals to work through text and assessment for success in the science classroom.

Lessons That Create Equitable Opportunities for All Students
(Grades 6–12) *502B, Convention Center*
Science Focus: GEN
Glenn Melero (@glennmelero; *gmelero@guhsd.net),* El Cajon Valley High School, El Cajon, Calif.
Creating equity in a science classroom is a challenge. But through careful consideration of teaching strategies, lesson planning, technology integration, and reflection, teachers can do it.

NGSS **3-2-1 Liftoff! NASA's Beginning Engineering Science and Technology (BEST) Curriculum**
(Grades K–12) *515A, Convention Center*
Science Focus: ETS, PS2.A, PS3.B, PS3.C, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP3, SEP4, SEP6, SEP8
Barbara Buckner (@bbuckner; *barbie.buckner@nasa.gov),* NASA Armstrong Flight Research Center, Palmdale, Calif.
Use each stage of the Engineering Design Process to complete a team challenge of building and launching a satellite while making connections to NASA missions.

The "How Tos" of an X-STREAM Family Night
(Grades P–5) *515B, Convention Center*
Science Focus: INF
INF **Susan Collins** *(scolli48@kennesaw.edu)* and **Gregory Patterson** *(gpatter7@students.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 and samples that will get all school stakeholders involved in a fun-filled science for the family.

Making Friends with Data: Strategies for Representing and Using Data in Early Childhood
(Grades P–1) *Kentia Hall A, Convention Center*
Science Focus: PS2.A, CCC1, CCC2, CCC7, SEP4, SEP7, SEP8
Donna Johnson *(djohnson11@schools.nyc.gov),* P.S. 021 Crispus Attucks, Brooklyn, N.Y.
Gary Benenson *(benenson@ccny.cuny.edu),* The City College of New York, N.Y.
Learn how emergent readers and writers can develop techniques for representing and comparing what they predicted and what they found from a hands-on experiment.

Integrate *NGSS* and *CCSS* with a Practical Research Strategy: Do It, Learn It, Use It!
(Grades K–5) *Kentia Hall B, Convention Center*
Science Focus: GEN, SEP
Caroline Stabile (@gemsnet10; *stokbridge@uri.edu)* and **Kelly Shea** (@kellyshea18; *kellyshea@uri.edu),* GEMS-Net, The University of Rhode Island, Kingston
Extend firsthand science knowledge by targeting a third of *CCSS ELA* using a practical research strategy for informational text. Engage in the strategy, view classroom artifacts, and consider how it can work for you!

Using Models for Instruction and Assessment
(Grades 3–5) *Kentia Hall C, Convention Center*
Science Focus: PS2, SEP
Marsha Bednarski *(bednarskim@ccsu.edu),* Central Connecticut State University, New Britain
Using a variety of models with students can be an invaluable tool for planning instruction and assessing student learning. Participants will make initial models, do gallery walks, identify important features and uses of models, examine initial and final student-created models, and discuss their use in instruction and assessment. Several different kinds of models related to forces and motion will be the focus for analysis.

What About a Chimney? Students 3D Print Their Learning Manipulatives
(Grades 3–5) *Kentia Hall F, Convention Center*
Science Focus: ETS, SEP
Johannes Strobel *(strobelj@missouri.edu),* University of Missouri, Columbia
Olivia Hua *(olivia.hua@mail.mcgill.ca)*, McGill University, Montreal, Que., Canada
Experience how to engage students and teach them 3D modeling and printing to produce their own learning tools.

Hands-On 5E Lessons from a Platinum-Designated STEM Elementary School
(Grades 1–4) *Kentia Hall H, Convention Center*
Science Focus: GEN, SEP
Stacey McGinnis (@staceymcginnis5; *stacey.mcginnis@washk12.org),* **Pamela Orton** *(pamela.orton@washk12.org),* and **Tiffany Porter** (@tiffporter23; *tiffany.porter@washk12.org),* Crimson View Elementary School, Saint George, Utah
True STEM schools get in their engineering and science lessons all in one week. Come learn how one school does it while getting motivated with project ideas to change your regular classroom into a STEM classroom. Bonus: Come share your PBL ideas at our end-of-class STEM smash!

Gravity Models: The Plight of Wile E. Coyote
(Grades 6–8) *Kentia Hall M, Convention Center*
Science Focus: ESS1, ESS2, PS2, SEP2, SEP7,
Jennifer Janzen (@jenniferj4242; *jennifer_janzen@sccoe.org),* Santa Clara County Office of Education, San Jose, Calif.
Explore the *NGSS* practice of modeling through activities that engage around the concept of gravity. Dive deep into modeling of *NGSS!*

Hot Hands: Chemical Engineering in a Sandwich Bag
(Grades 6–10) *Kentia Hall N, Convention Center*
Science Focus: ETS1.C, PS1.B, PS3.A, PS3.D, CCC1, SEP1, SEP3, SEP6
Matthew d'Alessio (@dalessioCSUN; *matthew.dalessio@csun.edu),* **Dorothy Nguyen-Graff** *(dng@csun.edu),* **Virginia (Gini) Oberholzer Vandergon** *(virginia.vandergon@csun.edu),* and **Brian Foley** (@csunfoley; *bfoley@csun.edu),* California State University, Northridge
Explore chemical systems in zip bags, then with your body acting as an atom, and design the most efficient hand warmer through an engineering challenge.

Blue Marble Matches
(Grades 6–8) *Kentia Hall Q, Convention Center*
Science Focus: ESS2.C, CCC1, CCC2, CCC3, CCC4, CCC5, CCC7, SEP4, SEP6
Veronica Leija *(veronica.m.leija@nasa.gov),* Learning Expert, Houston, Tex.
Brandon Hargis (@brandon_hargis; *brandon.m.hargis@nasa.gov),* NASA Johnson Space Center/Texas State University, Houston, Tex.
Connect NASA images of Earth and other planets with the evidence for geologic processes like weathering and erosion, while exploring the processes shaping our worlds.

—*Photo courtesy of Jacob Slaton*

Introducing Students to Biotechnology and Bioengineering in a Title 1 Middle School

(Grades 6–8) *Kentia Hall R, Convention Center*

Science Focus: ETS2, LS, CCC4, CCC6, CCC7

Beatriz Perez-Sweeney *(perezswe@bcm.edu),* **Barbara Tharp** *(btharp@bcm.edu),* **Nancy Moreno** *(nmoreno@bcm.edu),* and **Christopher Burnett** (@tophb; *caburnet@bcm.edu),* Baylor College of Medicine, Houston, Tex.

Misty Kirkland *(mkirklan@houstonisd.org)* and **Michael Wertz** *(mwertz@houstonisd.org),* Baylor College of Medicine Academy at Ryan, Houston, Tex.

We will share how our school organizes projects to help students understand and apply science concepts in biotechnology and bioengineering and the collaboration between the Center for Educational Outreach, Baylor College of Medicine, and Baylor College of Medicine Academy at Ryan.

Elevating Family Engagement to Empowerment: Urban Adv`15antage's Model of Fostering Sustainable Participation in Science Learning for Middle School Families

(Grades 5–9) *Kentia Hall S, Convention Center*

Science Focus: GEN

Tina Glover, American Museum of Natural History, New York, N.Y.

Colleen Owen *(cowen@wcs.org)* and **Christine DeMauro** *(cdemauro@wcs.org),* Wildlife Conservation Society, Bronx, N.Y.

Caitlyn Coffey *(ccoffey2@schools.nyc.gov),* J.H.S. 185 Edward Bleeker, Flushing, N.Y.

Discover the social and cognitive potential in shifting middle school family engagement to empowerment by promoting deeper science learning and equity beyond the classroom.

NMEA-Sponsored Session: Whale of a Tale Share-a-Thon

(General) *Petree Hall D, Convention Center*

Science Focus: ESS2.C, LS2

Emily Arnold *(emilyarnold@ucsd.edu),* Birch Aquarium at Scripps Institution of Oceanography, La Jolla, Calif.

Kathy Fuller, Prince George's County Public Schools, Upper Marlboro, Md.

Erin Hobbs *(ehobbs@newburyport.k12.ma.us),* Newburyport High School, Newburyport, Mass.

Jessica Kastler *(jessiekastler@gmail.com),* Gulf Coast Research Laboratory, Ocean Springs, Miss.

Mellie Lewis *(mellielewis@hotmail.com),* NOAA Climate Stewards Education Project, Silver Spring, Md.

Tami Lunsford (@tamiteach; *tami.lunsford@gmail.com),* Newark Charter School, Newark, Del.

Dale Stanley *(dale.stanley@ncc.edu),* Nassau Community College, Garden City, N.Y.

Carol Steingart *(info@coastencounters.com),* Coast Encounters, LLC, Wells, Maine

Jaime Thom *(jthom@scaquarium.org),* South Carolina Aquarium, Charleston

The National Marine Educators Association invites you to engage in hands-on activities and take home resources for your classroom. Discover how you can become involved in both ocean and freshwater initiatives from local and national organizations to promote ocean and climate literacy. After the share-a-thon, stay for the day for an NMEA track of sessions in the same room!

8:00–9:00 AM Exhibitor Workshops

STEM Literacy: Strategies for Making Science Text Meaningful

(Grades K–12) *150 AB, Convention Center*

Science Focus: GEN, NGSS

Sponsor: STEMscopes™ from Accelerate Learning

Jan Lanse, Consultant, Los Angeles, Calif.

Join us as we learn the power of using Close Reading strategies to engage students in reading, writing, and discussing the science text in collaborative groups, which can lead to student mastery and high achievement. Build the capacity for scientific literacy success in your STEM classroom!

True Colors: Spectrometry to Investigate Lights and Colors

(Grades 9–12) *405, Convention Center*

Science Focus: LS1.C, PS1.A, PS1.B, PS4.A, CCC1, CCC2, SEP2, SEP4, SEP5

Sponsor: PASCO scientific

Tom Loschiavo *(loschiavo@pasco.com),* PASCO scientific, Roseville, Calif.

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

What can light emissions tell you about atomic structure? How can a solution's color teach you about concentration and reaction rates? In this hands-on workshop with the Wireless Spectrometer, you will perform spectrometry experiments, including light source emission studies and colored solutions analysis.

STEM Activities: Easy-to-Teach Robotics

(Grades 6–12) *407, Convention Center*

Science Focus: ETS1, PS2.A, CCC1, CCC2, CCC3, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Sponsor: PASCO scientific

Brett Sackett, PASCO scientific, Roseville, Calif.

Thomas Hsu, Ergopedia, Inc., Cambridge, Mass.

Feeling overwhelmed by the idea of teaching programming to tech-savvy students? We have created curricula and lesson plans just for you! We will cover teaching motion and introductory programming with classroom-scale robots and an easy-to-use interactive curriculum. You will be programming within minutes and leave with confidence to lead your own robotics lessons.

Martian Genetics: An Electrophoresis Exploration

(Grades 6–College) *410, Convention Center*

Science Focus: LS

Sponsor: Edvotek, Inc.

Danielle Snowflack *(info@edvotek.com),* **Brian Ell** *(info@edvotek.com),* and **Tom Cynkar** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.

Explore genetics with our "out of this world" workshop! Imagine being the first scientist to explore Mars and discovering extraterrestrials. How would you use biotechnology to learn about the Martians? Discover how DNA technology can be used to explore the relationship between genotype and phenotype. Fluorescent dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving classroom time! Take home a free gift and entry in a LabStation™ giveaway.

Active Chemistry and Active Physics: Project-Based Inquiry Science That Engages Students

(Grades 9–12) *501 AB, Convention Center*

Science Focus: PS

Sponsor: It's About Time

Andrew Uy and **Lee Jackson,** Loyola High School of Los Angeles, Calif.

Active Chemistry and Active Physics are NSF research-based curricula that make chemistry and physics accessible to ALL high school students. Find out how Active Chemistry and Active Physics can enhance your *NGSS*-focused instruction. Watch what will happen to the quality of student work when they take ownership of real-world scientific challenges that matter to them.

Machine Technology and Engineering with K'NEX Machines: Using STEM to Make Work Easier

(Grades 5–9) *510, Convention Center*

Science Focus: ETS1, PS2, PS3

Sponsor: K'NEX Education

Robert Jesberg *(rjesberg@knex.com),* K'NEX Education, Hatfield, Pa.

Machines are not so simple after all! Build and explore STEM concepts with fully functioning models from K'NEX Exploring Machines. Test, evaluate, re-engineer, and optimize models to find how each "makes work easier." A great way to have your program meet address *NGSS* crosscutting concepts. A hands-on workshop for hands-on science educators.

8:00–9:30 AM Exhibitor Workshops

Inquiry-Based Introduction to Gel Electrophoresis
(Grades 7–College) *150C, Convention Center*
Science Focus: LS1, LS3, PS1, PS2, CCC1, CCC5, SEP4, SEP6
Sponsor: The MiniOne Systems
Kristin Majda *(info@theminione.com),* Gold Coast Science Network, Camarillo, Calif.
Participate in a hands-on 5E lesson that meets the *NGSS* and learn electrophoresis to teach key principles of matter, energy, force, motion, and genetics. Use the MiniOne Electrophoresis System over an entire school year or over multiple grade levels to provide learning that engages students in skills necessary for biotech careers.

Modeling Earth, the Sun, and Other Stars with Bring Science Alive!
(Grades K–5) *153A, Convention Center*
Science Focus: ESS
Sponsor: TCI
Christy Sanders, TCI, Mountain View, Calif.
Experience learning from a student's perspective as you learn about the relationship between Earth, the Sun, and other stars using a powerful online learning system. The lesson was entirely built on the *NGSS.*

Life Is Complicated: Flow of Genetic Information to Genomic Engineering
(Grades 9–College) *153B, Convention Center*
Science Focus: ETS1.B, LS1.A, LS3.A, LS3.B, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP1, SEP2, SEP4, SEP5, SEP6
Sponsor: 3D Molecular Designs
Tim Herman *(herman@msoe.edu)* and **Margaret Franzen** *(franzen@msoe.edu),* MSOE Center for BioMolecular Modeling, Milwaukee, Wis.
Teachers face the daunting task of preparing students for careers in the rapidly developing field of genomic engineering. This workshop will first explore innovative, hands-on tools that engage students in active modeling of RNA transcription and translation/protein synthesis, and then investigate genetic mutations and gene editing technologies, including CRISPR/Cas9.

Make Sure Your Makerspace Has Options for All Students!
(Grades 3–6) *301 AB, Convention Center*
Science Focus: ETS
Sponsor: Delta Education/School Specialty Science
Darrick Wood, Distance Learning Coordinator, Louisville, Ky.
Kathy Armstrong, Northside Elementary School, Midway, Ky.
For students to develop the proper range of skills required of "makers," a makerspace should provide tools and resources to help them grow as scientists. Many makerspaces now include supplemental curriculum options that give students who are curious about science the resources designed for exploring classroom concepts in a maker setting.

Engage Students in FOSS Next Generation K–8
(Grades K–8) *303 AB, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Delta Education/School Specialty Science–FOSS
Jessica Penchos and **Brian Campbell,** The Lawrence Hall of Science, University of California, Berkeley
Join FOSS developers to learn about the FOSS Next Generation K–8 program. We will introduce the instructional design, and illustrate how the system incorporates science-centered language development, notebooks, digital resources, formative assessments, and outdoor excursions into a coherent learning experience for students and teachers.

Engineering Design and *NGSS:* Learning About Friction Forces
(Grades 6–12) *304 AB, Convention Center*
Science Focus: ETS, PS2
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
Kat Mills, School Specialty Science, Rosharon, Tex.
Take the classic car and ramp experiment, explore friction forces, and combine them with technology to create a SAIL car. Extend the investigation with an engineering design problem and you build a basis for understanding *NGSS* and dynamics of friction for vehicle-related incidents. Door prizes. Free STEM resources provided.

Hands-On Science with Classroom Critters
(Grades K–12) *306 AB, Convention 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, bessbugs, 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.

Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher
(Grades 9–12) *308 AB, Convention 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 in your students. Whether you're new to chemistry or feeling out of your element, you will learn new ways to create excitement with hands-on labs and demonstrations.

Dissecting the *NGSS*
(Grades K–5) *309, Convention Center*
Science Focus: LS, CCC, SEP
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Did you know a squid has three hearts? Or that it uses a beak to break down its prey? Join us in constructing an argument that plants and animals have internal and external structures to support survival, growth, and reproduction. Leave with a dissection lesson from Building Blocks of Science®.

Integrating Chromebook with Vernier Technology
(Grades 3–College) *402A, Convention Center*
Science Focus: ETS2, PS1, PS2
Sponsor: Vernier Software & Technology
Rick Rutland *(info@vernier.com),* Five Star Education Solutions, Stockdale, Tex.
Use Vernier sensors with Chromebooks to conduct hands-on experiments such as "Graphing Your Motion" and "Grip Strength Comparison." See a demonstration of our new Go Direct wireless and USB sensors that connect directly to Chromebooks—no interface needed. Explore our wide range of digital tools that promote understanding of science concepts.

Renewable Energy with KidWind and Vernier
(Grades 7–College) *402B, Convention Center*
Science Focus: ESS3, ETS2, PS3
Sponsor: Vernier Software & Technology
David Carter *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Explore renewable energy and engineering design using KidWind kits with Vernier technology. In this engaging hands-on workshop, you will design, test, and refine a wind turbine to maximize its energy output. Activities such as this from our book, *Renewable Energy with Vernier,* embody the spirit of STEM education.

Flinn Scientific's *Exploring Chemistry*™: Connecting Content Through Experiments
(Grades 9–12) *403A, Convention Center*
Science Focus: PS
Sponsor: Flinn Scientific, Inc.
Jillian Saddler *(jsaddler@flinnsci.com)* and **Joan Berry** *(jberry@flinnsci.com),* 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! Handouts and door prizes!

Connecting Ecology Concepts from a Global Perspective
(Grades 9–12) *403B, Convention Center*
Science Focus: ESS, LS3
Sponsor: HHMI BioInteractive
Jennifer Barnes, Woodstock High School, Woodstock, Ga.
Timothy Guilfoyle, Phillip O. Berry Academy of Technology, Charlotte, N.C.
Join us for ecology from around the globe! Travel to Gorongosa for niche partitioning. Journey to the Pacific coast—exploring keystone species. Finally, build a food web in Gorongosa. Resources are free! Participants will work through activities, learn to use them in the classroom, and connect three ecological concepts.

Identify Patient Zero of a Zombie Apocalypse!
(Grades 9–College) *404 AB, Convention Center*
Science Focus: LS
Sponsor: Bio-Rad Laboratories
Damon Tighe *(damon_tighe@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!

Build a Box: Engineering Food Dye Electrophoresis for *NGSS*
(Grades 9–College) *406 AB, Convention Center*
Science Focus: LS, PS, SEP
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
In this hands-on workshop, use engineering practices to study something from your everyday lives—food dyes! Have students engineer a protocol to separate and identify food dyes using a do-it-yourself electrophoresis box. It's a colorful way to introduce pipetting and electrophoresis skills in addition to chemistry and physics concepts.

Next Generation Science Using Video-Based Projects
(Grades 3–12) *408B, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Houghton Mifflin Harcourt
Michael Heithaus *(heithaus@fiu.edu),* Florida International University, North Miami
Come see the transformational power that video-based projects can have on your classroom. Increase student engagement and learn how video-based projects can transport students around the globe as you integrate STEM into your classroom. All participants will be provided with copies of several projects.

Integrate Instruction and Assessment in Three Dimensions Using Learning Progressions
(Grades K–8) *409 AB, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Amplify
Eric Greenwald *(amplifyscience@berkeley.edu)* and **Meghan Comstock** *(amplifyscience@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley
Explore how learning progressions may be used to organize a coherent sequence of instruction for a unit, define the focus and timing of assessments, and enable actionable inferences about students' progress. Engage with K–8 exemplars from Amplify Science, the new *NGSS*-designed curriculum from The Lawrence Hall of Science.

Enzymes Made Doggone Easy: A Virtual Interactive Case Study!
(Grades 6–12) *503, Convention Center*
Science Focus: LS
Sponsor: Ward's Science
Liam Casey, VWR Science Education, Rochester, N.Y.
In this hands-on technology workshop, you will experience a standards-focused interactive case from Cogent Education on enzymes, which is proven to help students learn this challenging concept. A Great Dane is eating well, but losing weight. As veterinary technicians, students apply their learning of enzymes to help the dog recover.

Zombie Apocalypse!
(Grades 6–12) *511 AB, Convention Center*
Science Focus: GEN
Sponsor: Texas Instruments
Jeffrey Lukens, Sioux Falls (S.Dak.) School District
Be part of a zombie apocalypse! Learn about disease spread–modeling using simulations and fun story lines about a zombie outbreak. Applicable for middle school and high school, this workshop is sure to scare you and your little zombies with its exciting Hollywood themes used to engage students in learning science!

How Do Scientists Think?
(Grades 5–10) *512, Convention Center*
Science Focus: PS, CCC
Sponsor: Perimeter Institute for Theoretical Physics
Damian Pope, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada
What is so special about the way scientists think? What are the key habits of mind that scientists practice enabling them to make discoveries? Come explore the process of science and engage in hands-on inquiry activities that can encourage students to develop their problem-solving, collaboration, and creativity skills.

The Best Test Prep Book Ever for AP Chemistry
(Grades 9–12) *514, Convention Center*
Science Focus: PS
Sponsor: Pearson
Ed Waterman, Retired Educator, Fort Collins, Colo.
Learn how to give students control of the required content with ample practice to master the material. This book includes thorough content summaries and hundreds of updated multiple choice and free-response questions focusing on graphical and tabular data analysis and atomic-molecular particle representations.

8:00–11:00 AM Hands-On Workshop

PLI

***NGSS* Toolkit Pathway Session: Using the *NGSS* to Plan a Unit of Instruction**

(Grades 6–12) *Platinum Ballroom Salon G, JW Marriott*

Science Focus: LS2, CCC, SEP

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

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

Plan for instruction using a tool and *NGSS* card sets to deepen understanding of the three dimensions and consider what students need to know.

8:00 AM–5:00 PM Meetings

Discover the *NGSS* Train-the-Trainer Workshop 1

(By Separate Registration Only) *Gold Blrm. Salon 2, JW Marriott*

Visit *www.nsta.org/conferences/ngss3.aspx* for details.

Discover the *NGSS* Train-the-Trainer Workshop 2

(By Separate Registration Only) *Gold Blrm. Salon 3, JW Marriott*

Visit *www.nsta.org/conferences/ngss3.aspx* for details.

8:30–9:00 AM Presentations

Teaching the Tough Topics with Science Games

(Grades 6–12) *Diamond Ballroom Salon 8, JW Marriott*

Science Focus: ESS1, LS3, LS4, PS1, PS2, CCC4, CCC5, CCC6, SEP2, SEP4, SEP5

Ralph Bouquet (@rlbouquet), WGBH Education, Boston, Mass.

Explore the possibilities of using digital science games to educate and engage students in difficult science topics with NOVA.

Overview of Approaches That Help ENLs, Bilinguals, and All Students in General

(Grades 6–College) *Platinum Ballroom Salon H, JW Marriott*

Science Focus: GEN, SEP1, SEP4, SEP5, SEP6, SEP7, SEP8

Jannethe Pardo *(jpardo@ercsd.org),* Spring Valley High School, Spring Valley, N.Y.

In order to implement bilingual programs to serve our many English as a New Language students, it is crucial that strategies be integrated that will help ENL, bilingual, and all students' succeed in our demanding high school science curriculum.

***Wikiwatershed.org* Toolkit of Resources and Curriculum**

(Grades 4–College) *Platinum Ballroom Salon I, JW Marriott*

Science Focus: GEN, NGSS

Steve Kerlin *(skerlin@stroudcenter.org)* and **Melinda Daniels** *(mdaniels@stroudcenter.org),* Stroud Water Research Center, Avondale, Pa.

Nanette Marcum-Dietrich *(ndietrich@millersville.edu),* Millersville University, Millersville, Pa.

Carolyn Staudt *(cstaudt@concord.org),* The Concord Consortium, Concord, Mass.

Delve into how you can use the new STEM community of *www.Wikiwatershed.org* featuring online GIS modeling, DIY environmental sensors, scientific data-gathering processes, and a watershed curriculum.

How to Be a DonorsChoose Rockstar: Using Crowdfunding to Get a Killer STEM Space!

(Grades P–12) *Plaza 1, JW Marriott*

Science Focus: INF

Blair Mishleau (@blairtheblur; *blair.mishleau@kippdc.org)* and **Jennifer Ramsey** *(jennifer.ramsey@kippdc.org),* KIPP DC Heights Academy, Washington, D.C.

In order to ensure your science or STEM program has everything it needs to be *NGSS* focused, stop by our session to learn how you can fill your space with the learning tools, curriculum, supplies, and more to complete your three-dimensional learning space!

8:30–9:30 AM Presentation

Teacher Researcher Day Session: Poster Session for Teacher Researchers

(General) *Platinum Ballroom Salon D, JW Marriott*

Science Focus: GEN, NGSS

Deborah Roberts-Harris *(drober02@unm.edu),* The University of New Mexico, Albuquerque

Find out what questions teachers and teacher educators are asking and how they are exploring these in their own classrooms.

8:30–10:00 AM Meeting

NSELA Annual Membership Meeting

(By Invitation Only) *Diamond Ballroom Salon 6, JW Marriott*

The NSELA Annual Membership Meeting offers an up-to-date glimpse of NSELA by its officers and committee chairs. The recognition of our Outstanding Leadership in Science Education Award is celebrated. Come network with other key leaders from across the country. Visit *www.NSELA.org* for more information.

8:30–11:00 AM Meeting

Science Safety Advisory Board Meeting

Studio 1, JW Marriott

—Photo courtesy of James Blair and Lauren Harnett, NASA

Andy Weir presses the "flesh" with Robonaut2.

9:00 AM–5:00 PM Networking Opportunity

NSTA International Lounge

Atrium 1, JW Marriott

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.

9:15–10:30 AM General Session

***The Martian:* The Story Behind the Story**

(General) *West Hall B, Convention Center*

Science Focus: GEN

Sponsored by Penguin Random House

Andy Weir (@andyweirauthor; *sephalon@gmail.com),* Author of *The Martian,* Mountain View, Calif.

Presider and Introduction of Speaker: Mary Gromko, NSTA President, Colorado Springs, Colo.

Platform Guests: Andy Weir; Mary Gromko; Carolyn Hayes, NSTA Retiring President, and Retired Educator, Greenwood, Ind.; David Crowther, NSTA President-Elect, and University of Nevada, Reno; Christine Anne Royce, NSTA President-Elect-Elect, and Shippensburg University, Shippensburg, Pa.; Jessica L. Sawko, CSTA Executive Director, Folsom, Calif.; Camille Stegman, NSTA Director, District XVI, and Storey County Schools, Virginia City, Nev.; David L. Evans, NSTA Executive Director, Arlington, Va.; Tim Williamson, Chairperson, NSTA Los Angeles National Conference, and California State University, Long Beach; Therese Shanahan, Program Coordinator, NSTA Los Angeles National Conference, and University of California, Irvine; Susan Gomez Zwiep, Local Arrangements Coordinator, NSTA Los Angeles National Conference, and California State University, Long Beach

Andy Weir discusses how he went from computer programmer to bestselling author. Spoiler: He did it mostly by mistake!

Andy Weir was first hired as a programmer for a national laboratory at age 15 and has been working as a software engineer ever since. He is also a lifelong space nerd and a devoted hobbyist of subjects such as relativistic physics, orbital mechanics, and the history of manned spaceflight.

The first 250 people in line for Andy's session will receive a free classroom-edition copy of The Martian, *which Andy will personally autograph shortly after his talk.*

9:30–10:30 AM Hands-On Workshop

NMEA-Sponsored Session: Aquaponics Toward Urban Sustainability

(Grades 6–12) *Petree Hall D, Convention Center*

Science Focus: LS2.B

Linda Chilton *(lchilton@usc.edu),* USC Sea Grant, Los Angeles, Calif.

Lynn Whitley *(lwhitley@usc.edu),* University of Southern California, Los Angeles

Food for Thought Aquaponics weaves together chemistry, biology, physics, engineering, and more while addressing sustainable healthy food options in a highly urbanized, water-limited community.

9:30–10:30 AM Exhibitor Workshops

Make Science Night Meaningful

(Grades K–2) *150 AB, Convention Center*

Science Focus: GEN, INF, NGSS

Sponsor: STEMscopes™ from Accelerate Learning

Brandi Nicholson, STEMscopes from Accelerate Learning, Houston, Tex.

STEMscopes has partnered with EarthEcho International to develop Science Nights for schools that turn learning into action. Come see how you can both learn new science content and help save Earth's most valuable resource. You will leave being able to make your campus science night an unforgettable event for students and families.

Exploring Misconceptions: What Is pH?

(Grades 6–12) *405, Convention Center*

Science Focus: PS1.A, CCC1, CCC3, SEP2, SEP5

Sponsor: PASCO scientific

Tom Loschiavo *(loschiavo@pasco.com),* PASCO scientific, Roseville, Calif.

Paul Werner *(pwerner@rocklin.k12.ca.us),* Rocklin High School, Rocklin, Calif.

What is pH and why is the scale 0–14? Help students develop an understanding of the logarithmic pH scale by creating serial dilutions in this hands-on workshop. Using the Wireless pH Sensor and universal indicator, your students will be able to analyze and visualize what pH actually means and measures!

From DNA to Protein—A Modeling Approach

(Grades 8–12) *407, Convention Center*

Science Focus: LS1.A, LS1.C

Sponsor: PASCO scientific

Thomas Hsu *(thsu@pasco.com),* Ergopedia, Inc., Cambridge, Mass.

Ryan Reardon *(rreardon71@gmail.com),* Shades Valley High School, Irondale, Ala.

How can students visualize and better understand a molecular-level process? We'll use molecular models to simulate how information in DNA is expressed in the assembly of proteins from amino acids and conduct simple hands-on activities to help students grasp the fundamentals of molecular biology and protein structure.

Left at the Scene of the Crime: Introduction to Forensic Science

(Grades 9–College) *410, Convention Center*

Science Focus: LS

Sponsor: Edvotek, Inc.

Danielle Snowflack *(info@edvotek.com),* **Brian Ell** *(info@edvotek.com),* and **Tom Cynkar** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.

Explore genetic diversity using forensic science! Your students become crime scene investigators as they analyze biological evidence using DNA fingerprinting, a technique that identifies people via genetic differences. Gel electrophoresis is used to create DNA fingerprints from crime scene and suspect samples. A match between samples suggests which suspect committed the crime. Receive a free gift for attending.

—*Photo courtesy of Jacob Slaton*

Light Up STEM: Design a 50-Cent Microlight
(Grades 9–12) *501 AB, Convention Center*
Science Focus: ETS
Sponsor: It's About Time
Mihir Ravel, Olin College of Engineering, Needham, Mass.
Cary Sneider, Portland State University, Portland, Ore.
Engineering the Future is an affordable, multi-age, accessible, full-year high school engineering course that has been redesigned to deeply engage student interests while supporting their abilities to achieve *NGSS* performance expectations. Design your own Microlight with an LED is an example of the revised unit dealing with energy and electronics.

Bridges! Bridges! Structural Engineering at Its Best with K'NEX STEM Bridge Sets
(Grades 3–6) *510, Convention Center*
Science Focus: ETS1, PS2
Sponsor: K'NEX Education
Robert Jesberg *(rjesberg@knex.com),* K'NEX Education, Hatfield, Pa.
Bridges fascinate students and adults alike! Build K'NEX bridge models and explore STEM concepts. Investigate bridge technology as you build, experiment with the science of bridges, and brainstorm engineering solutions to challenges. We will investigate seven major bridge designs, and discuss their limits and their advantages. An emphasis on the "STE" in STEM!

9:30–11:00 AM Presentation

Teacher Researcher Day Session: Panel Discussion: Young Scientists
(Grades P–3) *Platinum Ballroom Salon D, JW Marriott*
Science Focus: GEN, NGSS
Deborah Roberts-Harris *(drober02@unm.edu),* The University of New Mexico, Albuquerque
This panel discussion will focus on the benefits of working with our youngest scientists from preschool to early elementary. What can we expect these students to be able to do? How much science can they actually learn? Why is it important to provide them with opportunities to explore science?

10:00–11:30 AM Exhibitor Workshops

Who Is Baby Whale's Father? DNA Fingerprinting Solves the Mystery!
(Grades 9–College) *150C, Convention Center*
Science Focus: LS1, LS3, PS1, CCC1, SEP4
Sponsor: The MiniOne Systems
Shannon Klemann *(info@theminione.com),* Adolfo Camarillo High School, Camarillo, Calif.
Come learn and get hands-on experience on how to teach gel electrophoresis and DNA fingerprinting in a 90-minute classroom session. You will pour, load, and run a gel; capture a gel image; analyze the results; and deduce a probable conclusion for a whale of a forensic mystery.

Analyzing and Interpreting Data Using TCI's *Bring Science Alive!*
(Grades K–5) *153A, Convention Center*
Science Focus: GEN, NGSS
Sponsor: TCI
Christy Sanders, TCI, Mountain View, Calif.
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.

The Ins and Outs of Crossing Cell Membranes
(Grades 6–College) *153B, Convention Center*
Science Focus: ETS1, LS1, LS2.A, LS2.B, LS2.C, PS1, PS2, CCC, SEP1, SEP2, SEP5, SEP6, SEP7, SEP8
Sponsor: 3D Molecular Designs
Gina Vogt *(gina.vogt@3dmoleculardesigns.com),* MSOE Center for BioMolecular Modeling, Milwaukee, Wis.
3-D models help students explore interactions between water and salt, the composition of cell membranes, and mechanisms of membrane transport. We will study polarity of water while investigating transport across hydrophobic membranes. Guide your students toward understanding phospholipid bilayer assembly. Join us as we simulate transport of water, glucose, and ions while differentiating between active and passive transport.

The Animal Kingdom Lessons with Shape of Life Resources
(Grades 5–College) *153C, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Shape of Life
Nancy Burnett *(burnettna@gmail.com)* and **Denise Ryan** *(denisearyan@gmail.com),* Shape of Life, Carmel Valley, Calif.
Mark Friedman *(marklewisfriedman@gmail.com),* Marine Biology Educator, Redondo Beach, Calif.
Shape of Life will bring Mark Friedman in to share his teaching experience using Shape of Life resources. For more than 13 years, Mark has inspired inner city kids through Shape of Life.

How to Argue in Science Class
(Grades 1–6) *301 AB, Convention Center*
Science Focus: GEN, SEP7
Sponsor: Delta Education/School Specialty Science
Darrick Wood, Distance Learning Coordinator, Louisville, Ky.
Kathy Armstrong, Northside Elementary School, Midway, Ky.
Help students develop scientific argumentation skills by making claims based on observable evidence. Put these skills into practice with lessons from Delta Science Modules, as we prove (or disprove!) fundamental science concepts. Leave with readers, equipment, and an activity you can use with your students next week.

Ten Minutes to Improving Science Achievement
(Grades 3–8) *303 AB, Convention Center*
Science Focus: GEN
Sponsor: Delta Education/School Specialty Science–FOSS
Kathy Long, The Lawrence Hall of Science, University of California, Berkeley
"Assessment" can strike fear and trepidation into the hearts of teachers and students. Join FOSS developers to learn how assessment can be transformed into an integrated teaching tool that grades 3–8 teachers and students can embrace to create a classroom culture that motivates effort and growth to improve student achievement.

CPO Science's Link™ Learning Module: Cell Reproduction Using Crazy Chromosomes
(Grades 6–12) *304 AB, Convention Center*
Science Focus: LS1, LS3
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
Kat Mills, School Specialty Science, Rosharon, Tex.
CPO Science's Link modules for genetics use *NGSS* strategies in a real-time digital learning environment. Students study the differences between DNA and genes, mitosis and meiosis, traits and alleles, and phenotypes and genotypes. Cell processes come alive with hands-on strategies in a unique collaborative program. Door prizes. Free STEM resources provided.

Bring Robotics to Your Science Classroom with LEGO® MINDSTORMS® Education EV3
(Grades 5–12) *304C, Convention Center*
Science Focus: ETS
Sponsor: LEGO® Education
Kelly Reddin, LEGO Education, Billund, Jylland, Denmark
Want to prepare your students for STEM-related fields? Want to bring more engineering and Problem-Based Learning into the classroom? Come to this workshop to not only program a LEGO MINDSTORMS Education EV3 robot, but also leave with the confidence to bring robotics to your classroom for more student-centered learning.

FLINN Workshops

Hands-On Science to Motivate and Educate

MORNING OF CHEMISTRY

Friday, March 31 • 10 am – 11:30 am • Petree Hall C

Other Flinn workshops are located in Room 403A of the Los Angeles Convention Center

Thursday, March 30

8:00 a.m. – 9:30 a.m.	Flinn's *Exploring Chemistry*™—Connecting Content through Experiments
10:00 a.m. –11:30 a.m.	Flinn Favorite Biology Activities and Games
12:00 p.m. – 1:30 p.m.	Year-Round Solutions for Success in AP* Chemistry
2:00 p.m. – 3:30 p.m.	Teaching Forensics with Real Crime Scene Investigation Techniques
4:00 p.m. – 5:30 p.m.	Building or Renovating a Laboratory? Get Your Questions Answered

Friday, March 31

8:00 a.m. – 9:30 a.m.	Fantastic Physical Science Demonstrations
10:00 a.m. –11:30 a.m.	Flipping AP* Biology with Flinn*PREP*™
12:00 p.m. – 1:30 p.m.	New Inquiry Investigations for AP* Physics 1 and 2
2:00 p.m. – 3:30 p.m.	Green Chemistry Experiments for General and Advanced Placement* Chemistry
4:00 p.m. – 5:30 p.m.	Enhance Your Science Course with POGIL™ Activities

Saturday, April 1

10:00 a.m. –11:30 a.m.	Flinn Scientific's STEM *Design Challenge*™ Activities
12:00 p.m. – 1:30 p.m.	Hands-On Integrated Science Activities for Middle School

*AP and Advanced Placement are registered trademarks of the College Board, which was not involved in the production of, and does not endorse, these products.

FLINN SCIENTIFIC

For full workshop descriptions, go to
www.flinnsci.com/workshops/nsta2017

FIRST® Tech Challenge Proves You CAN Program a Robot

(Grades 7–12) *305, Convention Center*

Science Focus: ETS, SEP1, SEP2, SEP3, SEP5, SEP6

Sponsor: *FIRST*

Thomas Eng *(teng@firstinspires.org), FIRST,* Manchester, N.H.

