WEDNESDAY & THURSDAY, MARCH 11 & 12

NATIONAL CONFERENCE *on* SCIENCE EDUCATION

CHICAGO

MARCH 12–15, 2015

#NSTA15

VOL. 1
GENERAL INFORMATION

NSTA National Science Teachers Association
#NSTA15

DISCOVER

Destination: Success™

Let USciences guide you to your rewarding future

USciences' Destination: Success™ is a unique educational platform that helps students discover their "perfect fit" career in the sciences or health professions.

Extensive, intensive, and customized, Destination: Success™ facilitates the USciences journey through:

- **Expanded advising:** Guided by multiple advisors, students can discover other options and confirm that they are on the right path.
- **Flexible curricula:** Students can transition smoothly between majors and programs that fit their goals and strengths, and typically graduate on schedule.
- **Hands-on experiential learning:** Students can begin research as early as the first year, with internships, and professional shadowing opportunities to reinforce and strengthen their experience.
- **"Early Assurance" seats:** Through USciences' articulation relationships, students have access to reserved seats in professional programs at USciences, and 8 other partner institutions leading to degrees in Medicine, Dentistry, Veterinary Medicine, Optometry, Physical Therapy, Occupational Therapy and more.

To learn more, visit
usciences.edu/DestinationSuccess/NSTA

USciences
University of the Sciences

Where healthcare and science converge.

Biotechnology Explorer™

CAPTIVATING SCIENCE EDUCATION

Fish DNA Barcoding Kit

Visit Us at Booth #847

Free hands-on workshops! Having a hard time infusing student-driven inquiry and creating current context and relevance for your labs? Join us for rich discussion and **hands-on learning** around **student-centered learning experiences** in the biology classroom. We have the tools and support to help you make it happen. Join us for fun new workshops!

For more information on workshop descriptions and schedules, visit us at **explorer.bio-rad.com/workshops**.

NSTA Chicago Workshop Schedule

Join us in rooms W474 A and B for our workshops.

Thursday, March 12

8:30–10:00 AM	***How to Integrate Inquiry into Your AP Biology Course*** *(AP Big Idea 3)*
9:00–11:00 AM	***The GMO Debate Rages On!***
10:30 AM–Noon	***Contagion! Track Dangerous Viruses Spreading across the Country***
1:00–2:30 PM	***DNA Detectives: Who Killed Jose?***
2:00–3:30 PM	***How to Use Pop Culture Science in Your Classes***
3:30–5:00 PM	***Explore Molecular Evolution Using Protein Electrophoresis*** *(AP Big Ideas 1, 3, 4)*

Friday, March 13

8:00–9:30 AM	***Identify Patient Zero of a Zombie Apocalypse***
8:00–9:30 AM	***How to Integrate Inquiry into Your AP Biology Course*** *(AP Big Idea 3)*
10:00–11:30 AM	***Are Worms Smarter than Your Students?*** *(AP Big Ideas 1, 2, 3, 4)*
10:00–11:30 AM	***Communicating Science through Lab Notebooking***
1:00–2:30 PM	***How to Use Pop Culture Science in Your Classes***
1:00–4:00 PM	***Choose Your Own Adventure in the Explorer Room!***

Saturday, March 14

8:00–9:30 AM	***Science, Fashion, and Fun! Genes in a Bottle™ Kit***
10:30 AM–Noon	***NGSS in the High School Biology Classroom***

Visit us on the Web at **explorer.bio-rad.com**
Call toll free at 1-800-424-6723;
outside the U.S., contact your local sales office.

BIO-RAD

NSTA 63rd National Conference on Science Education

Chicago: Great Lakes/Great Ideas

Chicago, Illinois • March 12–15, 2015

Volume 1 Wed., March 11/Thu., March 12

Volume 2 Fri., March 13

Volume 3 Sat., March 14 /Sun., March 15

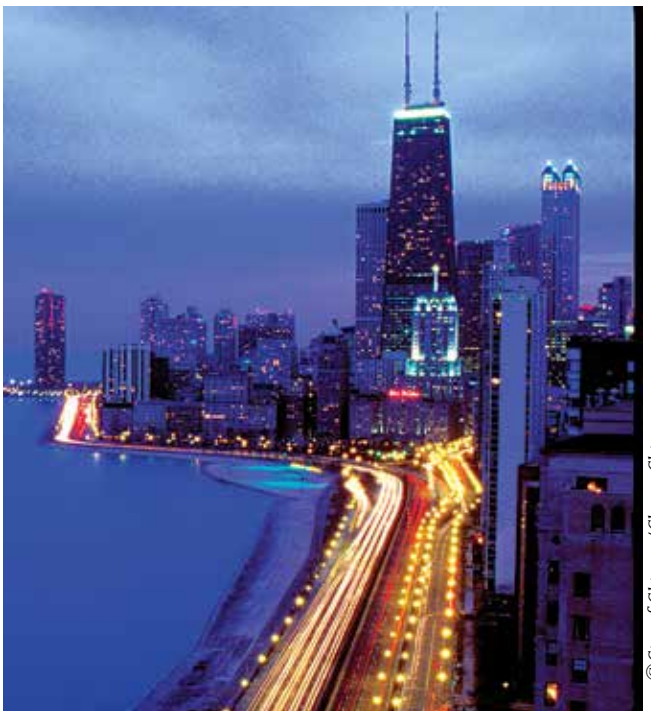
Volume 4 Exhibitors

Cover photo credit:
Thinkstock

Mission Statement

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

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



©City of Chicago/Choose Chicago

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)

The environment is important to science educators. These programs are recyclable and were printed on recycled paper.

Sponsors and Contributors to the Chicago Conference

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

Sponsors

Carolina Biological Supply
Discovery Dome
Educational Innovations, Inc.
ExxonMobil
FOSS and Delta Education
GEICO
HHMI BioInteractive
Illinois Science Teachers Association
It's About Time
Kemtec
LAB-AIDS®, Inc.
National Geographic Learning/Cengage Learning
Northrop Grumman Foundation
PASCO scientific
Pearson
Royal Society of Chemistry
Shell
Southwest Airlines
TCI
Texas Instruments
University of Nebraska–Lincoln Center for Science, Mathematics & Computer Education
Ward's Science

Contributors

Adler Planetarium
American Geophysical Union
Brandwein Institute
Brookfield Zoo/Chicago Zoological Society
Chicago Park District
Illinois Dept. of Natural Resources
Illinois Museum of Surgical Science
Illinois State Geological Survey
National Middle Level Science Teachers Association
NOAA
The Planetary Society

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

Educators Are Natural Builders

Every day we craft learning environments, help students construct ideas, and design bridges to the future. We usually do it as members of a team, supported by fellow teachers, administrators, and entire communities—drawing energy from the synergy that is created when we join our efforts. Together, we erect the foundation of a better world.

There is no better place for educators to design, construct, connect, and create than Chicago! Carl Sandburg called this place "The City of the Big Shoulders," a town whose labor supports the economy of the whole nation. This 2015 National Conference on Science Education brings together educators from every corner of the nation and beyond to celebrate our profession and define new paths to the future. We come to learn and to explore—and will leave with building blocks to a better future.

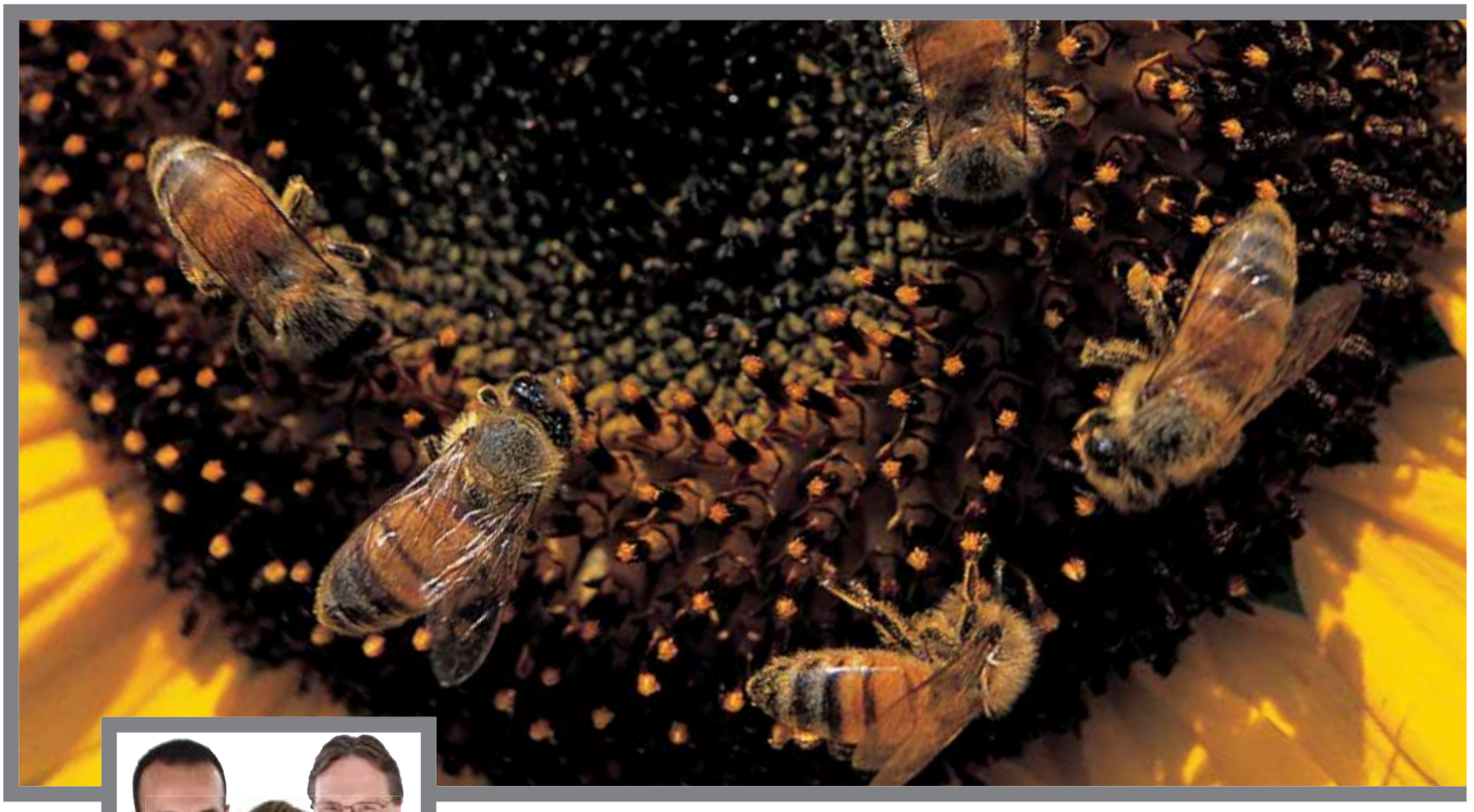
The outstanding conference team has identified four key strands. Sessions will explore partnerships between formal and informal education institutions that explore and protect the nation's natural resources. Presenters will share methods that can identify and provide opportunities for diverse learners; successful methods, materials, facilities, and partnerships will be the focus of many sessions. And for the first time, the science of design has been identified as a key strand in science education. Following the model of the *NGSS*, many sessions will focus on the interface between science and engineering. Our host city of Chicago represents a prime example of how structure and function interact in the science of design. Sessions on architecture and engineering illustrate crosscutting concepts and the "problem-solving focus" of today's science education.