Using off-the-shelf Android technology in a popular Blockly programming language, be ready to "dive in" using go-at-your-own-pace instructional materials to program a robot as used in the *FIRST* Tech Challenge program. Once you've built your program, take the robot for a test-drive based on what you've learned. Game on!

Physiology in Action: Explore Feedback Mechanisms and Homeostasis

(Grades 6–12) *306 AB, Convention Center*

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Investigate feedback mechanisms and how organisms maintain homeostasis with Carolina's physiology kits. Demonstrations and fun hands-on activities keep students engaged and excited about this difficult-to-teach topic.

Engineer Physical Science Excitement with a Carolina STEM Challenge®

(Grades 6–12) *308 AB, Convention Center*

Science Focus: PS, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Rockets zoom and race cars zip through hands-on activities that engage your middle school and high school students. Apply creative problem-solving skills and engineering practices to chemistry and physical science challenges. Experience how Carolina makes it easy to incorporate STEM into your classroom.

Science + Engineering = New Elementary Program from the Smithsonian

(Grades K–5) *309, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Be among the first to experience the exciting new Smithsonian elementary science program written from the ground up for *NGSS.* Engage in lesson examples to see how the program truly integrates science content with engineering and the nature of science.

Biology with Vernier

(Grades 7–College) *402A, Convention Center*

Science Focus: ETS2, LS1, LS2

Sponsor: Vernier Software & Technology

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

Use Vernier sensors to conduct biology experiments from our lab books in this engaging hands-on workshop. Collect and analyze data on LabQuest 2 and computers. Data sharing with mobile devices will be demonstrated. Explore our wide range of digital tools that promote student understanding of biology concepts.

Integrating iPad with Vernier Technology

(Grades 3–College) *402B, Convention Center*

Science Focus: ETS2, PS1, PS2

Sponsor: Vernier Software & Technology

Verle Walters *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors with iPad to conduct hands-on experiments such as "Graphing Your Motion" and "Grip Strength Comparison." See a demonstration of our new Go Direct sensors that connect wirelessly to iPad—no interface needed. Explore our wide range of digital tools that promote student understanding of science concepts.

Flinn Favorite Biology Lab Activities and Games

(Grades 7–12) *403A, Convention Center*

Science Focus: LS

Sponsor: Flinn Scientific, Inc.

Meg Griffith *(mgriffith@flinnsci.com)* and **Matt Anderson** *(manderson@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.

Students learn better and faster when they are actively involved in hands-on activities that are not only fun, but create learning opportunities along the way. We will share some inquiry-based labs, interactive demonstrations, and collaborative games you can use to motivate your students. We'll focus on core topics like evolution, genetics, biochemistry, and more—you're sure to find a Flinn Favorite that works for you! Handouts for all activities.

HHMI Is Phenomenal! Using BioInteractive to Create Phenomena-Based Lessons

(Grades 9–12) *403B, Convention Center*

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

Sponsor: HHMI BioInteractive

Samantha Johnson *(smjohnson@slzusd.org),* Arroyo High School, San Lorenzo, Calif.

James Clark *(jclark@slzusd.org),* San Lorenzo (Calif.) Unified School District

Struggling to find phenomena? Learn how you can use the many resources available at HHMI BioInteractive to anchor phenomena-based three-dimensional lessons. Participants will create and leave with 5E lessons that can facilitate students' explanations of natural phenomena, as well as a mini HHMI phenomena bank.

Investigate Photosynthesis and Cellular Respiration with Algae Beads

(Grades 9–College) *404 AB, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

Damon Tighe *(damon_tighe@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). Learn how to extend this lab to study the effects of light intensity, light color, temperature, and other organisms on these processes.

Enzymes: Technology Inspired by Nature

(Grades 9–College) *406 AB, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

With rising greenhouse gases, scientists look to nature for a biofuel solution. The star of this hands-on workshop is the cellobiase enzyme, an engine for cellulosic biofuel production. Use the inquiry-based approach to extract enzyme, test activity, and design experiments to study how pH, temperature, and concentrations affect reaction rates.

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

(Grades 9–12) *408A, Convention Center*

Science Focus: LS

Sponsor: BIOZONE International Ltd.

Richard Allan *(richard@thebiozone.com),* BIOZONE International Ltd., Hamilton, New Zealand

Successfully implement the high school life science component of the *NGSS* approach with BIOZONE's newest student workbook. This carefully constructed new 2016 edition 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*.

Awesome Activities for an *NGSS* Classroom

(Grades K–8) *408B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Houghton Mifflin Harcourt

Damon Smerchek *(dmerchek@hmhco.com)* and **James Oliver,** Houghton Mifflin Harcourt, Boston, Mass.

NGSS is more than starting your lesson with an activity. This hands-on workshop using selected activities from the brand-new HMH Science Dimensions curriculum will teach you how an *NGSS* lesson is different than the usual ways science is taught. Come experience a fun and engaging blended learning approach.

Floating Trains: Phenomena, 3D Instruction, and Amplify Science for Grades 2–5

(Grades 2–5) *409 AB, Convention Center*

Science Focus: PS2

Sponsor: Amplify

Rebecca Abbott *(amplifyscience@berkeley.edu)* and **Jennifer Garfield** *(amplifyscience@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley

Experience how students investigate maglev trains while figuring out principles of forces and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 2–5, engaging with this new K–8 *NGSS*-designed curriculum from The Lawrence Hall of Science.

Here Comes the Sun Power: Practical Applications and Protection
(Grades 6–12) *503, Convention Center*
Science Focus: GEN
Sponsor: Ward's Science
Patty Muscatello and **Michelle Pagani,** VWR Science Education, Rochester, N.Y.
Everyone loves the feel of sunshine on their skin, but what is really happening? In this workshop, you will learn to harness the Sun to work for your benefit and demonstrate the importance and effectiveness of different SPF levels in your sunscreen.

An All-American Total Eclipse of the Sun
(Grades 6–12) *511 AB, Convention Center*
Science Focus: ESS1.B
Sponsor: Simulation Curriculum Corp.
Herb Koller *(hkoller@simcur.com),* Simulation Curriculum Corp., Minnetonka, Minn.
What causes total eclipses? Why are they so rare? What makes this one special? Come see how we can use Simulation Curriculum's award-winning Starry Night to answer these questions and preview the circumstances of the August 2017 eclipse. Starry Night is available for all computing platforms, including Chromebooks.

Molecular-Level Visualization: Engage Your Students and Fight Misconceptions!
(Grades 7–College) *511C, Convention Center*
Science Focus: PS1.A, CCC, SEP
Sponsor: Wavefunction, Inc.
Jurgen Schnitker *(jurgen@wavefun.com),* Wavefunction, Inc., Irvine, Calif.
Is it difficult for your students to relate the macroscopic and symbolic levels of chemistry to molecular phenomena? 3D visualization can help! ODYSSEY Molecular Explorer is a highly interactive program for high school and AP chemistry. Bring a Windows or Macintosh laptop if you can; some loaner laptops also available.

What's New in Physics?
(Grades 8–12) *512, Convention Center*
Science Focus: PS, CCC, SEP
Sponsor: Perimeter Institute for Theoretical Physics
Damian Pope, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada
What's new in physics? From quantum mechanics to cosmology, this workshop will explore cutting-edge physics for teachers who are looking for current real-world science connections in their classrooms. We will discuss the big breakthroughs that your students are talking about and show you how you can incorporate them into your class.

Climate and Global Change…Too Hot to Handle? Teaching the Science with Rigor and Relevance
(Grades 9–12) *514, Convention Center*
Science Focus: ESS3
Sponsor: Pearson
Joseph Levine, Author, Boston, Mass.
Human activity is the most powerful driver of change on Earth—affecting sea level, rainfall, seasonality, and ecosystem functions on which all life depends. Global change is complex, interdisciplinary—and perfect for *NGSS*-oriented teaching. We will explore the value of system models, relating global climate system structure to its function and underscoring the importance of time and scale in understanding stability and change in global systems.

Waves—Make an Abstract Concept Become Visible!
(Grades 6–8) *518, Convention Center*
Science Focus: PS4.A, PS4.B, CCC1, CCC6, SEP2, SEP3, SEP4, SEP5
Sponsor: Lab-Aids, Inc.
Lisa Kelp, Lab-Aids, Inc., Ronkonkoma, N.Y.
Experience two exemplary *NGSS*-focused activities from SEPUP that build up to MS-PS4-2. Anchored in the context of health issues around various types and levels of wave exposure, these workshop activities model seamless integration of the three dimensions, ELA, and math standards. We will explore the relationship between visible light frequency and energy through the use of a phosphorescent material and use light boxes to explore reflection and refraction.

11:00–11:05 AM Exhibits Opening/Ribbon-Cutting Ceremony

NSTA Exhibits Entrance, Hall H, Convention Center

Presider: Mary Gromko, NSTA President, Colorado Springs, Colo.

Welcoming Remarks: Tim Williamson, Chairperson, NSTA Los Angeles National Conference, and California State University, Long Beach

Musical Entertainment provided by Crescenta Valley High School Jazz Combo, under the direction of Mathew Schick, Instrumental Music Director

Special Guests: Carolyn Hayes, NSTA Retiring President, and Retired Educator, Greenwood, Ind.; David Crowther, NSTA President-Elect, and University of Nevada, Reno; Christine Anne Royce, NSTA President-Elect-Elect, and Shippensburg University, Shippensburg, Pa.; Jessica L. Sawko, CSTA Executive Director, Folsom, Calif.; Camille Stegman, NSTA Director, District XVI, and Storey County Schools, Virginia City, Nev.; David L. Evans, NSTA Executive Director, Arlington, Va.; Therese Shanahan, Program Coordinator, NSTA Los Angeles National Conference, and University of California, Irvine; Susan Gomez Zwiep, Local Arrangements Coordinator, NSTA Los Angeles National Conference, and California State University, Long Beach; Jason Sheldrake, Assistant Executive Director, Sales, NSTA, Arlington, Va.

11:00–11:30 AM Presentations

Teacher Researcher Day Session: Yes, I Will Fix Your Computer…and Much More! My Journey as a Technology Coach in a High School Science and Math Department

(Grades 9–12) *Platinum Blrm. Salon D/Group 1, JW Marriott*

Science Focus: GEN

Sarah English (@SHChemistry; *senglish@sweethomeschools.org),* Sweet Home Senior High School, Buffalo, N.Y.

Gain a better understanding of the role of a technology coach and the beneficial impact on technology-enhanced learning experiences.

Teacher Researcher Day Session: Making Sense of Your Science Teaching Through Reflective Practice

(General) *Platinum Ballroom Salon D/Group 2, JW Marriott*

Science Focus: GEN

Jeremy Ervin (@drjervin; *jervin62@gmail.com),* Cedarville University, Cedarville, Ohio

Use effective inquiry-based reflection strategies to make sense of science teaching practices and student learning.

11:00 AM–12 Noon Presentations

Teacher Researcher Day Session: Culturally Responsive Mentoring: Building Pedagogical Capacity Through Teacher Inquiry in Chicago Science Classrooms

(Grades 9–12) *Platinum Blrm. Salon D/Group 4, JW Marriott*

Science Focus: GEN, SEP2, SEP3, SEP8

Brezhnev Batres, Benito Juarez Community Academy, Chicago, Ill.

Mindy Chappell (@femme_instruite; *mindyjc2@gmail.com),* North Grand High School, Chicago, Ill.

Nina Hike *(ninahike@uic.edu),* Marie Sklodowska Curie Metro High School, Chicago, Ill.

Chicago science teachers share findings from their teacher inquiries related to being responsive to urban communities and *NGSS* practices, and mentoring science teacher candidates.

NMEA-Sponsored Session: Sharks4Kids

(General) *Petree Hall D, Convention Center*

Science Focus: ETS2, LS, CCC, SEP

Leann Winn (@Sharks4kids; @JrzyShark; *leann@sharks4kids.com),* New Jersey Institute of Technology, Newark

Sharks4Kids brings together scientists, educators, conservationists, and professional videographers in creating the next generation of shark advocates through education, outreach, and adventure.

11:00 AM–12 Noon Exhibitor Workshops

Argumentation in the STEM Classroom

(Grades K–12) *150 AB, Convention Center*

Science Focus: GEN, NGSS

Sponsor: STEMscopes™ from Accelerate Learning

Heather Wilde, STEMscopes from Accelerate Learning, Houston, Tex.

Join us as we model successful implementation of consensus building through discourse and argumentation, which are practices at the heart of meeting the needs of diverse learners and creating a student-centered learning environment. When teachers in a STEM classroom consciously reduce teacher talk and increase the purposeful student talk, student achievement gains are noted.

Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws

(Grades 9–12) *405, Convention Center*

Science Focus: PS1.A, PS1.B, CCC1, CCC5, SEP4, SEP5

Sponsor: PASCO scientific

Tom Loschiavo *(loschiavo@pasco.com),* PASCO scientific, Roseville, Calif.

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

How can you tell when a reaction is complete? Why doesn't more reactant always lead to more product? Help students develop a better understanding of stoichiometry and limiting reactants through this hands-on activity using household chemicals and a wireless pressure sensor.

STEM Activities: Crash Barrier Design and Engineering Challenge

(Grades 6–12) *407, Convention Center*

Science Focus: ETS1, PS2.A, PS2.B, CCC1, CCC2, CCC3, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Sponsor: PASCO scientific

Brett Sackett *(sackett@pasco.com),* PASCO scientific, Roseville, Calif.

Thomas Hsu *(thsu@pasco.com),* Ergopedia, Inc., Cambridge, Mass.

Do your students struggle to understand the relationship between momentum and impact forces? Real-time measurements of collisions can drive home the difference! Help students move beyond observation by designing a crash barrier to minimize the maximum collision force of a moving cart and improve your design based on data analysis.

Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR

(Grades 9–College) *410, Convention Center*

Science Focus: LS

Sponsor: Edvotek, Inc.

Danielle Snowflack *(info@edvotek.com),* **Brian Ell** *(info@edvotek.com),* and **Tom Cynkar** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.

Explore the relationship between genotype and phenotype using Phenylthiocarbamide (PTC). Some think PTC tastes bitter, while others find it tasteless. The ability to taste PTC has been linked to variations in a taste receptor gene. In this workshop, you will learn to use PCR to distinguish between PTC alleles. Receive a free gift for attending.

Project-Based Learning + *NGSS* = Active Chemistry

(Grades 9–12) *501 AB, Convention Center*

Science Focus: PS

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.

Develop movie special effects; design an art object for museum display; create a game to teach the periodic table. Project-Based Learning is all the rage now. It motivates students and challenges them to apply their physics knowledge. The PBL lessons can simultaneously reflect the *NGSS*. Active Chemistry has been incredibly successful in U.S. schools and is now being adapted overseas. Join the fun and find out how to make your curriculum even better.

K'NEX DNA Structure, Replication, and Transcription: An Expertly Engineered Molecule in Living Things

(Grades 9–12) *510, Convention Center*

Science Focus: LS1

Sponsor: K'NEX Education

Robert Jesberg *(rjesberg@knex.com),* K'NEX Education, Hatfield, Pa.

No more gumdrops and toothpicks! Build K'NEX DNA models to explore structure, replication, and transcription. Translate mRNA strands to determine amino acid sequences. Assume the role of enzymes as you manipulate models, complete DNA processes, and explore the history of DNA's discovery. A hands-on/minds-on standards-based STEM program.

11:05 AM–6:00 PM Exhibits

Hall H, Convention Center

Did you know that NSTA offers exclusive exhibit hall hours today from 11:05 AM to 12:30 PM? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services leading science education companies and organizations have to offer. You'll discover something new and exciting in the world of science teaching. Some exhibitors will offer materials for sale.

11:30 AM–12 Noon Presentations

Teacher Researcher Day Session: Do Novice Elementary Teachers See Scientists in Their Classroom?

(Grades K–8) *Platinum Blrm. Salon D/Group 1, JW Marriott*

Science Focus: GEN

Kathryn Watkins, The University of New Mexico, Albuquerque

Novice elementary teachers in a science methods course draw pictures of a scientist and then pictures of their students.

Teacher Researcher Day Session: "Teachers Training Teachers" as a Scenario for the Integration of Research Skills into the Trainers' Educational Practices

(Grades 9–College) *Platinum Blrm. Salon D/Group 2, JW Marriott*

Science Focus: GEN

Myrna Hernández Nieves *(mirnahdez@hotmail.com),* **Minnuette Rodríguez** *(mmrhmonarca@gmail.com),* **María Ortiz-Hernández** *(marialmmmC8@yahoo.com),* **Yamily Colón** *(yamilycolon@hotmail.com),* and **Amabel Soto** *(amabelsoto@yahoo.com),* Center for Science and Math Research (CSMER), University of Puerto Rico at Río Piedras, and Puerto Rico Dept. of Education, San Juan

Presider: Marta Fortis *(fortismarta@gmail.com),* Center for Science and Math Research (CSMER), University of Puerto Rico at Río Piedras

Math and Science Master teachers present their findings on the impact of their training and mentoring to other teachers in an M and S integrated PD program.

12 Noon–12:30 PM Presentation

Teacher Researcher Day Session: Come Be a Part of the Science Inquiry Group Network

(General) *Platinum Ballroom Salon D, JW Marriott*

Science Focus: GEN, INF, NGSS

Deborah Roberts-Harris *(drober02@unm.edu),* The University of New Mexico, Albuquerque

The Science Inquiry Group Network provides a way for interested teachers and teacher educators to continue talking with one another via the internet in between Teacher Researcher Days. Join us and engage in discussing ways to support teachers interested in inquiring into their own teaching practices and student learning.

12 Noon–1:30 PM Exhibitor Workshops

Quick and Easy PCR in 90 Minutes

(Grades 9–College) *150C, Convention Center*

Science Focus: LS1, LS3, PS1, CCC1, CCC4, SEP4

Sponsor: The MiniOne Systems

Richard Chan *(info@theminione.com),* The MiniOne Electrophoresis, San Diego, Calif.

Learn to conduct a PCR experiment in your classroom with the new super fast and simple-to-use MiniOne PCR System. Increase engagement and learning by providing an exciting hands-on experience where students set up PCR reactions and monitor progress in real-time via a tablet.

Riding the Wave with TCI

(Grades K–5) *153A, Convention Center*

Science Focus: PS4

Sponsor: TCI

Christy Sanders, TCI, Mountain View, Calif.

With TCI's *Bring Science Alive!* programs, participants will be fully immersed in a lesson learning the ideas of science by actually "doing" science rather than just memorizing facts. We will use a powerful online learning system to develop a model of waves to describe patterns in terms of amplitude and wavelength. Experience learning from a student's perspective. After completing this workshop, you will have the tools to implement hands-on in-class investigations that work seamlessly with interactive technology.

DNA with a Data Twist: Modeling DNA Structure/Replication and Bioinformatics

(Grades 9–College) *153B, Convention Center*

Science Focus: LS1.A, LS1.B, LS1.D, LS3.A, LS3.B, LS4.B, LS4.D, CCC1, CCC2, CCC6, CCC7, SEP2, SEP4

Sponsor: 3D Molecular Designs

Gina Vogt *(gina.vogt@3dmoleculardesigns.com)* and **Margaret Franzen** *(franzen@msoe.edu),* MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Engaging physical models allows students to explore DNA structure and replication and model the classic Meselson-Stahl experiment. A beta globin gene map introduces students to bioinformatics and lets them "discover" introns. These activities allow students to discover concepts, and then learn terminology in an approach that really sticks!

PEASE in Our Time: Memory Lanes of the Brain and *NGSS*

(Grades K–6) *301 AB, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Delta Education/School Specialty Science

John Cafarella, Retired Teacher/Administrator, Canadensis, Pa.

Retrieved memories are the only proof we have that learning has taken place. Where is knowledge/understanding stored in the brain? How does it get in? How does it get out? We will look at the procedural, episodic, automatic, semantic, and emotional lanes of the brain through an *NGSS*/Delta lens.

Model Elementary Science Implementation

(Grades K–5) *303 AB, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Delta Education/School Specialty Science–FOSS

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

Hear from a panel of administrators and lead teachers about successful models for transforming instruction in elementary schools using science as the core. FOSS serves as the framework for the design of a science-centered curriculum for all students. Partnerships and professional development are part of the plan.

Solving the Mystery of STEM Using Forensic Science

(Grades 6–12) *304 AB, Convention Center*

Science Focus: GEN

Sponsor: Frey Scientific/School Specialty Science

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

Kat Mills, School Specialty Science, Rosharon, Tex.

Conduct STEM-focused beginning forensic activities that connect scientific investigations to analysis and investigative skills. Solve "cases" involving fingerprinting, blood spatter, and document and fabric analysis. Use a digital learning platform with simple supplies to apply basic mathematic principles. Integrate reading and writing strategies. Door prizes! Free STEM resources provided.

Make Science Come to Life Through Modeling with LEGO® Education

(Grades 1–4) *304C, Convention Center*

Science Focus: ETS

Sponsor: LEGO Education

Jenny Nash, LEGO Education, Billund, Jylland, Denmark

Looking for engaging ways to model sciences and teach computational thinking? See how programming can bring modeling to life in your science classroom, while teaching *NGSS* requirements including engineering. During this session, you will build a science model using LEGO bricks, motors, and sensors, and program that model to complete tasks.

Carolina's Young Scientist™ Dissections with Carolina's Perfect Solution® Specimen

(Grades K–6) *306 AB, Convention Center*

Science Focus: LS, CCC, SEP

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.

They Come in Pairs: Addressing Student Misconceptions About Chromosomes
(Grades 6–12) *308 AB, Convention Center*
Science Focus: LS, CCC, SEP
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Understanding the stages of meiosis and clarifying chromosome behavior has always been a challenge for students. What if those concepts were as easy to understand as folding laundry? This workshop will help you identify and address student misconceptions by using ChromoSocks®. Presented in partnership with HudsonAlpha.

***NGSS*: How Do We Know It When We See It?**
(Grades K–8) *309, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
How does *NGSS* change the instructional landscape of a science classroom? How is it different? How do principals/instructional leaders/coaches know *NGSS* is being implemented in their classrooms? Engage in examples of the instructional shift through *NGSS*-designed lessons. Leave with a tool for use by instructional leaders in classroom visits.

Chemistry with Vernier Using Chromebook
(Grades 9–College) *402A, Convention Center*
Science Focus: ETS2, PS1, PS3, PS4, SEP3, SEP4,
Sponsor: Vernier Software & Technology
Nüsret Hisim *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Use Vernier sensors with Chromebooks to conduct hands-on chemistry experiments such as "Boyle's Law" and "Beer's Law." See a demonstration of our new Go Direct wireless and USB sensors that connect directly to Chromebooks—no interface needed. Explore our wide range of digital tools that promote student understanding of chemistry concepts.

Physics with Vernier

(Grades 9–College) *402B, Convention Center*

Science Focus: ETS2, PS2, PS3, PS4

Sponsor: Vernier Software & Technology

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

Use Vernier sensors to conduct physics experiments from our lab books in this engaging hands-on workshop. Collect and analyze data on LabQuest 2 and computers. See a demonstration of our new Go Direct wireless and USB sensors that connect directly to computers, Chromebooks, and mobile devices—no interface needed.

Year-Round Solutions for Success in AP Chemistry from Flinn Scientific

(Grades 9–College) *403A, Convention Center*

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Joan Berry *(jberry@flinnsci.com)* and **Jillian Saddler** *(jsaddler@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.

Join Flinn as we share AP Chemistry demonstrations, labs, inquiry activities, and more! Come learn about new ways to engage your advanced students. Our activities are aligned to the learning objectives and skills your students need to be successful. Also, discover the benefits of preparing students for the first day of class with Flinn*PREP*™: a new online review of foundational chemistry concepts. Handouts and door prizes. *AP is a registered trademark of the College Board.*

HHMI BioInteractive Resources Exploring Human Skin Color and Polygenic Inheritance

(Grades 9–College) *403B, Convention Center*

Science Focus: LS3

Sponsor: HHMI BioInteractive

Robert Kuhn *(ucapugulator@gmail.com),* Centennial High School, Roswell, Ga.

Helen Snodgrass *(helen.snodgrass@yesprep.org),* YES Prep North Forest, Houston, Tex.

Dive into an authentic example of polygenic inheritance by studying the great variation in human skin color. We will explore activities related to the short film *The Biology of Skin Color* that use evidence and mathematical modeling to explain how SNPs are used to study genes and phenotypes in polygenic traits.

GMOs: A Hot Topic in the Media and Classroom: Monsanto Panel Discussion and Presentation

(General) *408A, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Monsanto Co.

Valerie Bayes, Leonard Herbert, and **Brian Gardunia**, Monsanto Co., Saint Louis, Mo.

Monsanto Company scientists will discuss what a GMO is and isn't, how these innovations are tested, the limitations and benefits of the technology, and where biotechnology is used outside of agriculture today. Hear how Monsanto is partnering with others in the agriculture industry to help farmers continue to grow more food for a growing population while remaining sustainable and environmentally conscious. Whether you host GMO debates in the classroom, cover biotechnology in your curriculum, or have questions—we want to make our STEM experts available to you.

Common Misconceptions About Engineering in the *NGSS*

(Grades K–12) *408B, Convention Center*

Science Focus: ETS1, SEP1, SEP3, SEP6

Sponsor: Houghton Mifflin Harcourt

Cary Sneider *(carysneider@gmail.com),* Portland State University, Portland, Ore.

Learn from a leader of the engineering team who helped develop the *Framework* and the *NGSS* to gain insights into engineering and the *NGSS*. He will empower you to understand the nature and application of engineering principles to more effectively engage your students in engineering activities and practices that meet the *NGSS*.

Space Docking Failure: Phenomena, 3D Instruction, and Amplify Science for Grades 6–8

(Grades 6–8) *409 AB, Convention Center*

Science Focus: PS2, SEP7

Sponsor: Amplify

Suzanna Loper *(amplifyscience@berkeley.edu)* and **Carissa Romano** *(amplifyscience@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley

Experience how students investigate a failed spacecraft docking while figuring out principles of force and motion and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 6–8, engaging with this new *NGSS*-designed curriculum from The Lawrence Hall of Science.

—*Photo courtesy of Jacob Slaton*

Lights, Camera, Action Potentials!
(Grades 6–12) *503, Convention Center*
Science Focus: LS
Sponsor: Ward's Science
Liam Casey, VWR Science Education, Rochester, N.Y.
Twenty percent of the world will have a neurological disorder…and there are no cures! Experience simple yet powerful neuroscience kits, popularized through engaging TED TALKS videos, and help enlist the next generation of neuroscientists. Backyard Brains' kits show students firsthand how the brain communicates with our senses, memories, and desires.

Smart Management of Water Resources Using TI Graphing Calculators and the TI-Innovator Hub
(Grades 6–12) *511 AB, Convention Center*
Science Focus: ESS, LS
Sponsor: Texas Instruments
Fred Fotsch, Texas Instruments, Dallas
In this hands-on workshop, learn how to enable your students to apply programming skills and knowledge of the water cycle and photosynthesis to solve a real-world problem. Your students will be able to design a smart water management system by programming a TI graphing calculator to control a TI-Innovator Hub with attached motors and temperature, moisture, and humidity sensors.

Environmental Science: Explore Living Landscapes
(Grades K–5) *511C, Convention Center*
Science Focus: LS2
Sponsor: TurfMutt
Ted Lattis, Scholastic Inc., New York, N.Y.
Superheroes TurfMutt & the Outdoor Powers are on a mission to teach the importance of living landscapes. Learn about the Scholastic-created environmental science program for grades K–5, play a fun eco-game with us, and meet the teacher who won $10,000 for her school's green space!

Take Your Students on a Quest! A Real-World Problem-Based Learning Project That Incorporates All Three Dimensions of *NGSS*
(Grades K–8) *514, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Pearson
Chuck McMillan, Pearson Education, Boston, Mass.
Experience a real-world Problem-Based Learning project that incorporates all three dimensions of the *NGSS* and immerses students in an environment of inquiry.

Introducing the Lab-Master®
(Grades 9–12) *518, Convention Center*
Science Focus: PS
Sponsor: Lab-Aids, Inc.
Andrew Uy, Loyola High School of Los Angeles, Calif.
Open flame is no longer allowed in many classrooms but the solution should never be to eliminate student labs! This workshop focuses on the Lab-Master, an innovative device designed to minimize safety concerns. Recently contracted for all New York City public schools, the unit safely boils up to 50 mL of water in 3–5 minutes, contains a built-in RGB spectrophotometer, and includes temperature and voltage probes. Join us for a hands-on look at the Lab-Master and sample labs featuring its use.

12:30–1:00 PM Presentations

SCST-Sponsored Session: Changes in Students' Perceptions and Motivation During Course-Embedded Freshman Research Experiences

(College) *Georgia 1, JW Marriott*

Science Focus: GEN

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

This presentation summarizes progress in combining measures of motivation and perception of research processes to predict persistence and performance in research-oriented introductory classes

Science Education, Multimodality, and Literacy: The Creation of Science Graphic Novelettes and the Literacy Connection

(General) *Platinum Ballroom Salon H, JW Marriott*

Science Focus: GEN, NGSS

Alex Romagnoli *(aromagno@monmouth.edu),* Monmouth University, West Long Branch, N.J.

Join me as I share research concerning interdisciplinary learning and collaboration through the creation of multimodal texts.

Classroom Procedures to Support Science Notebooks

(Grades 2–12) *Platinum Ballroom Salon J, JW Marriott*

Science Focus: GEN

Mary Newell *(mary.newell@alvord.k12.ca.us),* Alvord Unified School District, Riverside, Calif.

Engage in a set of classroom structures and procedures designed to make science notebooks efficient and effective learning tools. Topics will include notebook set-up, maintenance, and assessment.

Tales from the Front: Beginning Our Science Teaching Careers in the Era of *NGSS*

(Grades 9–11) *Plaza 2, JW Marriott*

Science Focus: PS

Vito Dipinto *(vdipinto@nl.edu),* National Louis University at Wheeling, Ill.

Andrew Bean *(apbean@cps.edu),* Dever Elementary School, Chicago, Ill.

Frank Prill *(frankprilljr@gmail.com),* Bolingbrook High School, Bolingbrook, Ill.

We will share the verities, vanities, and vulgarities of becoming secondary physical science teachers in the era of *NGSS*.

Viewing the Practices of Scientists and Engineers Through Three Spheres of Activity: The Importance of Evidence in Teaching Science

(Grades K–8) *507, Convention Center*

Science Focus: GEN, SEP3, SEP4, SEP6, SEP8

Aaron Isabelle *(isabella@newpaltz.edu),* SUNY New Paltz, N.Y.

The work of scientists/engineers occurs in three spheres of activity: empirical inquiry, explanation, and evaluation. This presentation highlights evidence as essential to effective science teaching.

The Living Classroom: Turning Your Curriculum into an Outdoor Adventure Through Learning Gardens with STEM

(Grades P–4) *Kentia Hall H, Convention Center*

Science Focus: GEN

Kristen Scrivens *(kscrivens@paramus.k12.nj.us),* Stony Lane School, Paramus, N.J.

Find out how to turn your current curriculum into learning opportunities in an outdoor laboratory. Promote physical activity and quality outdoor experiences while teaching students to nurture and care for other living things. Enhance connections between disciplines through outdoor learning such as science, math, reading, social studies, and writing.

Using Google My Maps to Determine Patterns of Earthquakes

(Grades 6–12) *Kentia Hall P, Convention Center*

Science Focus: ESS2.B, SEP4

Justin Glen *(jglen717@gmail.com),* Apponequet Regional High School, Lakeville, Mass.

Learn to use Google My Maps to interactively plot crustal activity, import your own datasets, discuss its strengths and limitations, and view student work samples.

12:30–1:30 PM Featured Presentation

Classroom Assessment and the *NGSS*

(General) *Petree Hall C, Convention Center*

Science Focus: GEN, NGSS

Speaker sponsored by Shell

Heidi Schweingruber (*hschweingruber@nas.edu*), Director, Board on Science Education, The National Academies of Sciences, Engineering, and Medicine, Washington, D.C.

Presider: Antoinette "Toni" Schlobohm, Strand Leader, *NGSS:* The Next Generation of Science Teaching, and Ardenwood Elementary School, Fremont, Calif.

The *NGSS* and standards like them are leading to major changes in classroom instruction. A new report from The National Academies of Sciences, Engineering, and Medicine's Board on Science Education provides guidance to teachers and professional development providers about how formative and summative classroom assessments will also need to change. Join Heidi as she highlights the key ideas in the report and explores ways that it can be used in professional development with K–12 teachers.

Heidi Schweingruber is director of the Board on Science Education at the National Research Council (NRC). She has been involved in many of the major projects of the board since it was formed in 2004. She co-directed the study that resulted in the report A Framework for K–12 Science Education. *In addition, Heidi has co-authored two books that translate findings from NRC reports for a broader audience*—Ready, Set, Science! Putting Research to Work in K–8 Science Classrooms *and* Surrounded by Science.

Prior to joining the NRC, Heidi worked as a senior research associate at the Institute of Education Sciences in the U.S. Department of Education, where she administered the preschool curriculum evaluation program and a grant program in mathematics education.

12:30–1:30 PM Presentations

INF **ASTC-Sponsored Session: Collaborations! Professional Development Connecting Local Resources with Teachers**

(Grades 3–12) *Atrium 3, JW Marriott*

Science Focus: GEN, INF, SEP

Linda McIntosh (@MITSinc86), **Brianna Wilkinson** (@MITSinc86), and **Sandra Ryack-Bell** *(sryackbell@mits.org),* MITS, Inc. (Museum Institute for Teaching Science), Quincy, Mass.

Kristen Scopinich (@MassAudubon; *(kscopinich@massaudubon.org),* Mass Audubon, Lincoln, Mass.

William Morton *(william_morton@nps.gov),* National Park Service, Lowell National Historical Park, Lowell, Mass.

Explore models for partnerships between informal/formal educators that leverage organizations' diverse areas of expertise and local connections to create successful inquiry-based professional development for teachers.

Science Online?! How Do You Do That?

(Grades 7–College) *Diamond Ballroom Salon 2, JW Marriott*

Science Focus: GEN, SEP8

Amy Smith *(asmith7@kaplan.edu),* **Annissa Furr** *(afurr@kaplan.edu),* and **Tyra Hall-Pogar** *(thall-pogar@kaplan.edu),* Kaplan University, Houston, Tex.

Members of the Kaplan University Science Department will discuss the integration of virtual labs, real-world problems, and multiculturalism and diversity concepts into science classes to engage learners.

NSTA Press® Session: Uncovering Elementary Students' Ideas About Science Through Literacy Capacities

(Grades K–5) *Diamond Ballroom Salon 3, JW Marriott*

Science Focus: GEN, SEP

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

Experience examples of formative assessment probes and techniques that uncover what students are really thinking about *NGSS* concepts and core ideas in science through use of the literacy capacities of speaking, listening, and language.

NSELA-Sponsored Session: Tools for Science Leaders
(Grades P–12) *Diamond Ballroom Salon 6, JW Marriott*
Science Focus: GEN
Keri Randolph (@keri_randolph; @nselascience; *(.keri@gmail.com),* Hamilton County Dept. of Education, Chattanooga, Tenn.
Bob Sotak *(bobsotak@gmail.com),* Science/STEM Education Consultant, Edmonds, Wash.
Come learn about the various tools and strategies that science leaders can use to enhance teaching and learning in their outreach.

Deep Brain Stimulation: Phenomena-Driven Instruction and Event-Based Science Linking Biomedical Engineering and Neuroscience to Teach the Nervous System
(Grades 7–12) *Diamond Ballroom Salon 8, JW Marriott*
Science Focus: ETS2, LS1, CCC2, CCC6, SEP1, SEP6, SEP7, SEP8
Kevin Fleming *(kevin.james.fleming@gmail.com),* Area Cooperative Educational Services (ACES), Hamden, Conn.
Learn about deep brain stimulation (used to treat movement disorders) as a phenomena and Event-based Science as a way to drive student learning and integrate science and engineering in a unit on the nervous system.

CSSS-Sponsored Session: Using the Crosscutting Concepts as the Basis for Competency-Based Learning
(Grades 5–12) *Olympic 3, JW Marriott*
Science Focus: GEN, CCC
Joanna Bruno *(jotab12@yahoo.com),* Colorado Dept. of Education, Denver
Many Colorado school districts are creating new accountability systems using competency-based learning. Come learn how using the crosscutting concepts as the basis for competency can illuminate learning science in many engaging and dynamic ways.

AMSE-Sponsored Session: Opening the Gateway to Success Using Case Studies to Help Implement Scientific Concepts for Diverse Learners
(Grades 10–12) *Platinum Ballroom Salon A, JW Marriott*
Science Focus: GEN, NGSS
Chelia McCoo Dogan (@CheliasTwins09; *crmccoo@ga.aliefisd.net),* Elsik High School, Houston, Tex.
Grow in your understanding of the relevance and implementation of *NGSS* with the use of case studies as a powerful tool to enhance scientific instruction with diverse learners.

Teacher Researcher Day Session: Assessing Changes in Student Understanding of the Nature of Science
(Grades 9–College) *Platinum Blrm. Salon D/Group 1, JW Marriott*
Science Focus: GEN, NGSS
Jeff Thomas, Central Connecticut State University, New Britain
CANCELED
Hear how students complete two 12-hour science instructional units over the course of a semester to improve their understanding of the nature of science.

Teacher Researcher Day Session: Urban Youth as Producers of Knowledge and Culture
(Grades 9–10) *Platinum Blrm. Salon D/Group 3, JW Marriott*
Science Focus: GEN, NGSS
Alejandra Frausto *(afrausto@cps.edu),* Chicago (Ill.) Public Schools
Explore examples of how students have been engaged in building and applying critical scientific literacy to claim their power as producers of knowledge and culture.

Teacher Researcher Day Session: Helping Preservice Teachers Understand and Use the *NGSS*
(General) *Platinum Ballroom Salon D/Group 4, JW Marriott*
Science Focus: GEN, NGSS
Deborah Roberts-Harris *(drober02@unm.edu),* The University of New Mexico, Albuquerque
Discussion centers on how preservice teachers approach using the *NGSS* through lesson analysis and then teaching. Come with your questions and suggestions!

Portfolios to Websites: The Ins and Outs of Showcasing Student Work
(Grades 9–12) *Plaza 1, JW Marriott*
Science Focus: ETS2
Sarah Tierney *(sarah_tierney@brewsteracademy.org),* Brewster Academy, Wolfeboro, N.H.
Come see how to showcase student work through the use of technology by creating a website that allows students a portfolio of their work.

The Power of Picture Books to Engage Girls in STEM
(Grades P–5) *501C, Convention Center*
Science Focus: GEN, SEP8
Andrea Beaty (@AndreaBeaty), Author, Naperville, Ill.
Ashley Spires (@ashleyspires), Author and Illustrator, Delta, B.C., Canada
Fiona Robinson (@FionaRstudio; *fiona@nyc.rr.com),* Author and Illustrator, Brooklyn, N.Y.
Join us for a panel discussion with picture book authors/illustrators of *Rosie Revere, Engineer; Ada Twist, Scientist; The Most Magnificent Thing;* and *Ada's Ideas.*

Designing Physical Science Learning Centers for Inclusive Early Childhood Classrooms
(Grades P–2) *502B, Convention Center*
Science Focus: PS
Mary Donegan-Ritter, University of Northern Iowa, Cedar Falls
Early childhood educators demonstrated how to provide universal design STEM investigations that are interesting, rigorous, and developmentally appropriate. ALL children can benefit from STEM learning.

CANCELED

Integrating Community Partnerships to Enhance STEM and PBL
(Grades 8–12) *504, Convention Center*
Science Focus: GEN
Alicia Pressel, Creekside High School, Saint Johns, Fla.
The Academy of Engineering and Environmental Sciences is a four-year STEM curriculum that integrates Project-Based Learning with community business partner involvement. Students have opportunities to earn industry certifications, develop real-world applications for STEM careers, and gain internship experiences through community partnerships.

Extending the Meaning of Access in Science: Co-Designing Curriculum with Students in the Margins
(Grades 7–12) *506, Convention Center*
Science Focus: LS2.A
Wardell Powell *(wapowell@umass.edu)* and **Christina Bosch** *(cbosch@umass.edu),* UMass Amherst, Mass.
Presider: Michael Krezmien *(krezmien@gmail.com),* UMass Amherst, Mass.
Learning is improved when "access to the curriculum" for exceptional students is extended to include their access and input into the curriculum development process.

What Constitutes High-Quality Discussion in a Science Classroom?
(Grades 3–5) *513, Convention Center*
CANCELED
Science Focus: GEN, NGSS
Emily Weiss *(weisse@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley
Watch and analyze several video examples to understand what constitutes high-quality discussion in the science classroom for students in grades 3–5. Appropriate for teacher leaders, administrators, and PD designers/providers.

Enhancing Your Physics Course with POGIL: Increasing Student Understanding and Concept Retention in High School Physics
(Grades 9–12) *Kentia Hall O, Convention Center*
Science Focus: PS
Julie Mills *(jmills@freelake.org),* Apponequet Regional High School, Lakeville, Mass.
Learn the whys and hows of the Process-Oriented Guided Inquiry Learning (POGIL) process in physics. Leave with resources to integrate POGILs in your classroom.

Magical Illusions and Simulating Simulations for Science
(General) *Theatre (411), Convention Center*
Science Focus: LS, PS
Alan McCormack *(amccorma@mail.sdsu.edu),* 2010–2011 NSTA President, and Professor Emeritus, San Diego State University, San Diego, Calif.
Storylines, discrepant events, and magic develop concepts in both physical and biological sciences, pique children's interest and imagination, and build creative and logical thinking skills.

12:30–1:30 PM Hands-On Workshops

Incorporating *NGSS* Science and Engineering Practices in the Context of 3D Learning Using the *NGSS* ASET Rubrics
(Grades 6–12) *Diamond Ballroom Salon 7, JW Marriott*
Science Focus: GEN, SEP
Corinne Lardy *(corinne.lardy@csueastbay.edu),* **Michelle Sinapuelas** *(michelle.sinapuelas@csueastbay.edu),* and **Michele Korb** *(michele.korb@csueastbay.edu),* California State University, East Bay, Hayward
Explore how to unpack, target, and apply specific elements of the *NGSS* science and engineering practices in example 3D lessons using Next Generation Alliance for Science Educators Toolkit rubrics.

INF **ASTE-Sponsored Session: Engaging Students with Dynamic Models: Peruvian Food Chain Jenga**
(Grades 5–12) *Georgia 2, JW Marriott*
Science Focus: LS2, INF, SEP2
Erin Pearce *(erin.pearce@tcu.edu),* **Beau Hartweg** *(b.b.hartweg@tcu.edu),* and **Ummuhan Malkoc** *(u.malkoc@tcu.edu),* Texas Christian University, Fort Worth
This Jenga© activity demonstrates how models can be used to facilitate learning. Attendees will engage in the creation and destruction of an aquatic food chain.

Exploring Chemicals from a Green Perspective
(Grades 8–College) *Gold Ballroom Salon 1, JW Marriott*
Science Focus: ESS3.B, ETS2.B, PS1.B, SEP1, SEP3, SEP4, SEP7
Suzanne Nesmith *(suzanne_nesmith@baylor.edu),* Baylor University, Waco, Tex.
Participate in "green" lab activities linking chemical toxicity, safety data sheets, green label claims, and evidence-based claims.

Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 101)
(General) *Platinum Ballroom Salon B, JW Marriott*
Science Focus: GEN, NGSS
LaMoine Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and The Motz Consulting Group, White Lake, Mich.
Sandra West *(sw04@txstate.edu),* Texas State University, San Marcos
Juliana Texley (@JulianaTexley; *texle1j@cmich.edu),* 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant
So you want new science facilities? Does your curriculum define your science teaching facility? With more than 20 years of conducting visits and presentations of new/renovated school science facilities, the author team of *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present the "basics" of science facility planning for safe, ergonomically designed, and sustainable facilities.

Integrate Science and Technology in the Classroom
(Grades 3–12) *Platinum Ballroom Salon C, JW Marriott*
Science Focus: GEN, SEP
Delia Bayna *(dbayna@dsdmail.net),* Canyon Creek Elementary School, Farmington, Utah
Learn 10 ways to integrate science and technology in your classroom next week. This session will include iPad apps, websites, and demos. BYOD to participate.

Preparing an *NGSS* Implementation Action Plan
(Grades P–12) *Platinum Ballroom Salon E, JW Marriott*
Science Focus: GEN, NGSS
Anthony Quan (@LacoeQuan; *anthony.p.quan@gmail.com),* Los Angeles County Office of Education, Downey, Calif.
John Spiegel (@sdngss; *john.spiegel@sdcoe.net),* San Diego County Office of Education, San Diego, Calif.
Find out how to develop your school or district *NGSS* Implementation Action Plan with county office science coordinators. We will share how we have assisted districts, both large and small, to prepare for *NGSS* implementation.

More than Airplanes: Models in the *NGSS*
(Grades 9–12) *Plaza 3, JW Marriott*
Science Focus: ESS1.B, LS2.B, PS1.A, CCC4, SEP2
Lesley Shapiro *(lesley.shapiro@ppsd.org),* Classical High School, Providence, R.I.
Rudolf Kraus *(rkraus@ric.edu),* Rhode Island College, Providence
The *NGSS* asks us to do more with models in both frequency and complexity. Learn what we're doing, and adapt it to your classroom.

Success for All, Takes Us All

(General) *152, Convention Center*

Science Focus: GEN, NGSS

Alison Thalmann (@athalmann77; *alison.nsta@gmail.com),* Senior Associate, Professional Development Relationships, NSTA, Arlington, Va.

Elida Abramyan *(exa7219@lausd.net),* Hooper Avenue Elementary School, Los Angeles, Calif.

Amy Argento *(scienceresourceteachers@tusd.org),* **Tera Black** *(scienceresourceteachers@tusd.org),* and **Marissa Stillittano** *(scienceresourceteachers@tusd.org),* and Torrance (Calif.) Unified School District

Polina Babina *(polina@opened.com),* OpenEd, an ACT company, San Jose, Calif.

Greg Beutler *(greg@techscool.org), TechsCool.org,* Huntington Beach, Calif.

Maria Cieslak *(myciesla@interact.ccsd.net),* Clark County School District, Las Vegas, Nev.

Lorenza Della Donna, Verbum Dei High School, Los Angeles, Calif.

David Garringer *(dag8819@lausd.net),* Stanley Mosk Elementary School, Winnetka, Calif.

Dean Gilbert *(gilbert_dean@me.com),* EDU Consulting LLC, Huntington Beach, Calif.

Josephine Golcher *(jgolcher@rosaryacademy.org),* Rosary Academy, Fullerton, Calif.

Pam Johnson *(pamjohnson@ecosinstitute.com),* Emerald Cove Outdoor Science Institute, Green Valley Lake, Calif.

Sean Kane *(skane@hlpusd.k12.ca.us),* Los Altos High School, Hacienda Heights, Calif.

Anita Kreide *(akreide@lmu.edu),* Loyola Marymount University, Los Angeles, Calif.

Lou Loftin *(lloftin@washoeschools.net),* Nevada's Northwest Regional Professional Development Program, Reno

Morris McCormick *(morris.mccormick@armintaes.net),* Arminta Street Elementary School, North Hollywood, Calif.

Lisa Nyberg *(lnyberg@csufresno.edu),* California State University, Fresno

Jessica Sawko *(jessica@cascience.org),* California Science Teachers Association, Folsom

Henri Shimojyo *(henri.shimojyo@ucr.edu)* and **Maria Simani** *(maria.simani@ucr.edu),* University of California, Riverside

Yamileth Shimojyo *(yshimojyo@rcoe.us),* Riverside County Office of Education, Murrieta Office, Murrieta, Calif.

Rachel Solis *(rachel.solis@lego.com),* LEGO® Education, Boston, Mass.

Scott Spector *(sspector@sbceo.net),* Santa Barbara County Education Office, Santa Barbara, Calif.

Virginia (Gini) Oberholzer Vandergon *(virginia.vandergon@csun.edu),* California State University, Northridge

Anne Marie Wotkyns *(awotkyns@lausd.net),* Kittridge Elementary School, Van Nuys, Calif.

Sandra Yellenberg *(sandi_yellenberg@sccoe.org),* Santa Clara County Office of Education, San Jose, Calif.

With pressure on teachers and districts for education improvements and implementation of the *NGSS*, now more than ever, teacher collaboration is needed.

High-Tech and Low-Tech Strategies for Science and Literacy

(Grades 4–College) *502A, Convention Center*

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

Michelle Joyce (@awesomescience; *AwesomeSTEM@gmail.com),* Palmetto Ridge High School, Naples, Fla.

Have your English language learner and low achieving students successfully navigate scientific vocabulary, formal language in reporting, as well as reading complex nonfiction text. Good teaching practices for ALL students.

Zombies in the Neighborhood? No Worries. STEM Them!

(Grades 6–College) *515B, Convention Center*

Science Focus: GEN

Jeffrey Lukens *(jeffreylukens0613@gmail.com),* Sioux Falls (S.Dak.) School District

Use the "Zombie Craze" to make STEM become "un-dead" in your science classroom! This is not only a hands-on session, but a brains-on session, as well!

Scientific Drawing with Elementary Students

(Grades P–5) *Kentia Hall A, Convention Center*

Science Focus: GEN, INF, SEP

Jenny Flowers *(jflowers@fieldmuseum.org)* and **Kyla Cook** *(kcook@fieldmuseum.org),* The Field Museum, Chicago, Ill.

Abigail Dye, Peggy Notebaert Nature Museum, Chicago, Ill.

Maggie Augustinsky, Northwestern University, Evanston, Ill.

Experience how to use scientific drawing as a strategy to engage elementary students in the *NGSS* science practices.

Using Integrated *(NGSS/CCSS)* Project-Based Learning to Support Modeling in Elementary Science Classrooms

(Grades 3–5) *Kentia Hall B, Convention Center*

Science Focus: GEN, NGSS

Deborah Peek-Brown *(dpbrown@msu.edu),* **Joseph Krajcik** (@krajcikjoe; *krajcik@msu.edu),* and **Kellie Finnie** *(cunni338@su.edu),* CREATE for STEM Institute, Michigan State University, East Lansing

Emily C. Miller *(emilycatherine329@gmail.com),* Madison (Wis.) Metropolitan School District

Explore integrated project-based units that use modeling practices to promote three-dimensional learning in elementary science integrating literacy, mathematics, and learning technologies.

Science Practices Using Math, Literature, and, YES, Even Diapers!

(Grades K–6) *Kentia Hall C, Convention Center*

Science Focus: GEN, SEP

Sandra Lampley *(sandra.lampley@uah.edu)* and **Frances Hamilton** *(franceshamilton87@gmail.com),* The University of Alabama in Huntsville

Join us for a hands-on exploration that is sure to engage you in lessons that integrate science, language arts, mathematics, and social studies.

Making Claims About Design Solutions to Mother Nature's Wrath

(Grades 3–5) *Kentia Hall D, Convention Center*

Science Focus: ESS3.B, ETS1, CCC3, CCC6, SEP2, SEP4, SEP7

Rebecca McDowell (@BeTheChnge; *beckymmcdowell@gmail.com),* Barrington (Ill.) 220 School District

Investigate structural and material properties and then plan and build a structure to minimize hail damage of an apple orchard.

Fun with Bubbles, Inquiry in the Elementary Science Classroom: Fostering Child-Led Discovery

(Grades P–6) *Kentia Hall E, Convention Center*

Science Focus: GEN, SEP3, SEP4, SEP5, SEP8

Leana Peltier *(lpeltier42@gmail.com),* Sleepy Hollow High School, Tarrytown, N.Y.

Discover how to navigate scientific investigations. An inquiry activity will highlight effective teaching and learning and the connection to *NGSS.*

INF Get Out! Strategies for Effective Outdoor Learning

(Grades P–5) *Kentia Hall F, Convention Center*

Science Focus: GEN, INF, NGSS

Kelly Shea (@kellyshea18; @gemsnet10; *kellyshea@uri.edu)* and **Caroline Stabile** (@gemsnet10; *stokbridge@uri.edu),* GEMS-Net, The University of Rhode Island, Kingston

Andrea Stein *(astein@rwpzoo.org),* Roger Williams Park Zoo, Providence, R.I.

Erica Beck Spencer *(ebspencer@berkeley.edu),* University of California, Berkeley

Develop effective outdoor pedagogy by engaging in an outdoor life science lesson. Find out how informal education partners help us bring three-dimensional learning to life outside!

Teaching Crosscutting Concepts Through Inquiry and English Language Arts in Elementary Classrooms

(Grades P–5) *Kentia Hall G, Convention Center*

Science Focus: GEN, CCC

Judith Lederman *(ledermanj@iit.edu),* **Norman Lederman** *(ledermann@iit.edu),* and **Selina Bartels** *(selina.bartels@cuchicago.edu),* Illinois Institute of Technology, Chicago

Engage in model lessons that integrate language arts with science content and practices to effectively teach *NGSS* crosscutting concepts.

Engineering Robotic Arms

(Grades 3–8) *Kentia Hall J, Convention Center*

Science Focus: ETS, SEP6

Kelli Mistretta *(kmistret@ccisd.net)* and **Nicole Long** *(nicolelong@ccisd.net),* Ed White Elementary School, El Lago, Tex.

Presider: Matthew Paulson *(mpaulson@ccisd.net),* Ed White Elementary School, El Lago, Tex.

Find out how to use cheap supplies to help students engineer various types of robotic arms to solve a task. Lesson plans, rubrics, and integration ideas will be shared.

More Games in Science Using *CCSS* and *NGSS*

(Grades 3–9) *Kentia Hall K, Convention Center*

Science Focus: GEN, INF

Judith Lucas-Odom (@Judith_Odom; *judyps23@yahoo.com),* Chester High School, Chester, Pa.

Help students make connections across the curriculum by designing and playing simple games!

Using a Web-Based Graphing Tool to Analyze and Interpret Local and National Weather and Climate Data for Patterns and Change

(Grades 6–9) *Kentia Hall L, Convention Center*

Science Focus: ESS2.C, ESS2.D, ESS3.D, CCC1, CCC2, CCC4, CCC5, CCC7, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7

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

Explore weather and climate data through an online graphing tool that simplifies data visualization so students can focus on analysis and interpretation. Local data available!

Infusing Literacy Standards into Science

(Grades 6–10) *Kentia Hall N, Convention Center*

Science Focus: GEN

Tammy Barnes *(tamara.barnes@browardschools.com),* Broward County Public Schools, Fort Lauderdale, Fla.

During this session, you will learn how to infuse student-centered literacy strategies into the science curriculum in order to increase student comprehension of science concepts.

Exploring Earth's Energy Balance, Carbon Cycle, and Our Changing Atmosphere

(Grades 6–9) *Kentia Hall Q, Convention Center*

Science Focus: ESS, CCC, SEP

Lori Lambertson *(llambertson@exploratorium.edu),* Exploratorium, San Francisco, Calif.

Model Earth's energy balance, explore the flows in the carbon cycle, and use NOAA data to graph changing carbon dioxide levels in the atmosphere.

Spicing Up Scientific Explanations with Authentic Animal Behavior Data from the Bronx Zoo!

(Grades 6–8) *Kentia Hall R, Convention Center*

Science Focus: GEN, SEP6, SEP7, SEP8

Gina Tesoriero (@STEMsuccessEdu; *ginatesoriero@gmail.com),* M.S. 319 Maria Teresa Mirabal School, New York, N.Y.

Paloma Krakower (@wcseducation; *pkrakower@wcs.org),* Wildlife Conservation Society, Bronx, N.Y.

Incorporate animal behavior data in the science classroom to engage students in stating claims that are rooted in evidence. View a rubric, too!

Bridge DATA Activity: Examining Juvenile Oyster Disease

(Grades 8–12) *Kentia Hall S, Convention Center*

Science Focus: LS

CANCELED

Celia Cackowski, Virginia Institute of Marine Science, Gloucester Point

What influences the onset of juvenile oyster disease? Using real data, determine if it's size, timing, or temperature that puts East Coast oysters at risk.

NMEA-Sponsored Session: Teach Marine Biology Instead of Biology to *NGSS* and *CCSS*

(Grades 9–College) *Petree Hall D, Convention Center*

Science Focus: LS1.A, LS1.B, LS1.C, LS2.A, LS2.B, LS2.C, LS3, LS4.A, LS4.B, LS4.C, SEP

Mark Friedman *(marklewisfriedman@gmail.com),* Marine Biology Educator, Redondo Beach, Calif.

Linda Chilton *(lchilton@usc.edu),* USC Sea Grant, Los Angeles, Calif.

Claire Fackler (@sanctuaries; *claire.fackler@noaa.gov),* NOAA Office of National Marine Santuaries, Santa Barbara, Calif.

Natasha Fraley, Shape of Life, Carmel Valley, Calif.

Hear about a comprehensive marine biology course that teaches *NGSS, CCSS,* and ocean literacy standards! A panel of marine science organization representatives will share free NGSS/CCSS–focused lessons, labs, activities, videos, assessments, games, and interactive webquests. Many Spanish language resources plus Center for Dark Energy Biological Investigations materials.

12:30–1:30 PM Exhibitor Workshops

DIVE into Engineering

(Grades K–12) *150 AB, Convention Center*

Science Focus: ETS

Sponsor: STEMscopes™ from Accelerate Learning

CJ Thompson and **Jason Maxwell,** STEMscopes from Accelerate Learning, Houston, Tex.

Teaching students to think and work like engineers is a big movement in current science education. Join us as we DIVE in together and experience some of the common practices of engineers and share how you can bring these into your classroom.

Understanding Photosynthesis: A Lab-Based Approach

(Grades 7–11) *405, Convention Center*

Science Focus: LS1.C, LS2.B, PS3.D

Sponsor: PASCO scientific

Michael Blasberg *(blasberg@pasco.com),* PASCO scientific, Roseville, Calif.

Ryan Reardon *(rreardon71@gmail.com),* Shades Valley High School, Irondale, Ala.

How can you clear up student misconceptions about respiration only occurring in the dark, or that only green light is used for photosynthesis? With data! Collect data on plant pigments, light reactions, and carbon cycling to create a better conceptual model that students can synthesize for complete understanding of photosynthesis.

Shockingly Good Electrochemistry: Making and Using Batteries

(Grades 6–12) *407, Convention Center*

Science Focus: PS1.A, PS3.D, CCC2, CCC5, SEP3, SEP7

Sponsor: PASCO scientific

Tom Loschiavo *(loschiavo@pasco.com),* PASCO scientific, Roseville, Calif.

Paul Werner *(pwerner@rocklin.k12.ca.us),* Rocklin High School, Rocklin, Calif.

How can metals "create" electricity? Can electricity drive a chemical reaction? Help your students understand the positives and negatives of electricity by creating batteries out of household items, measuring the voltage with a Wireless Voltage Sensor, and using electrical energy from a commercial battery to electroplate a metal.

Outbreak! Zika Testing Using the Enzyme Linked Immunosorbent Assay (ELISA)

(Grades 9–College) *410, Convention Center*

Science Focus: LS

Sponsor: Edvotek, Inc.

Danielle Snowflack *(info@edvotek.com),* **Brian Ell** *(info@edvotek.com),* and **Tom Cynkar** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.

The spread of Zika virus has led to a public health crisis in the Americas. While most infections are mild, the virus can contribute to birth defects and neurological problems. In this workshop, you will perform a quick and easy ELISA that simulates Zika testing. Free gift/raffle entry for attending!

Project-Based Inquiry Science: Blending Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms

(Grades 6–8) *501 AB, Convention Center*

Science Focus: GEN, NGSS

Sponsor: It's About Time

Mary Starr, Michigan Mathematics and Science Centers Network, Plymouth

Blending engineering practices, core ideas, and crosscutting concepts is made easy with Project-Based Inquiry Science. Experience how students collaborate to develop core ideas as they complete projects and science investigations that blend modeling, ask questions, and incorporate other science and engineering practices. Take home an activity idea and learn how PBIS makes learning science meaningful.

12:30–2:30 PM Meetings

***Science* & *Children* Advisory Board Meeting**

Diamond Ballroom Salon 4/5/Group 1, JW Marriott

***Science Scope* Advisory Board Meeting**

Diamond Ballroom Salon 4/5/Group 2, JW Marriott

***The Science Teacher* Advisory Board Meeting**

Diamond Ballroom Salon 4/5/Group 3, JW Marriott

***Journal of College Science Teaching* Advisory Board Meeting**

Diamond Ballroom Salon 4/5/Group 4, JW Marriott

***NSTA Reports* Advisory Board Meeting**

Diamond Ballroom Salon 4/5/Group 5, JW Marriott

Professional Development in Science Education Committee Meeting

Diamond Ballroom Salon 4/5/Group 6, JW Marriott

Preservice Teacher Preparation Committee Meeting

Diamond Ballroom Salon 4/5/Group 7, JW Marriott

Multicultural/Equity in Science Education Committee Meeting

Diamond Ballroom Salon 4/5/Group 8, JW Marriott

Coordination and Supervision of Science Teaching Committee Meeting

Diamond Ballroom Salon 4/5/Group 9, JW Marriott

Informal Science Education Committee Meeting

Diamond Ballroom Salon 4/5/Group 10, JW Marriott

Awards and Recognitions Committee Meeting

Olympic 2, JW Marriott

12:30–2:30 PM Hands-On Workshops

PLI

***NGSS* Toolkit Pathway Session: Using Performance Expectations to Plan for Classroom Assessments**

(Grades 6–12) *Platinum Ballroom Salon G, JW Marriott*

Science Focus: GEN, NGSS

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

Jo Topps *(jtopps@wested.org),* K–12 Alliance/WestEd, San Francisco, Calif.

Use a tool to engage in a process that deepens understanding of *NGSS* performance expectations to consider evidence of learning and plan for classroom assessment.

CESI-Sponsored Session: Using Toys to Teach Physics Share-a-Thon

(Grades P–8) *151, Convention Center*

Science Focus: PS

Karen Ostlund (@karen_ostlund; *klostlund@utexas.edu),* 2012–2013 NSTA President, and The University of Texas at Austin

Jim McDonald (@jimscienceguy; *jim.mcdonald@cmich.edu),* Central Michigan University, Mount Pleasant

Join us to gather ideas for how toys can be used to teach physics concepts in order to promote student motivation, excitement, interest, and learning.

12:30–4:30 PM Short Course

The Instructional Leader's Guide to *NGSS* (SC-1)

(Grades K–12) *Tickets Required; $32* *Gold Blrm. 4, JW Marriott*

Science Focus: GEN, NGSS

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

Peter McLaren (@PeterJMcLaren; *mclarenpeterj@gmail.com),* Next Gen Education, LLC, North Kingstown, R.I.

For description, see page 56.

1:00–1:30 PM Presentations

SCST-Sponsored Session: Research Experiences Throughout the Curriculum: A High-Impact Practice for Enhancing Student Success
(College) *Georgia 1, JW Marriott*
Science Focus: GEN
Kerry Cheesman *(kcheesma@capital.edu),* Capital University, Columbus, Ohio
If we are to prepare students for careers in science, the curriculum needs to reflect how scientific knowledge is gained.

Science, Literacy, and Beyond…
(Grades K–12) *Platinum Ballroom Salon H, JW Marriott*
Science Focus: GEN, NGSS
Greg Nicholas *(gnicholas@rcoe.us),* Riverside County Office of Education, Riverside, Calif.
This interactive presentation keeps it simple and fun by allowing participants to apply reading, writing, listening, and speaking in their science or elementary classrooms.

Interactive Notebooks Made Equitable, Engaging, and Easy
(Grades 1–12) *Platinum Ballroom Salon J, JW Marriott*
Science Focus: GEN, NGSS
Katrina Scherben *(katrina.scherben@hczpromise.org),* Harlem Children's Zone Promise Academy Schools, New York, N.Y.
Interactive Notebooks can empower diverse learners and promote scientific literacy. Receive classroom-ready strategies for all grades and disciplines that are manageable with any workload.

—Photo courtesy of Jacob Slaton

See It to Be It!
(Grades 9–College) *Plaza 2, JW Marriott*
Science Focus: GEN, SEP
Alexander Surra *(surra@stevenscollege.edu),* Thaddeus Stevens College of Technology, Lancaster, Pa.
Nanette Marcum-Dietrich (@DrNanette; *(ndietrich@millersville.edu),* Millersville University, Millersville, Pa.
Hear how one college is helping local high schools partner with industry to promote an understanding of STEM careers in green collar and technical fields.

Moving from Old Standards to *NGSS:* Bridging the Gap with Limited Time and Resources
(Grades K–5) *Kentia Hall H, Convention Center*
Science Focus: GEN, NGSS
Amanda Dykstra *(dykstraal@vvsd.org),* Valley View School District 365U, Romeoville, Ill.
Explore strategies to build teacher awareness and support of the *Next Generation Science Standards* when time and resources are at a minimum.

Natural Fracturing vs. Fracking: The Human Impact on Earthquakes
(Grades 6–12) *Kentia Hall P, Convention Center*
Science Focus: ESS3.B, ESS3.C, CCC1, CCC2, SEP4, SEP6, SEP7
Renee Clary *(rclary@geosci.msstate.edu),* Mississippi State University, Mississippi State, Miss.
Which produces more earthquakes—human activity or plate tectonic movement? Students use authentic data, map, correlate, and analyze earthquakes for the contiguous U.S.! Examples/resources provided.

1:00–2:30 PM Meeting

Aerospace Programs Advisory Board Meeting
Diamond Ballroom Salon 4/5/Group 11, JW Marriott

2:00–2:30 PM Presentations

SCST-Sponsored Session: Exploring Genetic Ancestry and Personal Identity in U.S. Ethnic Minority College Biology Students

(College) *Georgia 1, JW Marriott*

Science Focus: LS

Presenters to be announced

Hear about a classroom activity harnessing next generation sequencing results to discuss concepts in human evolutionary genetics and personal identity among U.S. ethnic minority college biology students.

Teacher Researcher Day Session: Merch It—*NGSS* and Standards-Based Grading

(Grades 9–10) *Platinum Blrm. Salon D/Group 1, JW Marriott*

Science Focus: PS

Alejandra Frausto *(afrausto@cps.edu),* Chicago (Ill.) Public Schools

Discussion centers on incorporating standards-based grading in high school physics and chemistry classrooms.

Teacher Researcher Day Session: Making Student Thinking Visible

(General) *Platinum Ballroom Salon D/Group 4, JW Marriott*

Science Focus: GEN, NGSS

Deborah Roberts-Harris *(drober02@unm.edu),* The University of New Mexico, Albuquerque

Understanding what students are thinking or already know is critical to facilitating effective instruction. Questioning and rich classroom discussion are key. Come join in the conversation.

Professional Learning Communities for Supporting *NGSS* Implementation

(Grades K–12) *Platinum Ballroom Salon I, JW Marriott*

Science Focus: GEN, SEP

Peter Hillman *(pch2110@tc.columbia.edu),* **Amanda Gunning** *(agunning@mercy.edu),* and **Meghan Marrero** (@megmarrero; *mmarrero3@mercy.edu),* Mercy College, Dobbs Ferry, N.Y.

Katherine Hohman *(khohman@portchesterschools.org),* Port Chester Middle School, Port Chester, N.Y.

Jenna Garguilo *(jgarguilo@portchesterschools.org),* Port Chester (N.Y.) School District

Explore the experiences of K–12 science teachers engaged in vertically aligned professional learning communities aimed at supporting *NGSS* implementation

Two Growth Mind-Set Activities to Help Motivate All Students and Teach Nature of Science

(Grades 4–12) *Platinum Ballroom Salon J, JW Marriott*

Science Focus: LS1.D, CCC2, SEP3

John Gensic (@bioonthego; *john.gensic@gmail.com),* Penn High School, Mishawaka, Ind.

Struggling to motivate students? Get two research-based activities that help students discover and own a growth mind-set while working with data and nature of science.

Inspiring Young Women to Pursue STEM Careers with an Annual "Women in Science Night"!

(Grades 6–12) *504, Convention Center*

Science Focus: GEN

Joseph Vincente, East Side Community High School, New York, N.Y.

See how our small public New York City school is inspiring young women of diverse backgrounds to pursue STEM careers with our annual "Women in Science Night" (now in its fourth year)!

2:00–2:30 PM Exhibitor Workshop

Earthquakes and Their Causes

(Grades 5–8) *Booth #748, Exhibit Hall, Convention Center*

Science Focus: ESS2.B

Sponsor: Science First, LLC

Helmut Albrecht *(helmut.albrecht@sciencefirst.com),* Science First, LLC, Yulee, Fla.

In this in-dome workshop from STARLAB®, you will learn what causes earthquakes and why they occur where they occur.

2:00–3:00 PM Presentations

Why Have All the Creatures Gone? Using the Three Dimensions to Explore Ecological Issues

(Grades 4–9) *Diamond Ballroom Salon 1, JW Marriott*

Science Focus: LS2.A, LS2.C, LS4.D, CCC1, CCC2, CCC4, CCC7

Rachel Davis ((@rdavisteaches; *racheldavis7@gmail.com),* American School Foundation of Monterrey, Santa Catarina, N.L., Mexico

Find out how to use games, modeling, and student-friendly data to create student-centered units that delve into ecological concepts by addressing phenomena like the decline of the monarch butterfly.

Science Experiments on High-Altitude Balloons

(General) *Diamond Ballroom Salon 2, JW Marriott*

Science Focus: ETS1.A, SEP

Chris Schaben *(chris.schaben@ops.org)* and **Christina Wildhagen** *(christina.wildhagen@ops.org),* Omaha (Neb.) Public Schools

Hear about our district's high-altitude balloon project. We have launched over 30 balloons with hundreds of students' experiments as payload. Join us as we share our experiences with creating and implementing this amazing STEM program.

NSTA Press® Session: Uncovering K–12 Students' (and Teachers') Ideas About Matter and Energy in the *NGSS*

(General) *Diamond Ballroom Salon 3, JW Marriott*

Science Focus: PS1, PS3, CCC5

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

Joel Truesdell *(jotruesd@ksbe.edu),* Kamehameha Schools Hawai'i, Kea'au

Experience examples of diagnostic probes from the *Uncovering Student Ideas* series, including several new ones, that reveal what students really think about matter and energy and the connection to "3-D formative assessment."

Leading from the Classroom

(General) *Diamond Ballroom Salon 6, JW Marriott*

Science Focus: GEN

Douglas Hodum ((@DougHodum; *dhodum@mtbluersd.org),* NSTA Director, District II, and Einstein Fellow, U.S. House of Representatives, Washington, D.C.

During this session, you will have conversations and hear suggestions to help you feel empowered to either become a teacher leader or propel you further. After getting some hints from the presenter and discussing ideas with peers, you will leave the session with a plan for taking the next steps in your teacher leadership journey.

Engineering for Change

(Grades 6–12) *Diamond Ballroom Salon 8, JW Marriott*

Science Focus: ETS1.A, ETS1.B, CCC2, SEP1, SEP6, SEP8

Andrea Aust ((@KQEDaust; *aaust@kqed.org)* and **Marie Laws** *(mlaws1224@yahoo.com),* KQED, San Francisco, Calif.

Bring engineering into your science classroom with a free, media-rich, project-based unit focused on sharing solutions with an online audience of peers and adults.

Virtual Reality's Emerging Future in Science Education

(Grades 6–8) *Diamond Ballroom Salon 10, JW Marriott*

Science Focus: ESS2.C, ESS3.D, ETS1.C, LS1.A, PS2.A, CCC1, CCC4, SEP

Garry Joseph ((@garryjoseph; *gxj9370@lausd.net),* Millikan Middle School, Sherman Oaks, Calif.

Join us for an overview and demonstration of virtual reality curricular resources and suggestions for how you can combine simulations and real-world physical activities into new forms of learning experiences.

NARST-Sponsored Session: Science, Education, and Ability: The Exclusion We Co-Create

(General) *Olympic 3, JW Marriott*

Science Focus: GEN, SEP

Phillip Boda *(pab2148@tc.columbia.edu),* Teachers College, Columbia University, New York, N.Y.

Through framing inclusion as a civic goal for all citizens, including those with disabilities, inclusion for people with disabilities in education is a human rights issue. Participants will receive a concise background of disability beyond the medicalization model within scientific research writ large to engage them toward pursuing self-studies of their practice to include all students.

AMSE-Sponsored Session: Empowering and Rewarding Educators of the Economically Disadvantaged Students

(Grades K–12) *Platinum Ballroom Salon A, JW Marriott*

Science Focus: GEN

Alicia Conerly ((@mrzjconerly25; *mrz_conerly@yahoo.com),* Hazlehurst (Miss.) City School District

Motivate yourself! Be innovative for others! The rewarding begins with you!

Teacher Researcher Day Session: Teacher Stories: What Four-Year-Olds Know and Can Do in Science
(Grades P–2) *Platinum Blrm. Salon D/Group 2, JW Marriott*
Science Focus: GEN, INF, NGSS
Mary Hobbs *(maryhobbs@utexas.edu),* The University of Texas at Austin
Bob Williams, Consultant, Belmont, Tex.
Excerpts will be shared from 24 prekindergarten teachers who wrote about their experiences as teacher-researchers. Hear their stories about what young children know and can do in science.

Teacher Researcher Day Session: Preservice Teachers' Perception of Scientists—Stereotypes, Gender Bias, or Media Influence?
(General) *Platinum Blrm. Salon D/Group 3, JW Marriott*
Science Focus: GEN
Tahsin Khalid *(tahsinkhalid@hotmail.com),* Southeast Missouri State University, Cape Girardeau
Discussion centers on what 21st-century educators can do to change the perception that girls and females cannot be scientists.

A Demo a Week Makes Science Class the Peak
(Grades 1–10) *Platinum Ballroom Salon H, JW Marriott*
Science Focus: PS1.A, PS1.B, PS2.A, PS3.B, PS3.C, PS3.D
Vinay Dulip *(vdulip@yahoo.com),* Foy H. Moody High School, Corpus Christi, Tex.
Victoria Chavez, Iliana Zamarron, Robert Carter, Baldree Mackenzie, Michael Ramos, and **Gerardo Guzman,** Students, Foy H. Moody High School, Corpus Christi, Tex.
Thirty simple demonstrations will be performed with materials obtained locally. The selected demos will excite students' interest and challenge them to do higher level thinking.

Nanotechnology: A Gateway to Student Engagement in *NGSS*
(Grades 9–12) *Plaza 2, JW Marriott*
Science Focus: PS
Lynn Kim John (@UCLAScienceProj; *ljohn@gseis.ucla.edu),* UCLA Center X, Los Angeles, Calif.
Nanotechnology can bring innovative learning experiences to the K–12 classroom. This session will showcase the partnership between the California Nanosystems Institute and UCLA. Engage in a nano experience that illustrates how the three dimensions of *NGSS* come together to develop understanding of chemistry concepts among learners.

Reach ALL Students by Supporting ALL Teachers
(General) *502B, Convention Center*
Science Focus: GEN, NGSS
Caroline Stabile (@gemsnet10; *stokbridge@uri.edu)* and **Sara Sweetman** (@gemsnet10; *sara_sweetman@uri.edu),* GEMS-Net, The University of Rhode Island, Narragansett
Find out how a university-district partnership ensures equitable *NGSS* opportunities for all students by supporting all teachers with PD, resources, and leadership. Sustain beyond outside funding. It is possible!

Integrating E-Books into the Secondary Classroom
(Grades 6–12) *507, Convention Center*
Science Focus: GEN
Leisa Clark, Assistant Executive Director, e-Products, NSTA, Arlington, Va.
Kara Pantalena, Senior Instructional Designer, e-Products, NSTA, Arlington, Va.
Eleonore Dixon-Roche, e-Learning Multimedia Specialist, e-Products, NSTA, Arlington, Va.
Engaging and Innovative—learn how interactive multimedia elements and text can enhance science learning in middle school and high school. While this workshop uses NSTA's eBooks+ Student Editions for examples, these concepts can be applied to many types of digital content.

Engineering EXPO
(Grades K–4) *513, Convention Center*
Science Focus: ETS
Arthur Williams (@PrincipalArthur; *arthur.williams@winona.k12.mn.us),* Jefferson Elementary STEM School, Winona, Minn.
Staff from Jefferson Elementary STEM School will share how to create an out-of-this-world Engineering EXPO for your school.