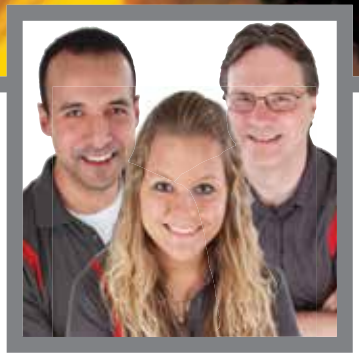
This year, NSTA has a theme of "Breaking Down Walls." We are working to build bridges to those who have the same vision. Another first for this conference is the recognition that teams matter! There are special rates and special designs for participation for districts that send both their science teachers and administrators. To those principals and coordinators who are first-time participants as well as representatives of partner groups, we offer a special welcome.

Dig in! Begin by exploring this rich, multidimensional program. Use the paper version or your app to identify the richest path for your participation. Then chart a course that will help you to succeed in your goals But don't miss the serendipitous opportunity to communicate with the educator you meet on the shuttle bus, in a coffee shop, or a hotel lobby. There are rich resources to mine all over Chicago.

Use your involvement this week to strengthen the foundation you have already built. Share what you learn with the educators back home. Above all, have a Great Time at the Great Lakes. NSTA, Chicago, and the nation's science teachers welcome you to "Sweet Home Chicago."

Juliana Texley
2014–2015 NSTA President





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

Connect with Ward's Science in Booth #830

Product Demos, Plus FREE In-Booth Workshops and Science Giveaways

Meet the **Ward's Science Plus Us** team of science and education experts, attend hands-on workshops and special events, and enter to win free science prizes in our booth.

- Hands-on science for every subject and grade level
- See the latest tools for your classroom and win FREE science prizes in our booth
- Workshops available all day Thursday, Friday and Saturday in our booth and in McCormick Place Room #W192B

For complete workshop schedule and details, visit wardsci.com/conference

ward's science

Welcome: Chicago: Great Lakes/Great Ideas


Wendy M. Jackson


Natacia Campbell


Judith Scheppler

Welcome to Chicago for the 2015 NSTA National Conference on Science Education. This is a city of Greats—great people, great neighborhoods, great food, Great Lakes, and Great Ideas in science teaching and learning!

We have designed a program to inspire, challenge, and stimulate your teaching and learning so that you can begin to fully realize the potential of the *Next Generation Science Standards*, and provide a high-quality science education for all students, regardless of background, ability, grade level, or school.

Our four strands deliberately target key themes in STEM education, and our featured speakers bring a wealth of knowledge and perspectives to you.

- Natural Resources, Natural Partnerships
- Teaching Every Child by Embracing Diversity
- The Science of Design: Structure and Function
- Student Learning—How Do We Know What They Know?

This conference offers numerous presentations, workshops, field trips, short courses, and exhibits for all learner levels and disciplines, so there are many opportunities for attendees to engage with colleagues and to explore ideas and strategies. We also encourage you to visit the many museums and cultural institutions in and around Chicago that support learning about science by both children and adults.

We are especially proud that Chicago's very own Dr. Neil Shubin will be our keynote speaker! Dr. Shubin, professor of Organismal Biology and Anatomy at the University of Chicago, and host of the PBS show *Your Inner Fish*, is sure to amaze and delight as he tells the story of our fishy origins.

We look forward to meeting you and discussing critical issues in STEM education. While we can't make any promises about the weather in Chicago in March, we can promise that the conference will be invigorating, informative, renewing, and full of Great Lakes/Great Ideas!

2015 Chicago Conference Committee Leaders
Wendy M. Jackson, Natacia Campbell, and Judith Scheppler

Conference Chairperson

Wendy M. Jackson
Project Director, STEM Center
DePaul University
990 W. Fullerton, Suite 4400
Chicago, IL 60614
wjackso7@depaul.edu

Program Coordinator

Natacia Campbell
Division Chair for Science, Applied Technology, and Family & Consumer Sciences
Victor J. Andrew High School
9001 W. 171st St.
Tinley Park, IL 60487
ncampbell@d230.org

Local Arrangements Coordinator

Judith Scheppler
Coordinator of Student Inquiry and Research
Illinois Mathematics and Science Academy
1500 Sullivan Rd.
Aurora, IL 60506
quella@imsa.edu

Program Committee

Program Representative
Harry Hendrickson
Executive Director
Illinois Science Teachers Association
Rochester, IL

Strand Leaders: Natural Resources, Natural Partnerships
Wendy M. Jackson

Dana Birch
Science Teacher
Victor J. Andrew High School
Tinley Park, IL

Strand Leaders: Student Learning—How Do We Know What They Know?
Natacia Campbell

Carol Baker
NGSS Writer
Curriculum Director of Science & Music
Community High School Dist. 218
Oaklawn, IL

Strand Leaders: The Science of Design: Structure and Function
Eric Brunsell
Program Representative
Associate Professor
University of Wisconsin
Oshkosh, WI

Scott Schaefer
Science Teacher
D.C. Everest Middle School
Weston, WI

Strand Leaders: Teaching Every Child by Embracing Diversity
Carolyn Hayes
Program Representative
NSTA President-Elect
Director, Student Assessment
Indiana University
Indianapolis, IN

Rita Januszyk
NGSS Writer
Teacher
Gower West Elementary School
Dist. 62
Willowbrook, IL

Local Arrangements Committee

Field Trips Manager
Michelle Kolar
Executive Director for Professional Field Services
Illinois Mathematics and Science Academy
Aurora, IL

Guides Manager
Sarah O'Leary Driscoll
Science Teacher
Illinois Mathematics and Science Academy
Aurora, IL

Manager of Services for People with Special Needs
Dora Phillips
Director of Statewide Educator Initiatives
Illinois Mathematics and Science Academy
Aurora, IL

Volunteers Manager
Hethyr Tregerman
Lead Instructional Coach
Loyola University, CSME
Chicago, IL

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. Brief conference previews allow us to be more focused in our conference content, since each preview is specific to a particular conference. As an added bonus, they are more environmentally friendly, as they dramatically reduce 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.

Recycled Paper and Sustainable Print Services

Conference previews and final conference programs are generally printed on recycled paper. In addition, Walsworth Print Group, the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth Print Group works to reduce and recycle waste, use reduced or low-VOC chemicals, increase the recycled content of raw materials, and use soy- and/or vegetable-based inks. Walsworth Print Group has also obtained chain-of-custody certification for paper products to ensure they 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 waste baskets. 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.

Final Conference Programs by E-Mail

Conference registrants are now given the option of receiving an electronic version (PDF) of the final conference program by e-mail approximately two weeks 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.

Green Initiatives at McCormick Place

McCormick Place is committed to green initiatives designed to conserve energy, protect vital resources, and promote ecologically-efficient policies and procedures. Current green initiatives include:

- **Rooftop Garden.** The 2.5 acre garden atop McCormick Place is the Midwest's largest rooftop garden producing seasonal harvests that yield 8,000 lbs. of farm-fresh plenty including beets, kale, carrots, lettuce, peppers, beans, and herbs. The rooftop garden is also home to 20,000 honey bees in three hives that produce 50 lbs. of honey a year and 2,000 Red Wiggler worms that create 200 lbs. of vericompost annually. SAVOR...Chicago has partnered with the Chicago Botanic Garden to plant this garden as part of its ongoing mission to promote local sustainable agriculture and train city residents for careers in urban agriculture.
- **Energy Conservation.** McCormick Place has committed to offsetting 100% of its electricity usage with clean, affordable wind energy. In total, McCormick Place will purchase an estimated 130 million kilowatt-hours of wind power each year over the course of a three-year REC purchase program provided by Sterling Planet.
- **LEED Certification.** The McCormick Place West Building has attained LEED Certification (Leadership in Energy and Environmental Design) from the U.S. Green Build Council. The West Building is the largest new-construction facility in the country to be certified.

"Go Green" at the Chicago Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout McCormick Place.
- 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.
- Use double-sided printing and/or recycled paper for session handouts and other conference materials.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the conference.
- Evaluate sessions attended online.

©Choose Chicago

Meeting Location and Times

The conference headquarters hotels are the Hyatt Regency McCormick Place and Palmer House Hilton. Conference registration, the exhibits, and the NSTA Science Store will be located at McCormick Place. Most sessions will be held at McCormick Place and the Hyatt Regency McCormick Place; and short courses will be held at Palmer House Hilton.

The conference will begin on Thursday, March 12, at 8:00 AM and end on Sunday, March 15, at 12 Noon.

Registration

Registration is required for participation in all conference activities and the exhibits. The lapel badge 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, field trips, networking events, etc.).

The NSTA Registration Area, located in Hall F2 of McCormick Place, will be open during the following hours:

Wed., March 11	5:00–8:00 PM
Thu., March 12	7:00 AM–6:00 PM
Fri., March 13	7:00 AM–5:00 PM
Sat., March 14	7:00 AM–5:00 PM
Sun., March 15	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 Chicago Conference Committee has scheduled a variety of ticketed events (e.g., professional development institutes, short courses, field 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 58) for details. Note that some events may have required advance registration.

Conference Hotels/Housing Bureau

See pages 14–15 for a list of hotels and a map of the downtown area. A Housing Bureau representative will be available at the Information/Housing Kiosk during registration hours 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 Chicago conference attendees. Visit *www.nsta.org/chicagotravel* for details.

©Choose Chicago

Ground Transportation to/from Airport

Three airport options *(www.flychicago.com)* are available:

- **Chicago Midway International Airport (MDW)** is located 11 miles from McCormick Place. Travel to the McCormick Place takes approximately 25 minutes.
- **O'Hare International Airport (ORD)** is located 25 miles from McCormick Place. Travel to McCormick Place takes approximately 45 minute
- **Gary/Chicago International Airport (GYY)** is located 30 miles from McCormick Place. Travel to McCormick Place takes approximately 40 minutes.

Taxi fares are based on traffic conditions, but an average fare from O'Hare to downtown Chicago ranges from $30 to $40. For current fare information, go to *bit.ly/1tovfR9*.

Shared ride service is available to those who wish to share a ride and pay a flat rate to certain destinations if multiple parties are available for the trip. Shared ride fares include:

- From O'Hare Airport to Downtown/McCormick Place ($24 per person)
- From Midway Airport to Downtown/McCormick Place ($18 per person)

BOOK NOW & SAVE!
GO Airport Express
THE ONLY WAY TO GO

GO Airport Express is offering a reduced fare special for NSTA conference attendees from O'Hare and Midway Airports to downtown Chicago hotels. Save 66% over the cost of a taxi.

Efficient, safe, and economical airport shuttles depart from O'Hare and Midway Airports every 15 minutes.

You can only enjoy these special rates through this reservation portal: go to *bit.ly/1BJaEhV* to make your airport shuttle reservation/s.

Special Offer for NSTA Conference Registrants

Photo courtesy of © City of Chicago/Choose Chicago

ADLER PLANETARIUM

National Science Teachers Association NSTA

Attention Chicago conference-goers
Enjoy complimentary general admission plus one planetarium show to

Adler Planetarium

www.adlerplanetarium.org

on the following days:

- **From Wednesday, March 11, through Tuesday, March 17**

(*Does not include admission to special ticketed events outside of normal visitor hours.)