NGSS **Using the Environment as a Springboard to Real-World 3D Learning**
(Grades K–12) *515A, Convention Center*
Science Focus: GEN, CCC, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8
Bryan Ehlers, California Dept. of Resources Recycling and Recovery, Sacramento
Gerald Lieberman *(gerald@seer.org),* State Education and Environment Roundtable, Poway, Calif.
Support environmental literacy and engage students in 3D exploration using the environment as an authentic, and intrinsically engaging, real-world context for learning

Beyond the Runway: Scientific Modeling and the *NGSS*

(Grades 1–8) *Kentia Hall L, Convention Center*

Science Focus: GEN, NGSS

Randy Bell *(randy.bell@oregonstate.edu),* Oregon State University, Corvallis

Participate in engaging activities featuring scientific modeling and nature of science for elementary and middle school students. You will receive free resources and lessons.

Wow! What on Earth Caused THAT?

(Grades 6–8) *Kentia Hall Q, Convention Center*

Science Focus: ESS3.B, ESS3.C, ESS3.D, CCC1, CCC2, SEP4

Tom Nolan *(thomas.e.nolan@jpl.nasa.gov),* NASA Jet Propulsion Laboratory, Pasadena, Calif.

Rebecca Abrams *(abrams.rebecca@myhapa.org),* Hmong American Peace Academy, Milwaukee, Wis.

Using high-resolution images from NASA Earth-observing satellites, we will demonstrate several inquiry examples of analyzing and interpreting data. Using images of "before and after" Earth-changing events, students can compare and contrast surface changes.

The Power of Science Literacy: A Success Story

(Grades 9–12) *Kentia Hall R, Convention Center*

Science Focus: GEN, NGSS

Colleen Zenner *(czenner@barrington220.org)* and **Lauren Pennock** (@lpennock_edu; *lpennock@barrington220.org),* Barrington High School, Barrington, Ill.

Increase student engagement with successful literacy strategies. This dynamic session provides resources and assessments that are easy to implement and adaptable for high school science.

2:00–3:00 PM Hands-On Workshops

CSSS-Sponsored Session: Three-Dimensional Lessons Based in Simple Natural Phenomena
(Grades K–12) *Atrium 3, JW Marriott*
Science Focus: ESS2, LS2, PS3, CCC4, SEP6
Juan-Carlos Aguilar *(jaguilar@doe.k12.ga.us),* Georgia Dept. of Education, Atlanta
Brett Moulding *(mouldingb@ogdensd.org),* Partnership for Effective Science Teaching and Learning, Ogden, Utah
Engage in analyzing a series of three-dimensional lessons developed to support the implementation of Georgia's new standards based on the NRC *Framework.* The lessons blend science core ideas, science and engineering practices, and crosscutting concepts through the study of phenomena and are built using Brett Moulding's instructional sequence of gathering, reasoning, and communicating while emphasizing the integration of mathematics, science, and literacy.

Read-Aloud with Rigor: Deepening Middle-Schoolers' Science Content Knowledge Through Literacy (Grades 6–8)
(Grades 6–8) *Diamond Ballroom Salon 7, JW Marriott*
Science Focus: LS2.C, SEP8
Rebecca Taylor *(rtaylor@amnh.org)* and **Allyson Nusser** (@AllysonLiteracy; *anusser@amnh.org),* American Museum of Natural History, New York, N.Y.
Middle-schoolers' understanding of complex science concepts can be deepened through interactive read-aloud of content-rich texts. Walk away with tools for implementing this powerful strategy.

ASTE-Sponsored Session: Crafting Coherent Conceptual Storylines: Lessons in Designing Lessons
(General) *Georgia 2, JW Marriott*
Science Focus: GEN
Kelsey Lipsitz *(kcgxv4@mail.missouri.edu),* **Deborah Hanuscin** *(hanuscind@missouri.edu),* and **Dante Cisterna,** University of Missouri, Columbia
Learn research-based strategies to design lessons that are conceptually coherent by connecting and sequencing key ideas and activities in ways that support student learning.

Crosscutting Concepts in Action
(Grades 3–12) *Gold Ballroom Salon 1, JW Marriott*
Science Focus: GEN, CCC
Peter A'Hearn (@casciencepete; *pahearn@psusd.us),* Palm Springs (Calif.) Unified School District
Think the crosscutting concepts are just "one more thing"? Wrong, they are at the heart of scientific inquiry. Use them to drive rich *NGSS* investigations.

Science as a Context for Literacy: Win-Win for Both
(Grades 1–12) *Olympic 1, JW Marriott*
Science Focus: GEN, NGSS
Karen Cerwin (*kcerwin@wested.org*), K–12 Alliance/WestEd, Los Alamitos, CA
Experience how science is a context for *CCSS ELA*. Hands-on experiences build authentic arguing from evidence, explanations, and informational text.

Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 102)
(General) *Platinum Ballroom Salon B, JW Marriott*
Science Focus: GEN, NGSS
LaMoine Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and The Motz Consulting Group, White Lake, Mich.
Sandra West *(sw04@txstate.edu),* Texas State University, San Marcos
Juliana Texley *(texle1j@cmich.edu),* 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant
Are you involved in your district's planning for new science facilities? If not, you need to get involved before it is too late. In an advanced course (an extension of Science Facilities 101 session), the NSTA author team for *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present more information and examples of safe, ergonomically correct, functional facilities for STEM-based science. We will cover budgeting, working with the architect, technology, and special adjacencies. Packet included.

Classroom iPad iDeas
(Grades 7–College) *Platinum Ballroom Salon C, JW Marriott*
Science Focus: GEN, NGSS
Gregory Dodd *(gbdodd@gmail.com),* Retired Educator, Pennsboro, W.Va.
Experience the enormous potential of the iPad and learn how to make it an essential tool in your science classroom.

NSTA Press® Session: *It's Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12*
(General) *Platinum Ballroom Salon E, JW Marriott*
Science Focus: GEN, NGSS
Sami Kahn *(kahns@ohio.edu),* Ohio University, Athens
We will model the use of controversial societal issues related to science in order to develop students' scientific literacy during this interactive workshop.

Hit the Ground Running

(Grades 9–12) *Plaza 3, JW Marriott*

Science Focus: PS2.A, CCC1, SEP3, SEP4, SEP5, SEP6, SEP8

Aaron Osowiecki *(aosowiecki@bostonpublicschools.org),* Boston Latin School, Boston, Mass.

Help students build an understanding of measurement, units, and unit conversion with their own data obtained using measuring devices they design and build.

Rebooting the Connection and Full Integration of Science with the Language Arts: A Natural Pairing Across the Curriculum

(Grades K–5) *502A, Convention Center*

Science Focus: GEN, NGSS

Judy Reinhartz *(jreinhartz@utep.edu),* Professor Emeritus, The University of Texas at El Paso

Science presents opportunities to contextualize communication offering full integration of language arts, contributing to the linguistic fabric of the classroom. Come participate in language-rich engaging activities.

Using PBLs to Teach High School Science

(Grades 9–12) *515B, Convention Center*

Science Focus: GEN, NGSS

Maria Thurmond, Peachtree Ridge High School, Lawrenceville, Ga.

CANCELED

Teaching *NGSS*-focused science courses to high school students requires the teaching of STEM that is connected to real-world issues as well. Explore how to incorporate Project-Based Learning into your biology, chemistry, physics, and environmental science curriculum using engineering design practices.

Checkerspot Challenge: Early Childhood Engineering

(Grades K–2) *Kentia Hall A, Convention Center*

Science Focus: ESS3.C, LS1.C, CCC2, SEP2

Eric Cromwell *(ecromwell@bcps.org),* Baltimore County Public Schools Office of Science, Towson, Md.

Learn how observing the needs of plants and animals can be combined with engineering in this *NGSS*-focused session.

NGSS@NSTA: One-Stop Resource Shopping for Elementary Teachers!

(Grades K–5) *Kentia Hall B, Convention Center*

Science Focus: PS2.A, PS2.B, CCC2

Karen Umeda *(karen_umeda@notes.k12.hi.us),* Hawaii State Dept. of Education, Pearl City

Kathy Renfrew (@KRScienceLady; *krsciencelady@gmail.com),* Vermont Agency of Education, Barre

Investigate and deepen understanding of how NSTA Hub resources can move instruction toward three-dimensional learning when the science and engineering practices, disciplinary core ideas, and crosscutting concepts of the *NGSS* are addressed simultaneously.

STEM Road Map Curriculum Series for Early Childhood Education

(Grades K–2) *Kentia Hall C, Convention Center*

Science Focus: PS4.A

Andrea Milner (@andrearaemilner; *amilner@adrian.edu)* and **Vanessa Morrison** *(vmorrison@adrian.edu),* Adrian College, Adrian, Mich.

Receive an overview of the upcoming NSTA Press® curriculum book series *STEM Road Map for Early Childhood Education* as we take a deep dive exploring one of the modules—1st grade: Cause and Effect: Influence of Waves: Invasion of the Waves.

Building an *NGSS*-Focused Curriculum with *Picture Perfect Science* as the Foundation

(Grades K–5) *Kentia Hall D, Convention Center*

Science Focus: GEN, NGSS

Jake Beers (@jakethebeers; *jbeers@sdale.org),* Springdale (Ark.) Public Schools

Engage in the process of creating a sample Understanding by Design curriculum unit by using *NGSS, Picture Perfect Science,* and additional resources. Bring your device to take part.

Help Happy the Horse: A Design Thinking and Engineering Challenge for Young Students

(Grades P–2) *Kentia Hall E, Convention Center*

Science Focus: ETS1, PS2, SEP4, SEP5, SEP6

Lynn Reed *(lreed@bullischarterschool.com)* and **Jessica Lura** (@msjlura; *jlura@bullischarterschool.com),* Bullis Charter School, Los Altos, Calif.

We will use the Design Thinking Process to help create a new home for Happy, the LEGO® Horse. In a second activity, we will use the Engineering Process to design a wall to keep Happy safe.

Future Worlds: Storm Survival Shelters STEM Challenge
(Grades 3–6) *Kentia Hall F, Convention Center*
Science Focus: PS1, PS2, CCC, SEP
Debbie Myers *(debbie.myers@canterbury.ac.uk),* Canterbury Christ Church University, Canterbury, U.K.
Engage in a real-life scenario requiring delegates to design, construct, and evaluate shelters against a rubric of scientific criteria to develop their application of STEM problem-solving skills.

Come Wiggle with the Bees! Learn All About Beehavior!
(Grades 2–5) *Kentia Hall H, Convention Center*
Science Focus: LS1.D, LS2.A, LS2.D
Sabrina Shapiro *(sshapiro@wbais.net)* and **Stuart Fleischer** *(sfleischer@wbais.net),* Walworth Barbour American International School in Israel, Even Yehuda
Students "Waggle Dance" their way to understanding the honeybee's unique navigation and communication system, connecting *NGSS* to *CCSS ELA Literacy and Mathematics.*

STEM Applications in Transportation: The Answer to "When Will I Ever Use This in Real Life?"
(Grades K–8) *Kentia Hall J, Convention Center*
Science Focus: ETS, PS, CCC4, CCC6, SEP1, SEP3, SEP4, SEP8
Jennifer Richards *(jennifer.richards@utk.edu),* The University of Tennessee Institute of Agriculture, Knoxville
Brianna Fisher (@GAMTTEP; *brianna.fisher@knoxschools.org),* Knox County Schools, Knoxville, Tenn.
Through hands-on activities and facilitated discussions, participants will understand how to integrate transportation into their STEM curriculum using the engineering design process and habits of mind. Come see how the Garrett A. Morgan Clearinghouse program can make learning real for both you and your students.

Modeling Using STEM
(Grades 3–9) *Kentia Hall K, Convention Center*
Science Focus: GEN, NGSS
Judith Lucas-Odom (@Judith_Odom; *judyps23@yahoo.com),* Chester High School, Chester, Pa.
STEM comes alive using models. Simple science, math, and engineering lessons help make abstract concepts more tangible!

Beyond Naming Forms: Teaching Energy in Middle School by Modeling Energy Transfers Between Systems
(Grades 6–8) *Kentia Hall M, Convention Center*
Science Focus: PS3
Jeff Nordine *(nordine@ipn.uni-kiel.de),* Leibniz Institute for Science and Mathematics Education, Keil, Germany
Joseph Krajcik (@krajcikjoe; *krajcik@msu.edu),* CREATE for STEM Institute, Michigan State University, East Lansing
Katherine Carswell (@katherinecars; *carswellk@hollyacademy.org),* Holly Academy, Holly, Mich.
We will present a modeling-based approach to teaching energy in middle school that emphasizes tracking energy transfers between systems as phenomena occur.

Middle School Chemistry and Engineering Design in the *NGSS*
(Grades 6–8) *Kentia Hall N, Convention Center*
Science Focus: ETS1, PS
James Kessler, American Chemical Society, Washington, D.C.
Learn about and practice a new engineering design lesson from the free website *middleschoolchemistry.com.*

***NGSS* Chemistry and Integration of Climate Change**
(Grades 10–12) *Kentia Hall O, Convention Center*
Science Focus: ESS2.D, ESS3.D, PS1.B, PS3.B, SEP4
Katrina Rotter, San Francisco (Calif.) Unified School District
Learn and experience how ESS climate change standards can be embedded in a high school *NGSS* chemistry course. Activities and a course outline used in the class will be presented.

Teaching Environmental Sustainability Using a Free Place-Based Watershed Model
(Grades 8–12) *Kentia Hall P, Convention Center*
Science Focus: LS2, CCC4, SEP
Carolyn Staudt *(cstaudt@concord.org),* The Concord Consortium, Concord, Mass.
Nanette Marcum-Dietrich (@DrNanette; *ndietrich@millersville.edu),* Millersville University, Millersville, Pa.
Steve Kerlin *(skerlin@stroudcenter.org),* Stroud Water Research Center, Avondale, Pa.
Model My Watershed is a free web-based application that invites students to explore the condition of their local watershed with a scientifically valid watershed model.

***The Martian:* Lessons in Biology and Chemistry**
(Grades 9–12) *Kentia Hall S, Convention Center*
Science Focus: LS1.B, LS1.C, PS1.B, PS4.B, CCC5, CCC6, SEP3, SEP6
Julie Bookman (@jbookman76; *jbookman@avhsd.org),* Palmdale High School, Palmdale, Calif.
Use the science of *The Martian* to engage your students in biology, chemistry, ecology, and human physiology.

NMEA-Sponsored Session: Discovering the World of Aquaculture with K–5 Students
(Grades K–5) *Petree Hall D, Convention Center*
Science Focus: GEN, NGSS
Sarah Sparks *(sarah.sparks@maine.edu),* University of Maine Cooperative Extension Androscoggin & Sagadahoc Counties Office, Lisbon Falls
Laura Wilson *(laura.wilson@maine.edu),* University of Maine Cooperative Extension, Orono
Laurie Bragg *(laurie.bragg@maine.edu),* Maine EPSCoR at the University of Maine, Orono
Explore hands-on, research-based activities designed to introduce elementary students to the world of aquaculture and how it connects to their everyday lives.

2:00–3:00 PM Exhibitor Workshops

The Value of Writing Scientific Explanations in STEM with Claim-Evidence-Reasoning
(Grades K–12) *150 AB, Convention Center*
Science Focus: GEN, NGSS
Sponsor: STEMscopes™ from Accelerate Learning
Greg Brown, Consultant, San Jose, Calif.
By analyzing evidence to make a claim statement and using scientific reasoning to explain how the claim is connected, we learn more about the phenomenon. Engagement with real-world science followed by discourse about how observations support scientific explanations and provide insight into the need for inquiry in making science meaningful.

Chemical Formulas: Subscripts and Coefficients Made Easy!
(Grades 6–12) *405, Convention Center*
Science Focus: PS1.A, PS1.B, CCC1, CCC5, SEP2
Sponsor: PASCO scientific
Tom Loschiavo *(loschiavo@pasco.com),* PASCO scientific, Roseville, Calif.
Jason Lee *(mrlee3@att.blackberry.net),* East Georgia State College–Statesboro
Can your students tell the difference between coefficients and subscripts? Do they know when they need more of an atom in a compound, or more of the compound itself? Help your students understand the important differences by using the Molecular Model Kit to actually build molecules and model chemical reactions!

STEM Activities: Untangling Electric Circuits
(Grades 9–12) *407, Convention Center*
Science Focus: PS3.A, PS3.B, PS3.D, CCC5, SEP3, SEP4, SEP5
Sponsor: PASCO scientific
Brett Sackett *(sackett@pasco.com),* PASCO scientific, Roseville, Calif.
Thomas Hsu *(thsu@pasco.com),* Ergopedia, Inc., Cambridge, Mass.
How can students understand circuits when they can't "see" the phenomenon? And how can they move beyond the tangled wires when creating a circuit diagram? Get hands-on with new technology to discover a better way to teach circuits!

A Bright Idea: Using GFP to Teach STEM
(Grades 9–College) *410, Convention Center*
Science Focus: LS, SEP
Sponsor: Edvotek, Inc.
Danielle Snowflack *(info@edvotek.com),* **Brian Ell** *(info@edvotek.com),* and **Tom Cynkar** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Bring exciting STEM learning techniques into your classroom laboratory! In this hands-on workshop, we will build a size-exclusion chromatography column. The column is used to purify green fluorescent protein (GFP) from a crude bacterial extract. Proteins containing fractions are identified by fluorescence and analyzed for purity by SDS-PAGE. Free gift/raffle entry.

Project-Based Learning + *NGSS* = Active Physics
(Grades 9–12) *501 AB, Convention Center*
Science Focus: PS
Sponsor: It's About Time
Arthur Eisenkraft, 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.
Develop a sport for the moon; create a light and sound show; design and build an improved safety device for a car. Project-Based Learning is all the rage now. It motivates students and challenges them to apply their physics knowledge. The PBL lessons can simultaneously reflect the *NGSS*. Active Physics has been incredibly successful in U.S. schools and is being adapted overseas. Join the fun and find out how to make your curriculum even better.

Explore Solar Energy STEM Concepts with K'NEX Models: Engineering for a Sustainable Future
(Grades 5–9) *510, Convention Center*
Science Focus: ETS1, PS3
Sponsor: K'NEX Education
Robert Jesberg *(rjesberg@knex.com),* K'NEX Education, Hatfield, Pa.
STEM and standards rule with the K'NEX Investigating Solar Energy Set. We will build working solar models. Complete experiments to quantify solar panel efficiency. Compare model speed and distance solar panels are from a light or the wattage of bulbs. Isn't this the way you want your students to learn renewable energy STEM concepts? Wind and water models will also be demonstrated.

2:00–3:30 PM Exhibitor Workshops

Are You a PTC Taster? Let's Do PCR to Find Out!
(Grades 10–College) *150C, Convention Center*
Science Focus: LS1, LS3, PS1, CCC1, CCC4, SEP4
Sponsor: The MiniOne Systems
Bridget Ward *(info@theminione.com),* Springfield Central High School, Springfield, Mass.
PTC sensitivity is an example of Mendelian inheritance. Learn firsthand how to conduct a PCR experiment by extracting, amplifying, and digesting your own DNA—all in 90 minutes! Stay for our next session to run your DNA sample on gel electrophoresis to determine if you are a taster.

Reconceptualizing Chemistry Through Play: Acids and Bases
(Grades 7–12) *153A, Convention Center*
Science Focus: PS1.A, PS1.B
Sponsor: PlayMada Games
Lindsay Plavchak *(lindsayp@playmadagames.com)* and **Edward Wang** *(edwardw@playmadagames.com),* PlayMada Games, New York, N.Y.
Discover a new way to teach fundamental chemistry ideas in a fun and engaging way! Explore Collisions™ and experience how gameplay can provide high school students with a deepened, enduring understanding of key concepts in the system of chemistry. Bring your laptop or tablet for this lively hands-on workshop!

Using Science Magazines to Incorporate the Three Dimensions of *NGSS*
(Grades 3–10) *153B, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Scholastic Inc.
Mara Grunbaum, Patricia Janes, and **Andrew Klein,** Scholastic Inc., New York, N.Y.
Scholastic® classroom magazine editors team up with teachers to show you how to develop lessons that incorporate the three dimensions of the *NGSS* with exciting scientific discoveries that are too new for textbooks.

Innovative Bioscience Classrooms with 3D Bioprinting
(Grades 9–College) *153C, Convention Center*
Science Focus: LS, CCC, SEP
Sponsor: SE3D
Mayasari Lim *(mlim@se3d.com)* and **Sarah Salameh** *(ssalameh@se3d.com),* SE3D, Redwood City, Calif.
Desktop 3D bioprinters are highly versatile bio-lab equipment for training next generation scientists and engineers. Learn how this cutting-edge tool can benefit your science

classroom for different applications in biotechnology, green technology, and tissue engineering.

Science and Engineering Practices Made Easy
(Grades K–6) *301 AB, Convention Center*
Science Focus: GEN, SEP
Sponsor: Delta Education/School Specialty Science
Darrick Wood, Distance Learning Coordinator, Louisville, Ky.
Kathy Armstrong, Northside Elementary School, Midway, Ky.
Don't throw out your favorite lesson just because it doesn't use the science and engineering practices. Experience a Delta Science Module activity and explore ways to embed the SEPs into your favorite science lessons. Leave with readers, equipment, and strategies you can use with your students next week.

Wave Properties and Information Transfer
(Grades 6–8) *303 AB, Convention Center*
Science Focus: PS4, CCC, SEP
Sponsor: Delta Education/School Specialty Science–FOSS
Virginia Reid and **Jessica Penchos,** The Lawrence Hall of Science, University of California, Berkeley
Engage in activities using lasers and optical fibers in the new FOSS Next Generation Waves Course for middle school. Explore properties of refraction and reflection that allow information transfer by fiber-optic technology, and identify connections to the three dimensions of the *NGSS*.

CPO Science's Link™ Learning Module: Chemistry and the Periodic Table
(Grades 6–12) *304 AB, Convention Center*
Science Focus: PS1
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
Kat Mills, School Specialty Science, Rosharon, Tex.
CPO Science's new Link Chemistry learning module is an *NGSS* approach that lets students experience innovative activities to learn about atomic structure and the periodic table. Use a digital learning environment with hands-on equipment to study bonding, isotopes, subatomic particles, ions, balancing equations, energy levels, and periodicity. Door prizes!

INF **It's Never Too Early to Discover STEM: *FIRST*® LEGO® League Jr. Encourages the Curiosity That Leads to Discovery**
(Grades 1–4) *304C, Convention Center*
Science Focus: ETS, INF
Sponsor: LEGO® Education and *FIRST*®
Jenny Nash, LEGO Education, Billund, Jylland, Denmark
Betsy Daniels, *FIRST* (For Inspiration and Recognition of Science and Technology), Manchester, N.H.
Young children are natural investigators and eager to explore their world. Learn how the *FIRST* LEGO League Jr. program challenges young children to explore real-world problems and develop important core values through building solutions using LEGO Education WeDo 2.0. This session will be hands on and guaranteed fun!

Genes in Space: Launch Your DNA Experiment into Space!
(Grades 7–12) *305, Convention Center*
Science Focus: LS, CCC, SEP
Sponsor: miniPCR
Sebastian Kraves, miniPCR, Cambridge, Mass.
Genes in Space is a national science competition where teachers and students design authentic DNA research proposals. Winners have their experiments launched to the International Space Station! Engage students in integrative STEM problem solving using DNA analysis technology and you may win the miniPCR DNA Discovery System™ among other amazing awards.

Introduction to Wisconsin Fast Plants®
(Grades K–12) *306 AB, Convention 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, suit 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.

Strawberry Milkshakes: DNA and Lactose Intolerance
(Grades 6–12) *308 AB, Convention Center*
Science Focus: LS, CCC, SEP
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Introduce students to the fascinating world of molecular biology through age-appropriate hands-on activities. They're designed to make challenging abstract concepts (including DNA, genes, and enzymes) more concrete—and to make biology fun. Presented in partnership with the DNA Learning Center.

Bring Visual Science into K–5 Classrooms: It's a Game Changer!
(Grades K–5) *309, Convention Center*
Science Focus: GEN
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Spark student interest and improve outcomes—engage science instruction using Tigtag Science real-world STEM videos, interactive content, and a hands-on activity. A blend of compelling online learning tools with hands-on fun is guaranteed to delight you and your students! Watch out! It might get messy.

Environmental Science with Vernier
(Grades 7–College) *402A, Convention Center*
Science Focus: ESS, ETS2, LS2
Sponsor: Vernier Software & Technology
Colleen McDaniel *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Use Vernier sensors to conduct environmental science experiments from our lab books in this engaging hands-on workshop. Collect and analyze data on LabQuest 2. Data sharing with mobile devices and mapping on Logger *Pro*® will be demonstrated. Explore our wide range of tools that promote understanding of environmental science concepts.

Middle School Science with Vernier
(Grades 4–8) *402B, Convention Center*
Science Focus: ETS2, PS2, PS3
Sponsor: Vernier Software & Technology
David Carter *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Use Vernier sensors to conduct age-appropriate experiments from our lab books in this engaging hands-on workshop. Collect and analyze data on LabQuest 2 and computers. See a demonstration of our new Go Direct wireless and USB sensors that connect directly to computers, Chromebooks, and mobile devices—no interface needed.

Teaching Forensics with Real Crime Scene Investigation Techniques from Flinn Scientific
(Grades 9–12) *403A, Convention Center*
Science Focus: GEN
Sponsor: Flinn Scientific, Inc.
Meg Griffith *(mgriffith@flinnsci.com)* and **Matt Anderson** *(manderson@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.
Are you looking for innovative new ways to teach forensics in your classroom? See demonstrations of a variety of products and laboratory activities that can get your students engaged in forensic science! Features professional-grade products used by real CSI teams with write-ups that make them ideal for classroom use. Handouts for all activities.

Using BioInteractive Resources to Bring Math into the Biology Lesson
(Grades 9–12) *403B, Convention Center*
Science Focus: LS4, SEP4, SEP5
Sponsor: HHMI BioInteractive
Robin Bulleri *(rbulleri@gmail.com),* Carrboro High School, Carrboro, N.C.
Valerie May *(valeriemay@me.com),* Woodstock Academy, Woodstock, Conn.
Looking for engaging and authentic ways to increase quantitative analysis (yes, we mean MATH) in your high school biology lessons? We will share activities embedding concepts of ecology (Great Elephant Census) and natural selection (Galápagos finches) that expose students to computational thinking. Basic statistics will also be covered.

Effortlessly Integrate Inquiry with Glowing Bacteria
(Grades 9–College) *404 AB, Convention Center*
Science Focus: LS
Sponsor: Bio-Rad Laboratories
Damon Tighe *(damon_tighe@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Learn to advance inquiry in the classroom—from guided to open inquiry—by establishing a strategy that integrates essential and real-world science practices to encourage your students to direct the scientific investigation. From generating scientifically reasonable questions to developing procedures for interpreting data, glowing pGLO™ bacteria will lead the way.

How to Use Pop Culture in Your Life Science Class
(Grades 9–College) *406 AB, Convention Center*
Science Focus: LS
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 in your classroom. See how popular TV and movies connect to real-world discoveries and issues. Learn how to use examples like DNA fingerprinting to make gel electrophoresis the foundation of a fun hands-on lab that increases student involvement and understanding.

Which Scientist's Work Saves 8 Million Lives a Year?
(Grades 3–College) *408A, Convention Center*
Science Focus: LS, CCC, SEP
Sponsor: Vaccine Education Center
Donald Mitchell *(donald@medicalhistorypictures.com),* Eyeline Pictures, LLC, Flourtown, Pa.
Charlotte Moser *(moser@email.chop.edu),* Vaccine Education Center at Children's Hospital of Philadelphia, Pa.
The greatest scientist of the 20th century—most don't know his name. Come watch the documentary about Maurice R. Hilleman, a man whose goal was to eliminate childhood diseases. His story will captivate and engage your students. Meet the director, learn about supporting classroom materials, and leave inspired!

FOLD-tastic Science Notebooks via Dinah Zike's Notebook Foldables
(General) *408B, Convention Center*
Science Focus: GEN
Sponsor: *Dinah.com*
Bob Stremme *(karlrobdz@gmail.com), Dinah.com,* Plymouth Meeting, Pa.
Cut, fold, and more in this hands-on workshop as you construct Notebook Foldables that are sure to make your students' science notebooks FOLD-tastic. Use basic classroom materials and depart with examples and ideas ready to use on Monday.

Assess the *NGSS:* Formative Assessment Strategies for Grades K–8
(Grades K–8) *409 AB, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Measured Progress
Justine Hargreaves *(info@measuredprogress.org),* Measured Progress, Dover, N.H.
Learn how STEM Gauge® formative assessment resources engage students and support three-dimensional teaching and learning during the transition to the *NGSS.* This interactive workshop provides classroom strategies that you can implement immediately, plus assessment questions, rubrics, and formative support tools. Get a free STEM Gauge item set!

LA Confidential: Investigate the Murder of the Unknown Starlet
(Grades 6–12) *503, Convention Center*
Science Focus: GEN
Sponsor: Ward's Science
Michelle Pagani, VWR Science Education, Rochester, N.Y.
Trails of blood in the classroom? YES! Learn how to safely and easily do blood typing, presumptive blood testing, and blood spatter analysis in your classroom. Using a variety of science disciplines—including biology, chemistry, and physics—teach students the applications of blood science to real life.

Five Amazing Things You Can Do with Calculators in Your Science Classroom!
(Grades 6–12) *511 AB, Convention Center*
Science Focus: ETS, CCC, SEP
Sponsor: Texas Instruments
Jeffrey Lukens, Sioux Falls (S.Dak.) School District
This rapid-fire hands-on workshop goes through five great things you can do with your graphing calculators. For middle school and high school, this workshop shows you how to do data collection, analysis, argumentation from evidence, simulations, and story-based lessons using technology your school probably already has available.

Catalyst Planner: Streamline Your *NGSS* Curriculum Development
(Grades K–12) *511C, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Studio 111
Jaime Rechenberg *(jrechenberg@crec.org)* and **Josiah Hills** *(jhills@crec.org),* Capitol Region Education Council, Hartford, Conn.
Are you overwhelmed by the challenge of developing and coordinating your K–12 *NGSS* curriculum? Try the new Catalyst Planner web app! Construct coherent three-dimensional STEM instructional units driven by real-world phenomena. Catalyst Planner guides the process of designing learning sequences that engage students in using practices to deepen understanding of core science ideas while building *CCSS* literacy and mathematics skills. Participants will receive a free six-month user license.

Linking Literature and STEM in the Primary Classroom
(Grades K–3) *512, Convention Center*
Science Focus: GEN, NGSS
Sponsor: SAE International
Meghan Stoyanoff *(meghan.stoyanoff@sae.org),* SAE International, Warrendale, Pa.
Breathe new life into your primary classroom by incorporating literature into your STEM lessons.

STEM and *NGSS* Inquiry in Chemistry—Effective, Efficient, Economical
(Grades 9–12) *514, Convention Center*
Science Focus: PS
Sponsor: Pearson
Ed Waterman, Retired Educator, Fort Collins, Colo.
Learn how to transition to a STEM and *NGSS* student-centered chemistry classroom by implementing safe, simple, easy-to-use, material-conserving, time-efficient, and effective inquiry activities in chemistry.

Chemical Formula and Amino Acids
(Grades 9–12) *518, Convention Center*
Science Focus: PS1.A, PS2.B, CCC3, SEP3, SEP4
Sponsor: Lab-Aids, Inc.
Andrew Uy, Loyola High School of Los Angeles, Calif.
What is the difference between subscripts and coefficients? What does balancing a chemical equation mean? If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for some elegant, intuitive, and well-differentiated lessons that allow students of all levels to master the chemical formula and thereby move confidently into a deeper understanding of chemistry.

2:00–4:00 PM Meeting

Urban Science Education Informal Meet-Up
Diamond Ballroom Salon 9, JW Marriott
Calling all California Urban Science Educators! Come join this informal meet-up for NSTA Urban Science Educators. It's a great opportunity for networking and a chance to talk with members of the NSTA Urban Science Education Advisory Board—your voice matters!

In Memory of Al Guenther
1936–2016
Please contact Nancy Guenther at *nguenther13@gmail.com* for information on classroom materials that Al wished to donate to teachers and schools.

2:30–3:00 PM Presentations

SCST-Sponsored Session: "I Don't Fit In Here"
(College) *Georgia 1, JW Marriott*
Science Focus: GEN
Shane Cavanaugh *(cavan1s@cmich.edu),* Central Michigan University, Mount Pleasant
Let's discuss what science professors need to know about elementary education students' feelings of belonging in science courses and how it affects their attitudes toward science. Attention will be paid to the importance of creating a welcoming environment for elementary education students within college science courses and suggestions for doing so.

Teacher Researcher Day Session: Helping Preservice Teachers See the Need for Science in Their Elementary Classrooms
(General) *Platinum Blrm. Salon D/Group 4, JW Marriott*
Science Focus: GEN, NGSS
Deborah Roberts-Harris *(drober02@unm.edu),* The University of New Mexico, Albuquerque
Preservice teachers often arrive in methods class feeling inadequate and science phobic. Persuading them to become agents of change in classrooms and schools is challenging. Join me for an interactive exchange.

The Broader Impacts/*NGSS* Connection
(General) *Platinum Ballroom Salon I, JW Marriott*
Science Focus: GEN, SEP
Teddie Phillipson-Mower, Indiana University Bloomington
There are unique opportunities to meet the new vision for science education *(NGSS)* through scientific research engagement projects that meet BI criteria. Come for examples, brainstorming, and possible collaboration.

Citizen Science: Considerations and Possibilities for K–12 Classrooms
(Grades K–12) *Platinum Ballroom Salon J, JW Marriott*
Science Focus: LS2.A, LS4.D, INF, SEP
Theresa House *(thouse@mcoe.us),* Mendocino County Office of Education, Ukiah, Calif.
Citizen science activities bring together scientists and educators, connecting students to the natural world through age-appropriate, authentic investigations; data collection; and research. Learn how teachers and science researchers team up to engage students in authentic scientific research through the lens of the science and engineering practices of the *NGSS*.

Using Cyanogenic Clover to Teach Biology in 3 D
(Grades 9–College) *Plaza 1, JW Marriott*
Science Focus: LS3.B, LS4.B, LS4.C, CCC1, CCC4, SEP3, SEP4
Chuck McWilliams *(chuck.mcwilliams@mrhschools.net),* MRH High School, Saint Louis, Mo.
Dig deeper into the study of the genetic basis for plant diversity by having your students engage in authentic science research involving the cyanogenesis of clover plants growing in their own backyards, supported by Washington University.

Development and Use of a Secondary Observation Framework to Examine and Support Equitable Science Teaching
(Grades 6–12) *504, Convention Center*
Science Focus: GEN, SEP
Imelda Nava *(inava@ucla.edu),* UCLA Lab School, Los Angeles, Calif.
Jarod Kawasaki *(jarodkawasaki@gmail.com),* UCLA Center X, Los Angeles, Calif.
Join us we share the development of a secondary science observation framework combining a subject-specific focus with a pedagogical and social emphasis on democratic and humanizing classrooms.

3:00–4:30 PM Meetings

Preschool–Elementary Science Teaching Committee Meeting
Diamond Ballroom Salon 4/5/Group 1, JW Marriott

Middle Level Science Teaching Committee Meeting
Diamond Ballroom Salon 4/5/Group 2, JW Marriott

High School Science Teaching Committee Meeting
Diamond Ballroom Salon 4/5/Group 3, JW Marriott

College Science Teaching Committee Meeting
Diamond Ballroom Salon 4/5/Group 4, JW Marriott

Research in Science Teaching Committee Meeting
Diamond Ballroom Salon 4/5/Group 5, JW Marriott

Retired Members Advisory Board Meeting
Diamond Ballroom Salon 4/5/Group 6, JW Marriott

Special Needs Advisory Board Meeting
Diamond Ballroom Salon 4/5/Group 7, JW Marriott

Technology Advisory Board Meeting
Diamond Ballroom Salon 4/5/Group 8, JW Marriott

***NGSS* Advisory Board Meeting**
Diamond Ballroom Salon 4/5/Group 9, JW Marriott

Science Matters Advisory Board Meeting
Diamond Ballroom Salon 4/5/Group 10, JW Marriott

Nominations Committee Meeting
Olympic 2, JW Marriott

3:00–6:00 PM Meetings

AMSE Board of Directors Meeting
(By Invitation Only) *Atrium 2, JW Marriott*
For more information, please visit *amsek16.org.*

CESI Board Meeting
(By Invitation Only) *508C (Boardroom), Convention Center*

—*Photos courtesy of Jacob Slaton*

3:00–6:00 PM Short Courses

NGSS **Lessons Learned: The California *NGSS* K–8 Early Implementation Initiative (SC-2)**

(Grades K–8) Tickets Required; $31 San Gabriel A, Westin

Science Focus: GEN, NGSS

Kathy DiRanna *(kdirann@wested.org),* K–12 Alliance/WestEd, Los Alamitos, Calif.

For description, see page 56.

NGSS **A Short Course on Analyzing and Adapting Three-Dimensional Assessment Tasks (SC-3)**

(Grades 1–12) Tickets Required; $33 Santa Anita B, Westin

Science Focus: GEN, NGSS

Katie Van Horne (@dizzvh; *katie.vanhorne@colorado.edu),* University of Colorado Boulder

For description, see page 56.

3:30– 4:00 PM Presentations

"Making" Three-Dimensional Learning Happen: Using Makerspace Technologies to Engage the *NGSS*

(Grades 6–12) Diamond Ballroom Salon 8, JW Marriott

Science Focus: ETS

Colby Tofel-Grehl *(colby.tg@usu.edu),* Utah State University, Logan

Join me as I walk you through the ways in which makerspace technology can be used to engage in the *NGSS,* especially students in three-dimensional learning.

SCST-Sponsored Session: Testing the Testing Effect: Modifying Summative Assessment to Enhance Student Learning

(College) Georgia 1, JW Marriott

Science Focus: LS

Tarren Shaw, The University of Oklahoma, Norman

Assessment strategies in a large introductory biology course were compared over several semesters. Student grade and attitude data were collected in sections using three-unit exams and sections using five-unit exams.

NARST-Sponsored Session: Peer-Led Team Learning: Improving Achievement, Recruitment, and Retention for Underrepresented Minorities in Postsecondary Biology

(College) Platinum Ballroom Salon A, JW Marriott

Science Focus: LS

Julia Snyder *(jjseymou@syr.edu),* Syracuse University, Syracuse, N.Y.

Students engaging in PLTL, particularly underrepresented minorities, had higher achievement and course retention rates as well has higher recruitment and retention in STEM fields.

STEAM in Action
(Grades K–5) *501C, Convention Center*
Science Focus: ETS2.A, SEP
Jennifer O'Sullivan (@suntanslsnplans; *jdavid18@fau.edu),* A.D. Henderson University School, Boca Raton, Fla.
Learn how our K–5 STEAM Lab has mixed a cardboard arcade with augmented reality, 3D printing with ceramics, Google Apps with worm composting, and more.

Engineering Adventure: Blazing a STEM Trail Along the Boston & Worcester Railroad
(Grades 6–12) *504, Convention Center*
Science Focus: ETS, SEP
Kathryn Buckley *(keb42@georgetown.edu),* Robert H. Adams Middle School, Holliston, Mass.
Check out how shovels, springs, and streams can be used to create cool outdoor STEM activities that investigate how engineering affects landscapes and people.

The Sludge Test: Using Project-Based Learning to Build Argumentation and Reasoning Skills in Chemistry
(Grades 6–12) *Kentia Hall N, Convention Center*
Science Focus: PS, SEP2, SEP8
Emily Berman *(emily.berman@kstf.org)* and **Brianna Balke,** and Blackstone Academy Charter School, Pawtucket, R.I.
Come learn from the successes and failures of our "Sludge Test" PBL unit that fosters risk-taking and develops *NGSS* science practices, particularly scientific writing!

Going Green! Middle Schoolers Out to Save the World
(Grades 6–12) *Kentia Hall P, Convention Center*
Science Focus: GEN
Heather Holm *(hather_holm@universitylaboratoryschool.org)* and **Betty Skiles** *(betty_skiles@universitylaboratoryschool.org),* University Laboratory School, Honolulu, Hawaii
Going Green! Middle Schoolers Out to Save the World is an energy conservation project intended to promote student interest in STEM through Problem-Based Learning.

3:30–4:30 PM Featured Presentation

Creating Learning Ecologies: Integrating Formal and Informal Spaces
(General) *Theatre (411), Convention Center*
Science Focus: INF, GEN

Jennifer Long (*jjlong@uci.edu*), Education and Outreach Coordinator, Cener for Environmental Biology, University of California, Irvine

Presider: Eddie Tabata, Strand Leader, 2017: A STEM Odyssey, and Science@OC, Santa Ana, Calif.

A great deal of science learning takes place outside of school. It goes on in parks, museums, science centers, after-school programs, online, and in conversations around the dinner table. There is a growing recognition that fostering links between in school and out of school is one important way to enhance science learning. This talk explores where and how our students discover and learn science as they engage in myriad experiences, as well as examines how these experiences can be integrated to form an ecology of science learning, and considers how these ecologies can be leveraged to provide students with opportunities to engage with science all around them.

Jennifer Joan Long is the education and outreach coordinator for the Center for Environmental Biology in the University of California, Irvine's Ayala School of Biological Sciences. Her research centers on science learning in informal environments, including museums and science centers, co-curricular and after-school programs, and wilderness areas. Specifically, Jennifer focuses on the effectiveness of designed environments in helping people learn about the natural world and reason about complex environmental issues. As part of her work, she designs and studies practical educational interventions, exploring the types of environments that afford science learning and systems thinking.

Previously, Jennifer worked as a program director and instructional designer at an informal science center, where she worked on an initiative to build effective, efficient bridges between the research and education communities, providing the research community with opportunities for outreach and the education community with programs enriched by cutting-edge science research.

3:30–4:30 PM Presentations

ELL and Culturally Relevant STEAM Strategies for Teaching Diverse Learners

(General) *Diamond Ballroom Salon 1, JW Marriott*

Science Focus: GEN

Gerry Madrazo, Jr. *(gerrymadrazo@gmail.com),* 1993–1994 NSTA President, and Madrazo Multicultural Science Consultancy, Elon, N.C.

Steve Showalter *(steve.showalter@nau.edu)* and **Patricia Peterson** *(patricia.peterson@nau.edu),* Northern Arizona University, Flagstaff

From theory to best practices—we will share STEAM/STEM instruction developed and implemented in our undergraduate and graduate teacher preparation programs for English language learners.

INF **Reflective Practitioners: Tools and Tips for Informal Science Educators**

(Grades K–12) *Diamond Ballroom Salon 2, JW Marriott*

Science Focus: INF

Lynn Tran *(lynn.tran@berkeley.edu)* and **Catherine Halversen** *(chalver@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley

Let us introduce you to methods for reflecting on practice to informal science educators. Videos, observation instruments, and discussions are used to develop skills for reflection.

NSTA Press® Session: Diving into the *NGSS* Disciplinary Core Ideas: How and Why They Are Important for Teaching and Learning

(Grades K–12) *Diamond Ballroom Salon 3, JW Marriott*

Science Focus: GEN, NGSS

Ann Rivet (@arivet6; *ribbit216@yahoo.com),* Teachers College, Columbia University, New York, N.Y.

Ravit Golan Duncan *(ravit.duncan@gse.rutgers.edu),* Rutgers University, New Brunswick, N.J.

Joseph Krajcik (@krajcikjoe; *krajcik@msu.edu),* CREATE for STEM Institute, Michigan State University, East Lansing

Book editors discuss the disciplinary core ideas across physical, life, Earth and space sciences, and engineering through rich descriptions of phenomena, learning progressions, and teaching resources.

Hook Your Students with Digital Storytelling: Introducing NOAA's Interactive *Every Full Moon* Video Series

(Grades 5–12) *Gold Ballroom Salon 1, JW Marriott*

Science Focus: ESS2.B, ESS2.C, ESS2.D, ESS3, ETS1.B, ETS2.A, LS2.A, LS2.C, LS2.D, LS, LS4.B, LS4.C, LS4.D, INF, CCC2, CCC3, CCC4, SEP3, SEP4, SEP6, SEP8

Kurt Mann *(kurt.mann@noaa.gov),* NOAA National Ocean Service, Silver Spring, Md.

Leverage the power of video! Jump-start discussion! Engage your students in hands-on activities! Head back to school with 250+ free videos from NOAA and the Smithsonian!

CSSS-Sponsored Session: Communication for Science Education Leaders (Yes, That Means You!)

(General) *Olympic 3, JW Marriott*

Science Focus: GEN, NGSS

Tom Keller *(tom.keller.me@gmail.com),* Maine Mathematics and Science Alliance, Augusta

Science leaders—at the state, district, school, and classroom level—are the best advocates for science education, yet are often the least prepared in communication.

Innovative and Engaging Strategies for Teaching Lab Safety Concepts

(Grades K–12) *Platinum Ballroom Salon B, JW Marriott*

Science Focus: GEN, INF, 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

A variety of safety demonstrations involving participants will be provided to experience more engaging ways to teach *NGSS* science and engineering practices (STEM).

Considerations for Applying Technology in Outdoor Science Education

(Grades 4–College) *Platinum Ballroom Salon C, JW Marriott*

Science Focus: ETS2, LS2, INF

Steve Kerlin *(skerlin@stroudcenter.org),* Stroud Water Research Center, Avondale, Pa.

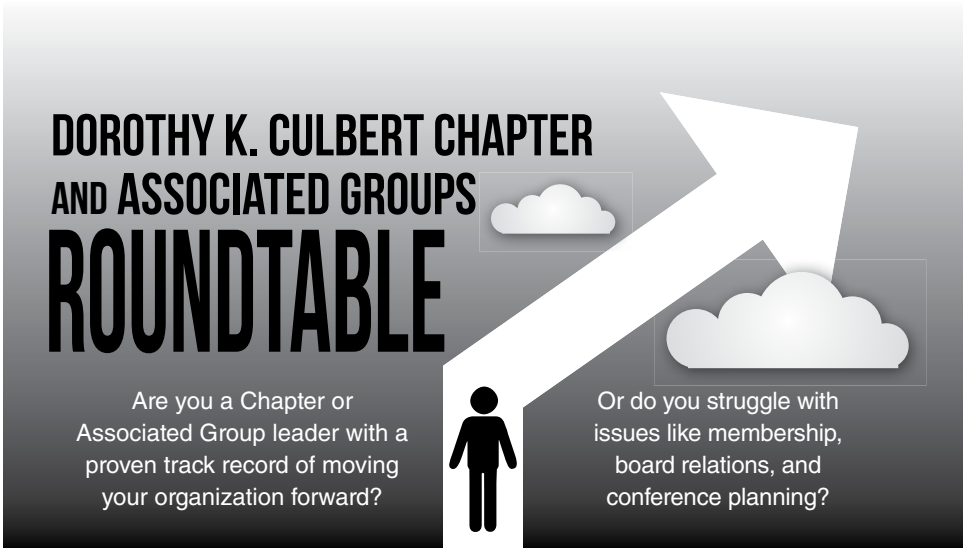
Justin Hougham (@uphamwoods1941; *justin.hougham@ces.uwex.edu),* University of Wisconsin-Extension, Wisconsin Dells

Mobile and field technologies can enhance outdoor education for digital natives—today's learners. Examples will include a water quality app and digital instrumentation kits.

STEM Is Not a Buzzword, It's a Culture!
(Grades P–12) *Platinum Ballroom Salon I, JW Marriott*
Science Focus: GEN, NGSS
Rosemary Berson, Orange County Public Schools, Orlando, Fla.
Hear how STEM can be implemented at the class, school, district, and community levels, changing it from just a buzzword to a culture!

Learning to Integrate Science Practices in K–12 Classroom Instruction
(Grades K–12) *Platinum Ballroom Salon J, JW Marriott*
Science Focus: GEN, SEP
Maria Gonzalez *(gonzaldx@bc.edu)* and **Katherine McNeill** *(kmcneill@bc.edu),* Boston College, Chestnut Hill, Mass.
Pamela Pelletier (@BPSSciencePam; *ppelletier@boston-publicschools.org),* Boston (Mass.) Public Schools
We will showcase a multimedia professional development resource about the eight *NGSS* science and engineering practices. Learn how to infuse science practices into K–12 instruction!

Positioning Students as Transformative Intellectuals in Science
(Grades 9–12) *Plaza 1, JW Marriott*
Science Focus: GEN, NGSS
Alejandra Frausto *(afrausto@cps.edu),* Chicago (Ill.) Public Schools
Daniel Morales-Doyle *(moralesd@uic.edu),* The University of Illinois at Chicago
We will share examples of high school science curricula developed to address local issues of environmental and social (in)justice.



Join us for this networking opportunity to share your experience and learn from other leaders who are "in the trenches" just like you. NSTA's Chapter Relations staff will be available to offer their expertise, and Chapters and Associated Groups celebrating special anniversaries will be recognized.
Refreshments provided.

Friday, March 31
3:00–4:00 PM
JW Marriott Hotel
Atrium 3

NSTA National Science Teachers Association

Equal Access Does Not Mean Equal Experiences: Differentiating the General Education Classroom for Diverse Learners
(Grades 9–12) *Plaza 2, JW Marriott*
Science Focus: GEN
Laura Turngren *(lturngren@barrington220.org),* Barrington High School, Barrington, Ill.
Increase student access through differentiation and building-wide supports. I'll provide instructional strategies, assessments, and ideas for schoolwide programs to facilitate growth for diverse learners.

Essential Questions for the Next Generation Notebook
(Grades 6–12) *505, Convention Center*
Science Focus: GEN, SEP1
Henri Shimojyo *(henri.shimojyo@ucr.edu),* University of California, Riverside
Yamileth Shimojyo *(yshimojyo@rcoe.us),* Riverside County Office of Education, Murrieta Office, Murrieta, Calif.
Emphasis will be placed on Essential Questions (EQs) as the driving force of curricular design. Participants will analyze several science notebooks that have used the specific strategy of EQs. Discussion includes connections to the *NGSS.*

3:30– 4:30 PM Hands-On Workshops

Group Learning Routines as a Bridge to Constructing Scientific Explanations
(Grades 8–12) *Diamond Ballroom Salon 7, JW Marriott*
Science Focus: GEN, NGSS
Elizabeth Chatham (@EChathamNVPS; *libbychat@gmail.com),* New Visions for Public Schools, New York, N.Y.
Zachary White-Stellato *(zwhitest23@gmail.com),* Advanced Math & Science II, Bronx, N.Y.
Join us for an immersive experience exploring how to use group learning routines as a prewriting support for writers of all abilities. We will focus on constructing scientific explanations.

ASTE-Sponsored Session: *NGSS* Activities for Middle School Teachers
(Grades 6–8) *Georgia 2, JW Marriott*
Science Focus: ESS1.B, CCC1, SEP4
William Veal, College of Charleston, S.C.
Join me for two *NGSS*-based activities focused on performance expectations that use online calculators to collect data.

Stream Study…With or Without a Stream!
(Grades 4–College) *Olympic 1, JW Marriott*
Science Focus: ESS, PS, CCC1, CCC4, CCC5, CCC7
Jill Lytle *(jill.lytle@sausd.us),* Godinez Fundamental High School, Santa Ana, Calif.
Cheryl Ann Park *(cherylann.park@sausd.us),* Century High School, Santa Ana, Calif.
Make a stream study work for you and your students, no matter their age or stream access. We will also discuss obtaining funding for materials.

High School Engineers: Build a Model Hydrogen Car
(Grades 9–12) *Plaza 3, JW Marriott*
Science Focus: ETS1, PS1.B, PS3.A, PS3.B, SEP1, SEP3, SEP4, SEP7, SEP8
Kristen Tomasicchio (@TransOptions; *ktomasicchio@transoptions.org),* TransOptions, Cedar Knolls, N.J.
Teach your high school students about hydrogen fuel cell technology by building a model car that uses two Mini PEM fuel cells.

NESTA Session: Outstanding Earth Science Teacher Awardee (OESTA) Share-a-Thon
(Grades K–12) *151, Convention Center*
Science Focus: ESS
Cheryl Manning (@clbmanning; *clbmanning@mac.com),* Evergreen High School, Evergreen, Colo.
Join more than 20 OESTA winners as they share their favorite *NGSS*-congruent classroom activities. Lots of free handouts!

Fairy Tales, Folk Tales, and Fables Engineering
(Grades K–3) *502A, Convention Center*
Science Focus: GEN, NGSS
Maria Blue *(txmblue@gmail.com),* Emblem Academy, Santa Clarita, Calif.
Integrate engineering and literacy through fairy tales, folk tales, and fables with practical management techniques and connections to crosscutting concepts and science and engineering practices.

Using I-Engineering Teacher Tools to Promote Positive Engineering Identity Formation

(Grades 6–7) *502B, Convention Center*

Science Focus: ETS, PS3, SEP1, SEP6, SEP8

Angela Calabrese Barton (@calabresebarton; *acb@msu.edu),* Michigan State University, East Lansing

Presider: Kathleen Schenkel *(schenk13@msu.edu),* Michigan State University, East Lansing

I-Engineering teacher tools can help teachers forefront students' identity work in engineering as they engage in the engineering practices of defining problems and designing solutions.

NGSS Science and Math Collision Course: Using Phenomena to Teach Matter and Math

(Grades P–6) *515A, Convention Center*

Science Focus: PS1.B, CCC2, SEP4

Dawn O'Connor (@dawno_connor; *dawno@acoe.org)* and **Leena Bakshi** (Leena219; *leena219@gmail.com),* Alameda County Office of Education, Hayward, Calif.

Implement *CCSS* and *NGSS* simultaneously through math/science practices. Experience phenomena, discourse, and the math three-act structure (Hook, Explore, Reveal) to investigate matter and its interactions.

Making the Case for STEM Career Pathways in Public Health (Centers for Disease Control and Prevention)

(Grades 7–College) *515B, Convention Center*

Science Focus: GEN, NGSS

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

Participate in a CDC case study–based lesson plan that engages students in science, math, and health concepts and introduces students to career pathways in public health.

That's a Good Question!

(Grades K–5) *Kentia Hall A, Convention Center*

Science Focus: GEN, SEP1

Jennifer Hope *(jmghope@gmail.com),* 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.

NGSS Connections for TK and Preschool STEM Learning

(Grades P–K) *Kentia Hall B, Convention Center*

Science Focus: GEN, CCC, SEP

Carrie Lynne Draper *(carrie@readinesslearning.net),* Readiness Learning Associates, Pasadena, Calif.

Early learning STEM educators will walk away with an understanding of how to use *NGSS* and its related resources to inspire cross-curricular integration of STEM into the preschool and transitional kindergarten curriculum.

Teaching Science Concepts through Literacy and Hands-On Exploration

(Grades P–5) *Kentia Hall C, Convention Center*

Science Focus: GEN, INF, NGSS

Lori Gallagher (@NYC_ESC; *ESC@schools.nyc.gov),* **Fabiana Cellini** (@NYC_ESC; *ESC@schools.nyc.gov),* **Christine Mazza** (@NYC_ESC; *ESC@schools.nyc.gov),* and **Sarah Bowers** (@NYC_ESC; *ESC@schools.nyc.gov),* NYCDOE Environmental Study Center, Brooklyn, N.Y.

Presider: Tracy Byrne, NYCDOE Environmental Study Center, Brooklyn, N.Y.

Learn to generate engagement and excitement with young learners through trade books paired with hands-on activities.

Centered on Science: Making It Seamless in the PreK–3 Classroom

(Grades P–3) *Kentia Hall D, Convention Center*

Science Focus: GEN, NGSS

Barbara Tharp *(btharp?@bcm.edu),* **Greg Vogt,** and **Nancy Moreno** *(nmoreno@bcm.edu),* Baylor College of Medicine, Houston, Tex.

Reading, writing, and doing science all lead to loving science! Let literacy lead student engagement in connecting the dots that make science come alive.

Frankenstruction: Hybridizing Literacy and Science

(Grades 7–12) *Kentia Hall E, Convention Center*

Science Focus: LS1.A, LS1.B, LS3.B, LS4.B, LS4.D, CCC6, SEP6, SEP7, SEP8

Candyce Johnson *(cjohnson@bbg.org),* Brooklyn Botanic Garden, Brooklyn, N.Y.

With a focus on plant reproduction and genetic modification, learn strategies for sharpening students' literacy skills without sacrificing content.

Batology: An Integrated STEAM Unit on Bat Structure, Diversity, and Their Vital Role in the Ecosystem
(Grades 2–4) *Kentia Hall F, Convention Center*
Science Focus: LS
Wendy Wing (@Wingtweets; *wwing@forsyth.k12.ga.us),* Sharon Elementary School, Suwanee, Ga.
Capture your students' attention with blood-loving vampires, giant flying fox bats, and bat poop. Fly away with a STEAM unit full of engaging activities and resources.

INF **Starting a STEM Club in Lower School: Now What Do I Do?**
(Grades P–5) *Kentia Hall G, Convention Center*
Science Focus: INF, NGSS
Rebecca Kurson (@beckyk326; *rkurson@goldaochacademy.org),* Golda Och Academy, West Orange, N.J.
Get information about how to design projects, plan curriculum, and fund a successful lower school STEM Club.

Building a Love for Science In and Out of the Classroom
(Grades K–4) *Kentia Hall H, Convention Center*
Science Focus: GEN
Jessica Grant, Blackstone Valley Prep Elementary School 2, Cumberland, R.I.
Prepare to engage your students with two different strategies that are sure to inspire them to think about science in their everyday lives.

STEM Engagement at a STARBASE Near You!
(Grades 3–7, College) *Kentia Hall J, Convention Center*
Science Focus: ETS1, PS3.A, INF, SEP
Mary Stein *(stein@oakland.edu)* and **Betty Crowder** *(crowder@oakland.edu),* Oakland University, Rochester, Mich.
Mark Muzzin *(mmuzzin@starbaseone.org),* STARBASE One, Selfridge Air National Guard Base, Mich.
At STARBASE, grade 5 students' passion for learning is ignited. Inspire your students with inquiry-based STEM activities and learn more about this free nationally recognized program.

Using Structures to Enhance STEM Learning
(Grades K–8) *Kentia Hall K, Convention Center*
Science Focus: GEN
Rebecca Dyasi, Long Island University, Brooklyn, N.Y.
Find out how a practical problem requiring students to build stable and attractive structures to specifications can advance contextualized science and engineering ideas and practices.

Paired Inquiry Using Paper Chromatography
(Grades 4–9) *Kentia Hall L, Convention Center*
Science Focus: PS1.A, CCC1, CCC2, CCC7, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8
Kelly Moore *(kellymoore@tntech.edu),* Tennessee Tech University, Cookeville
Use popular candies and food dyes to teach mixtures and physical properties! We will focus on a pair of lab activities that can be used as a guided investigation (teaching skills and protocols useful for the next step) followed by a more open inquiry. *NGSS* compatibility will also be discussed.

Invisible Signals at the Touch of a Button
(Grades 6–8) *Kentia Hall M, Convention Center*
Science Focus: PS4, CCC5, SEP1
Coral Clark and **Pamela Harman,** SETI Institute, Mountain View, Calif.
Participants will explore energy through investigation using remote controls and their own smartphones.

INF **Connect Chemistry to Your World with ChemClub**
(Grades 9–12) *Kentia Hall O, Convention Center*
Science Focus: PS, INF
Karen Kaleuati (@ACSChemClubs; *k_kaleuati@acs.org),* American Chemical Society, Washington, D.C.
The ACS ChemClub program provides fun and educational resources—all for FREE! Learn about the program, try out some of the activities, and take home a copy of the resources.

Hypothesis Generation in the Science Classroom
(Grades 3–College) *Kentia Hall Q, Convention Center*
Science Focus: GEN, SEP
Paul Strode (@pkstrode; *paul.strode@bvsd.org),* Fairview High School, Boulder, Colo.
We will discuss student and teacher misconceptions about hypotheses and scientific reasoning as well as practice strategies for helping students effectively explore hypothesis generation in science.

Polar Ice Blast: Get Your Students Involved in Polar Sciences
(Grades 4–8) *Kentia Hall R, Convention Center*
Science Focus: GEN, NGSS
Louise Huffman *(louise.t.huffman@dartmouth.edu),* Thayer School of Engineering at Dartmouth, Hanover, N.H.
Polar activities can open the world of global change to your students far beyond penguins and polar bears.

Evolution the *NGSS* Way
(Grades 9–12) *Kentia Hall S, Convention Center*
Science Focus: LS4
Molly Malone *(molly.malone@utah.edu),* The University of Utah, Salt Lake City
Explore curriculum materials that integrate the *NGSS* three dimensions of learning with published scientific data to address core ideas in evolution such as common ancestry, heredity, natural selection, and speciation. Visit *learn.genetics.utah.edu* for more information.

NMEA-Sponsored Session: Tagging and Tracking Sharks: What's Your Hypothesis?
(Grades 3–12) *Petree Hall D, Convention Center*
Science Focus: LS, CCC2, SEP1, SEP4
Jessica Kastler, Summer Dorcik *(summer.rohe@usm.edu),* and **Jill Hendon** *(jill.hendon@usm.edu),* Gulf Coast Research Laboratory, Ocean Springs, Miss.
Learn about the elusive whale shark as you consider tagging technology and shark life histories. Graph shark migration tracks and discuss hypothesis formation and testing.

3:30– 4:30 PM Exhibitor Workshops

Cooking Up Lessons with Three Dimensional Learning
(Grades 6–12) *150 AB, Convention Center*
Science Focus: GEN, NGSS
Sponsor: STEMscopes™ from Accelerate Learning
Amanda McGee and **Dawn Alvarez,** STEMscopes from Accelerate Learning, Houston, Tex.
Three-dimensional learning has been compared to cooking a really great meal. Come explore this analogy with us as we work together to plan an effective lesson that addresses all three dimensions of the *NGSS.* .

Exploring and Modeling Climate Change
(Grades 7–12) *405, Convention Center*
Science Focus: ESS2.D, ESS3.D, LS2.B
Sponsor: PASCO scientific
Michael Blasberg, PASCO scientific, Roseville, Calif.
Roger Palmer, GISetc, Dallas, Tex.
How can you make a global phenomenon tangible so students can better understand the local impacts of climate change? Through hands-on, sensor-based investigations, we will monitor local CO_2 levels, model ocean acidification, and use Geographic Information Systems (GIS) to explore (and create) global data sets with free classroom-ready resources.

Exploring Misconceptions: Motion Graphs
(Grades 6–12) *407, Convention Center*
Science Focus: PS2.A, CCC1, SEP2, SEP3, SEP4, SEP5
Sponsor: PASCO scientific
Brett Sackett *(sackett@pasco.com),* PASCO scientific, Roseville, Calif.
Thomas Hsu *(thsu@pasco.com),* Ergopedia, Inc., Cambridge, Mass.
What's the difference between position, speed, and velocity? By collecting data of a moving cart, we will graph distance vs. speed and position vs. velocity to help students understand the motion of moving objects and the distinction between positive and negative position and velocity.

Environmental Toxicology Using Edvotek's New EZ-elegans
(Grades 9–College) *410, Convention Center*
Science Focus: LS
Sponsor: Edvotek, Inc.
Danielle Snowflack *(info@edvotek.com),* **Brian Ell** *(info@edvotek.com),* and **Tom Cynkar** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Model organisms allow scientists to investigate biological questions that cannot be studied in humans. Learn how Edvotek's EZ-elegans simplifies culturing *C. elegans* in your classroom. Then, explore effects of environmental factors on *C. elegans* using a simple locomotion assay. Integrate STEM concepts with data collection and statistics. Freebie/raffle entry for attending!

Forces, Energy, Motion, and Engineering with K'NEX Machines: Using STEM to Make Work Easier
(Grades 5–9) *510, Convention Center*
Science Focus: ETS1, PS2
Sponsor: K'NEX Education
Robert Jesberg *(rjesberg@knex.com),* K'NEX Education, Hatfield, Pa.
Experience STEM hands on by building gravity, rubber band, and spring-powered K'NEX racers to experiment with physical science concepts using 5E instructional strategies. Test your cars (Explore), graph and analyze results (Explain), and redesign (Extend). Investigate potential and kinetic energy, average speed, and more. Standards and STEM concepts will be our guide.

3:30–5:30 PM Hands-On Workshops

CSSS-Sponsored Session: Having Classroom Instruction and Formative Assessment Meet the *NGSS* Performance Expectations

(General) *Platinum Ballroom Salon F, JW Marriott*

Science Focus: GEN, NGSS

Brett Moulding *(mouldingb@ogdensd.org)* and **Nicole Paulson** *(nicole.paulson@nebo.edu),* Partnership for Effective Science Teaching and Learning, Ogden, Utah

Attention will be paid on how the three dimensions of science from the *Framework* and *NGSS* work together in student science performances. We will share a useful tool to have classroom instruction and formative assessment meet the *NGSS* performance expectations.

INF Science in the Community Session: Creativity Forum: A Serious and Fun Aspect of Science

(General) *152, Convention Center*

Science Focus: GEN, INF, NGSS

Phyllis Katz *(pkatz15@gmail.com),* Retired Educator, Silver Spring, Md.

This ISE Committee Science in the Community Forum focuses on creativity and the importance of patterns from neurobiology to your science class. Featuring Thomas Knaurer—quilter and mathematician.

4:00–4:30 PM Presentations

Making Makerspaces Equitable and Accessible

(Grades 6–12) *Diamond Ballroom Salon 8, JW Marriott*

Science Focus: ETS, PS

Colby Tofel-Grehl *(colby.tg@usu.edu),* Utah State University, Logan

This talk focuses on the ways that providing classroom students with opportunities to engage with making provides better access and equity for all groups over the traditional after-school club or camp.

SCST-Sponsored Session: Examining the Progression of Student-Developed Hypotheses in an Inquiry Biology Laboratory Course (IBLC)

(College) *Georgia 1, JW Marriott*

Science Focus: LS

Joseph Trackey *(joseph.l.trackey@lonestar.edu),* **Helen McDowell** *(helen.e.mcdowell@lonestar.edu),* and **Linda Crow** *(lcrow@lonestar.edu),* Lone Star College–Montgomery, Conroe, Tex.

Hear about the struggles students encounter and overcome in developing a testable hypothesis during an inquiry-based introductory college biology course.

NARST-Sponsored Session: Engaging Students with Primary Literature Improves Nature of Science Conceptions and Confidence in Reading Science

(College) *Platinum Ballroom Salon A, JW Marriott*

Science Focus: LS, SEP

Jason Wiles, Syracuse University, Syracuse, N.Y.

College biology students exposed to primary literature showed positive gains in nature of science conceptions as well as increased confidence with approaching original research.

Phenomena and the Fed

(Grades 1–5) *501C, Convention Center*

Science Focus: GEN, NGSS

Margaret Chmiel (@mchmiel), Howard Hughes Medical Institute, Chevy Chase, Md.

Explore free online resources from across federal agencies that provide science educators with a starting place for identifying phenomena to drive *NGSS* lessons.

Incorporating Inquiry and Problem-Based Projects in High School Chemistry Class

(Grades 8–12) *Kentia Hall N, Convention Center*

Science Focus: PS, CCC4, CCC5, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8

Jeannette Adkins *(jadkins@st.catherines.org),* St. Catherine's School, Richmond, Va.

Discussion centers on integration of problems and projects into a high school chemistry course to encourage engagement in real-world problems through *NGSS* while ensuring content is covered.

Learning STEM Through Bioenergy: Lessons from the Plants

(Grades 7–12) *Kentia Hall P, Convention Center*

Science Focus: LS, PS3, CCC

Kathryn Orvis, Purdue University, West Lafayette, Ind.

Fuel new learning in your classroom with a comprehensive curriculum focused on biofuels from plants that provides a foundation for teaching fundamental STEM concepts and making connections to a range of diverse careers.

4:00–5:30 PM Exhibitor Workshops

Gel Electrophoresis in 90 Minutes to Deduce Genotype from Phenotype

(Grades 10–College) *150C, Convention Center*

Science Focus: LS1, LS3, PS1, CCC1, SEP4

Sponsor: The MiniOne Systems

Richard Chan *(sales@theminione.com),* The MiniOne Electrophoresis, San Diego, Calif.

Learn and get hands-on experience teaching Mendelian genetics and genotyping by doing electrophoresis. You will pour, load, and run a gel; capture a gel image; analyze the results; and determine PTC taster genotype. If you attended our PTC Taster by PCR session, you may load and analyze your own amplified DNA.

How to Incorporate STEM Project-Based Learning in Your Classroom—Start Building!

(Grades K–12) *153A, Convention Center*

Science Focus: ETS

Sponsor: Iridescent

Judith Ahumada *(info@curiositymachine.org),* Iridescent, Los Angeles, Calif.

Discover Curiosity Machine, our STEM PBL program! Developed in partnership with professional engineers, our design challenges are *NGSS* focused. Find out how you can use them with your K–12 students. Walk away with free resources. Come build with us!

Living by Chemistry: Create a Table

(Grades 9–12) *153B, Convention Center*

Science Focus: PS

Sponsor: Bedford, Freeman, & Worth High School Publishers

Angelica Stacy, University of California, Berkeley

Teach rigorous chemistry through guided inquiry! In this workshop, we will explore activities that introduce the periodic table and other core chemistry concepts through a historical context. Leave with free materials to use in your class!

Hands-On Approach to Teach Electricity in Japan

(Grades 7–12) *153C, Convention Center*

Science Focus: PS2.B, PS3.A, PS3.B

Sponsor: NaRiKa Corp.

Michal Marcik *(global@rika.com)* and **Taiki Watanabe** *(global@rika.com),* NaRiKa Corp., Tokyo, Japan

As a time-honored Japanese company, NaRiKa introduces a hands-on approach to teaching electricity, which is a topic so many teachers worldwide struggle with. Our participatory workshop provides solutions in the Japanese way for this challenge along with our handheld generator covering both static and dynamic electricity, including energy conservation and conversion.

Build Skills to Boost the Makerspace Experience for Young Scientists!

(Grades K–3) *301 AB, Convention Center*

Science Focus: ETS

Sponsor: Delta Education/School Specialty Science

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Makerspaces are popping up everywhere, providing a creative space to explore questions and solve problems. But for students in grades K–3, tackling STEM-related challenges requires a foundation in science investigation. Help young scientists build the skills needed for independent exploration in their makerspaces with programs like Science in a Nutshell.

Evolutionary Evidence in the Fossil Record

(Grades 6–8) *303 AB, Convention Center*

Science Focus: ESS, LS4

Sponsor: Delta Education/School Specialty Science–FOSS

Virginia Reid and **Ann Moriarty,** The Lawrence Hall of Science, University of California, Berkeley

What does the fossil record tell us about how life has changed over time? Explore evolutionary history through hands-on activities from the new FOSS Next Generation Heredity and Adaptation Course for middle school, and identify connections to the three dimensions of *NGSS*.

Wind Turbine: An *NGSS* Approach to Understanding Renewable Energy

(Grades 6–12) *304 AB, Convention Center*

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

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

Kat Mills, School Specialty Science, Rosharon, Tex.

Wind is a plentiful energy source, but is the energy transformation really clean? Investigate costs and energy efficiency using an innovative model. Participants build a wind turbine, analyze costs involved, and then compete against others to see who can get the most from their engineered design. Door prizes. Free STEM resources.

Learn to Code with LEGO® MINDSTORMS® Education EV3

(Grades 5–12) *304C, Convention Center*

Science Focus: ETS

Sponsor: LEGO® Education

Kelly Reddin, LEGO Education, Billund, Jylland, Denmark

Learn how to teach your students "coding habits of mind," which will lay the foundation for students to engage in more advanced programming. Complete hands-on lessons that leverage coding skills and are built around national standards. Not a programmer? No problem. By the end of this session, you will be eager to bring coding and robotics to your classroom.

STEM Leaders in Action: Learn About the Einstein Fellowship (AEF) Program

(Grades 5–12) *305, Convention Center*

Science Focus: GEN

Sponsor: Albert Einstein Distinguished Educator Fellowship

Jill Latchana *(einsteinfellows@orise.orau.gov)* and **Beth White** *(einsteinfellows@orise.orau.gov),* Oak Ridge Associated Universities, Oak Ridge, Tenn.

Learn how Einstein Fellows bring their insights and experience as K–12 STEM educators to federal STEM education programs, initiatives, and policy efforts by serving in U.S. Congressional Offices, or the U.S. Department of Energy (DOE), National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA). Find out from the panel of current Fellows about their day-to-day experiences, the substantial contributions to federal-level education efforts, the unique professional and career development opportunities available to Fellows, and how to apply to the program.

Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs

(Grades 9–12) *306 AB, Convention Center*

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Are you ready for a forensic dissection activity that is on the cutting edge? Engage students and revitalize your instruction of mammalian structure and function with a "real" classroom autopsy! Dissect a Carolina's Perfect Solution pig by modeling the protocols of a forensic pathologist.

Clean Up Your Mess! Air and Water Pollution Remediation

(Grades 6–12) *308 AB, Convention Center*

Science Focus: ESS3.C, ETS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Pollution remediation is a messy but necessary business. Experience two hands-on environmental science activities that model the techniques used to clean up pollution—air pollution wet scrubbers and a three-step wastewater treatment process. Both activities may be used qualitatively or quantitatively, depending on instructional objectives.

Shifting to the Five Innovations: How Do We Transform Instruction?

(Grades 6–8) *309, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience three-dimensional learning, phenomena, the nature of science, ELA and math connections, and an in-depth progression of learning as you explore the new Smithsonian STCMS™ middle school curriculum designed to implement these five innovations. Leave with examples of supportive resources to make the transition easy and fun for students.

Chemistry with Vernier

(Grades 9–College) *402A, Convention Center*

Science Focus: ETS2, PS1, PS3, PS4

Sponsor: Vernier Software & Technology

Nüsret Hisim *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors to conduct chemistry experiments from our lab books in this engaging hands-on workshop. Collect and analyze data on LabQuest 2 and computers. See a demonstration of our new Go Direct wireless and USB sensors that connect directly to computers, Chromebooks, and mobile devices—no interface needed.

STEM/Engineering Activities Using Vernier Sensors with Arduino

(Grades 7–12) *402B, Convention Center*

Science Focus: ETS

Sponsor: Vernier Software & Technology

Dave Vernier *(dvernier@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 RedBoard. Topics include an introduc-

tion to programming Arduino microcontrollers, calibrating sensors, and controlling outputs based on sensor readings. Learn how you can use Arduino for great STEM and engineering projects.

Building or Renovating a Laboratory? Get Your Questions Answered

(Grades 5–College) *403A, Convention Center*

Science Focus: GEN

Sponsor: Flinn Scientific, Inc.

Greg Chyson *(gchyson@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.

Get answers to all your laboratory design questions! We will share design priority tips and safety information gathered from years of experience helping science teachers plan their laboratory construction and remodeling projects! You will learn what features to include in your laboratories and what common mistakes to avoid.

Ecological Restoration—From a Case Study Investigation to Local Action

(Grades 9–12) *403B, Convention Center*

Science Focus: LS2.C, SEP3

Sponsor: HHMI BioInteractive

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

Perri Carr *(perricarr@gmail.com),* Bishop Dunne Catholic School, Dallas, Tex.

This hands-on workshop uses the ongoing Gorongosa National Park ecological restoration case study to prepare students to conduct their own ecological investigations locally. Participants will use classroom-ready resources that engage, cover complex ecological concepts, and demonstrate how to best access and generate WildCam citizen science data for classroom analysis.

Take pGLO™ to the Next Level!

(Grades 9–College) *404 AB, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

What happens when you add jellyfish DNA to *E. coli?* pGLO green glowing bacteria! Scientists can do this by transforming bacteria with the genes for Green Fluorescent Protein (GFP). In this workshop, you will become a bio-engineer and purify GFP from transformed bacteria via a biomanufacturing process—chromatography.

Become a GMO Investigator

(Grades 9–College) *406 AB, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

Regardless of where you stand in the GM debate, wouldn't it be interesting to know which foods you eat are GM foods? This hands-on workshop teaches the basics of DNA extraction, PCR, and electrophoresis and how they are used to test grocery store food products for the presence of GM foods.

Using Mobile Technology to Engage Students with STEM

(Grades K–8) *408A, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Discovery Agents

Cynthia Rounds *(cynthia_rounds@myfsd.org),* Robert C. Fisler School, Fullerton, Calif.

Mary Clark *(mclark@discoveryagents.net),* Discovery Agents, Kelowna, B.C., Canada

Ashley Ukleja, Discovery Science Foundation, Los Angeles, Calif.

Technology is the language of youth today. Discovery Agents provides educators with an innovative, easy-to-use tool that makes learning fun and engaging for students. This platform enables educators to easily publish their content to mobile, thereby turning the community into a classroom.