Show your NSTA badge for complimentary general admission plus one planetarium show March 11–17 at Adler Planetarium—offered exclusively to NSTA Chicago Conference registrants. Adler Planetarium, located on Chicago's beautiful Museum Campus, is America's first planetarium and a premier resource for inspiring the next generation of space explorers.

Getting Around Town

Located on Level 2.5 of the Grand Concourse in the South Building of McCormick Place, the METRA Electric commuter railroad (*metrarail.com*) provides direct service within seven minutes to and from downtown Chicago. Service from the Randolph Station (near the Fairmont Hotel) to McCormick Place begins early morning, with more frequent pickups during rush hours. Shuttle connections (via CTA bus) can be made to the METRA system at Chicago Union Station, Ogilvie Transportation Center, and LaSalle Street Station. METRA services the Midwest as far north as Kenosha, Wisconsin; northwest to Fox Lake and Harvard; west to Elgin, Geneva and Aurora; southwest to Joliet and Orland Park; south to University Park; and east to South Bend, Indiana. Metra/CTA Bus Map.

Getting to McCormick Place is also possible by using the city transit system. The Chicago Transit Authority (*www.transitchicago.com*) provides the following bus service and runs approximately every 15 minutes. Drop off is located at the main entrance to the South Building on Martin Luther King Drive. It's easy to pay your fare. On buses, you pay as you enter the bus using a Ventra Card. Please visit the Chicago Transit Authority "CTA Fares & Tickets" page for a complete listing of payment card options and fares available to you: *www.transitchicago.com/fares/*. The #3 King Drive bus and the #21 Cermak bus make stops at McCormick Place.

Parking

Lot A (8' height clearance) is a six level garage with 2,100 parking spaces located on Martin Luther King Drive, adjacent to McCormick Place. Covered walkways from Lot A leading directly into McCormick Place and the Hyatt Regency McCormick Place Hotel also provide added convenience. The parking rate is $21 for up to 16 hours and $34 from 16 to 24 hours. *Note:* There are no in-and-out privileges. Overnight parking is available in Lot A only. Lost tickets will pay the $34 (overnight) fee per day. For driving directions and a parking map, visit *bit.ly/14ARVIh*.

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."*

CHICAGO
MARCH 12–15, 2015
NSTA NATIONAL CONFERENCE ON SCIENCE EDUCATION

National Science Teachers Association

Shuttle Service to McCormick Place West

Shuttle service is provided between McCormick Place West and the official NSTA hotels listed below. 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 310-274-8819 ext. 219.

Shuttle provided by KUSHNER & ASSOCIATES Meeting and Convention Transportation 310.274.8819

Hotels and Boarding Locations

All routes board at McCormick Place West Gates 43-44

The Hyatt McCormick Place is within walking distance of McCormick Place West and is not part of the shuttle service (*with the exception on March 13 Shell Reception, Teacher Awards Gala and Presidents Mixer at the Palmer House Hilton)

ROUTE 1 Hilton Chicago	**Boarding Location** Curbside on 8th St.
ROUTE 2 Palmer House Hilton	**Boarding Location** Curbside on Wabash Ave
ROUTE 3 Westin River North Sheraton Chicago Hotel & Towers	**Boarding Location** Across street on Clark St. Curbside on Columbus Dr.
ROUTE 4 Westin Michigan Ave.	**Boarding Location** Across Street on Delaware
ROUTE 5 Fairmont Chicago, Millennium Park Hyatt Regency Chicago Swissotel	**Boarding Location** At Hyatt Regency Chicago Curbside on Wacker Dr. At Hyatt Regency Chicago

Hours of Shuttle Operation

Peak Service: Shuttles depart every 20 minutes
Off-peak Service: Shuttles depart every 20-30 minutes

Wednesday, March 11

Professional Development Institute (PDI) Shuttle between Hotels and McCormick Place West	Off-peak:	7:00 – 10:00 AM
PDI's 1-6 (ticket required)		
Global Conversations, Welcome to My Classroom (W-1) Field Trip will have two bus-loading options – Hyatt McCormick Place (lobby): 6:30 AM, Palmer House (lobby): 6:45 AM (ticket required)		
(No shuttle service for all hotels		*10:00 AM – 4:30 PM)*
Conference Shuttle between McCormick Place West and Hotels	Off-peak:	4:30 – 9:30 PM *

Thursday, March 12

Conference Shuttle between Hotels and McCormick Place West	Peak:	6:30 – 10:00 AM
Short Course Shuttle between Palmer House Hilton and McCormick Place West	Off-peak:	12:00 – 4:00 PM ◆
(No shuttle service at other hotels		*10:00 AM – 4:00 PM)*
Conference Shuttle between McCormick Place West and Hotels	Peak:	4:00 – 8:00 PM *

Friday, March 13

Conference Shuttle between Hotels and McCormick Place West	Peak:	6:30 – 9:30 AM
Short Course Shuttle between Palmer House Hilton and McCormick Place West	Off-peak:	10:30 AM – 1:30 PM ◆
(No shuttle service at other hotels		*9:30 AM – 3:30 PM)*
Conference Shuttle between McCormick Place West and Hotels	Peak:	3:30 – 7:30 PM *
Conference Shuttle between Hotels and Palmer House Hilton	Off-peak:	3:30 PM – 12:30 AM **

Note: Shell Reception (invite only) is at the Palmer House Hilton 5:00 PM to 5:45 PM
NSTA Teacher Awards Gala M3 *(ticket required)* is at the Palmer House Hilton 6:00 PM to 8:45 PM
President's Mixer (open to all) is at the Palmer House Hilton 9:00 PM to 12 Midnight

Saturday, March 14

Conference Shuttle between Hotels and McCormick Place West	Peak:	6:30 – 9:30 AM
Short Course Shuttle between Palmer House Hilton and McCormick Place West	Off-peak:	12:00 – 4:00 PM ◆
(No shuttle service at other hotels		*9:30 AM – 4:00 PM)*
Conference Shuttle between the McCormick Place West and Hotels	Peak:	4:00 – 8:00 PM *
Conference Shuttle between Hotels and Hyatt McCormick Place	Off-peak:	8:00 – 11:00 PM **

Sunday, March 15

Conference Shuttle between Hotels and McCormick Place West	Off-peak:	7:30 AM –12:30 PM *

*** This is the time the last shuttle from McCormick Place departs for the hotels. Last shuttle from hotels departs one hour prior.**

**** This is the time the last shuttle from Hyatt McCormick or Palmer House departs for the hotels. Last shuttle from hotels departs one hour prior.**

◆This is the time the last Short Course shuttle from Palmer House Hilton departs for the McCormick Place

10 REASONS TO BECOME AN NSTA MEMBER

#1.
20% savings on NSTA Press® books

#2.
Customized lesson plans

#3.
Member-only journals

#4.
Network with teachers nationwide

#5.
Unlimited access to journal articles

#6.
16 vibrant listservs

#7.
Discounts on NSTA Conferences

#8.
Countless NGSS@NSTA resources

#9.
Online learning

#10.
Professional development opportunities year-round

For more information or to become a member,
www.nsta.org/membership or call 1.800.722.6782

National Science Teachers Association

Registration, Travel, and Hotels

—Courtesy of ©City of Chicago/Choose Chicago

NSTA Conference Hotels

Numbers correspond to map on facing page.

1. Fairmont Chicago Millennium Park
   200 N. Columbus Dr.
   312-565-8000

2. Hilton Chicago
   720 S. Michigan Ave.
   312-922-4400

3. Hyatt Regency Chicago
   151 E. Upper Wacker Dr.
   312-565-1234

4. Hyatt Regency McCormick Place
   Co-Headquarters Hotel
   2233 S. Dr. Martin Luther King Jr. Dr.
   312-567-1234

5. Palmer House Hilton
   Co-Headquarters Hotel
   17 E. Monroe St.
   312-726-7500

6. Sheraton Chicago Hotel & Towers
   301 E. North Water St.
   312-464-1000

7. Swissôtel Chicago
   323 E. Upper Wacker Dr.
   312-565-0565

8. The Westin Chicago River North
   320 N. Dearborn St.
   312-744-1900

9. The Westin Michigan Avenue Chicago
   909 N. Michigan Ave.
   312-943-7200

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 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. A map display of the Exhibit Hall will be on-site in Attendee Registration and in the Exhibit Hall, and maps will be accessible via our Conference app (see page 18). 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 F2 at McCormick Place.

Exhibit Hall Hours. Located in Hall F2 of McCormick Place, exhibits will be open for viewing during the following hours:

Thu., March 12	11:00 AM–6:00 PM
Fri., March 13	9:00 AM–5:00 PM
Sat., March 14	9:00 AM–3:00 PM

Did you know that NSTA offers Exclusive Exhibit Hall hours—Thursday, 11:00 AM–12:30 PM? During this time, there are no sessions or workshops scheduled and 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 171.

NSTA Expo

Stop by the NSTA Expo to learn about NSTA's benefits, services, programs, and partners…all created for you! Share with others, expand your knowledge, and earn rewards for you and your students.

NSTA Science Store

Visit us at the NSTA Science Store to explore an incredible array of exclusive products 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 pencils. We also offer convenient free shipping when you place your order online from the store! We've lined up a number of unique opportunities for conference-goers:

- Exclusive author signings and meet-and-greet opportunities
- Our latest books—*The BSCS 5E Instructional Model; Earth Science Success, 2nd Edition*; *Reimagining the Science Department*; and *Teaching for Conceptual Understanding in Science*—and our new children's books from NSTAKids, including the *Next Time You See* series
- "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 for all attendees
- Daily book and gear specials, product giveaways, and more

ISTA Booth

The Illinois Science Teachers Association (ISTA) booth is located in Hall F2 at McCormick Place. Stop by for information on how to receive ISBE-approved professional development credit for service hours, as well as the benefits of becoming a member of ISTA. Membership forms and information on association activities will be also available.

Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at *www.surveymonkey.com/s/KTT62NB*

Wi-Fi at McCormick Place

Free wireless internet intended for light web browsing is available throughout McCormick Place, including the meeting rooms, public spaces, and food pod areas. There is no code to access.

First Aid Services

The First Aid Room is located on Level 1 near Gate 43/44 of McCormick Place West. Look for the red cross. In case of emergency, call Building Security at 312-791-6060. A lactation room is also available.

Lost and Found

All lost-and-found items at McCormick Place 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.

Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in and pick up your ribbon at the Presenters/Presiders booth in the Registration Area after you have registered for the conference and received your name badge.

NSTA International Lounge

The Michigan Room at Hyatt Regency McCormick Place 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.

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.

Graduate Credit Opportunity

Chicago conference attendees can earn one graduate-level credit hour in professional development through Framingham State University at NSTA's Chicago National Conference. Participants must attend conference sessions totaling at least 12 documented hours for one credit hour, submit a written report, and pay a fee of $129. To learn more about the assignment requirements and registration, visit *www.framingham.edu/nsta*. *Note:* Credit is by pass/fail only.

Conference Resources

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 McCormick Place, hotels, and the Exhibit Hall; Social Media plugins; and a note-taking tool. Scan the QR code or 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.

Business Services

The satellite FedEx Office Print & Ship Center℠ at McCormick Place West is located on level 2, next to the gift shop and across from the food court. For more information, call 312-949-2100 or e-mail *usa5020@fedex.com*. Hours are:

Wednesday–Saturday	8:30 AM–5:00 PM
Sunday	8:30 AM–1:00 PM

Located on the hotel's second floor, the Hyatt Regency McCormick Place's FedEx® Office offers a full-service business center. For more information, call 312-808-1826 or e-mail *usa5634@fedex.com*. Hours are:

Wednesday–Friday	7:00 AM–6:00 PM
Saturday–Sunday	7:00 AM–3:00 PM

The UPS Store at the Palmer House Hilton *(17 E. Monroe St.)* provides a full-service business center. For more information, call 312-917-1705 or e-mail *store5905@theupsstore.com*. Hours are:

Monday–Friday	6:00 AM–7:00 PM
Saturday–Sunday	8:00 AM–4:00 PM

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. Production Resource Group (PRG), the designated AV company on-site, will be located at:

McCormick Place	Room W177
	Room S4000
Hyatt Regency Palmer House	Superior Room
	Salon 10

Thursday "Meet and Greet"

Be sure to stop by Thursday from 11:05 AM to 11:30 AM at the entrance to Exhibit Hall F2 of the McCormick Place for a special session. Come "meet and greet" with your elected NSTA officers.

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 Chicago.

NSTA TV is an on-site conference television channel featuring a new episode daily, screened around McCormick Place, 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 of the Willis Tower skydeck courtesy of Adam Alexander Photography/Choose Chicago

Online Session Evaluations and Tracking Professional Development

All attendees can now 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 11–26, 2015, 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 a Kindle Fire 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 7, 2015, an attendee can view his or her transcript at the NSTA Learning Center *(learningcenter.nsta.org)* by clicking on "My PD Record and Certificates." 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.

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.*

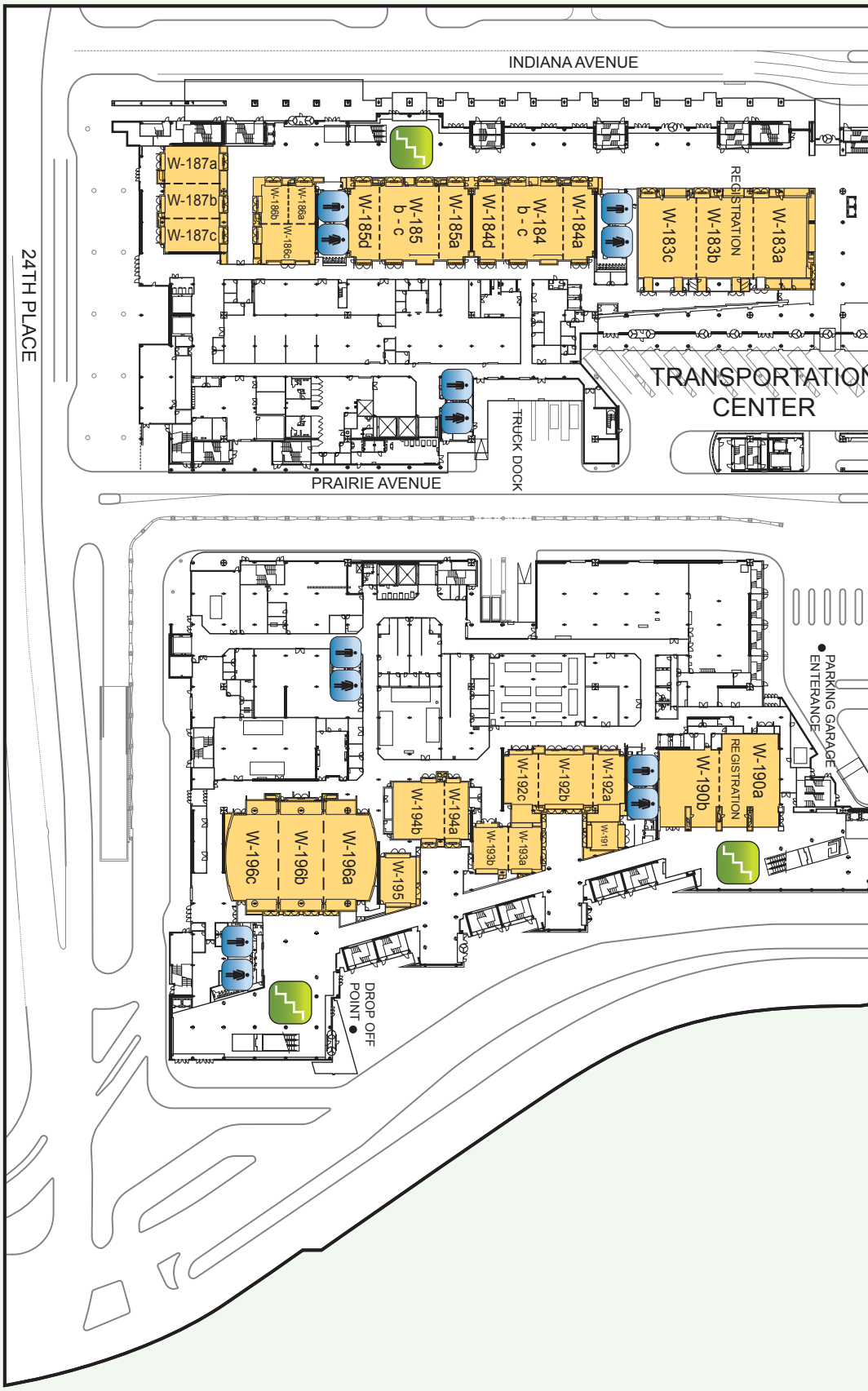
(Submitted by William Peltz)

—*Photo of Tyrannosaurus rex at the Field Museum courtesy of Choose Chicago*

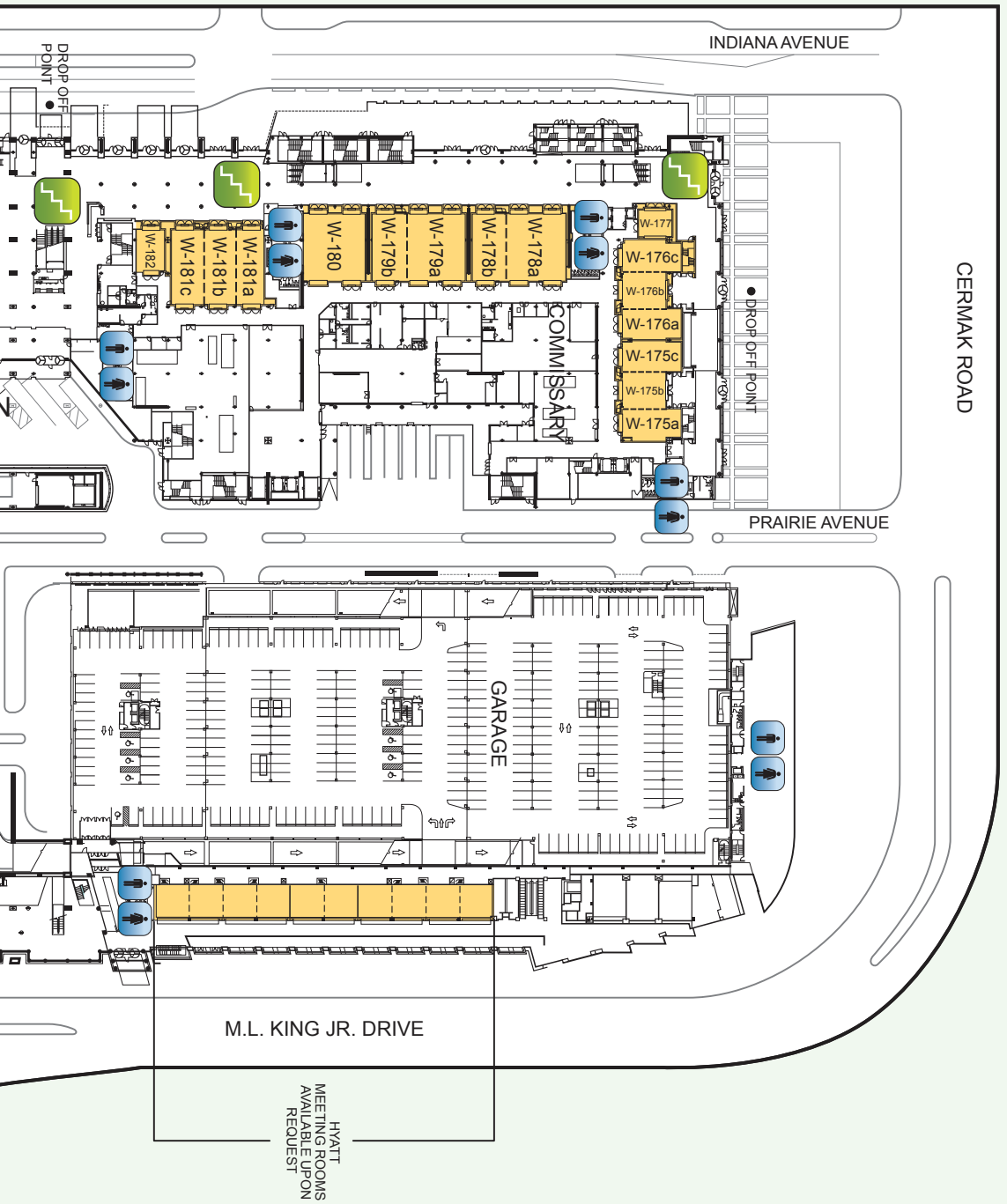
The Field Museum is home to a collection of more than 24 million specimens, with scientists adding to and accessing that collection daily. *See page 65 for an educational trip/workshop at the museum.*


FILM PREMIERE ON THE BIG SCREEN
GREAT TRANSITIONS
The Origin of Birds
The Origin of Humans
Followed by Q&A with leading scientists in vertebrate paleontology and evolutionary biology Julia Clarke and Sean B. Carroll
THURSDAY, MARCH 12 at 6PM
McCormick Place West, Skyline Ballroom W375D
Pick up your free ticket at Booth 1532 and enter to win an iPad mini.
hhmi | BioInteractive