Cool Tools for Light and Color

(Grades 8–12) *408B, Convention Center*

Science Focus: PS

Sponsor: Arbor Scientific

James Lincoln, Arbor Scientific, Newport Beach, Calif.

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 included!

Integrating Earth Systems Investigations and Action into Curriculum

(Grades 9–12) *409 AB, Convention Center*

Science Focus: ESS2, ESS3, LS2, CCC2, CCC3, CCC4, CCC7, SEP1, SEP2, SEP3, SEP6, SEP8

Sponsor: HHMI BioInteractive

Aleeza Oshry *(oshrya@hhmi.org),* Howard Hughes Medical Institute, Chevy Chase, Md.

Jessica Bean *(jrbean@berkeley.edu),* University of California Museum of Paleontology, Berkeley

Join us for an interactive workshop to learn how HHMI's BioInteractive resources with UCMP's Understanding Science and Global Change Frameworks can be used to create relevant, student-centered, and inquiry-based curricula that meet content standards. Whether you are developing, implementing, or supplementing curricula, the resources and methods shared in this workshop will support your efforts.

The Voice LIVE: Physics Edition

(Grades 6–12) *503, Convention Center*

Science Focus: PS

Sponsor: Ward's Science

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

Have you ever wanted to perform in front of an audience? Well, it's your time to shine! Form your own band and perform a hit single using resonance tubes! Teach concepts such as sound, transfer of energy, waves, forced vibrations, pitch, and frequency in a way students won't soon forget.

Creating Excitement About Science Through Water Education

(Grades P–10) *511 AB, Convention Center*

Science Focus: ESS, CCC, SEP

Sponsor: Project WET Foundation

Julia Beck, Project Wet Foundation, Bozeman, Mont.

Project WET is the global leader in water education using hands-on science methods to train teachers to teach children. In 2017, Project WET introduces new connections to the *NGSS* for its award-winning and *NSTA Recommends* publication, the *Project WET Curriculum and Activity Guide 2.0* along with launching a new guide titled *Getting Little Feet Wet.* Come learn how to use Project WET activities to get children of all ages excited about science and environmental education.

Bring Your Cell Biology Teaching to the Next Level with the 3D Cell Explorer!

(Grades 9–College) *511C, Convention Center*

Science Focus: ETS, LS, SEP

Sponsor: Nanolive SA

Lisa Pollaro, *N*anoLive SA, Écublens, Vaud, Switzerland

Nanolive launches the 3D Cell Explorer for education—a revolutionary microscope that delivers live cell tomography at the push of a button. The intuitive software STEVE enables digital staining on single cells with an unlimited choice of colors and obtains its 3D reconstruction in real time. To share, interact, and explore your results, the cells data can further be printed (e.g. 3D printer or 3D holograms), or can be directly viewed on 3D beamers or in 3D animations.

Hands-On STEM in the Upper Elementary Classroom

(Grades 4–6) *512, Convention Center*

Science Focus: ETS1

Sponsor: SAE International

Amy Smith *(asmith@gmail.com),* SAE International, Warrendale, Pa.

Learn how to keep your upper elementary students engaged in STEM. This hands-on workshop will provide you with the tools you will need to use the engineering design experience in your classroom.

Cultivating a Culture of Argumentation in Your Classroom

(Grades K–8) *514, Convention Center*

Science Focus: GEN, SEP7

Sponsor: Pearson

Zipporah Miller, Anne Arundel County Public Schools, Annapolis, Md.

Critical thinking, communication, collaboration, creativity, and innovation are skills students should possess that allow them to compete in today's global economy. Cultivating a culture of argumentation in classrooms affords students with the opportunity to develop these skills. This session will model techniques that help encourage students to formulate explanations based on evidence, in an effort to defend their ideas or challenge a classmate's ideas. This session will also demonstrate how argumentation allows students to challenge the status quo based on evidence.

Calling All Carbons
(Grades 9–12) *518, Convention Center*
Science Focus: ESS2.A, SEP2, SEP3, SEP4
Sponsor: Lab-Aids, Inc.
Lisa Martin-Hansen, California State University, Long Beach
The element carbon is critical to life on Earth. All living organisms contain different and essential carbon-based molecules. Several Earth processes work together to cycle carbon from one carbon reservoir to another and to keep the amount in each reservoir stable. We will learn about and model different carbon transfer processes in this exemplary *NGSS* activity developed by EDC and the Oceans of Data Institute.

4:00–6:00 PM Meeting

APAST Board of Directors Meeting
(By Invitation Only) *401, Convention Center*

4:30–5:30 PM Meeting

Outstanding Science Trade Books Committee Meeting
(By Invitation Only) *Studio 1, JW Marriott*

4:30–6:00 PM Meeting

NSTA Board and Council Meet & Greet
(By Invitation Only) *Atrium 3, JW Marriott*

4:30–6:00 PM Networking Opportunity

NSTA Young Professional and New Teacher Reception
Diamond Ballroom Salon 6, JW Marriott
Preservice and new teachers (inservice for less than five years, including career-changers) are invited to attend this fun and interactive networking reception. No ticket required.

The reception will include short presentations offering tips on how to excel in the classroom from both new and preservice teachers as well as NSTA Student Chapter leaders. An overview of NSTA resources geared to preservice and new teachers will also be presented. Refreshments and hors d'oeuvres will be served as you network with your peers.

4:45–5:45 PM Meeting

STEM Outstanding Trade Books Meeting
(By Invitation Only) *Olympic 2, JW Marriott*

5:00–5:30 PM Presentations

NSTA Press® Session: Teaching Energy Across the Sciences
(Grades K–12) *Diamond Ballroom Salon 3, JW Marriott*
Science Focus: PS3, CCC5
Jeff Nordine *(nordine@ipn.uni-kiel.de),* Leibniz Institute for Science and Mathematics Education, Keil, Germany
Get introduced to the "Five Big Ideas" about energy that are critical for making energy a crosscutting concept across the sciences and everyday life.

SCST-Sponsored Session: Using Museums to Broaden the Science Practices and Increase Engagement
(Grades 9–College) *Georgia 1, JW Marriott*
Science Focus: LS, SEP
Lynn Diener, Mount Mary University, Milwaukee, Wis.
Robert Payo *(robert.payo@dmns.org),* Denver Museum of Nature & Science, Denver, Colo.
Learn about often underutilized opportunities to help you teach sciences to your undergraduate science students.

Global Collaboration in the Science Classroom
(Grades 8–12) *Plaza 2, JW Marriott*
Science Focus: GEN, NGSS
Jacqueline Fernandez CANCELED LEAYC Career Academy, Washington, D.C.
Find out where to find schools interested in collaboration, how to get involved with global collaborative organizations such as the Global Nomads Group, get tips on how to establish a successful partnership, and develop a framework for collaboration projects based on personal experiences with schools in Hong Kong, China, and Jordan.

Implementing Profession-Based Learning in the Science Classroom
(Grades 9–College) *Plaza 3, JW Marriott*
Science Focus: GEN, SEP1
Joseph Whalen (@jpwhalen; *grouper21@hotmail.com),* Center for Advanced Professional Studies (CAPS), Overland Park, Kans.
Want to provide real-world and authentic experiences for your students while maintaining a rigorous curriculum? Techniques, tips, and lessons learned using this approach will be shared.

Effective Applications of iPad Technology in the Science Classroom
(Grades 6–12) *504, Convention Center*
Science Focus: ETS, CCC, SEP
Melodie Ting (@mgtchemist; *mgt2130@tc.columbia.edu),* The Browning School, New York, N.Y.
Attention will be paid to the application of iPad technology in a science classroom. We will explore different digital tools that can be used to enhance collaboration and three dimensional learning.

Disaster in the Making: Implementing Dual Class System to Teach Emerging Infectious Disease in a First-Responder School
(Grades 9–12) *Kentia Hall S, Convention Center*
Science Focus: ESS3.B, ESS3.C, LS4.B, LS4.C, CCC1, CCC2, CCC6, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8
Arun Kadam *(akadam@bridgeportedu.net)* and **Brianne Bresky** *(bbresky@bridgeportedu.net),* Bridgeport Military Academy, Bridgeport, Conn.
Hear about a science and history course at Bridgeport Military Academy, a first-responder magnet school. We will share the course's interdisciplinary integrations of science, social sciences, homeland security, CDC, and FDA for emergency management.

5:00–6:00 PM Networking Opportunity

Alliance of Affiliates Networking Social
(By Invitation Only) *Platinum Ballroom Salon H, JW Marriott*
Members of NSTA's affiliate organizations (NARST, ASTE, CESI, NSELA, AMSE, NMLSTA, CSSS, ASTC, SCST) are invited to attend this social to network with other affiliate members.

—Photo courtesy of Jacob Slaton

5:00–6:00 PM Presentations

Measuring Proficiency and Growth in the Science and Engineering Practices
(Grades 7–12) *Diamond Ballroom Salon 8, JW Marriott*
Science Focus: GEN, SEP
Steve Wood *(swood@d125.org)* and **Dean Barr** *(dbarr@d125.org),* Adlai E. Stevenson High School, Lincolnshire, Ill.
Explore resources we have developed to measure student proficiency and growth in the science and engineering practices. Practical examples for lessons, rubrics, and other resources will be shared and discussed.

Elementary Science Methods: Learning to Teach Students with Learning Disabilities
(College) *Olympic 1, JW Marriott*
Science Focus: GEN
Lisa Brooks, University of Central Florida, Orlando
Learn about strategies and tools to guide preservice teachers to understand how to provide meaningful experiences for ALL students, including those with special needs.

CSSS-Sponsored Session: Creating STEM Mentor Networks to Increase STEM Teacher Retention
(Grades K–8) *Platinum Ballroom Salon A, JW Marriott*
Science Focus: GEN
Jennifer Hicks (@DrJennyHicks; *hicks12@purdue.edu),* I-STEM Resource Network, West Lafayette, Ind.
Jeff Thomas *(jathomas@usi.edu),* University of Southern Indiana, Evansville
Deborah Vannatter *(davanna1203@gmail.com),* University of Evansville, Ind.
We will describe the work we are doing in Indiana to build a network of STEM mentor teachers in grades K–8.

Teachers as Edventurers: Deepening Science Inquiry with Mobile Media Devices
(Grades 6–College) *Platinum Ballroom Salon I, JW Marriott*
Science Focus: ETS2, LS2, INF
Justin Hougham (@uphamwoods1941; *justin.hougham@ces.uwex.edu),* University of Wisconsin–Extension, Madison
Chris Schaben *(chris.schaben@ops.org),* Omaha (Neb.) Public Schools
Elizabeth Mulkerrin *(elizabethm@omahazoo.com)*, Omaha's Henry Doorly Zoo and Aquarium, Omaha, Neb.
Tara Short (@greenedventures; *tara@greenedventures.com),* Green Edventures LLC, Las Vegas, Nev.
Discover a professional development model that combines international travel and mobile digital tools to quantify characteristics of a place, making relevant connections with students back home.

Relevance Is Everything: Connecting All Students to the *NGSS* by Engaging in Local Problems
(Grades K–5) *501C, Convention Center*
Science Focus: ETS1.A, CCC7
Eric Cromwell (@GIS_Cromwell; *ecromwell@bcps.org),* Baltimore County Public Schools Office of Science, Towson, Md.
Why am I learning this? What will it help me to do? Answering these questions can make your instruction accessible to all students.

Culturally Responsive Science: Ensuring That the Science Classroom Reflects Every Student
(Grades 6–12) *505, Convention Center*
Science Focus: GEN
Joshua Edwards (@jedwardschem; *joshxedwards@gmail.com),* Graded School, São Paulo, Brazil
How can we redesign our lessons to match the background and experiences of diverse learners in our classrooms? Start by viewing differences as a strength!

Useful, Relevant Interactive Reading Passages in Your Secondary Classroom
(Grades 6–12) *506, Convention Center*
Science Focus: GEN, SEP4, SEP8
Jess Rowell (@STEMJourneys; *learnmore@stemjourneys.org),* Independent Consultant, Houston, Tex.
Journeys are *NGSS*-focused middle school and high school interactive reading passages integrating current scientist case studies, data analysis, graphing practice sets, engineering stories, and citizen science opportunities.

Science, Technology, and Literacy: Ideas for the Elementary Classroom
(Grades 1–6) *513, Convention Center*
Science Focus: GEN, NGSS
Jane Savatski (@teachtwo; *savatskijane@aasd.k12.wi.us),* Janet Berry Elementary School, Appleton, Wis.
Use Chromebooks or iPads to simultaneously teach and learn about science and literacy concepts. Most elementary classroom teachers face the challenge of teaching multiple disciplines in a limited amount of time. Walk away with ideas for using technology to internalize science and literacy concepts.

NGSS **Analyzing and Interpreting Ice Sheet Data to Determine the Effects of Human Activities on Climate**
(Grades 6–College) *515A, Convention Center*
Science Focus: ESS3
David Randle *(drandle@amnh.org),* American Museum of Natural History, New York, N.Y.
Use GRACE satellite ice sheet data with resources that incorporate data analysis and literacy strategies to teach about the causes and effects of climate change.

Solids: The Neglected "State" of Chemistry
(Grades 9–12) *Kentia Hall O, Convention Center*
Science Focus: PS1.A, PS1.B, CCC2, CCC6
Debbie Goodwin *(nywin@hotmail.com),* Retired High School Science Teacher, Chillicothe, Mo.
Use solids to make chemistry more relevant for students. Hands-on STEM activities using solid materials (metals/polymers/ceramics) make concepts easier to teach/learn. *NGSS* correlations. Take home a CD of information.

Powerful and Free Online Simulations and Curriculum for Earth Science
(Grades 7–12) *Kentia Hall P, Convention Center*
Science Focus: ESS, SEP7
Amy Pallant *(apallant@concord.org),* The Concord Consortium, Concord, Mass.
Discover free Earth system and environmental science simulations and curricula on topics such as plate tectonics, climate change, and hydraulic fracturing.

INF **NMEA Session: Students Study the Seas: In-Classroom STEM Oceanography Projects Inspire Global Awareness and Science Literacy**

(General) *Petree Hall D, Convention Center*

Science Focus: ESS2.A, ESS2.C, ESS2.D, ETS2.B, PS2.A

Richard Baldwin *(dick@educationalpassages.com),* Educational Passages, Belfast, Maine

Bradley Janocha ((@bradjanocha; *bjanocha2@washcoll.edu),* Washington College, Chestertown, Md.

This international hands-on learning program uses miniature GPS-monitored sailboats on the Pacific Ocean to share incredible adventure and learning opportunities. Students will monitor their boat as it works its way towards the Orient…learning all the way.

5:00–6:00 PM Hands-On Workshops

Teaching STEM Lessons with a Multicultural Perspective

(Grades 8–11) *Diamond Ballroom Salon 7, JW Marriott*

Science Focus: GEN, NGSS

Kathleen McKinley, Temple University, Philadelphia, Pa.

Enhance understanding of multicultural teaching; use technology, cooperative groups, total participation techniques; and orchestrate productive discourse in teaching STEM lessons.

Equal Access to Science: Universal Design and Students with Disabilities

(Grades 2–College) *Platinum Ballroom Salon B, JW Marriott*

Science Focus: ESS1.B, ETS2.A, CCC3, CCC4, SEP2

Rachel Zimmerman Brachman (@RachelZBrachman; *rachel.zimmerman-brachman@jpl.nasa.gov),* NASA Jet Propulsion Laboratory, Pasadena, Calif.

Lyla Mae Crawford *(lylac@uw.edu),* DO-IT, Spokane, Wash.

Full inclusion of students with disabilities in STEM involves accommodation strategies and universal design of instruction. We will share a NASA-based example.

Let's Give Them Something to Talk About: Discourse in the *NGSS* Science Classroom

(General) *502A, Convention Center*

Science Focus: PS1.A, PS1.B, CCC2, CCC5, SEP1, SEP3, SEP6, SEP7, SEP8

Leena Bakshi (@Leena219; *leena219@gmail.com),* **Mena Parmar** (@MenaParmar), and **Dawn O'Connor** (@dawno_connor; *dawno@acoe.org),* Alameda County Office of Education, Hayward, Calif.

Engage in numerous talk formats and experience how discourse helps students construct explanations and argue from evidence about the scientific phenomenon of alcohol evaporation.

Host a Rockstar Family STEM Event

INF

(Grades K–5) *502B, Convention Center*

Science Focus: ETS, INF, SEP

Rebecca McDowell (@BeTheChnge; *beckymmcdowell@gmail.com),* Barrington (Ill.) 220 School District

Creating a lasting impact starts with engaging families. Learn how to host a rockstar STEM Family Event and explore maker projects families can do together.

5 Es and Literacy?

(Grades 4–5) *Kentia Hall A, Convention Center*

Science Focus: GEN, NGSS

Shana Tirado *(shana.tirado@sdhc.k12.fl.us),* Hillsborough County Public Schools, Tampa, Fla.

Let's put it all together with literacy and communicate like a scientist. Join us in finding natural connections in making science notebooks engaging, interactive, and meaningful for students.

Elevating Science Vocabulary and Literacy-Based 3D Learning in Early Childhood STEM

(Grades P–3) *Kentia Hall B, Convention Center*

Science Focus: GEN, NGSS

Sylvia Goggin, Coralwood School, Decatur, Ga.

Integrate engineering design, literacy, and rigorous science vocabulary into the early childhood/elementary curriculum. It's STEM three-dimensional learning through a love of words and books.

Informational Text and the Integration of Science and Literacy

(Grades 2–6) *Kentia Hall C, Convention Center*

Science Focus: GEN, NGSS

Ruth Yopp (@RuthYopp; *ryopp@fullerton.edu)* and **Hallie Slowik** (@HallieYopp; *hkslowik@gmail.com),* California State University, Fullerton

Experience language-based strategies that promote science learning, engage students in science practices, and foster meaningful interactions with informational text.

Wriggle and Squirm Your Way Through Claims, Evidence, and Reasoning with Earthworm Inquiry

(Grades 2–6) *Kentia Hall D, Convention Center*

Science Focus: LS1, LS4, CCC, SEP

Reeda Hart *(hartr@nku.edu),* Retired Educator, Falmouth, Ky.

Ella Bowling (@ellabowling; *bowlinge6@nku.edu),* Northern Kentucky University, Highland Heights

Explore qualitative and quantitative observations of earthworm models to scaffold claims, evidence, and reasoning. Achieve multiple *NGSS* performance expectations! Free CD!

Teaching Measurement to Young Children

(Grades P–2) *Kentia Hall E, Convention Center*

Science Focus: GEN, NGSS

Mary Hobbs *(maryhobbs@utexas.edu),* The University of Texas at Austin

Bob Williams, Consultant, Belmont, Tex.

Measurement is an important science skill. Learn hands-on strategies for teaching young learners to use measurement tools, including the ruler, the balance, and the thermometer.

INF **Shaping Tomorrow's Researches with Citizen Science**
(Grades P–6) *Kentia Hall F, Convention Center*
Science Focus: GEN, INF
Lindsay Glasner (@BirdSleuth; *lig27@cornell.edu),* The Cornell Lab of Ornithology, Ithaca, N.Y.
Whether it's counting birds during a hike through the mangroves or using numerical data to write a fictional story about a migrating species, citizen science programs bring students out of the classroom and into the worlds that they are studying. Get details about this gateway to discovery and authentic science learning for students of all ages.

Patterns of Survival
(Grades K–2) *Kentia Hall G, Convention Center*
Science Focus: LS, CCC1, SEP6
Joey Scott (@joeyelle; *jscott@mbayaq.org),* Monterey Bay Aquarium, Monterey, Calif.
What patterns do we see in animals that live in the rocky shore? Use free iPad applications to help primary students communicate explanations and patterns.

Teaching Plants with STEAM: Using STEM and Art in the Classroom
(Grades P–5) *Kentia Hall H, Convention Center*
Science Focus: LS
Rebecca Kurson (@beckyk326; *rkurson@goldaochacademy.org),* Golda Och Academy, West Orange, N.J.
Student work connects to *NGSS* and *CCSS* by using art projects to support an understanding of parts of a plant and how plants grow.

Elementary STEM for All: Building Things That Move!
(Grades 3–8) *Kentia Hall J, Convention Center*
Science Focus: ETS, SEP3, SEP4, SEP6
Sheryl Sotelo (@SherylSotelo; *sherylsotelo@gmail.com),* STEM Outreach Coordinator, Fritz Creek, Alaska
Come learn how to create, invent, and design to learn in this exciting elementary STEM activity session with three different motivating and moving projects that are engaging and applicable for students with varied instructional levels and learning needs.

Conceptos Transversales Para Todos los Estudiantes
(Grades K–8) *Kentia Hall L, Convention Center*
Science Focus: ESS2.A, ESS2.C, LS1.A, LS1.C, PS2.A, CCC, SEP1, SEP3, SEP6, SEP7, SEP8
Diana Velez *(dvelez@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley
Claudio Vargas *(claudio.vargas@ousd.org),* Oakland (Calif.) Unified School District
For educators teaching science in Spanish: *Experimenten el poder de los siete conceptos transversales de* NGSS *a través de investigaciones activas y discusiones académicas.*

How I Learned to Split a Molecule: Weaving a Story Line Through Scientific Phenomena
(Grades 5–8) *Kentia Hall M, Convention Center*
Science Focus: PS1.A, PS1.B
Linda Preminger *(lkpreminger@comcast.net),* Washington Manor Middle School, San Leandro, Calif.
Weave a story thread among several disciplinary core ideas, turn observations into investigable questions, promote student-designed investigations of manageable variables, and translate literacy into argumentation.

Green Chemistry: A Framework and Lens for Learning, Teaching, and Investigating STEM Skill Sets
(Grades 7–11) *Kentia Hall N, Convention Center*
Science Focus: ETS, PS1.A, CCC2, SEP1, SEP3, SEP6
Kathe Blue Hetter (@skylinehetter; *kbhetter@gmail.com),* Skyline High School, Ann Arbor, Mich.
Kate Anderson (@beyondbenign; *kate_anderson@beyondbenign.org)* and **Mollie Enright** *(mollie_enright@beyondbenign.org),* Beyond Benign, Wilmington, Mass.
Investigate and explore new innovative green chemistry technologies. Challenge students to dig deeper into solutions to environmental concerns. Focus on the science of solutions rather than the despair of environmental problems.

Urban Field Ecology for Middle School Students
(Grades 6–8) *Kentia Hall Q, Convention Center*
Science Focus: LS2.A, CCC1, SEP1, SEP3, SEP4
Wendy Jackson (@SEPUP_UCB; *wendy.jackson@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley
Participate in hands-on lessons designed to engage urban middle school students in authentic ecological study of their local environment. Lessons integrate the *NGSS* three dimensions—designing and conducting investigations to detect ecological patterns.

Using Vectors, Mutations, and Viral Replication to Teach Evolution and Genetics in a Context-Based Setting Focused on Africa

(Grades 6–12) *Kentia Hall R, Convention Center*

Science Focus: LS4

Timothy Goodale *(tagoodal@ncsu.edu),* North Carolina State University, Raleigh

Using methods from an NSF-funded international study, this workshop will demonstrate the second of four units involving the teaching and learning of genetics and evolution through context-based methods surrounding food security issues in Africa.

5:15–6:45 PM Meeting

NMLSTA Board of Directors Meeting

(By Invitation Only) *Atrium 1, JW Marriott*

5:30–6:00 PM Presentations

SCST-Sponsored Session: A Science Sales Pitch: Increase Student Buy-In to Increase Classroom Engagement

(College) *Georgia 1, JW Marriott*

Science Focus: GEN

Tarren Shaw *(tjshaw@ou.edu),* The University of Oklahoma, Norman

Research supports the use of active-learning strategies, but do our students realize this? Methods to increase student participation and buy-in of active learning will be presented.

Literacy and Life Science

(Grades 9–12) *Kentia Hall S, Convention Center*

Science Focus: LS

Andrew Camp *(andrewmcamp@gmail.com),* Blytheville (Ark.) Public Schools

Have your students latch onto relevant and relatable texts as a mechanism to not only grow in appreciation of scientific knowledge, but also carry that appreciation into the formation of complex scientific arguments. Find out how to teach cross-curricular, argument-driven scientific inquiry with culturally responsive nonfiction texts through a combined Bio-Lit course.

5:30–6:30 PM Meeting

Teaming Up for STEM Sharing Session

(By Invitation Only) *Platinum Ballroom Salon G, JW Marriott*

5:30–7:30 PM Networking Events

NGSS Live Chat

Diamond Ballroom Salon 9, JW Marriott

Come to the *NGSS* Live Chat and meet Ted Willard, Tricia Shelton, and others as they discuss the *NGSS*. Join us live or via Twitter…#NGSSchat.

CESI Dinner and Membership Meeting

(By Ticket Through CESI) *Miro Restaurant (Off-site)*

Deadline to order tickets was March 10.

CESI is having a dinner and membership meeting in the Chef's Dining Room at Miro Restaurant. Tickets cost $50 for dinner plus $15 for a one-year CESI membership if you need to renew or join for the first time. Each attendee gets three books by Karen Ostlund.

For more details, please visit *bit.ly/2mhZ8XO.*

Miro Restaurant is located at 888 Wilshire Boulevard, Los Angeles, CA 90017, phone 213-988-8880.

Film Screenings

The HHMI Night at the Movies: Sneak Preview of *Amazon Adventure 3D*

Regal LA Live, Off-site

6:00–7:30 PM (SOLD OUT)
8:00–9:30 PM

Join HHMI BioInteractive for a special sneak preview of *Amazon Adventure 3D,* a new IMAX feature film. Witness the epic true story of Henry Walter Bates, who risked his life exploring the Amazon in the 1850s on a burning quest to determine if species change—and ultimately provided "beautiful proof" for Darwin's new theory of the origin of species by natural selection by unraveling the phenomenon of mimicry. Visit *bit.ly/2lems7Y* for details on the 6:00 PM showing and *bit.ly/2lXVTUA* for details on the 8:00 PM showing.

SAVE THE DATES

2017 NSTA AREA CONFERENCES ON SCIENCE EDUCATION

BALTIMORE
MARYLAND

10/5–10/7

MAKING SCIENCE ACCESSIBLE: FULL SPEED AHEAD

MILWAUKEE
WISCONSIN

11/9–11/11

MAKING WAVES: MOVING SCIENCE FORWARD!

NEW ORLEANS
LOUISIANA

11/30–12/2

CELEBRATE SCIENCE: INSPIRE, INTEGRATE, INNOVATE

PROFESSIONAL DEVELOPMENT STRANDS

ANCHORING OUR NATURAL TREASURES THROUGH ENVIRONMENTAL LITERACY

CHARTING THE COURSE FOR INNOVATION

TYING THE KNOT: COHERENCE IN 3D SCIENCE LEARNING

PREPARING ALL STUDENTS FOR THE VOYAGE

NAVIGATING STEM THROUGH THE *NGSS*

BUOYING UP LITERACY WITH SCIENCE

INSPIRE OUR YOUNG LEARNERS

INTEGRATE SCIENCE EDUCATION FOR ALL

INNOVATE SCIENCE EDUCATION FOR TOMORROW

FOR MORE INFORMATION AND UPDATES, VISIT **WWW.NSTA.ORG/CONFERENCES**

#NSTA17

NSTA National Science Teachers Association

3D Molecular Designs (Booth #1035)

Thursday, Mar 30	8:00–9:30 AM	153B, Conv. Center	Life Is Complicated: Flow of Genetic Information to Genomic Engineering (p. 96)
Thursday, Mar 30	10:00–11:30 AM	153B, Conv. Center	The Ins and Outs of Crossing Cell Membranes (p. 104)
Thursday, Mar 30	12 Noon–1:30 PM	153B, Conv. Center	DNA with a Data Twist: Modeling DNA Structure/Replication and Bioinformatics (p. 112)

Albert Einstein Distinguished Educator Fellowship (Booth #1251)

Thursday, Mar 30	4:00–5:30 PM	305, Conv. Center	STEM Leaders in Action: Learn About the Einstein Fellowship (AEF) Program (p. 152)

Amplify (Booth #1225)

Thursday, Mar 30	8:00–9:30 AM	409 AB, Conv. Center	Integrate Instruction and Assessment in Three Dimensions Using Learning Progressions (p. 99)
Thursday, Mar 30	10:00–11:30 AM	409 AB, Conv. Center	Floating Trains: Phenomena, 3D Instruction, and Amplify Science for Grades 2–5 (p. 107)
Thursday, Mar 30	12 Noon–1:30 PM	409 AB, Conv. Center	Space Docking Failure: Phenomena, 3D Instruction, and Amplify Science for Grades 6–8 (p. 114)

Arbor Scientific (Booth #1548)

Thursday, Mar 30	4:00–5:30 PM	408B, Conv. Center	Cool Tools for Light and Color (p. 153)

Bedford, Freeman, & Worth High School Publishers (Booth #1850)

Thursday, Mar 30	4:00–5:30 PM	153B, Conv. Center	Living by Chemistry: Create a Table (p. 151)

Bio-Rad Laboratories (Booth #1540)

Thursday, Mar 30	8:00–9:30 AM	406 AB, Conv. Center	Build a Box: Engineering Food Dye Electrophoresis for *NGSS* (p. 99)
Thursday, Mar 30	8:00–9:30 AM	404 AB, Conv. Center	Identify Patient Zero of a Zombie Apocalypse! (p. 98)
Thursday, Mar 30	10:00–11:30 AM	404 AB, Conv. Center	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 107)
Thursday, Mar 30	10:00–11:30 AM	406 AB, Conv. Center	Enzymes: Technology Inspired by Nature (p. 107)
Thursday, Mar 30	2:00–3:30 PM	406 AB, Conv. Center	How to Use Pop Culture in Your Life Science Class (p. 139)
Thursday, Mar 30	2:00–3:30 PM	404 AB, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (p. 138)
Thursday, Mar 30	4:00–5:30 PM	404 AB, Conv. Center	Take pGLO™ to the Next Level! (p. 153)
Thursday, Mar 30	4:00–5:30 PM	406 AB, Conv. Center	Become a GMO Investigator (p. 153)

BIOZONE International Ltd. (Booth #1239)

Thursday, Mar 30	10:00–11:30 AM	408A, Conv. Center	Biology for *NGSS:* A New Approach for a New Program (Grades 9–12) (p. 107)

Carolina Biological Supply Co. (Booth #1325)

Thursday, Mar 30	8:00–9:30 AM	306 AB, Conv. Center	Hands-On Science with Classroom Critters (p. 97)
Thursday, Mar 30	8:00–9:30 AM	308 AB, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 97)
Thursday, Mar 30	8:00–9:30 AM	309, Conv. Center	Dissecting the *NGSS* (p. 97)
Thursday, Mar 30	10:00–11:30 AM	309, Conv. Center	Science + Engineering = New Elementary Program from the Smithsonian (p. 106)
Thursday, Mar 30	10:00–11:30 AM	306 AB, Conv. Center	Physiology in Action: Explore Feedback Mechanisms and Homeostasis (p. 106)

Carolina Biological Supply Co., cont.

Thursday, Mar 30	10:00–11:30 AM	308 AB, Conv. Center	Engineer Physical Science Excitement with a Carolina STEM Challenge® (p. 106)
Thursday, Mar 30	12 Noon–1:30 PM	306 AB, Conv. Center	Carolina's Young Scientist™ Dissections with Carolina's Perfect Solution® Specimen (p. 112)
Thursday, Mar 30	12 Noon–1:30 PM	308 AB, Conv. Center	They Come in Pairs: Addressing Student Misconceptions About Chromosomes (p. 113)
Thursday, Mar 30	12 Noon–1:30 PM	309, Conv. Center	*NGSS:* How Do We Know It When We See It? (p. 113)
Thursday, Mar 30	2:00–3:30 PM	309, Conv. Center	Bring Visual Science into K–5 Classrooms: It's a Game Changer! (p. 138)
Thursday, Mar 30	2:00–3:30 PM	308 AB, Conv. Center	Strawberry Milkshakes: DNA and Lactose Intolerance (p. 138)
Thursday, Mar 30	2:00–3:30 PM	306 AB, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 137)
Thursday, Mar 30	4:00–5:30 PM	308 AB, Conv. Center	Clean Up Your Mess! Air and Water Pollution Remediation (p. 152)
Thursday, Mar 30	4:00–5:30 PM	306 AB, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 152)
Thursday, Mar 30	4:00–5:30 PM	309, Conv. Center	Shifting to the Five Innovations: How Do We Transform Instruction? (p. 152)

CPO Science/School Specialty Science (Booth #1925)

Thursday, Mar 30	8:00–9:30 AM	304 AB, Conv. Center	Engineering Design and *NGSS:* Learning About Friction Forces (p. 96)
Thursday, Mar 30	10:00–11:30 AM	304 AB, Conv. Center	CPO Science's Link™ Learning Module: Cell Reproduction Using Crazy Chromosomes (p. 104)
Thursday, Mar 30	2:00–3:30 PM	304 AB, Conv. Center	CPO Science's Link™ Learning Module: Chemistry and the Periodic Table (p. 137)
Thursday, Mar 30	4:00–5:30 PM	304 AB, Conv. Center	Wind Turbine: An *NGSS* Approach to Understanding Renewable Energy (p. 151)

Delta Education/School Specialty Science (Booth #1925)

Thursday, Mar 30	8:00–9:30 AM	301 AB, Conv. Center	Make Sure Your Makerspace Has Options for All Students! (p. 96)
Thursday, Mar 30	10:00–11:30 AM	301 AB, Conv. Center	How to Argue in Science Class (p. 104)
Thursday, Mar 30	12 Noon–1:30 PM	301 AB, Conv. Center	PEASE in Our Time: Memory Lanes of the Brain and *NGSS* (p. 112)
Thursday, Mar 30	2:00–3:30 PM	301 AB, Conv. Center	Science and Engineering Practices Made Easy (p. 137)
Thursday, Mar 30	4:00–5:30 PM	301 AB, Conv. Center	Build Skills to Boost the Makerspace Experience for Young Scientists! (p. 151)

Delta Education/School Specialty Science–FOSS (Booth #1925)

Thursday, Mar 30	8:00–9:30 AM	303 AB, Conv. Center	Engage Students in FOSS Next Generation K–8 (p.96)
Thursday, Mar 30	10:00–11:30 AM	303 AB, Conv. Center	Ten Minutes to Improving Science Achievement (p. 104)
Thursday, Mar 30	12 Noon–1:30 PM	303 AB, Conv. Center	Model Elementary Science Implementation (p. 112)
Thursday, Mar 30	2:00–3:30 PM	303 AB, Conv. Center	Wave Properties and Information Transfer (p. 137)
Thursday, Mar 30	4:00–5:30 PM	303 AB, Conv. Center	Evolutionary Evidence in the Fossil Record (p. 151)

Dinah.com (Booth #2340)

Thursday, Mar 30	2:00–3:30 PM	408B, Conv. Center	FOLD-tastic Science Notebooks via Dinah Zike's Notebook Foldables (p. 139)

Discovery Agents (Booth #2115)

Thursday, Mar 30	4:00–5:30 PM	408A, Conv. Center	Using Mobile Technology to Engage Students with STEM (p. 153)

Edvotek, Inc. (Booth #931)

Thursday, Mar 30	8:00–9:00 AM	410, Conv. Center	Martian Genetics: An Electrophoresis Exploration (p. 95)
Thursday, Mar 30	9:30–10:30 AM	410, Conv. Center	Left at the Scene of the Crime: Introduction to Forensic Science (p. 102)
Thursday, Mar 30	11:00 AM–12 Noon	410, Conv. Center	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR (p. 110)
Thursday, Mar 30	12:30–1:30 PM	410, Conv. Center	Outbreak! Zika Testing using the Enzyme Linked Immunosorbent Assay (ELISA) (p. 125)
Thursday, Mar 30	2:00–3:00 PM	410, Conv. Center	A Bright Idea: Using GFP to Teach STEM (p. 135)
Thursday, Mar 30	3:30–4:30 PM	410, Conv. Center	Environmental Toxicology Using Edvotek's New EZ-elegans (p. 149)

FIRST® (Booth #2143)

Thursday, Mar 30	10:00–11:30 AM	305, Conv. Center	*FIRST*® Tech Challenge Proves You CAN Program a Robot (p. 106)

Flinn Scientific, Inc. (Booth #1825)

Thursday, Mar 30	8:00–9:30 AM	403A, Conv. Center	Flinn Scientific's *Exploring Chemistry*™: Connecting Content Through Experiments (p. 98)
Thursday, Mar 30	10:00–11:30 AM	403A, Conv. Center	Flinn Favorite Biology Lab Activities and Games (p. 106)
Thursday, Mar 30	12 Noon–1:30 PM	403A, Conv. Center	Year-Round Solutions for Success in AP Chemistry from Flinn Scientific (p. 114)
Thursday, Mar 30	2:00–3:30 PM	403A, Conv. Center	Teaching Forensics with Real Crime Scene Investigation Techniques from Flinn Scientific (p. 138)
Thursday, Mar 30	4:00–5:30 PM	403A, Conv. Center	Building or Renovating a Laboratory? Get Your Questions Answered (p. 153)

Frey Scientific/School Specialty Science (Booth #1925)

Thursday, Mar 30	12 Noon–1:30 PM	304 AB, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 112)

HHMI BioInteractive (Booth #1125)

Thursday, Mar 30	8:00–9:30 AM	403B, Conv. Center	Connecting Ecology Concepts from a Global Perspective (p. 98)
Thursday, Mar 30	10:00–11:30 AM	403B, Conv. Center	HHMI Is Phenomenal! Using BioInteractive to Create Phenomena-Based Lessons (p. 107)
Thursday, Mar 30	12 Noon–1:30 PM	403B, Conv. Center	HHMI BioInteractive Resources Exploring Human Skin Color and Polygenic Inheritance (p. 114)
Thursday, Mar 30	2:00–3:30 PM	403B, Conv. Center	Using BioInteractive Resources to Bring Math into the Biology Lesson (p. 138)
Thursday, Mar 30	4:00–5:30 PM	403B, Conv. Center	Ecological Restoration: From a Case Study Investigation to Local Action (p. 153)
Thursday, Mar 30	4:00–5:30 PM	409 AB, Conv. Center	Integrating Earth Systems Investigations and Action into Curriculum (p. 154)

Houghton Mifflin Harcourt (Booth #2124)

Thursday, Mar 30	8:00–9:30 AM	408B, Conv. Center	Next Generation Science Using Video-Based Projects (p. 99)
Thursday, Mar 30	10:00–11:30 AM	408B, Conv. Center	Awesome Activities for an *NGSS* Classroom (p. 107)
Thursday, Mar 30	12 Noon–1:30 PM	408B, Conv. Center	Common Misconceptions about Engineering in the *NGSS* (p. 114)