Level 1, West

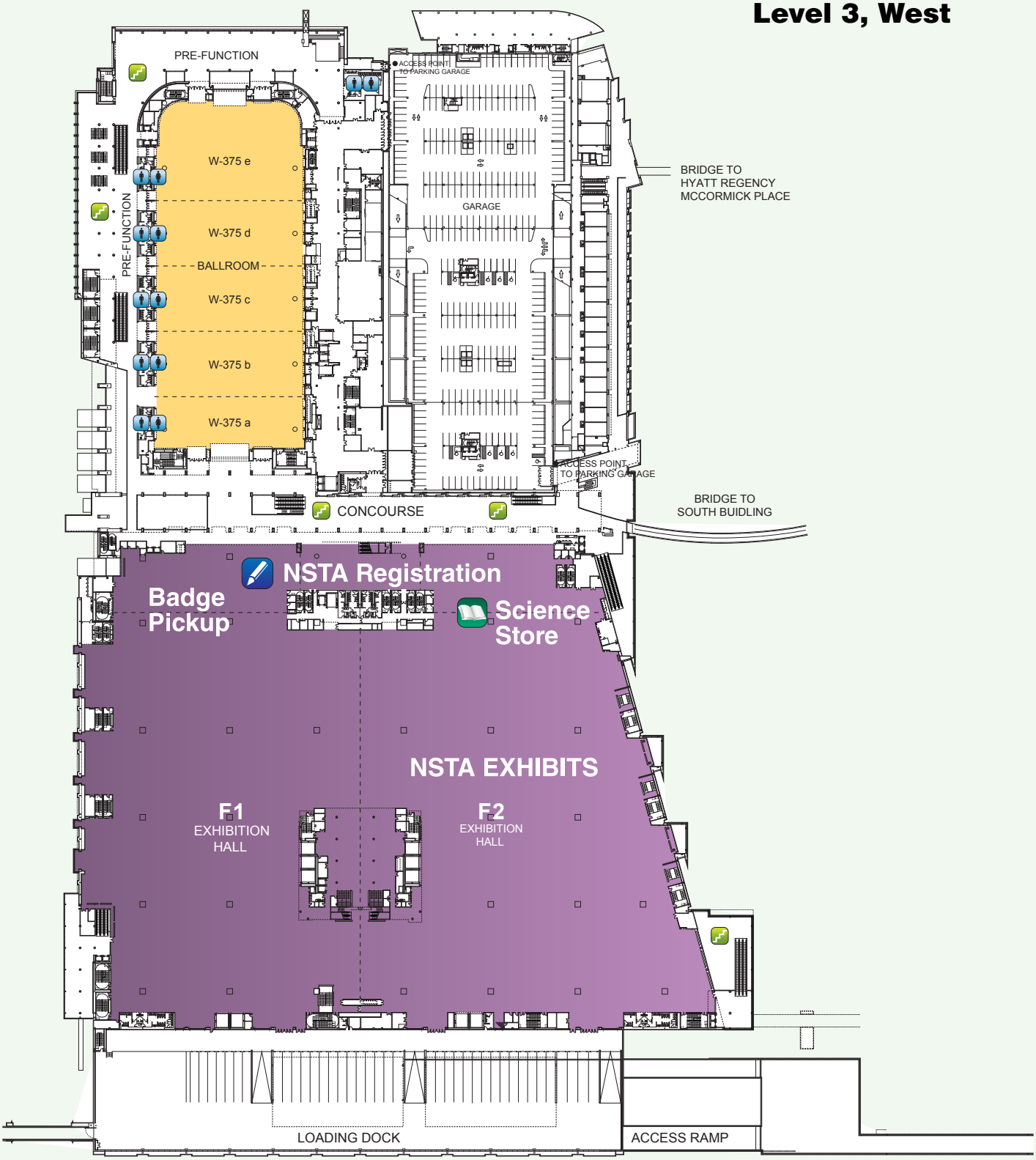

INDIANA AVENUE
24TH PLACE
PRAIRIE AVENUE
TRUCK DOCK
TRANSPORTATION CENTER
REGISTRATION
W-187a
W-187b
W-187c
W-186b
W-186a
W-185d
W-185 b - c
W-185a
W-184d
W-184 b - c
W-184a
W-183c
W-183b
W-183a
W-196c
W-196b
W-196a
W-195
W-194b
W-194a
W-193b
W-193a
W-192c
W-192b
W-192a
W-191
W-190b
W-190a
REGISTRATION
PARKING GARAGE ENTERANCE
DROP OFF POINT

ick Place

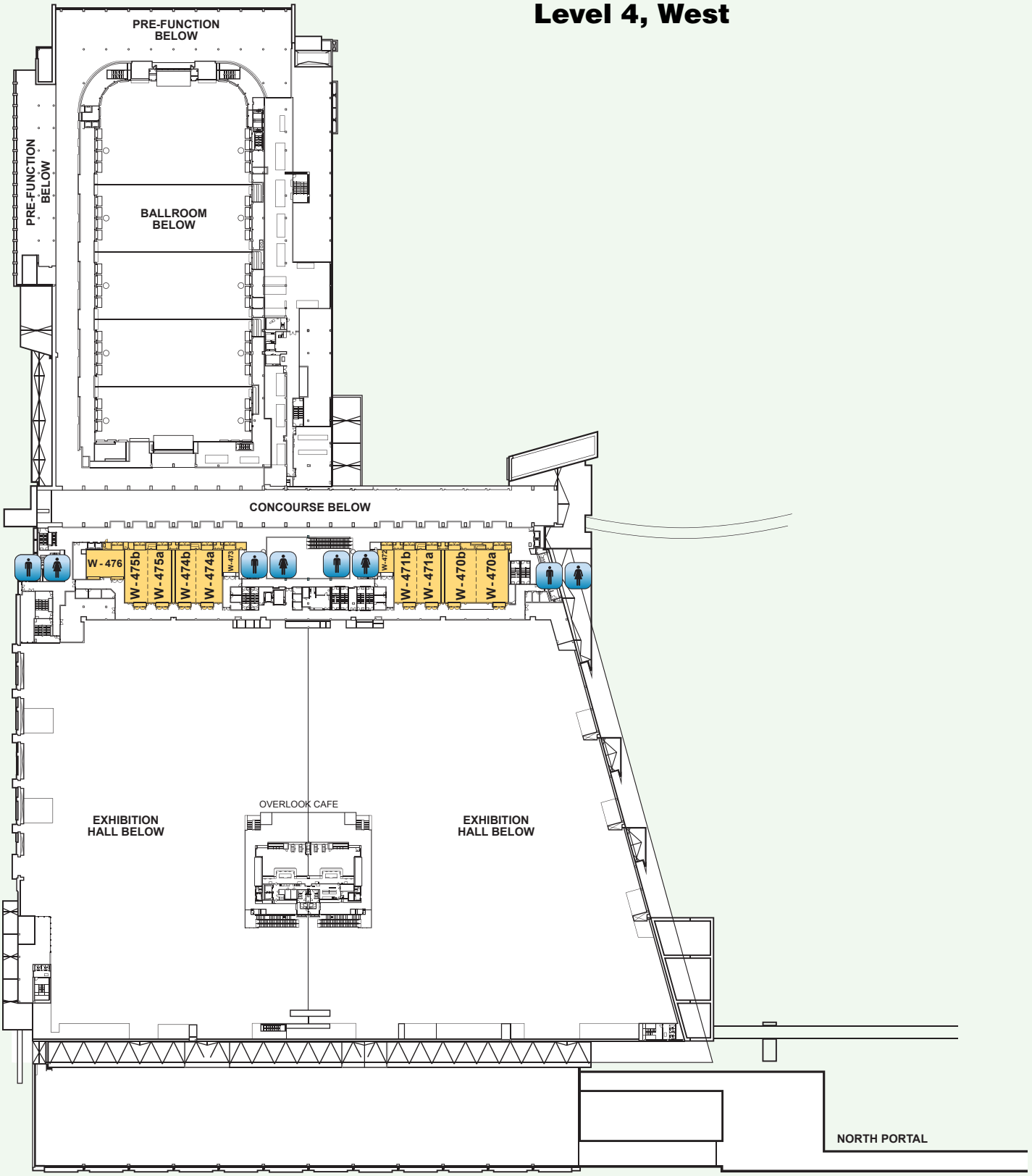

INDIANA AVENUE
DROP OFF POINT
W-182
W-181c
W-181b
W-181a
W-180
W-179b
W-179a
W-178b
W-178a
W-177
W-176c
W-176b
W-176a
W-175c
W-175b
W-175a
COMMISSARY
DROP OFF POINT
CERMAK ROAD
PRAIRIE AVENUE
GARAGE
M.L. KING JR. DRIVE
HYATT MEETING ROOMS AVAILABLE UPON REQUEST

McCormick Place

Level 3, West

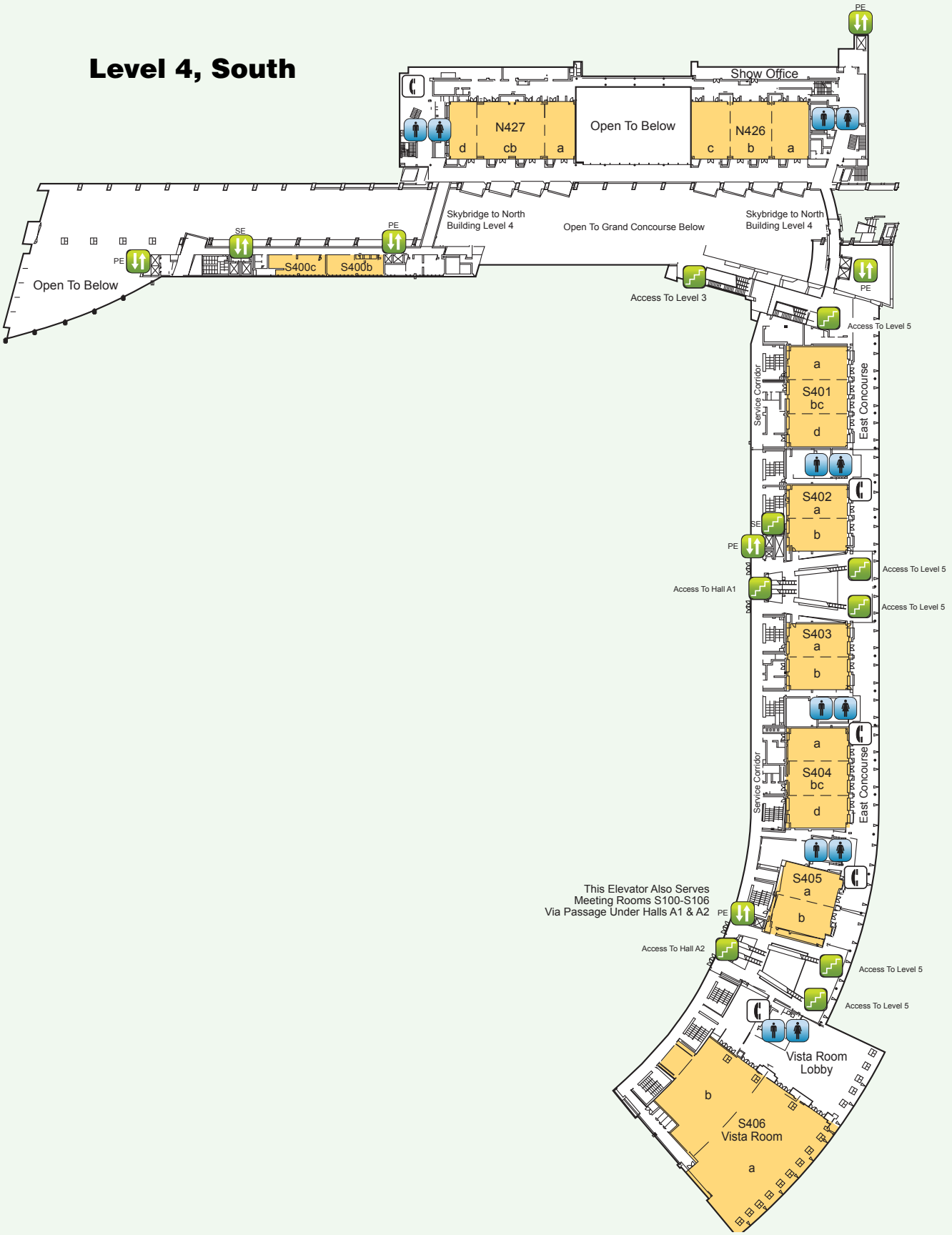


Level 4, West

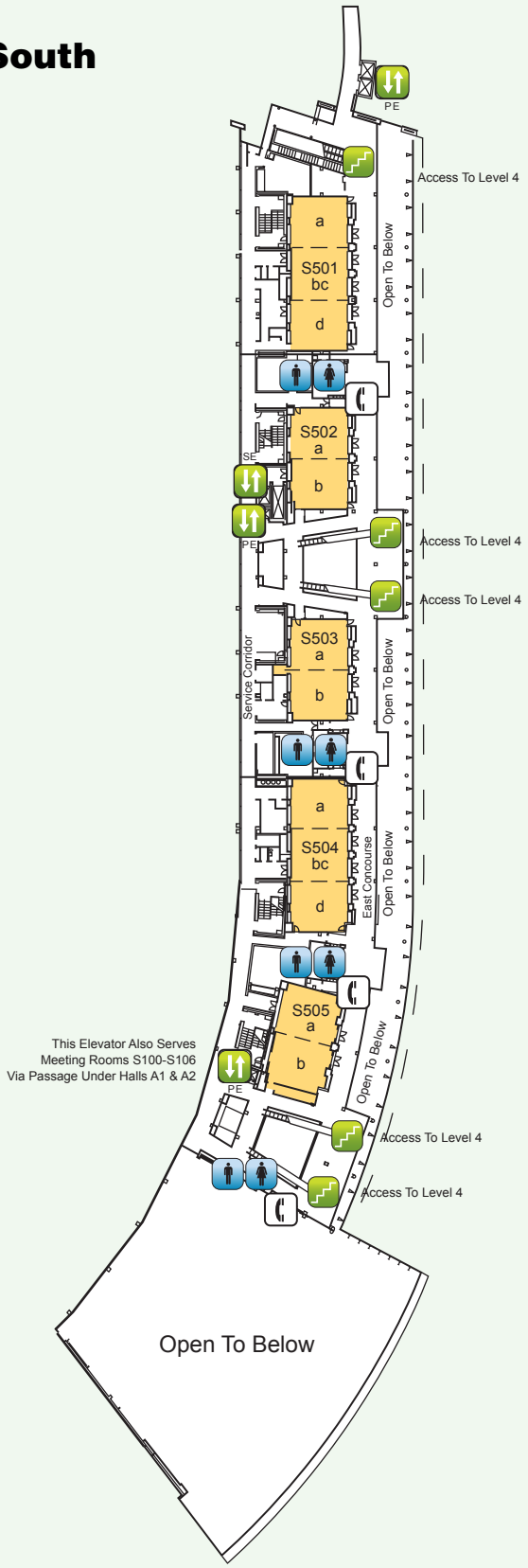

PRE-FUNCTION BELOW
PRE-FUNCTION BELOW
BALLROOM BELOW
CONCOURSE BELOW
W-476
W-475b
W-475a
W-474b
W-474a
W-473
W-472
W-471b
W-471a
W-470b
W-470a
OVERLOOK CAFE
EXHIBITION HALL BELOW
EXHIBITION HALL BELOW
NORTH PORTAL