Iridescent (Booth #2342)

Thursday, Mar 30	4:00–5:30 PM	153A, Conv. Center	How to Incorporate STEM Project-Based Learning in Your Classroom—Start Building! (p. 151)

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It's About Time (Booth #2235)

Thursday, Mar 30	8:00–9:00 AM	501 AB, Conv. Center	Active Chemistry and Active Physics: Project-Based Inquiry Science That Engages Students (p. 95)
Thursday, Mar 30	9:30–10:30 AM	501 AB, Conv. Center	Light Up STEM: Design a 50-Cent Microlight (p. 103)
Thursday, Mar 30	11:00 AM–12 Noon	501 AB, Conv. Center	Project-Based Learning + *NGSS* = Active Chemistry (p. 110)
Thursday, Mar 30	12:30–1:30 PM	501 AB, Conv. Center	Project-Based Inquiry Science: Blending Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms (p. 126)
Thursday, Mar 30	2:00–3:00 PM	501 AB, Conv. Center	Project-Based Learning + *NGSS* = Active Physics (p. 136)

K'NEX Education (Booth #618)

Thursday, Mar 30	8:00–9:00 AM	510, Conv. Center	Machine Technology and Engineering with K'NEX Machines: Using STEM to Make Work Easier (p. 95)
Thursday, Mar 30	9:30–10:30 AM	510, Conv. Center	Bridges! Bridges! Bridges Structural Engineering at Its Best with K'NEX STEM Bridge Sets (p. 103)
Thursday, Mar 30	11:00 AM–12 Noon	510, Conv. Center	K'NEX DNA Structure, Replication, and Transcription: An Expertly Engineered Molecule in Living Things (p. 110)
Thursday, Mar 30	2:00–3:00 PM	510, Conv. Center	Explore Solar Energy STEM Concepts with K'NEX Models: Engineering for a Sustainable Future (p. 136)
Thursday, Mar 30	3:30–4:30 PM	510, Conv. Center	Forces, Energy, Motion, and Engineering with K'NEX Machines: Using STEM to Make Work Easier (p. 149)

Lab-Aids, Inc. (Booth #1126)

Thursday, Mar 30	10:00–11:30 AM	518, Conv. Center	Waves—Make an Abstract Concept Become Visible! (p. 108)
Thursday, Mar 30	12 Noon–1:30 PM	518, Conv. Center	Introducing the Lab-Master® (p. 115)
Thursday, Mar 30	2:00–3:30 PM	518, Conv. Center	Chemical Formula and Amino Acids (p. 140)
Thursday, Mar 30	4:00–5:30 PM	518, Conv. Center	Calling All Carbons (p. 155)

LEGO® Education (Booth #1836)

Thursday, Mar 30	10:00–11:30 AM	304C, Conv. Center	Bring Robotics to Your Science Classroom with LEGO® MINDSTORMS® Education EV3 (p. 104)
Thursday, Mar 30	12 Noon–1:30 PM	304C, Conv. Center	Make Science Come to Life Through Modeling with LEGO® Education (p. 112)
Thursday, Mar 30	4:00–5:30 PM	304C, Conv. Center	Learn to Code with LEGO® MINDSTORMS® Education EV3 (p. 152)

LEGO® Education (Booth #1836) and *FIRST*® (Booth #2143)

Thursday, Mar 30	2:00–3:30 PM	304C, Conv. Center	It's Never Too Early to Discover STEM: *FIRST*® LEGO® League Jr. Encourages the Curiosity that Leads to Discovery (p. 137)

Measured Progress (Booth #1338)

Thursday, Mar 30	2:00–3:30 PM	409 AB, Conv. Center	Assess the *NGSS:* Formative Assessment Strategies for Grades K–8 (p. 139)

The MiniOne Systems (Booth #1135)

Thursday, Mar 30	8:00–9:30 AM	150C, Conv. Center	Inquiry-Based Introduction to Gel Electrophoresis (p. 96)
Thursday, Mar 30	10:00–11:30 AM	150C, Conv. Center	Who Is Baby Whale's Father? DNA Fingerprinting Solves the Mystery! (p. 103)
Thursday, Mar 30	12 Noon–1:30 PM	150C, Conv. Center	Quick and Easy PCR in 90 Minutes (p. 111)
Thursday, Mar 30	2:00–3:30 PM	150C, Conv. Center	Are You a PTC Taster? Let's Do PCR to Find Out! (p. 136)
Thursday, Mar 30	4:00–5:30 PM	150C, Conv. Center	Gel Electrophoresis in 90 Minutes to Deduce Genotype from Phenotype (p. 151)

miniPCR (Booth #828)

Thursday, Mar 30	2:00–3:30 PM	305, Conv. Center	Genes in Space: Launch Your DNA Experiment into Space! (p. 137)

Monsanto Co. (Booth #935)

Thursday, Mar 30	12 Noon–1:30 PM	408A, Conv. Center	GMOs: A Hot Topic in the Media and Classroom: Monsanto Panel Discussion and Presentation (p. 114)

Nanolive SA (Booth #1155)

Thursday, Mar 30	4:00–5:30 PM	511C, Conv. Center	Bring Your Cell Biology Teaching to the Next Level with the 3D Cell Explorer! (p. 154)

NaRiKa Corp. (Booth #1249)

Thursday, Mar 30	4:00–5:30 PM	153C, Conv. Center	Hands-On Approach to Teach Electricity in Japan (p. 151)

PASCO scientific (Booth #1639)

Thursday, Mar 30	8:00–9:00 AM	405, Conv. Center	True Colors: Spectrometry to Investigate Lights and Colors (p. 95)
Thursday, Mar 30	8:00–9:00 AM	407, Conv. Center	STEM Activities: Easy-to-Teach Robotics (p. 95)
Thursday, Mar 30	9:30–10:30 AM	407, Conv. Center	From DNA to Protein—A Modeling Approach (p. 102)
Thursday, Mar 30	9:30–10:30 AM	405, Conv. Center	Exploring Misconceptions: What Is pH? (p. 102)
Thursday, Mar 30	11:00 AM–12 Noon	405, Conv. Center	Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws (p. 110)
Thursday, Mar 30	11:00 AM–12 Noon	407, Conv. Center	STEM Activities: Crash Barrier Design and Engineering Challenge (p. 110)
Thursday, Mar 30	12:30–1:30 PM	407, Conv. Center	Shockingly Good Electrochemistry: Making and Using Batteries (p. 125)
Thursday, Mar 30	12:30–1:30 PM	405, Conv. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 125)
Thursday, Mar 30	2:00–3:00 PM	405, Conv. Center	Chemical Formulas: Subscripts and Coefficients Made Easy! (p. 135)
Thursday, Mar 30	2:00–3:00 PM	407, Conv. Center	STEM Activities: Untangling Electric Circuits (p. 135)
Thursday, Mar 30	3:30–4:30 PM	407, Conv. Center	Exploring Misconceptions: Motion Graphs (p. 149)
Thursday, Mar 30	3:30–4:30 PM	405, Conv. Center	Exploring and Modeling Climate Change (p. 149)

Pearson (Booth #1141)

Thursday, Mar 30	8:00–9:30 AM	514, Conv. Center	The Best Test Prep Book Ever for AP Chemistry (p. 99)
Thursday, Mar 30	10:00–11:30 AM	514, Conv. Center	Climate and Global Change…Too Hot to Handle? Teaching the Science with Rigor and Relevance (p. 108)
Thursday, Mar 30	12 Noon–1:30 PM	514, Conv. Center	Take Your Students On a Quest! A Real-World Problem-Based Learning Project that Incorporates All Three Dimensions of *NGSS* (p. 115)
Thursday, Mar 30	2:00–3:30 PM	514, Conv. Center	STEM and *NGSS* Inquiry in Chemistry: Effective, Efficient, Economical (p. 140)
Thursday, Mar 30	4:00–5:30 PM	514, Conv. Center	Cultivating a Culture of Argumentation in Your Classroom (p. 154)

Perimeter Institute for Theoretical Physics (Booth #1254)

Thursday, Mar 30	8:00–9:30 AM	512, Conv. Center	How Do Scientists Think? (p. 99)
Thursday, Mar 30	10:00–11:30 AM	512, Conv. Center	What's New in Physics? (p. 108)

PlayMada Games (Booth #2117)

Thursday, Mar 30	2:00–3:30 PM	153A, Conv. Center	Reconceptualizing Chemistry Through Play: Acids and Bases (p. 136)

Project WET Foundation (Booth #2251)

Thursday, Mar 30	4:00–5:30 PM	511 AB, Conv. Center	Creating Excitement About Science Through Water Education (p. 154)

SAE International (Booth #1451)

Thursday, Mar 30	2:00–3:30 PM	512, Conv. Center	Linking Literature and STEM in the Primary Classroom (p. 140)
Thursday, Mar 30	4:00–5:30 PM	512, Conv. Center	Hands-On STEM in the Upper Elementary Classroom (p. 154)

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Scholastic Inc. (Booths #1328 and #1324)

Thursday, Mar 30	2:00–3:30 PM	153B, Conv. Center	Using Science Magazines to Incorporate the Three Dimensions of *NGSS* (p. 136)

Science First, LLC (Booths #748 and #749)

Thursday, Mar 30	2:00–2:30 PM	Booth #748, Exhibit Hall	Earthquakes and Their Causes (p. 128)

SE3D (Booth #1029)

Thursday, Mar 30	2:00–3:30 PM	153C, Conv. Center	Innovative Bioscience Classrooms with 3D Bioprinting (p. 136)

Shape of Life (Booth #1452)

Thursday, Mar 30	10:00–11:30 AM	153C, Conv. Center	The Animal Kingdom Lessons with Shape of Life Resources (p. 104)

Simulation Curriculum Corp. (Booth #728)

Thursday, Mar 30	10:00–11:30 AM	511 AB, Conv. Center	An All-American Total Eclipse of the Sun (p. 108)

STEMscopes™ from Accelerate Learning (Booth #834)

Thursday, Mar 30	8:00–9:00 AM	150 AB, Conv. Center	STEM Literacy: Strategies for Making Science Text Meaningful (p. 95)
Thursday, Mar 30	9:30–10:30 AM	150 AB, Conv. Center	Make Science Night Meaningful (p. 102)
Thursday, Mar 30	11:00 AM–12 Noon	150 AB, Conv. Center	Argumentation in the STEM Classroom (p. 110)
Thursday, Mar 30	12:30–1:30 PM	150 AB, Conv. Center	DIVE into Engineering (p. 125)
Thursday, Mar 30	2:00–3:00 PM	150 AB, Conv. Center	The Value of Writing Scientific Explanations in STEM with Claim-Evidence-Reasoning (p. 135)
Thursday, Mar 30	3:30–4:30 PM	150 AB, Conv. Center	Cooking Up Lessons with Three Dimensional Learning (p. 149)

Studio 111 (Booth #1162)

Thursday, Mar 30	2:00–3:30 PM	511C, Conv. Center	Catalyst Planner: Streamline Your *NGSS* Curriculum Development (p. 139)

TCI (Booth #942)

Thursday, Mar 30	8:00–9:30 AM	153A, Conv. Center	Modeling Earth, Sun, and Other Stars with Bring Science Alive! (p. 96)
Thursday, Mar 30	10:00–11:30 AM	153A, Conv. Center	Analyzing and Interpreting Data Using TCI's Bring Science Alive! (p. 103)
Thursday, Mar 30	12 Noon–1:30 PM	153A, Conv. Center	Riding the Wave with TCI (p. 111)

Texas Instruments (Booth #1633)

Thursday, Mar 30	8:00–9:30 AM	511 AB, Conv. Center	Zombie Apocalypse! (p. 99)
Thursday, Mar 30	12 Noon–1:30 PM	511 AB, Conv. Center	Smart Management of Water Resources Using TI Graphing Calculators and the TI-Innovator Hub (p. 115)
Thursday, Mar 30	2:00–3:30 PM	511 AB, Conv. Center	Five Amazing Things You Can Do with Calculators in Your Science Classroom! (p. 139)

TurfMutt (Booth #2153)

Thursday, Mar 30	12 Noon–1:30 PM	511C, Conv. Center	Environmental Science: Explore Living Landscapes (p. 115)

Vaccine Education Center (Booth #524)

Thursday, Mar 30	2:00–3:30 PM	408A, Conv. Center	Which Scientist's Work Saves 8 Million Lives a Year? (p. 139)

Vernier Software & Technology (Booth #1625)

Thursday, Mar 30	8:00–9:30 AM	402A, Conv. Center	Integrating Chromebook with Vernier Technology (p. 98)
Thursday, Mar 30	8:00–9:30 AM	402B, Conv. Center	Renewable Energy with KidWind and Vernier (p. 98)
Thursday, Mar 30	10:00–11:30 AM	402B, Conv. Center	Integrating iPad with Vernier Technology (p. 106)
Thursday, Mar 30	10:00–11:30 AM	402A, Conv. Center	Biology with Vernier (p. 106)
Thursday, Mar 30	12 Noon–1:30 PM	402A, Conv. Center	Chemistry with Vernier Using Chromebook (p. 113)
Thursday, Mar 30	12 Noon–1:30 PM	402B, Conv. Center	Physics with Vernier (p. 114)
Thursday, Mar 30	2:00–3:30 PM	402B, Conv. Center	Middle School Science with Vernier (p. 138)
Thursday, Mar 30	2:00–3:30 PM	402A, Conv. Center	Environmental Science with Vernier (p. 138)
Thursday, Mar 30	4:00–5:30 PM	402A, Conv. Center	Chemistry with Vernier (p. 152)
Thursday, Mar 30	4:00–5:30 PM	402B, Conv. Center	STEM/Engineering Activities Using Vernier Sensors with Arduino (p. 152)

Ward's Science (Booth #648)

Thursday, Mar 30	8:00–9:30 AM	503, Conv. Center	Enzymes Made Doggone Easy: A Virtual Interactive Case Study! (p. 99)
Thursday, Mar 30	10:00–11:30 AM	503, Conv. Center	Here Comes the Sun Power: Practical Applications and Protection (p. 108)
Thursday, Mar 30	12 Noon–1:30 PM	503, Conv. Center	Lights, Camera, Action Potentials! (p. 115)
Thursday, Mar 30	2:00–3:30 PM	503, Conv. Center	LA Confidential: Investigate the Murder of the Unknown Starlet (p. 139)
Thursday, Mar 30	4:00–5:30 PM	503, Conv. Center	The Voice LIVE: Physics Edition (p. 154)

Wavefunction, Inc. (Booth #1154)

Thursday, Mar 30	10:00–11:30 AM	511C, Conv. Center	Molecular Level Visualization: Engage Your Students and Fight Misconceptions! (p. 108)

Earth and Space Science: Thursday

8:00–8:30 AM	G	Platinum Salon I, JW Marriott	Exploring the World as a Scientist with AMS DataStreme Courses (p. 87)
8:00–9:00 AM	6–12	506, Conv. Center	Teaching Socially Contentious Scientific Topics (p. 90)
8:00–9:00 AM	3–8	Diamond Salon 7, JW Marriott	Engineering: Blow the Roof Off! (p. 91)
8:00–9:00 AM	G	Petree Hall D, Conv. Center	NMEA-Sponsored Session: Whale of a Tale Share-a-Thon (p. 94)
8:00–9:00 AM	6–12	Kentia Hall P, Conv. Center	Bring the Ocean into Your Classroom with National Marine Sanctuaries (p. 90)
8:00–9:00 AM	6–8	Kentia Hall M, Conv. Center	Gravity Models: The Plight of Wile E. Coyote (p. 93)
8:00–9:00 AM	6–8	Kentia Hall Q, Conv. Center	Blue Marble Matches (p. 93)
8:00–9:00 AM	5–12	Diamond Salon 3, JW Marriott	NSTA Press® Session: Argumentation in the Earth and Space Science Classroom (p. 91)
8:00–9:30 AM	7–C	402B, Conv. Center	Renewable Energy with KidWind and Vernier (p. 98)
8:00–9:30 AM	K–5	153A, Conv. Center	Modeling Earth, Sun, and Other Stars with Bring Science Alive! (p. 96)
8:00–9:30 AM	9–12	403B, Conv. Center	Connecting Ecology Concepts from a Global Perspective (p. 98)
8:30–9:00 AM	6–12	Diamond Salon 8, JW Marriott	Teaching the Tough Topics with Science Games (p. 100)
10:00–11:30 AM	6–12	511 AB, Conv. Center	An All-American Total Eclipse of the Sun (p. 108)
10:00–11:30 AM	9–12	514, Conv. Center	Climate and Global Change…Too Hot to Handle? Teaching the Science with Rigor and Relevance (p. 108)
11:30 AM–12 Noon	9–C	Platinum Salon D/2, JW Marriott	Teacher Researcher Day Session: "Teachers Training Teachers" as a Scenario for the Integration of Research Skills into the Trainers' Educational Practices (p. 111)
12 Noon–1:30 PM	6–12	511 AB, Conv. Center	Smart Management of Water Resources Using TI Graphing Calculators and the TI-Innovator Hub (p. 115)
12:30–1:00 PM	6–12	Kentia Hall P, Conv. Center	Using Google My Maps to Determine Patterns of Earthquakes (p. 116)
12:30–1:30 PM	8–C	Gold Salon 1, JW Marriott	Exploring Chemicals from a Green Perspective (p. 120)
12:30–1:30 PM	9–12	Plaza 3, JW Marriott	More than Airplanes: Models in the *NGSS* (p. 121)
12:30–1:30 PM	3–5	Kentia Hall D, Conv. Center	Making Claims About Design Solutions to Mother Nature's Wrath (p. 123)
12:30–1:30 PM	6–9	Kentia Hall L, Conv. Center	Using a Web-Based Graphing Tool to Analyze and Interpret Local and National Weather and Climate Data for Patterns and Change (p. 124)
12:30–1:30 PM	6–9	Kentia Hall Q, Conv. Center	Exploring Earth's Energy Balance, Carbon Cycle, and Our Changing Atmosphere (p. 124)
1:00–1:30 PM	6–12	Kentia Hall P, Conv. Center	Natural Fracturing vs. Fracking: The Human Impact on Earthquakes (p. 127)
2:00–3:00 PM	K–12	Atrium 3, JW Marriott	CSSS-Sponsored Session: Three-Dimensional Lessons Based in Simple Natural Phenomena (p. 132)
2:00–3:00 PM	6–8	Diamond Blrm. Salon 10, JW Marriott	Virtual Reality's Emerging Future in Science Education (p. 129)
2:00–3:00 PM	10–12	Kentia Hall O, Conv. Center	*NGSS* Chemistry and Integration of Climate Change (p. 134)
2:00–3:00 PM	6–8	Kentia Hall Q, Conv. Center	Wow! What on Earth Caused THAT? (p. 131)
2:00–3:00 PM	K–2	Kentia Hall A, Conv. Center	Checkerspot Challenge: Early Childhood Engineering (p. 133)
2:00–3:30 PM	7–C	402A, Conv. Center	Environmental Science with Vernier (p. 138)
3:30–4:30 PM	6–8	Georgia 2, JW Marriott	ASTE-Sponsored Session: *NGSS* Activities for Middle School Teachers (p. 146)
3:30–4:30 PM	7–12	405, Conv. Center	Exploring and Modeling Climate Change (p. 149)
3:30–4:30 PM	4–C	Olympic 1, JW Marriott	Stream Study…With or Without a Stream! (p. 146)
3:30–4:30 PM	K–12	151, Conv. Center	Outstanding Earth Science Teacher Awardee (OESTA) Share-a-Thon (p. 146)
3:30–4:30 PM	5–12	Gold Salon 1, JW Marriott	Hook Your Students wyith Digital Storytelling: Introducing NOAA's Interactive Every Full Moon Video Series (p. 144)
4:00–5:30 PM	9–12	518, Conv. Center	Calling All Carbons (p. 155)
4:00–5:30 PM	6–12	308 AB, Conv. Center	Clean Up Your Mess! Air and Water Pollution Remediation (p. 152)
4:00–5:30 PM	6–8	303 AB, Conv. Center	Evolutionary Evidence in the Fossil Record (p. 151)
4:00–5:30 PM	P–10	511 AB, Conv. Center	Creating Excitement About Science Through Water Education (p. 154)
4:00–5:30 PM	9–12	409 AB, Conv. Center	Integrating Earth Systems Investigations and Action into Curriculum (p. 154)
5:00–5:30 PM	9–12	Kentia Hall S, Conv. Center	Disaster in the Making: Implementing Dual Class System to Teach Emerging Infectious Disease in a First-Responder School (p. 156)

5:00–6:00 PM	G	Petree Hall D, Conv. Center	Students Study the Seas: In-Classroom STEM Oceanography Projects Inspire Global Awareness and Science Literacy (p. 158)
5:00–6:00 PM	2–C	Platinum Salon B, JW Marriott	Equal Access to Science: Universal Design and Students with Disabilities (p. 159)
5:00–6:00 PM	K–8	Kentia Hall L, Conv. Center	*Conceptos Transversales Para Todos los Estudiantes* (p. 160)
5:00–6:00 PM	7–12	Kentia Hall P, Conv. Center	Powerful and Free Online Simulations and Curriculum for Earth Science (p. 157)
5:00–6:00 PM	6–C	515A, Conv. Center	Analyzing and Interpreting Ice Sheet Data to Determine the Effects of Human Activities on Climate (p. 157)

Engineering, Technology, and the Application of Science: Thursday

8:00–9:00 AM	6–C	Platinum Salon A, JW Marriott	AMSE-Sponsored Session: Engineering Through Aquaculture Technology for Women (p. 89)
8:00–9:00 AM	9–C	Plaza 2, JW Marriott	Students' Views on the Nature of Science: Can Philosophy of Science (p. 90)
8:00–9:00 AM	G	Platinum Salon B, JW Marriott	Successful STEM-Rich Making Practices That Benefit Underserved Students (p. 91)
8:00–9:00 AM	3–5	Kentia Hall F, Conv. Center	What About a Chimney? Students 3D Print Their Learning Manipulatives (p. 93)
8:00–9:00 AM	1–12	Diamond Salon 1, JW Marriott	Coaching Teachers from 1D to 3D Learning (p. 88)
8:00–9:00 AM	6–12	407, Conv. Center	STEM Activities: Easy-to-Teach Robotics (p. 95)
8:00–9:00 AM	K–12	515A, Conv. Center	3-2-1 Lift-Off! NASA's Beginning Engineering Science and Technology (BEST) Curriculum (p. 92)
8:00–9:00 AM	3–8	Diamond Salon 7, JW Marriott	Engineering: Blow the Roof Off! (p. 91)
8:00–9:00 AM	6–10	Kentia Hall N, Conv. Center	Hot Hands: Chemical Engineering in a Sandwich Bag (p. 93)
8:00–9:00 AM	5–9	510, Conv. Center	Machine Technology and Engineering with K'NEX Machines: Using STEM to Make Work Easier (p. 95)
8:00–9:30 AM	7–C	402B, Conv. Center	Renewable Energy with KidWind and Vernier (p. 98)
8:00–9:30 AM	3–6	301 AB, Conv. Center	Make Sure Your Makerspace Has Options for All Students! (p. 96)
8:00–9:30 AM	6–12	304 AB, Conv. Center	Engineering Design and *NGSS:* Learning About Friction Forces (p. 96)
8:00–9:30 AM	9–C	153B, Conv. Center	Life Is Complicated: Flow of Genetic Information to Genomic Engineering (p. 96)
8:00–9:30 AM	3–C	402A, Conv. Center	Integrating Chromebook with Vernier Technology (p. 98)
9:30–10:30 AM	3–6	510, Conv. Center	Bridges! Bridges! Bridges Structural Engineering at Its Best with K'NEX STEM Bridge Sets (p. 103)
9:30–10:30 AM	9–12	501 AB, Conv. Center	Light Up STEM: Design a 50-Cent Microlight (p. 103)
10:00–11:30 AM	6–C	153B, Conv. Center	The Ins and Outs of Crossing Cell Membranes (p. 104)
10:00–11:30 AM	7–C	402A, Conv. Center	Biology with Vernier (p. 106)
10:00–11:30 AM	3–C	402B, Conv. Center	Integrating iPad with Vernier Technology (p. 106)
10:00–11:30 AM	7–12	305, Conv. Center	*FIRST*® Tech Challenge Proves You CAN Program a Robot (p. 106)
10:00–11:30 AM	5–12	304C, Conv. Center	Bring Robotics to Your Science Classroom with LEGO® MINDSTORMS® Education EV3 (p. 104)
11:00 AM–12 Noon	G	Petree Hall D, Conv. Center	NMEA-Sponsored Session: Sharks4Kids (p. 109)
11:00 AM–12 Noon	6–12	407, Conv. Center	STEM Activities: Crash Barrier Design and Engineering Challenge (p. 110)
12 Noon–1:30 PM	K–12	408B, Conv. Center	Common Misconceptions about Engineering in the *NGSS* (p. 114)
12 Noon–1:30 PM	9–C	402A, Conv. Center	Chemistry with Vernier Using Chromebook (p. 113)
12 Noon–1:30 PM	9–C	402B, Conv. Center	Physics with Vernier (p. 114)
12 Noon–1:30 PM	1–4	304C, Conv. Center	Make Science Come to Life Through Modeling with LEGO® Education (p. 112)
12:30–1:30 PM	7–12	Diamond Salon 8, JW Marriott	Deep Brain Stimulation: Phenomena-Driven Instruction and Event-Based Science Linking Biomedical Engineering and Neuroscience to Teach the Nervous System (p. 118)

12:30–1:30 PM	8–C	Gold Salon 1, JW Marriott	Exploring Chemicals from a Green Perspective (p. 120)
12:30–1:30 PM	9–12	Plaza 1, JW Marriott	Portfolios to Websites: The Ins and Outs of Showcasing Student Work (p. 118)
12:30–1:30 PM	3–8	Kentia Hall J, Conv. Center	Engineering Robotic Arms (p. 124)
12:30–1:30 PM	3–5	Kentia Hall D, Conv. Center	Making Claims About Design Solutions to Mother Nature's Wrath (p. 123)
12:30–1:30 PM	K–12	150 AB, Conv. Center	DIVE into Engineering (p. 125)
2:00–3:00 PM	K–4	513, Conv. Center	Engineering EXPO (p. 130)
2:00–3:00 PM	K–8	Kentia Hall J, Conv. Center	STEM Applications in Transportation, the Answer to: When Will I Ever Use This in Real Life? (p. 134)
2:00–3:00 PM	6–12	Diamond Salon 8, JW Marriott	Engineering for Change (p. 129)
2:00–3:00 PM	6–8	Kentia Hall N, Conv. Center	Middle School Chemistry and Engineering Design in the *NGSS* (p. 134)
2:00–3:00 PM	P–2	Kentia Hall E, Conv. Center	Help Happy the Horse, a Design Thinking and Engineering Challenge for Young Students (p. 133)
2:00–3:00 PM	6–8	Diamond Blrm. Salon 10, JW Marriott	Virtual Reality's Emerging Future in Science Education (p. 129)
2:00–3:00 PM	G	Diamond Salon 2, JW Marriott	Science Experiments on High-Altitude Balloons (p. 129)
2:00–3:00 PM	5–9	510, Conv. Center	Explore Solar Energy STEM Concepts with K'NEX Models: Engineering for a Sustainable Future (p. 136)
2:00–3:30 PM	4–8	402B, Conv. Center	Middle School Science with Vernier (p. 138)
2:00–3:30 PM	5–12	511 AB, Conv. Center	Five Amazing Things You Can Do with Calculators in Your Science Classroom! (p. 139)
2:00–3:30 PM	7–C	402A, Conv. Center	Environmental Science with Vernier (p. 138)
2:00–3:30 PM	1–4	304C, Conv. Center	It's Never Too Early to Discover STEM: *FIRST*® LEGO® League Jr. Encourages the Curiosity that Leads to Discovery (p. 137)
3:30–4:00 PM	6–12	Diamond Salon 8, JW Marriott	"Making" Three-Dimensional Learning Happen: Using Makerspace Technologies to Engage the *NGSS* (p. 142)
3:30–4:00 PM	6–12	504, Conv. Center	Engineering Adventure: Blazing a STEM Trail Along the Boston & Worcester Railroad (p. 143)
3:30–4:00 PM	K–5	501C, Conv. Center	STEAM in Action (p. 143)
3:30–4:30 PM	5–9	510, Conv. Center	Forces, Energy, Motion, and Engineering with K'NEX Machines: Using STEM to Make Work Easier (p. 149)
3:30–4:30 PM	4–C	Platinum Salon C, JW Marriott	Considerations for Applying Technology in Outdoor Science Education (p. 144)
3:30–4:30 PM	6–7	502B, Conv. Center	Using I-Engineering Teacher Tools to Promote Positive Engineering Identity Formation (p. 147)
3:30–4:30 PM	3–7/C	Kentia Hall J, Conv. Center	STEM Engagement at a STARBASE Near You! (p. 148)
3:30–4:30 PM	9–12	Plaza 3, JW Marriott	High School Engineers: Build a Model Hydrogen Car (p. 146)
3:30–4:30 PM	5–12	Gold Salon 1, JW Marriott	Hook Your Students with Digital Storytelling: Introducing NOAA's Interactive Every Full Moon Video Series (p. 144)
4:00–4:30 PM	6–12	Diamond Salon 8, JW Marriott	Making Makerspaces Equitable and Accessible (p. 150)
4:00–5:30 PM	6–12	304 AB, Conv. Center	Wind Turbine: An *NGSS* Approach to Understanding Renewable Energy (p. 151)
4:00–5:30 PM	9–C	402A, Conv. Center	Chemistry with Vernier (p. 152)
4:00–5:30 PM	4–6	512, Conv. Center	Hands-On STEM in the Upper (p. 154)
4:00–5:30 PM	9–C	511C, Conv. Center	Bring Your Cell Biology Teaching to the Next Level with the 3D Cell Explorer! (p. 154)
4:00–5:30 PM	K–12	153A, Conv. Center	How to Incorporate STEM Project-Based Learning in Your Classroom—Start Building! (p. 151)
4:00–5:30 PM	6–12	308 AB, Conv. Center	Clean Up Your Mess! Air and Water Pollution Remediation (p. 152)
4:00–5:30 PM	7–12	402B, Conv. Center	STEM/Engineering Activities Using Vernier Sensors with Arduino (p. 152)
4:00–5:30 PM	5–12	304C, Conv. Center	Learn to Code with LEGO® MINDSTORMS® Education EV3 (p. 152)
4:00–5:30 PM	K–3	301 AB, Conv. Center	Build Skills to Boost the Makerspace Experience for Young Scientists! (p. 151)
5:00–5:30 PM	6–12	504, Conv. Center	Effective Applications of iPad Technology in the Science Classroom (p. 156)

5:00–6:00 PM	6–C	Platinum Salon I, JW Marriott	Teachers as Edventurers: Deepening Science Inquiry with Mobile Media Devices (p. 157)
5:00–6:00 PM	G	Petree Hall D, Conv. Center	Students Study the Seas: In-Classroom STEM Oceanography Projects Inspire Global Awareness and Science Literacy (p. 158)
5:00–6:00 PM	K–5	501C, Conv. Center	Relevance Is Everything: Connecting All Students to the *NGSS* by Engaging in Local Problems (p. 157)
5:00–6:00 PM	K–5	502B, Conv. Center	Host a Rockstar Family STEM Event (p. 159)
5:00–6:00 PM	2–C	Platinum Salon B, JW Marriott	Equal Access to Science: Universal Design and Students with Disabilities (p. 159)
5:00–6:00 PM	7–11	Kentia Hall N, Conv. Center	Green Chemistry: A Framework and Lens for Learning, Teaching, and Investigating STEM Skill Sets (p. 160)
5:00–6:00 PM	3–8	Kentia Hall J, Conv. Center	Elementary STEM for All: Building Things That Move! (p. 160)

Life Science: Thursday

8:00–8:30 AM	9–12	Plaza 1, JW Marriott	Problem-Posing SSI (Socio-Scientific Issues): Making Science Personal for Diverse Learners (p. 87)
8:00–9:00 AM	6–12	506, Conv. Center	Teachers Helping Teachers: Teaching Socially Contentious Scientific Topics (p. 90)
8:00–9:00 AM	9–12	405, Conv. Center	True Colors: Spectrometry to Investigate Lights and Colors (p. 95)
8:00–9:00 AM	G	Petree Hall D, Conv. Center	NMEA-Sponsored Session: Whale of a Tale Share-a-Thon (p. 94)
8:00–9:00 AM	6–8	Kentia Hall R, Conv. Center	Introducing Students to Biotechnology and Bioengineering in a Title 1 Middle School (p. 94)
8:00–9:00 AM	9–12	Platinum Salon F, JW Marriott	NSTA Press® Session: Argument-Driven Inquiry in Biology, Chemistry, and Physics—Lab Investigations for Grades 9–12 (p. 92)
8:00–9:00 AM	9–C	Platinum Salon J, JW Marriott	Using Statistical Analysis of the PTC Gene as a Means to Study Mendelian Principles and Evolutionary Trends (p. 89)
8:00–9:00 AM	6–C	410, Conv. Center	Martian Genetics: An Electrophoresis Exploration (p. 95)
8:00–9:30 AM	9–12	403B, Conv. Center	Connecting Ecology Concepts from a Global Perspective (p. 98)
8:00–9:30 AM	9–C	153B, Conv. Center	Life Is Complicated: Flow of Genetic Information to Genomic Engineering (p. 96)
8:00–9:30 AM	7–C	150C, Conv. Center	Inquiry-Based Introduction to Gel Electrophoresis (p. 96)
8:00–9:30 AM	6–12	503, Conv. Center	Enzymes Made Doggone Easy: A Virtual Interactive Case Study! (p. 99)
8:00–9:30 AM	K–12	306 AB, Conv. Center	Hands-On Science with Classroom Critters (p. 97)
8:00–9:30 AM	9–C	404 AB, Conv. Center	Identify Patient Zero of a Zombie Apocalypse! (p. 98)
8:00–9:30 AM	K–5	309, Conv. Center	Dissecting the *NGSS* (p. 97)
8:00–9:30 AM	9–C	406 AB, Conv. Center	Build a Box: Engineering Food Dye Electrophoresis for *NGSS* (p. 99)
8:00–11:00 AM	6–12	Platinum Salon G, JW Marriott	*NGSS* Toolkit Pathway Session: Using the *NGSS* to Plan a Unit of Instruction (p. 100)
8:30–9:00 AM	6–12	Diamond Salon 8, JW Marriott	Teaching the Tough Topics with Science Games (p. 100)
9:30–10:30 AM	6–12	Petree Hall D, Conv. Center	NMEA-Sponsored Session: Aquaponics Toward Urban Sustainability (p. 102)
9:30–10:30 AM	8–12	407, Conv. Center	From DNA to Protein—A Modeling Approach (p. 102)
9:30–10:30 AM	9–C	410, Conv. Center	Left at the Scene of the Crime: Introduction to Forensic Science (p. 102)
10:00–11:30 AM	7–12	403A, Conv. Center	Flinn Favorite Biology Lab Activities and Games (p. 106)
10:00–11:30 AM	9–C	150C, Conv. Center	Who Is Baby Whale's Father? DNA Fingerprinting Solves the Mystery! (p. 103)
10:00–11:30 AM	6–12	306 AB, Conv. Center	Physiology in Action: Explore Feedback Mechanisms and Homeostasis (p. 106)
10:00–11:30 AM	9–C	404 AB, Conv. Center	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 107)
10:00–11:30 AM	9–C	406 AB, Conv. Center	Enzymes: Technology Inspired by Nature (p. 107)
10:00–11:30 AM	9–12	408A, Conv. Center	Biology for *NGSS*: A New Approach for a New Program (Grades 9–12) (p. 107)
10:00–11:30 AM	6–C	153B, Conv. Center	The Ins and Outs of Crossing Cell Membranes (p. 104)
10:00–11:30 AM	7–C	402A, Conv. Center	Biology with Vernier (p. 106)
10:00–11:30 AM	6–12	304AB, Conv. Center	CPO Science's Link™ Learning Module: Cell Reproduction Using Crazy Chromosomes (p. 104)