McCormick Place

Level 4, South

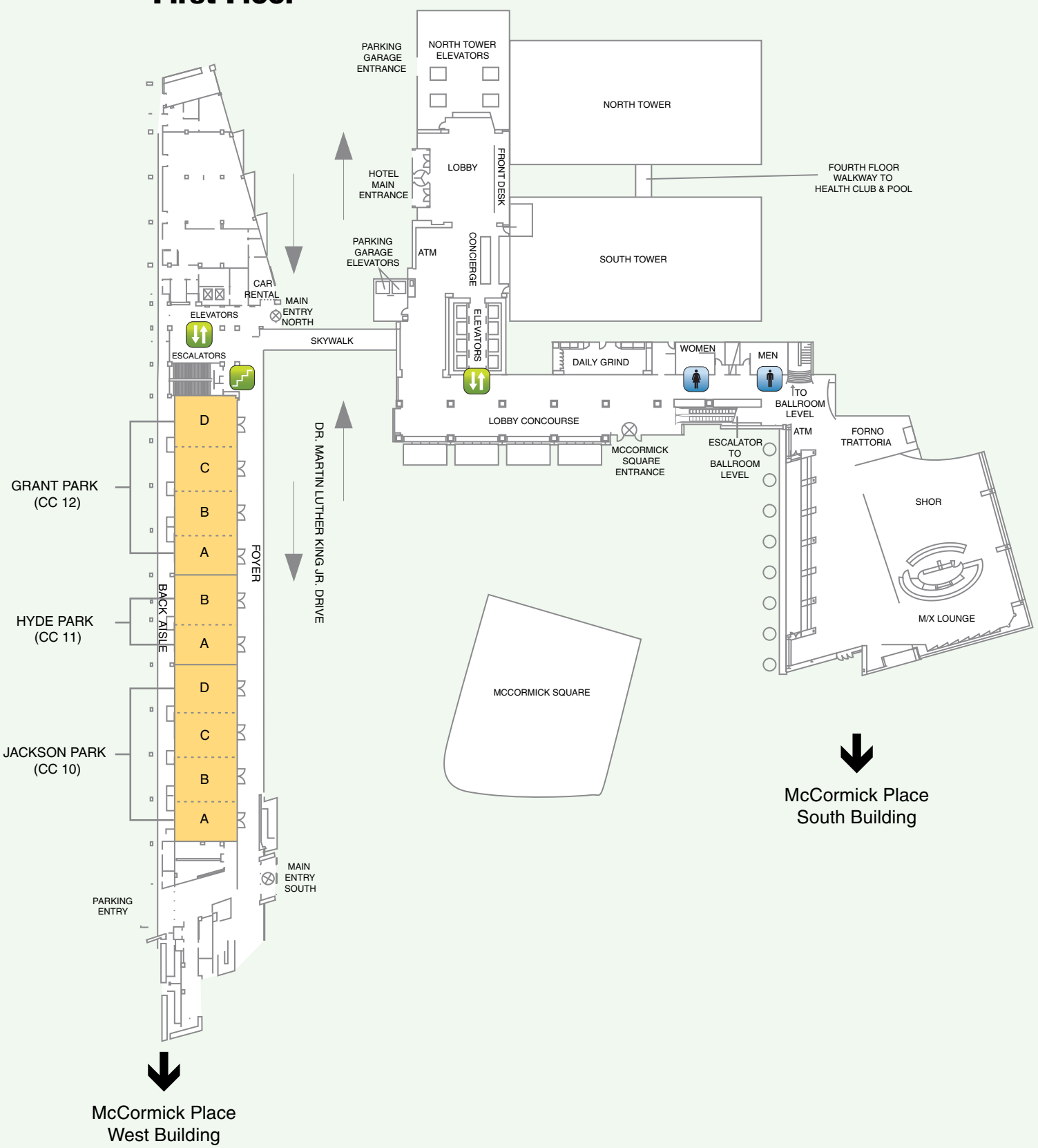


Level 5, South



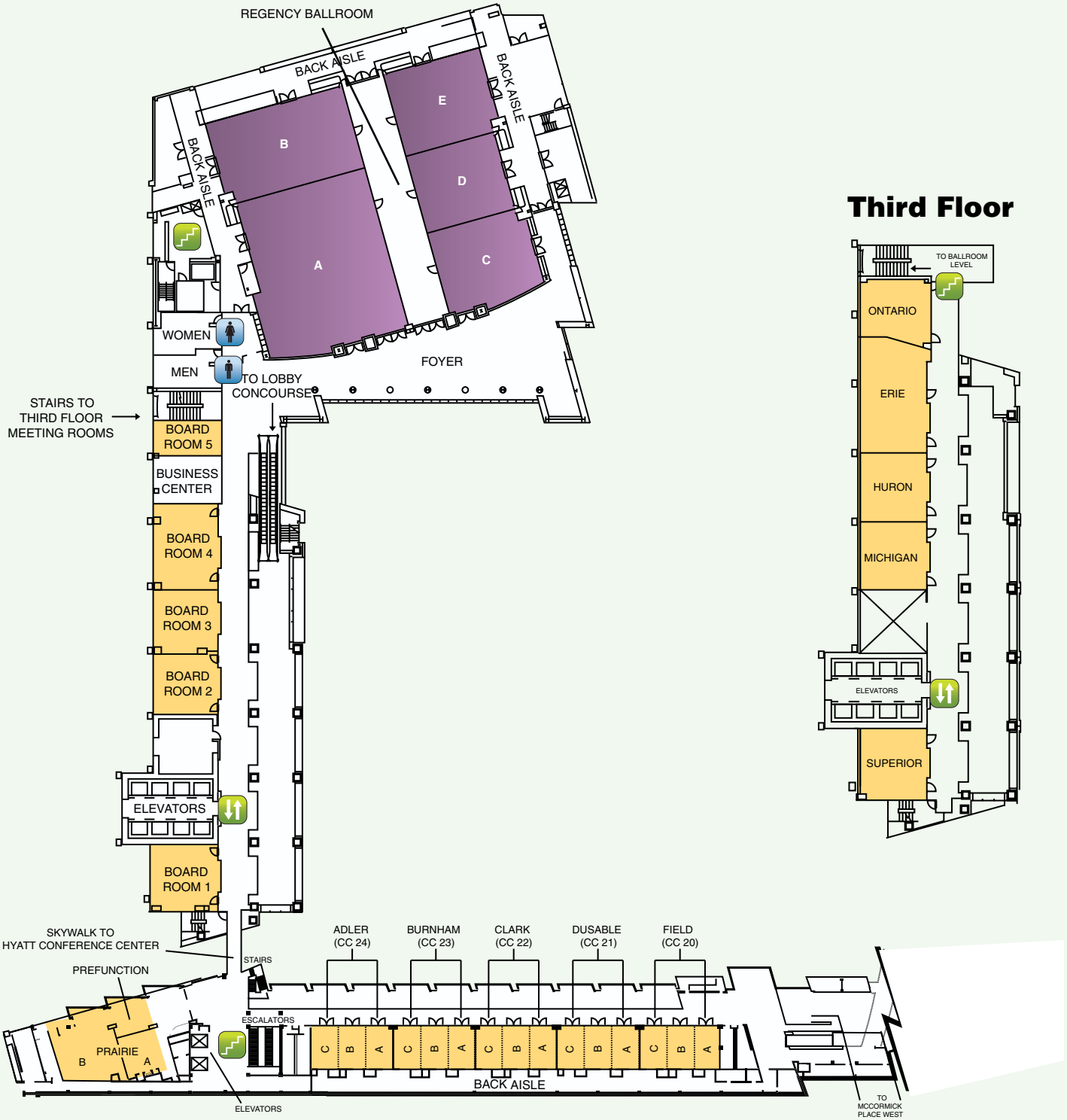
Hyatt Regency McCormick Place

First Floor



Hyatt Regency McCormick Place

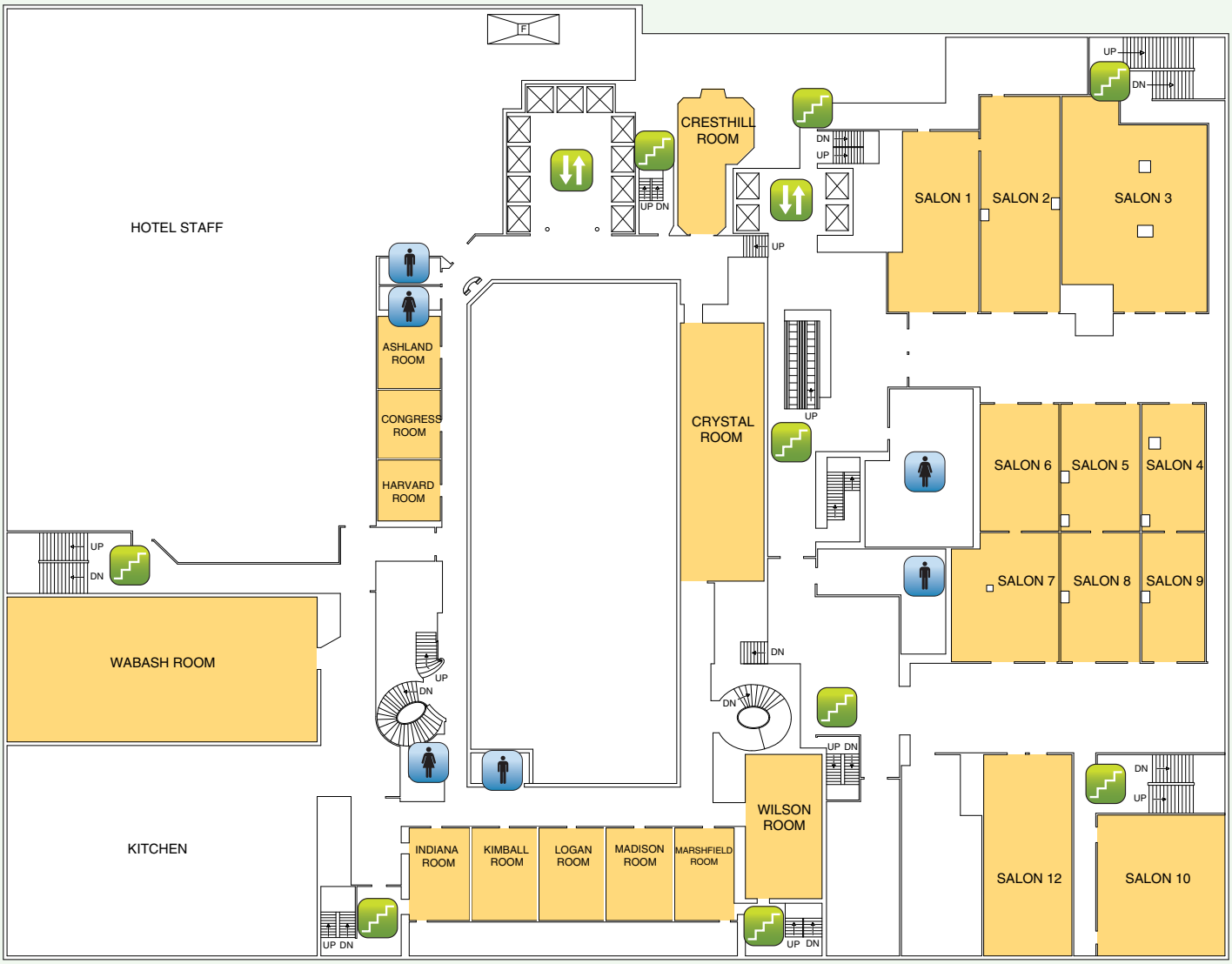
Second Floor



Third Floor

Palmer House

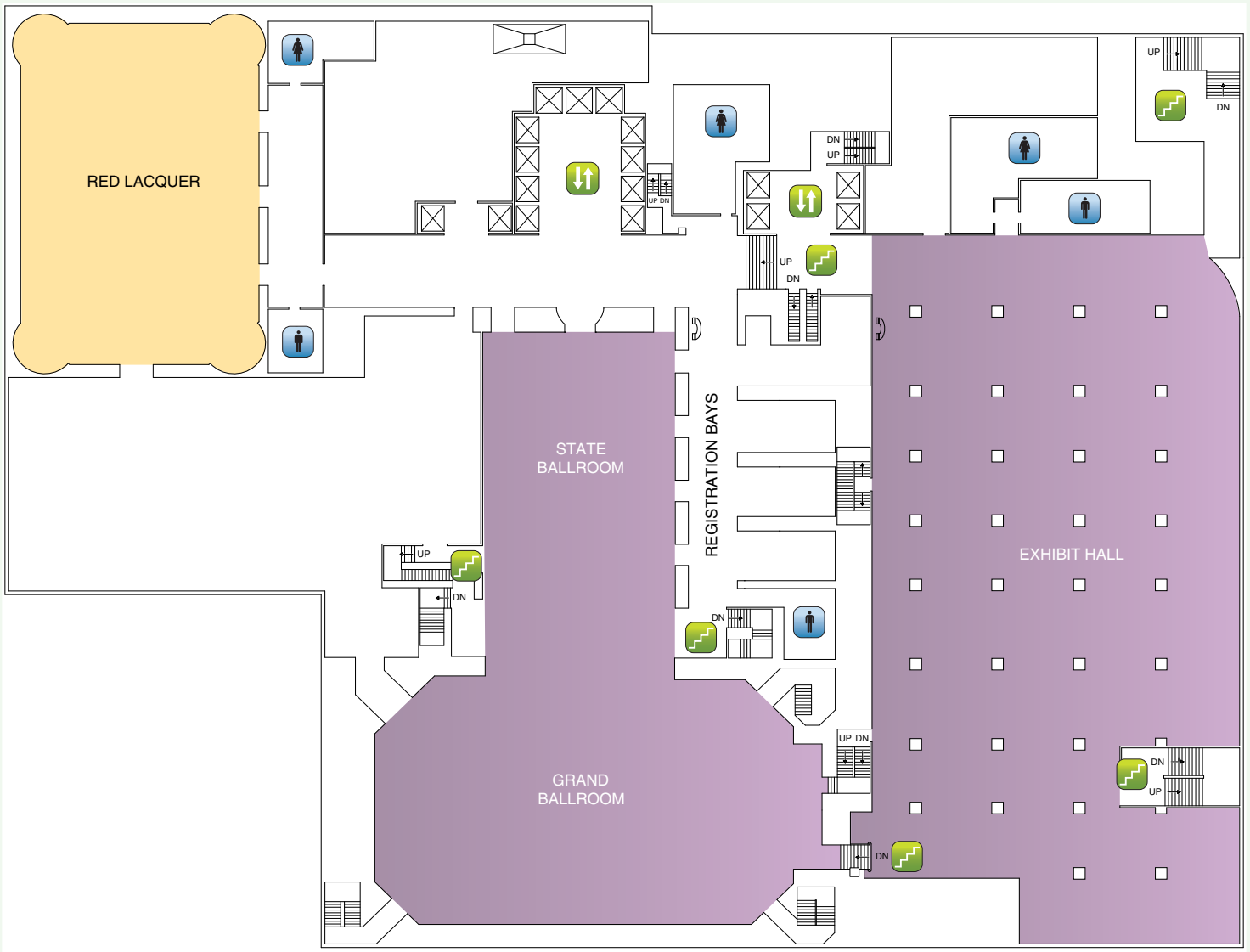
Third Floor



Please note that the Empire Room is on the Lobby Level

Palmer House

Fourth Floor



Executive Office

David L. Evans, Executive Director

Board Relations

Michelle Butler, Executive Administrator and Manager

Communications

Legislative Affairs

Jodi Peterson, Assistant Executive Director
Kate Falk, Senior Manager, Public Relations
Cindy Workosky, Communications Specialist

Marketing

Jennifer Gulley, Manager

Social Media and e-Newsletters

Lauren Jonas, Director

Website

Tim Weber, Assistant Executive Director, Web and News

Development Office

Eric Dillon, Assistant Executive Director, Development
Azi Ambrishami, Development Coordinator

Membership

Teshia Birts, Senior Director of Membership Development and Chapter Relations

NGSS

Ted Willard, Program Director, COMPASS
Jennifer Horak, *NGSS* Project Manager

Nominations and Teacher Awards Program

Amanda Upton, Manager

Operations Division

Moira Fathy Baker, Associate Executive Director, COO, and CFO
Shantee Young, Administrative Assistant

Business & Finance

Brian Short, Senior Accountant
Ravi Mittal, Controller
Diane Cash, Manager, Accounts Payable
Gaby Bathiche, Accountant
LaKeisha Hines, Jr. Accountant
Shawn Crowder, Grant Administrative Support Specialist

Facilities and Operations

Christine Gregory, Director
Rodney Palmer, Building Engineer
Donovan Parker, Mailing Services Coordinator
Joe Harpe, Mailing Services Assistant

Human Resources

Irene Doley, Assistant Executive Director
Janine Smith, HR Benefits Manager and Generalist

Management Information Systems

Todd Wallace, Assistant Executive Director and CIO
Ryan Foley, Assistant Executive Director, IS
Mike Sullivan, Director, IT
Edwin Pearce, Manager, IT Support
Martin Lopong, Manager, Web Development
Edward Hausknecht, Web and Database Developer
Adam Ebel, Web Developer

Publications Orders/Inventory Control

Elsie Maka, Manager, Inventory and Distribution
LaToyya Parks, Coordinator, CSR/Data Entry, Publication Sales
Kristen Reiss, Customer Service Representative, Publication Sales

Sales

Jason Sheldrake, Assistant Executive Director
Rick Bounds, Assistant Executive Director
Kimberly Hotz, Senior Manager, Exhibitor Operations
Jeffrey LeGrand, Marketing and Sales Associate
Becky Shoemaker, Advertising Production Manager
Danielle McNeill, Project Manager, NSTA Mailing List
Lucia Davis, Advertising Sales Associate

Service Central

Michelle Chauncey, Director, Customer Service
Nelly Guacheta, Senior Manager
Jasmine McCall, Special Projects Coordinator/CSR
Cindy Thomas, Fulfillment Coordinator/Claims Correspondent
Kiara Pate, Customer Service Representative

Services Division

Al Byers, Associate Executive Director
Jodie Rozzell, Director
Caroline Nichols, Executive Administrator and International Program Coordinator

Conferences and Meetings

Delores Howard, Assistant Executive Director
Dina Weiss, Associate Director
Linda Crossley, Assistant Director/Managing Editor
Donna Fletcher, Conference Coordinator
Beverly Shaw, Conference Administrator
Christina Dierssen, Project Editor
Kimberlyn McDonald, Registration Supervisor/Administrative Assistant
Jo Neville, Database Manager
Marcelo Nunez, Exhibit Services Coordinator

Learning Center/SciLinks

Flavio Mendez, Senior Director
Dayna Anderson, Coordinator, e-Learning and Government Partnerships

Professional Programs

John Putnam Assistant Executive Director, Services
Wendy Binder, SPIR Project Director
Vacant, Program Manager

Science Education Competitions

Acacia McKenna, Director, Science Education Competitions
Sue Whitsett, eCYBERMISSION Program Manager
Ty Butler, Assistant Manager, Science Education Competitions
John Batko, eCYBERMISSION Logistics Coordinator
Dimetrius Simon, eCYBERMISSION Communications Coordinator
Frank Curcio, eCYBERMISSION Outreach Specialist
Christopher Campbell, eCYBERMISSION Outreach Specialist
Matt Hartman, eCYBERMISSION Content Manager
Alexis Mundis, eCYBERMISSION Volunteer Coordinator
Keisha Jeffries, eCYBERMISSION Administrative Assistant
Jasmine Culver, eCYBERMISSION Administrative Assistant

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

NSTA 2015 Chicago National Conference
Professional Development Documentation Form

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

Beginning April 7, 2015, Chicago transcripts can be accessed at the NSTA Learning Center *(learningcenter.nsta.org)* by logging on with your Chicago Badge ID# and then clicking on "My PD Record and Certificates." Keep this form and use it to add the following activities to your Chicago 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/chicagobrowser.* You will need your badge number to evaluate sessions. See page 19 of the 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 a Kindle Fire HDX 7", 16 GB!***