11:00 AM–12 Noon	G	Petree Hall D, Conv. Center	NMEA-Sponsored Session: Sharks4Kids (p. 109)
11:00 AM–12 Noon	9–C	410, Conv. Center	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR (p. 110)
11:00 AM–12 Noon	9–12	510, Conv. Center	K'NEX DNA Structure, Replication, and Transcription: An Expertly Engineered Molecule in Living Things (p. 110)
12 Noon–1:30 PM	6–12	511 AB, Conv. Center	Smart Management of Water Resources Using TI Graphing Calculators and the TI-Innovator Hub (p. 115)
12 Noon–1:30 PM	K–5	511C, Conv. Center	Environmental Science: Explore Living Landscapes (p. 115)
12 Noon–1:30 PM	9–C	150C, Conv. Center	Quick and Easy PCR in 90 Minutes (p. 111)
12 Noon–1:30 PM	9–C	153B, Conv. Center	DNA with a Data Twist: Modeling DNA Structure/Replication and Bioinformatics (p. 112)
12 Noon–1:30 PM	9–C	403B, Conv. Center	HHMI BioInteractive Resources Exploring Human Skin Color and Polygenic Inheritance (p. 114)
12 Noon–1:30 PM	6–12	503, Conv. Center	Lights, Camera, Action Potentials! (p. 115)
12 Noon–1:30 PM	K–6	306 AB, Conv. Center	Carolina's Young Scientist Dissections with Carolina's Perfect Solution® Specimen (p. 112)
12 Noon–1:30 PM	6–12	308 AB, Conv. Center	They Come in Pairs: Addressing Student Misconceptions About Chromosomes (p. 113)
12:30–1:30 PM	9–12	Plaza 3, JW Marriott	More than Airplanes: Models in the *NGSS* (p. 121)
12:30–1:30 PM	9–C	Petree Hall D, Conv. Center	NMEA-Sponsored Session: Teach Marine Biology Instead of Biology to *NGSS* and *CCSS* (p. 125)
12:30–1:30 PM	7–12	Diamond Salon 8, JW Marriott	Deep Brain Stimulation: Phenomena-Driven Instruction and Event-Based Science Linking Biomedical Engineering and Neuroscience to Teach the Nervous System (p. 118)
12:30–1:30 PM	7–11	405, Conv. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 125)
12:30–1:30 PM	5–12	Georgia 2, JW Marriott	ASTE-Sponsored Session: Engaging Students with Dynamic Models: Peruvian Food Chain Jenga (p. 120)
12:30–1:30 PM	7–12	506, Conv. Center	Extending the Meaning of Access in Science: Co-Designing Curriculum with Students in the Margins (p. 119)
12:30–1:30 PM	G	Theatre (411), Conv. Center	Magical Illusions and Simulating Simulations for Science (p. 120)
12:30–1:30 PM	9–C	410, Conv. Center	Outbreak! Zika Testing using the Enzyme Linked Immunosorbent Assay (ELISA) (p. 125)
2:00–2:30 PM	4–12	Platinum Salon J, JW Marriott	Two Growth Mind-Set Activities to Help Motivate All Students and Teach Nature of Science (p. 128)
2:00–2:30 PM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Exploring Genetic Ancestry and Personal Identity in U.S. Ethnic Minority College Biology Students (p. 128)
2:00–3:00 PM	6–10	Diamond Salon 7, JW Marriott	Read-Aloud with Rigor: Deepening Middle-Schoolers' Science Content Knowledge Through Literacy (Grades 6–8) (p. 132)
2:00–3:00 PM	K–2	Kentia Hall A, Conv. Center	Checkerspot Challenge: Early Childhood Engineering (p. 133)
2:00–3:00 PM	8–12	Kentia Hall P, Conv. Center	Teaching Environmental Sustainability Using a Free Place-Based Watershed Model (p. 134)
2:00–3:00 PM	6–8	Diamond Blrm. Salon 10, JW Marriott	Virtual Reality's Emerging Future in Science Education (p. 129)
2:00–3:00 PM	C	Diamond Blrm. Salon 1, JW Marriott	Why Have All The Creatures Gone? Using the Three Dimensions to Explore Ecological Issues (p. 129)
2:00–3:00 PM	2–5	Kentia Hall H, Conv. Center	Come Wiggle with the Bees! Learn All About Bee-havior! (p. 134)
2:00–3:00 PM	9–12	Kentia Hall S, Conv. Center	*The Martian:* Lessons in Biology and Chemistry (p. 135)
2:00–3:00 PM	K–12	Atrium 3, JW Marriott	CSSS-Sponsored Session: Three-Dimensional Lessons Based in Simple Natural Phenomena (p. 132)
2:00–3:00 PM	9–C	410, Conv. Center	A Bright Idea: Using GFP to Teach STEM (p. 135)
2:00–3:30 PM	7–12	305, Conv. Center	Genes in Space: Launch Your DNA Experiment into Space! (p. 137)
2:00–3:30 PM	K–12	306 AB, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 137)
2:00–3:30 PM	10–C	150C, Conv. Center	Are You a PTC Taster? Let's Do PCR to Find Out! (p. 136)
2:00–3:30 PM	7–C	402A, Conv. Center	Environmental Science with Vernier (p. 138)
2:00–3:30 PM	9–12	403B, Conv. Center	Using BioInteractive Resources to Bring Math into the Biology Lesson (p. 138)

2:00–3:30 PM	3–C	408A, Conv. Center	Which Scientist's Work Saves 8 Million Lives a Year? (p. 139)
2:00–3:30 PM	9–C	153C, Conv. Center	Innovative Bioscience Classrooms with 3D Bioprinting (p. 136)
2:00–3:30 PM	9–C	406 AB, Conv. Center	How to Use Pop Culture in Your Life Science Class (p. 139)
2:00–3:30 PM	9–C	404 AB, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (p. 138)
2:00–3:30 PM	6–12	308 AB, Conv. Center	Strawberry Milkshakes: DNA and Lactose Intolerance (p. 138)
2:30–3:00 PM	9–C	Plaza 1, JW Marriott	Using Cyanogenic Clover to Teach Biology in 3 D (p. 141)
2:30–3:00 PM	K–12	Platinum Salon J, JW Marriott	Citizen Science: Considerations and Possibilities for K–12 Classrooms (p. 141)
3:30–4:00 PM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Testing the Testing Effect: Modifying Summative Assessment to Enhance Student Learning (p. 142)
3:30–4:00 PM	C	Platinum Salon A, JW Marriott	NARST-Sponsored Session: Peer-Led Team Learning: Improving Achievement, Recruitment, and Retention for Underrepresented Minorities in Postsecondary Biology (p. 142)
3:30–4:30 PM	7–12	405, Conv. Center	Exploring and Modeling Climate Change (p. 149)
3:30–4:30 PM	3–12	Petree Hall D, Conv. Center	Evolution the *NGSS* Way (p. 149)
3:30–4:30 PM	4–C	Platinum Salon C, JW Marriott	Considerations for Applying Technology in Outdoor Science Education (p. 144)
3:30–4:30 PM	5–12	Gold Salon 1, JW Marriott	Hook Your Students with Digital Storytelling: Introducing NOAA's Interactive Every Full Moon Video Series (p. 144)
3:30–4:30 PM	3–12	Petree Hall D, Conv. Center	NMEA-Sponsored Session: Tagging and Tracking Sharks: What's Your Hypothesis? (p. 149)
3:30–4:30 PM	7–12	506, Conv. Center	Frankenstruction: Hybridizing Literacy and Science (p. 147)
3:30–4:30 PM	2–4	Kentia Hall F, Conv. Center	Batology: An Integrated STEAM Unit on Bat Structure, Diversity, and Their Vital Role in the Ecosystem (p. 148)
3:30–4:30 PM	9–C	410, Conv. Center	Environmental Toxicology Using Edvotek's New EZ-elegans (p. 149)
4:00–4:30 PM	7–12	Kentia Hall P, Conv. Center	Learning STEM Through Bioenergy: Lessons from the Plants (p. 150)
4:00–4:30 PM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Examining the Progression of Student-Developed Hypotheses in an Inquiry Biology Laboratory Course (IBLC) (p. 150)
4:00–4:30 PM	C	Platinum Salon A, JW Marriott	NARST-Sponsored Session: Engaging Students with Primary Literature Improves Nature of Science Conceptions and Confidence in Reading Science (p. 150)
4:00–5:30 PM	9–12	403B, Conv. Center	Ecological Restoration: From a Case Study Investigation to Local Action (p. 153)
4:00–5:30 PM	9–12	306 AB, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution®Pigs (p. 152)
4:00–5:30 PM	9–12	409 AB, Conv. Center	Integrating Earth Systems Investigations and Action into Curriculum (p. 154)
4:00–5:30 PM	6–8	303 AB, Conv. Center	Evolutionary Evidence in the Fossil Record (p. 151)
4:00–5:30 PM	9–C	406 AB, Conv. Center	Become a GMO Investigator (p. 153)
4:00–5:30 PM	9–C	404 AB, Conv. Center	Take pGLO to the Next Level! (p. 153)
4:00–5:30 PM	9–C	511C, Conv. Center	Bring Your Cell Biology Teaching to the Next Level with the 3D Cell Explorer! (p. 154)
4:00–5:30 PM	10–C	150C, Conv. Center	Gel Electrophoresis in 90 Minutes to Deduce Genotype from Phenotype (p. 151)
5:00–5:30 PM	9–12	Kentia Hall S, Conv. Center	Disaster in the Making: Implementing Dual Class System to Teach Emerging Infectious Disease in a First-Responder School (p. 156)
5:00–5:30 PM	9–C	Georgia 1, JW Marriott	SCST-Sponsored Session: Using Museums to Broaden the Science Practices and Increase Engagement (p. 155)
5:00–6:00 PM	6–C	Platinum Salon I, JW Marriott	Teachers as Edventurers: Deepening Science Inquiry with Mobile Media Devices (p. 157)
5:00–6:00 PM	2–6	Kentia Hall D, Conv. Center	Wriggle and Squirm Your Way through Claims, Evidence, and Reasoning with Earthworm Inquiry (p. 159)
5:00–6:00 PM	P–5	Kentia Hall H, Conv. Center	Teaching Plants with STEAM: Using STEM and Art in the Classroom (p. 160)
5:00–6:00 PM	K–8	Kentia Hall L, Conv. Center	*Transversales Para Todos los Estudiantes* (p. 160)
5:00–6:00 PM	K–2	Kentia Hall G, Conv. Center	Patterns of Survival (p. 160)
5:00–6:00 PM	6–8	Kentia Hall Q, Conv. Center	Urban Field Ecology for Middle School Students (p. 160)

5:00–6:00 PM	6–12	Kentia Hall R, Conv. Center	Using Vectors, Mutations, and Viral Replication to Teach Evolution and Genetics in a Context-Based Setting Focused on Africa (p. 161)
5:30–6:00 PM	9–12	Kentia Hall S, Conv. Center	Literacy and Life Science (p. 161)

Physical Science: Thursday

8:00–9:00 AM	P–1	Kentia Hall A, Conv. Center	Making Friends with Data: Strategies for Representing and Using Data in Early Childhood (p. 93)
8:00–9:00 AM	6–8	Kentia Hall M, Conv. Center	Gravity Models: The Plight of Wile E. Coyote (p. 93)
8:00–9:00 AM	9–12	Kentia Hall O, Conv. Center	Engaging Students in Chemistry: Project-Based Learning Closes the Gap (p. 90)
8:00–9:00 AM	6–10	Kentia Hall N, Conv. Center	Hot Hands: Chemical Engineering in a Sandwich Bag (p. 93)
8:00–9:00 AM	G	Diamond Salon 2, JW Marriott	STEaM: Combining Physical Science with the Arts and Literature (p. 88)
8:00–9:00 AM	K–12	515A, Conv. Center	3-2-1 Lift-Off! NASA's Beginning Engineering Science and Technology (BEST) Curriculum (p. 92)
8:00–9:00 AM	3–5	Kentia Hall C, Conv. Center	Using Models for Instruction and Assessment (p. 93)
8:00–9:00 AM	9–12	Platinum Salon F, JW Marriott	NSTA Press® Session: Argument-Driven Inquiry in Biology, Chemistry, and Physics—Lab Investigations for Grades 9–12 (p. 92)
8:00–9:00 AM	9–12	Plaza 3, JW Marriott	From Activity to Inquiry: Analytical Approach to Inquiry-Based Learning from the Students' Perspective (p. 92)
8:00–9:00 AM	9–12	405, Conv. Center	True Colors: Spectrometry to Investigate Lights and Colors (p. 95)
8:00–9:00 AM	6–12	407, Conv. Center	STEM Activities: Easy-to-Teach Robotics (p. 95)
8:00–9:00 AM	9–12	501 AB, Conv. Center	Active Chemistry and Active Physics: Project-Based Inquiry Science That Engages Students (p. 95)
8:00–9:00 AM	5–9	510, Conv. Center	Machine Technology and Engineering with K'NEX Machines: Using STEM to Make Work Easier (p. 95)
8:00–9:30 AM	7–C	402B, Conv. Center	Renewable Energy with KidWind and Vernier (p. 98)
8:00–9:30 AM	3–C	402A, Conv. Center	Integrating Chromebook with Vernier Technology (p. 98)
8:00–9:30 AM	5–10	512, Conv. Center	How Do Scientists Think? (p. 99)
8:00–9:30 AM	6–12	304 AB, Conv. Center	Engineering Design and *NGSS:* Learning About Friction Forces (p. 96)
8:00–9:30 AM	9–12	403A, Conv. Center	Flinn Scientific's *Exploring Chemistry*: Connecting Content Through Experiments (p. 98)
8:00–9:30 AM	9–12	514, Conv. Center	The Best Test Prep Book Ever for AP Chemistry (p. 99)
8:00–9:30 AM	7–C	150C, Conv. Center	Inquiry-Based Introduction to Gel Electrophoresis (p. 96)
8:00–9:30 AM	9–C	406 AB, Conv. Center	Build a Box: Engineering Food Dye Electrophoresis for *NGSS* (p. 99)
8:00–9:30 AM	9–12	308 AB, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 97)
8:30–9:00 AM	6–12	Diamond Salon 8, JW Marriott	Teaching the Tough Topics with Science Games (p. 100)
9:30–10:30 AM	6–12	405, Conv. Center	Exploring Misconceptions: What Is pH? (p. 102)
9:30–10:30 AM	3–6	510, Conv. Center	Bridges! Bridges! Bridges Structural Engineering at Its Best with K'NEX STEM Bridge Sets (p. 103)
10:00–11:30 AM	9–C	150C, Conv. Center	Who Is Baby Whale's Father? DNA Fingerprinting Solves the Mystery! (p. 103)
10:00–11:30 AM	8–12	512, Conv. Center	What's New in Physics? (p. 108)
10:00–11:30 AM	6–12	308 AB, Conv. Center	Engineer Physical Science Excitement with a Carolina STEM Challenge® (p. 106)
10:00–11:30 AM	2–5	409 AB, Conv. Center	Floating Trains: Phenomena, 3D Instruction, and Amplify Science for Grades 2–5 (p. 107)
10:00–11:30 AM	3–C	402B, Conv. Center	Integrating iPad with Vernier Technology (p. 106)
10:00–11:30 AM	6–C	153B, Conv. Center	The Ins and Outs of Crossing Cell Membranes (p. 104)
10:00–11:30 AM	7–C	511C, Conv. Center	Molecular Level Visualization: Engage Your Students and Fight Misconceptions! (p. 108)
10:00–11:30 AM	6–8	518, Conv. Center	Waves—Make an Abstract Concept Become Visible! (p. 108)
11:00 AM–12 Noon	9–12	405, Conv. Center	Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws (p. 110)

11:00 AM–12 Noon	9–12	501 AB, Conv. Center	Project-Based Learning + *NGSS* = Active Chemistry (p. 110)
11:00 AM–12 Noon	6–12	407, Conv. Center	STEM Activities: Crash Barrier Design and Engineering Challenge (p. 110)
12 Noon–1:30 PM	9–C	150C, Conv. Center	Quick and Easy PCR in 90 Minutes (p. 111)
12 Noon–1:30 PM	6–8	409 AB, Conv. Center	Space Docking Failure: Phenomena, 3D Instruction, and Amplify Science for Grades 6–8 (p. 114)
12 Noon–1:30 PM	K–5	153A, Conv. Center	Riding the Wave with TCI (p. 111)
12 Noon–1:30 PM	9–12	518, Conv. Center	Introducing the Lab-Master® (p. 115)
12 Noon–1:30 PM	9–C	403A, Conv. Center	Year-Round Solutions for Success in AP Chemistry from Flinn Scientific (p. 114)
12 Noon–1:30 PM	9–C	402B, Conv. Center	Physics with Vernier (p. 114)
12 Noon–1:30 PM	9–C	402A, Conv. Center	Chemistry with Vernier Using Chromebook (p. 113)
12:30–1:00 PM	9–11	Plaza 2, JW Marriott	Tales from the Front: Beginning Our Science Teaching Careers in the Era of *NGSS* (p. 116)
12:30–1:30 PM	9–12	Kentia Hall O, Conv. Center	Enhancing Your Physics Course with POGIL: Increasing Student Understanding and Concept Retention in High School Physics (p. 120)
12:30–1:30 PM	G	Theatre (411), Conv. Center	Magical Illusions and Simulating Simulations for Science (p. 120)
12:30–1:30 PM	7–11	405, Conv. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 125)
12:30–1:30 PM	P–2	502B, Conv. Center	Designing Physical Science Learning Centers for Inclusive Early Childhood Classrooms (p. 119)
12:30–1:30 PM	8–C	Gold Salon 1, JW Marriott	Exploring Chemicals from a Green Perspective (p. 120)
12:30–1:30 PM	9–12	Plaza 3, JW Marriott	More than Airplanes: Models in the *NGSS* (p. 121)
12:30–1:30 PM	6–12	407, Conv. Center	Shockingly Good Electrochemistry: Making and Using Batteries (p. 125)
12:30–2:30 PM	P–8	151, Conv. Center	CESI-Sponsored Session: Using Toys to Teach Physics Share-a-Thon (p. 126)
2:00–2:30 PM	9–10	Platinum Salon D/1, JW Marriott	Teacher Researcher Day Session: Merch It—*NGSS* and Standards-Based Grading (p. 128)
2:00–3:00 PM	10–12	Kentia Hall O, Conv. Center	*NGSS* Chemistry and Integration of Climate Change (p. 134)
2:00–3:00 PM	3–6	Kentia Hall F, Conv. Center	Future Worlds: Storm Survival Shelters STEM Challenge (p. 134)
2:00–3:00 PM	9–12	Plaza 3, JW Marriott	Hit the Ground Running (p. 133)
2:00–3:00 PM	K–12	Atrium 3, JW Marriott	CSSS-Sponsored Session: Three-Dimensional Lessons Based in Simple Natural Phenomena (p. 132)
2:00–3:00 PM	P–2	Kentia Hall E, Conv. Center	Help Happy the Horse, a Design Thinking and Engineering Challenge for Young Students (p. 133)
2:00–3:00 PM	6–8	Diamond Blrm. Salon 10, JW Marriott	Virtual Reality's Emerging Future in Science Education (p. 129)
2:00–3:00 PM	6–8	Kentia Hall N, Conv. Center	Middle School Chemistry and Engineering Design in the *NGSS* (p. 134)
2:00–3:00 PM	9–12	Plaza 2, JW Marriott	Nanotechnology: A Gateway to Student Engagement in *NGSS* (p. 130)
2:00–3:00 PM	6–8	Kentia Hall M, Conv. Center	Beyond Naming Forms: Teaching Energy in Middle School by Modeling Energy Transfers Between Systems (p. 134)
2:00–3:00 PM	9–12	407, Conv. Center	STEM Activities: Untangling Electric Circuits (p. 135)
2:00–3:00 PM	9–12	Kentia Hall S, Conv. Center	*The Martian:* Lessons in Biology and Chemistry (p. 135)
2:00–3:00 PM	K–8	Kentia Hall J, Conv. Center	STEM Applications in Transportation, the Answer to: When Will I Ever Use This in Real Life? (p. 134)
2:00–3:00 PM	G	Diamond Salon 3, JW Marriott	NSTA Press® Session:: Uncovering K–12 Students' (and Teachers') Ideas About Matter and Energy in the *NGSS* (p. 129)
2:00–3:00 PM	1–10	Platinum Salon H, JW Marriott	A Demo a Week Makes Science Class the Peak (p. 130)
2:00–3:00 PM	K–5	Kentia Hall B, Conv. Center	NGSS@NSTA: One-Stop Resource Shopping for Elementary Teachers! (p. 133)
2:00–3:00 PM	K–2	Kentia Hall C, Conv. Center	STEM Road Map Curriculum Series for Early Childhood Education (p. 133)
2:00–3:00 PM	9–12	501 AB, Conv. Center	Project-Based Learning + *NGSS* = Active Physics (p. 136)
2:00–3:00 PM	6–12	405, Conv. Center	Chemical Formulas: Subscripts and Coefficients Made Easy! (p. 135)
2:00–3:00 PM	5–9	510, Conv. Center	Explore Solar Energy STEM Concepts with K'NEX Models: Engineering for a Sustainable Future (p. 136)
2:00–3:30 PM	9–12	518, Conv. Center	Chemical Formula and Amino Acids (p. 140)
2:00–3:30 PM	4–8	402B, Conv. Center	Middle School Science with Vernier (p. 138)
2:00–3:30 PM	6–12	304AB, Conv. Center	CPO Science's Link™ Learning Module: Chemistry and the Periodic Table (p. 137)

2:00–3:30 PM	10–C	150C, Conv. Center	Are You a PTC Taster? Let's Do PCR to Find Out! (p. 136)
2:00–3:30 PM	7–12	153A, Conv. Center	Reconceptualizing Chemistry Through Play: Acids and Bases (p. 136)
2:00–3:30 PM	9–12	514, Conv. Center	STEM and *NGSS* Inquiry in Chemistry: Effective, Efficient, Economical (p. 140
2:00–3:30 PM	6–8	303 AB, Conv. Center	Wave Properties and Information Transfer (p. 137)
3:30–4:30 PM	P–6	515A, Conv. Center	Science and Math Collision Course: Using Phenomena to Teach Matter and Math (p. 147)
3:30–4:00 PM	6–12	Kentia Hall N, Conv. Center	The Sludge Test: Using Project-Based Learning to Build Argumentation and Reasoning Skills in Chemistry (p. 143)
3:30–4:30 PM	3–7/C	Kentia Hall J, Conv. Center	STEM Engagement at a STARBASE Near You! (p. 148)
3:30–4:30 PM	6–12	407, Conv. Center	Exploring Misconceptions: Motion Graphs
3:30–4:30 PM	9–12	Kentia Hall O, Conv. Center	Connect Chemistry to Your World with ChemClub (p. 148)
3:30–4:30 PM	6–8	Kentia Hall M, Conv. Center	Invisible Signals at the Touch of a Button (p. 148)
3:30–4:30 PM	9–12	Plaza 3, JW Marriott	High School Engineers: Build a Model Hydrogen Car (p. 146)
3:30–4:30 PM	4–C	Olympic 1, JW Marriott	Stream Study…With or Without a Stream! (p. 146)
3:30–4:30 PM	6–7	502B, Conv. Center	Using I-Engineering Teacher Tools to Promote Positive Engineering Identity Formation (p. 147)
3:30–4:30 PM	4–9	Kentia Hall L, Conv. Center	Paired Inquiry Using Paper Chromatography (p. 148)
3:30–4:30 PM	5–9	510, Conv. Center	Forces, Energy, Motion, and Engineering with K'NEX Machines: Using STEM to Make Work Easier (p. 149)
4:00–4:30 PM	7–12	Kentia Hall P, Conv. Center	Learning STEM Through Bioenergy: Lessons from the Plants (p. 150)
4:00–4:30 PM	6–12	Diamond Salon 8, JW Marriott	Making Makerspaces Equitable and Accessible (p. 150)
4:00–4:30 PM	8–12	Kentia Hall N, Conv. Center	Incorporating Inquiry and Problem-Based Projects in High School Chemistry Class (p. 150)
4:00–5:30 PM	10–C	150C, Conv. Center	Gel Electrophoresis in 90 Minutes to Deduce Genotype from Phenotype (p. 151)
4:00–5:30 PM	9–12	153B, Conv. Center	Living by Chemistry: Create a Table (p. 151)
4:00–5:30 PM	9–C	402A, Conv. Center	Chemistry with Vernier (p. 152)
4:00–5:30 PM	6–12	503, Conv. Center	The Voice LIVE: Physics Edition (p. 154)
4:00–5:30 PM	8–12	408B, Conv. Center	Cool Tools for Light and Color (p. 153)
4:00–5:30 PM	7–12	153C, Conv. Center	Hands-On Approach to Teach Electricity in Japan (p. 151)
4:00–5:30 PM	K–12	Diamond Blrm. Salon 3, JW Marriott	NSTA Press® Session: Teaching Energy Across the Sciences (p. 155)
5:00–6:00 PM	7–11	Kentia Hall N, Conv. Center	Green Chemistry: A Framework and Lens for Learning, Teaching, and Investigating STEM Skill Sets (p. 160)
5:00–6:00 PM	G	502A, Conv. Center	Let's Give Them Something to Talk About: Discourse in the *NGSS* Science Classroom (p. 159)
5:00–6:00 PM	9–12	Kentia Hall O, Conv. Center	Solids: The Neglected "State" of Chemistry (p. 157)
5:00–6:00 PM	G	Petree Hall D, Conv. Center	Students Study the Seas: In-Classroom STEM Oceanography Projects Inspire Global Awareness and Science Literacy (p. 158)
5:00–6:00 PM	8–11	Diamond Salon 7, JW Marriott	Teaching STEM Lessons with a Multicultural Perspective (p. 158)
5:00–6:00 PM	K–8	Kentia Hall L, Conv. Center	*Conceptos Transversales Para Todos los Estudiantes* (p. 160)
5:00–6:00 PM	5–8	Kentia Hall M, Conv. Center	How I Learned to Split a Molecule: Weaving a Story Line Through Scientific Phenomena (p. 160)

General Science Education: Wednesday

6:00–8:00 PM	G	West Hall B, Conv. Center	The Planetary Society Lecture: Everything All at Once (p. 84)

General Science Education: Thursday

8:00–8:30 AM	6–C	Diamond Salon 8, JW Marriott	Using Memes, Puns, Jokes, and Comics in the Science Classroom (p. 87)
8:00–8:30 AM	2–10	Platinum Salon H, JW Marriott	Can You Explain?/*¿Puedes Explicar?* (p. 87)
8:00–9:00 AM	1–5	513, Conv. Center	Disciplinary Literacy and Reading in the Content Area of Science: Yes! You Can Do Both as an Elementary Teacher! (p. 90)

8:00–9:00 AM	K–4	501C, Conv. Center	Snapshot of a Perfectly Integrated Curriculum in K–4 (p. 90)
8:00–9:00 AM	K–12	Olympic 1, JW Marriott	Finding Your Voice Without Shouting: Seeking Successful Support for Science Education (p. 91)
8:00–9:00 AM	4–12	Gold Salon 1, JW Marriott	STEM Infographic Use, Analysis, and Production for Higher Scientific Literacy in the Classroom (p. 91)
8:00–9:00 AM	5–9	Kentia Hall S, Conv. Center	Elevating Family Engagement to Empowerment: Urban Advantage's Model of Fostering Sustainable Participation in Science Learning for Middle School Families (p. 94)
8:00–9:00 AM	G	151, Conv. Center	Is This Your First NSTA Conference? First-Timer Conference Attendees' Orientation (p. 90)
8:00–9:00 AM	1–4	Kentia Hall H, Conv. Center	Hands-On 5E Lessons from a Platinum-Designated STEM Elementary School (p. 93)
8:00–9:00 AM	1–12	Platinum Salon E, JW Marriott	Silent Labs: Movie Making in a Science Classroom (p. 92)
8:00–9:00 AM	P–12	502A, Conv. Center	Charts, Graphs, and Diagrams, Oh My! The World of Visual Learners (p. 92)
8:00–9:00 AM	6–12	Diamond Salon 10, JW Marriott	Using a Free Online Tool to Support Students in Developing Models (p. 91)
8:00–9:00 AM	K–8	Kentia Hall L, Conv. Center	Enhancing Science Through Culturally Responsive Teaching (p. 90)
8:00–9:00 AM	9–C	Georgia 1, JW Marriott	SCST-Sponsored Session: How Are We Implementing Vision and Change in the College Science Classroom? (p. 89)
8:00–9:00 AM	K–12	Olympic 3, JW Marriott	CSS-Sponsored Session: We've Adopted *NGSS,* How Do We Know It's Making a Difference? (p. 89)
8:00–9:00 AM	4–12	Atrium 3, JW Marriott	ASTC-Sponsored Session: Linking In-School and Out-of-School STEM Learning: Examples of Programs Featured in Connected Science Learning (p. 88)
8:00–9:00 AM	P–12	Atrium 2, JW Marriott	NARST-Sponsored Session: Do Practitioners and Researchers Agree on the Issues? A Critical Perspective on the Practice-Research Gap in Science Education (p. 88)
8:00–9:00 AM	5–12	Georgia 2, JW Marriott	ASTE-Sponsored Session: Three-Dimensional Science Instruction Using the Learning Cycle Approach (p. 91)
8:00–9:00 AM	6–12	502B, Conv. Center	Lessons That Create Equitable Opportunities for All Students (p. 92)
8:00–9:00 AM	K–5	Kentia Hall B, Conv. Center	Integrate *NGSS* and *CCSS* with a Practical Research Strategy: Do It, Learn It, Use It! (p. 93)
8:00–9:00 AM	K–12	150 AB, Conv. Center	STEM Literacy: Strategies for Making Science Text Meaningful (p. 95)
8:00–9:00 AM	P–5	Theatre (411), Conv. Center	Mary C. McCurdy Lecture: Born to Be a Scientist (p. 88)
8:00–9:30 AM	K–8	409 AB, Conv. Center	Integrate Instruction and Assessment in Three Dimensions Using Learning Progressions (p. 99)
8:00–9:30 AM	6–12	511 AB, Conv. Center	Zombie Apocalypse! (p. 99)
8:00–9:30 AM	3–12	408B, Conv. Center	Next Generation Science Using Video-Based Projects (p. 99)
8:00–9:30 AM	K–7	303 AB, Conv. Center	Engage Students in FOSS Next Generation K–8 (p. 96)
8:30–9:00 AM	6–C	Platinum Salon H, JW Marriott	Overview of Approaches That Help ENLs, Bilinguals, and All Students in General (p. 100)
8:30–9:00 AM	4–C	Platinum Salon I, JW Marriott	*Wikiwatershed.org* Toolkit of Resources and Curriculum (p. 100)
8:30–9:30 AM	G	Platinum Salon D, JW Marriott	Teacher Researcher Day Session: Poster Session for Teacher Researchers (p. 101)
9:15–10:30 AM	G	West Hall B, Conv. Center	General Session: *The Martian:* The Story Behind the Story (p. 101)
9:30–10:30 AM	K–2	150 AB, Conv. Center	Make Science Night Meaningful (p. 102)
9:30–11:00 AM	P–3	Platinum Salon D, JW Marriott	Teacher Researcher Day Session: Panel Discussion: Young Scientists (p. 103)
10:00–11:30 AM	K–5	153A, Conv. Center	Analyzing and Interpreting Data Using TCI's Bring Science Alive! (p. 103)
10:00–11:30 AM	1–6	301 AB, Conv. Center	How to Argue in Science Class (p. 104)
10:00–11:30 AM	9–12	403B, Conv. Center	HHMI Is Phenomenal! Using BioInteractive to Create Phenomena-Based Lessons (p. 107)
10:00–11:30 AM	9–C	404 AB, Conv. Center	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 107)
10:00–11:30 AM	3–8	303 AB, Conv. Center	Ten Minutes to Improving Science Achievement (p. 104)
10:00–11:30 AM	K–5	309, Conv. Center	Science + Engineering = New Elementary Program from the Smithsonian (p. 106)

10:00–11:30 AM	K–8	408B, Conv. Center	Awesome Activities for an *NGSS* Classroom (p. 107)
10:00–11:30 AM	6–12	503, Conv. Center	Here Comes the Sun Power: Practical Applications and Protection (p. 108)
10:00–11:30 AM	5–C	153C, Conv. Center	The Animal Kingdom Lessons with Shape of Life Resources (p. 104)
11:00–11:30 AM	G	Platinum Salon D/2, JW Marriott	Teacher Researcher Day Session: Making Sense of Your Science Teaching Through Reflective Practice (p. 109)
11:00–11:30 AM	9–12	Platinum Salon D/1, JW Marriott	Teacher Researcher Day Session: Yes, I Will Fix Your Computer…and Much More! My Journey as a Technology Coach in a High School Science and Math Department (p. 109)
11:00 AM–12 Noon	9–12	Platinum Salon D/4, JW Marriott	Teacher Researcher Day Session: Culturally Responsive Mentoring: Building Pedagogical Capacity Through Teacher Inquiry in Chicago Science Classrooms (p. 109)
11:00 AM–12 Noon	K–12	150 AB, Conv. Center	Argumentation in the STEM Classroom (p. 110)
11:30 AM–12 Noon	K–8	Platinum Salon D/1, JW Marriott	Teacher Researcher Day Session: Do Novice Elementary Teachers See Scientists in Their Classroom? (p. 111)
12 Noon–12:30 PM	G	Platinum Salon D, JW Marriott	Teacher Researcher Day Session: Come Be a Part of the Science Inquiry Group Network (p.111)
12 Noon–1:30 PM	G	408A, Conv. Center	GMOs: A Hot Topic in the Media and Classroom: Monsanto Panel Discussion and Presentation (p. 114)
12 Noon–1:30 PM	K–6	301 AB, Conv. Center	PEASE in Our Time: Memory Lanes of the Brain and *NGSS* (p. 112)
12 Noon–1:30 PM	K–8	514, Conv. Center	Take Your Students On a Quest! A Real-World Problem-Based Learning Project that Incorporates All Three Dimensions of *NGSS* (p. 115)
12 Noon–1:30 PM	6–12	304 AB, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 112)
12 Noon–1:30 PM	K–8	309, Conv. Center	*NGSS:* How Do We Know It When We See It? (p. 113)
12 Noon–1:30 PM	K–5	303 AB, Conv. Center	Model Elementary Science Implementation (p. 112)
12:30–1:00 PM	K–8	507, Conv. Center	Viewing the Practices of Scientists and Engineers Through Three Spheres of Activity: The Importance of Evidence in Teaching Science (p. 116)
12:30–1:00 PM	P–4	Kentia Hall H, Conv. Center	The Living Classroom: Turning Your Curriculum into an Outdoor Adventure Through Learning Gardens with STEM (p. 116)
12:30–1:00 PM	2–12	Platinum Salon J, JW Marriott	Classroom Procedures to Support Science Notebooks (p. 116)
12:30–1:00 PM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Changes in Students' Perceptions and Motivation During Course-Embedded Freshman Research Experiences (p. 116)
12:30–1:00 PM	G	Platinum Salon H, JW Marriott	Science Education, Multimodality, and Literacy: The Creation of Science Graphic Novelettes and the Literacy Connection (p. 116)
12:30–1:30 PM	3–12	Platinum Salon C, JW Marriott	Integrate Science and Technology in the Classroom (p. 121)
12:30–1:30 PM	P–5	Kentia Hall G, Conv. Center	Teaching Crosscutting Concepts through Inquiry and English Language Arts in Elementary Classrooms (p. 124)
12:30–1:30 PM	P–6	Kentia Hall E, Conv. Center	Fun with Bubbles, Inquiry in the Elementary Science Classroom: Fostering Child-Led Discovery (p. 123)
12:30–1:30 PM	G	Platinum Salon B, JW Marriott	Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 101) (p. 120)
12:30–1:30 PM	P–5	Kentia Hall F, Conv. Center	Get Out! Strategies for Effective Outdoor Learning (p. 123)
12:30–1:30 PM	K–6	Kentia Hall C, Conv. Center	Science Practices Using Math, Literature, and, YES, Even Diapers! (p.123)
12:30–1:30 PM	6–8	Kentia Hall R, Conv. Center	Spicing Up Scientific Explanations with Authentic Animal Behavior Data from the Bronx Zoo! (p. 124)
12:30–1:30 PM	6–12	Diamond Salon 7, JW Marriott	Incorporating *NGSS* Science and Engineering Practices in the Context of 3D Learning Using the *NGSS* ASET Rubrics (p. 120)
12:30–1:30 PM	3–9	Kentia Hall K, Conv. Center	More Games in Science Using *CCSS* and *NGSS* (p. 124)
12:30–1:30 PM	10–12	Platinum Salon A, JW Marriott	AMSE-Sponsored Session: Opening the to Success Using Case Studies to Help Implement Scientific Concepts for Diverse Learners (p. 118)
12:30–1:30 PM	G	152, Conv. Center	Success for All, Takes Us All (p. 122)
12:30–1:30 PM	P–5	Kentia Hall A, Conv. Center	Scientific Drawing with Elementary Students (p. 123)
12:30–1:30 PM	P–12	Platinum Salon E, JW Marriott	Preparing an *NGSS* Implementation Action Plan (p. 121)
12:30–1:30 PM	4–C	502A, Conv. Center	High-Tech and Low-Tech Strategies for Science and Literacy (p. 123)
12:30–1:30 PM	3–5	513, Conv. Center	What Constitutes High-Quality Discussion in a Science Classroom? (p. 120)

12:30–1:30 PM	6–C	515B, Conv. Center	Zombies in the Neighborhood? No Worries. STEM Them! (p. 123)
12:30–1:30 PM	8–12	504, Conv. Center	Integrating Community Partnerships to Enhance STEM and PBL (p. 119)
12:30–1:30 PM	5–12	Olympic 3, JW Marriott	CSSS-Sponsored Session: Using the Crosscutting Concepts as the Basis for Competency-Based Learning (p. 118)
12:30–1:30 PM	3–12	Atrium 3, JW Marriott	ASTC-Sponsored Session: Collaborations! Professional Development Connecting Local Resources with Teachers (p. 117)
12:30–1:30 PM	K–5	Diamond Salon 3, JW Marriott	NSTA Press® Session: Uncovering' Ideas About Science Through Literacy Capacities (p. 117)
12:30–1:30 PM	P–12	Diamond Salon 6, JW Marriott	NSELA-Sponsored Session: Tools for Science Leaders (p. 118)
12:30–1:30 PM	P–5	501C, Conv. Center	The Power of Picture Books to Engage Girls in STEM (p. 118)
12:30–1:30 PM	6–10	Kentia Hall N, Conv. Center	Infusing Literacy Standards into Science (p. 124)
12:30–1:30 PM	7–C	Diamond Salon 2, JW Marriott	Science Online?!? How Do You Do That? (p. 117)
12:30–1:30 PM	3–5	Kentia Hall B, Conv. Center	Using Integrated *(NGSS/CCSS)* Project-Based Learning to Support Modeling in Elementary Science Classrooms (p. 123)
12:30–1:30 PM	9–C	Platinum Salon D/1, JW Marriott	Teacher Researcher Day Session: Assessing Changes in Student Understanding of the Nature of Science (p. 118)
12:30–1:30 PM	9–10	Platinum Salon D/3, JW Marriott	Teacher Researcher Day Session: Urban Youth as Producers of Knowledge and Culture (p. 118)
12:30–1:30 PM	G	Petree Hall C, Conv. Center	Featured Presentation: Classroom Assessment and the *NGSS* (p. 117)
12:30–1:30 PM	G	Platinum Salon D/4, JW Marriott	Teacher Researcher Day Session: Helping Preservice Teachers Understand and Use the *NGSS* (p. 118)
12:30–1:30 PM	6–8	501 AB, Conv. Center	Project-Based Inquiry Science: Blending Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms (p. 126)
12:30–2:30 PM	6–12	Platinum Salon G, JW Marriott	*NGSS* Toolkit Pathway Session: Using Performance Expectations to Plan for Classroom Assessments (p. 126)
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Informal Science Education: Thursday

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Day	Time	Room Number 402A	Room Number 402B
THURSDAY 3/30	8:00–9:30 a.m.	Integrating Chromebook™ with Vernier Technology	Renewable Energy with KidWind and Vernier
	10:00–11:30	Biology with Vernier	Integrating iPad® with Vernier Technology
	12:00–1:30 p.m.	Chemistry with Vernier Using Chromebook	Physics with Vernier
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	4:00–5:30	Chemistry with Vernier	STEM / Engineering Activities using Vernier Sensors with Arduino™
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