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 11 6:30 AM–7:30 PM

Start Time	End Time	Activity/Event Title

Thursday, March 12 8:00 AM–7:30 PM

Start Time	End Time	Activity/Event Title

We're giving a Kindle Fire 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 13, 7:00 AM–12 Midnight

Start Time	End Time	Activity/Event Title

Saturday, March 14 7:30 AM–10:00 PM

Start Time	End Time	Activity/Event Title

Sunday, March 15 8:00 AM–12 Noon

Start Time	End Time	Activity/Event Title

Products Division

David Beacom, Associate Executive Director and Publisher
Emily Brady, Executive Administrator and Manager, NSTA Recommends

Art and Design

Will Thomas, Director
Joseph Butera, Senior Graphic Designer
Hima Bichali, Graphic Designer

e-Products

Leisa Clark, Director/Producer
Kara Pantalena, Course Developer
Eleanore Dixon-Roche, e-Learning Multimedia Specialist

Journals

Ken Roberts, Assistant Executive Director
Kate Lu, Editorial Assistant

Science & Children
Linda Froschauer, Field Editor
Valynda Mayes, Managing Editor
Stephanie Simmons, Associate Editor

Science Scope
Inez Fugate Liftig, Field Editor
Ken Roberts, Senior Managing Editor

The Science Teacher
Stephen C. Metz, Field Editor
Scott Stuckey, Managing Editor

Journal of College Science Teaching
Ann Cutler, Field Editor
Caroline Barnes, Managing Editor

New Products

Tyson Brown, Director

NSTA Press

Claire Reinburg, Assistant Executive Director
Wendy Rubin, Managing Editor, Books
J. Andrew Cooke, Senior Editor
Amanda O'Brien, Associate Editor
Donna Yudkin, Book Acquisitions Coordinator

NSTA Reports
Lynn Petrinjak, Editor
Debra Shapiro, Associate Editor

Printing and Production

Catherine Lorrain, Director
Jack Parker, Electronic Prepress Technician

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.

Officers and Board of Directors

David L. Evans, Executive Director
Juliana Texley, President
Carolyn Hayes President-Elect
Bill Badders, Retiring President
Harold Pratt, Parliamentarian
LeRoy Lee, Treasurer

Peggy Carlisle, Preschool/Elementary
Patty McGinnis, Middle Level Science Teaching
Beverly DeVore-Wedding, High School Science Teaching
Sally Harms, College Science Teaching
Kelly Price, Coordination and Supervision of Science Teaching
Candace Lutzow-Felling, Informal Science
Jerry Valadez, Multicultural/Equity
Eric J. Pyle, Preservice Teacher Preparation
Steve Rich, Professional Development
John Tillotson, Research

Council

Juliana Texley, President
Harold Pratt, Parliamentarian

Jeanelle Day, District I
Lynn Farrin, District II
Stephanie Wright, District III
Fran Hess, District IV
Donna Governor, District V
Manley Midgett, District VI
John Ammons, District VII
David Helm, District VIII
Mary Colson, District IX
Janet Struble, District X
Paul Adams, District XI
Natacia Campbell, District XII
Norma Neely, District XIII
Vicki Massey, District XIV
Timothy Maze, District XV
Tim Williamson, District XVI
Steven Ruthford, District XVII
Michael Bowen, District XVIII

Alliance of Affiliates

Elizabeth Allan, Chairperson, and NSELA Affiliate Representative
Robert Ferguson, AMSE Affiliate Representative
Sharon A. Kortman, ASTC Affiliate Representative
Lisa Martin-Hansen, ASTE Affiliate Representative
Julie Thomas, CESI Affiliate Representative
Juan-Carlos Aguilar, CSSS Affiliate Representative
Deborah Hanuscin, NARST Affiliate Representative
Todd Hoover, NMLSTA Affiliate Representative
Brian Shmaefsky, SCST Affiliate Representative

All cities are subject to change pending final negotiation.

National Conferences on Science Education

Nashville, Tennessee
March 31–April 3, 2016

Los Angeles, California
March 30–April 2, 2017

2015 STEM Forum & Expo

Minneapolis, Minnesota
May 20–23

Area Conferences on Science Education

2015 Area Conferences

Reno, Nevada—October 22–24
Philadelphia, Pennsylvania—November 12–14
Kansas City, Missouri—December 3–5

2016 Area Conferences

Minneapolis, Minnesota—October 27–29
Portland, Oregon—November 10–12
Columbus, Ohio—December 1–3

2017 Area Conferences

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

NSTA NATIONAL CONFERENCE ON SCIENCE EDUCATION

BE PART OF EDUCATION'S

PREMIER EVENT!

SAVE THE DATE

NASHVILLE

MARCH 31 - APRIL 3

2016

OVER 1,200 SESSIONS

NETWORK WITH OVER 10,000 EDUCATORS

350+ EXHIBITORS WITH CUTTING-EDGE RESOURCES

(PDIs) PROFESSIONAL DEVELOPMENT INSTITUTES

GRADUATE CREDIT FOR SESSIONS

MUCH MORE!

SCIENCE: EMPOWERING PERFORMANCE

Setting the Stage: Scientific Literacy	**Building the Band:** Involving Community Stakeholders	**Harmonizing Concepts:** Integrating Instruction	**Stringing It All Together:** Three-Dimensional Learning

FOR INFORMATION AND UPDATES, VISIT,

www.nsta.org/nashville

NSTA National Science Teachers Association

National Science Teachers Association

Robert H. Carleton Award

for National Leadership in the Field of Science Education

Herb Brunkhorst
Professor Emeritus
California State University San Bernardino
San Bernardino, Calif.

Presidential Citation

Kenneth Miller
Professor of Biology
Brown University
Providence, R.I.

Fellow Award

Carla Zembal-Saul
Professor
Penn State University
University Park, Pa.

National Science Teachers Association

Distinguished Teaching Award

Sponsored in part by TruGreen

Liz Meredith
Science Teacher
St. Clairsville Middle School
St. Clairsville, Ohio

National Science Teachers Association

Distinguished Service to Science Award

Sponsored in part by TruGreen

Jacqueline Fernandez-Romero
Science Teacher and STEM Coordinator
LAYC Career Academy
Washington, D.C.

Stephen Pruitt
Senior Vice President
Achieve, Inc.
Washington, D.C.

Angela Award

Gracie Goodpasture
Science Student
The Steward School
Richmond, Va.

Sylvia Shugrue Award for Elementary School Teachers

Wendy Smith
Science Teacher
Hong Kong International School
Repulse Bay, Hong Kong
China

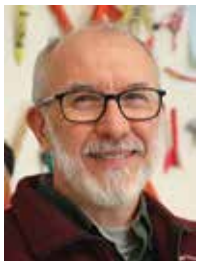
Robert E. Yager Foundation Excellence in Teaching Award

Yager Scholar

NSTA District XVI (AM SAMOA, CA, GUAM, HI, NV)

Beverly Kutsunai
Science Teacher
Kamehameha Elementary School
Honolulu, Hawaii

NSTA District II (ME, NH, VT)



Dave Parker
Science Teacher
Noble High School
North Berwick, Maine

NSTA District IV (NJ, NY, PA)

Kenneth Huff
Science Teacher
Mill Middle School
Williamsville, N.Y.

NSTA District VIII (KY, VA, WV)

Leslie Lausten
Science Teacher
Hartwood Elementary School
Fredricksburg, Va.

NSTA District X (IN, MI, OH)

Joe Ruhl
Science Teacher
Jefferson High School
Lafayette, Ind.

NSTA District XIV (AZ, CO, UT)

David Black
Science Teacher
Walden School of Liberal Arts
Provo, Utah

Northrop Grumman Foundation Excellence in Engineering Education Award

Sponsored by Northrop Grumman Foundation

Maureen Barrett
Science Teacher
Harrington Middle School
Mt. Laurel, N.J.

Wendell G. Mohling Outstanding Aerospace Educator Award

Donna Burrus
Science Teacher
Fayette Academy
Somerville, Tenn.

Ron Mardigian Memorial Biotechnology Explorer Award

Sponsored by Bio-Rad Laboratories

David Brock
Science Teacher
Roland Park Country School
Baltimore, Md.

DuPont Pioneer Excellence in Agricultural Science Education Award

Chris Embry Mohr
Science Teacher
Olympia High School
Stanford, Ill.

PASCO STEM Educator Awards

Sponsored by PASCO scientific

Middle Level

Brandy Whitney
Science Teacher
Ottoson Middle School
Arlington, Mass.

High School

Doug Baltz
Science Teacher
Ernest W. Seaholm High School
Birmingham, Mich.

Ian Fogarty
Science Teacher
Riverview High School
Riverview, N.B.
Canada

Vernier Technology Awards

Sponsored by Vernier Software & Technology

Elementary Level

Amy Atkinson
Science Teacher
Hominy Valley Elementary School
Candler, N.C.

Middle Level

Susan Brown
Science Teacher
Northland Preparatory Academy
Flagstaff, Ariz.

Dennis Pevey
Science Teacher
CSTEM Public Charter School
Little Rock, Ark.

High School Level

Kristy Bibbey
Science Teacher
Poudre High School
Ft. Collins, Colo.

Karlheinz Haas
Science Teacher
The Pine School
Hobe Sound, Fla.

Ann Shioji
Science Teacher
William C. Overfelt High School
San Jose, Calif.

College Level

Lois Zook-Gerdau
Associate Professor
Muskingum University
New Concord, Ohio

Shell Science Teaching Award

Sponsored by Shell Oil Co.

Awardee

Jose Rivas
Science Teacher
Lennox Math, Science and Technology Academy
Lennox, Calif.

Finalist

Shawndra Fordham
Science Teacher
Rock Canyon High School
Highlands Ranch, Colo.

Finalist

Morgan Cuthbert
Science Teacher
Frank Harrison Middle School
Yarmouth, Maine

Shell Urban Science Educators Development Award

Sponsored by Shell Oil Co.

Aja Brown
Science Teacher
Lorraine Hansberry Academy
Bronx, N.Y.

Heriberto Castro
Science Teacher
E.M. Pease Middle School
San Antonio, Tex.

Alicia Conerly
Science Teacher
South Pike High School
Magnolia, Miss.

Rubi deHoyos
Science Teacher
Jim G Martin Elementary School
San Antonio, Tex.

Carriann DeSanto
Science Teacher
Hillside High School
Hillside, N.J.

Alyssa Gipson
Science Teacher
Belleview High School
Belleview, Mich.

Mary Gonzales
Science Teacher
Passmore Elementary School
San Antonio, Tex.

Sherene McDonald
Science Teacher
MS 254
Bronx, N.Y.

Ina Perales
Science Teacher
Earl Warren High School
San Antonio, Tex.

Jennifer Ramsey
Science Teacher
KIPP-DC Heights Academy
Washington, D.C.

The Maitland P. Simmons Memorial Award for New Teachers

Andrea Ames
Elizabeth Baker
Olyukaode Banmeke
Lindsey Blansit
Stephanie Bianchi
Eric Brockway
Melissa Cieniuch
Heather Dedie
Jaclyn Easter
Hillary Gawne
Nancy Gifford
Kathryn Hallal
Kathleen Harris
Liz Hawkes
Tim Jones
Karissa Kelley
Kim Kingery
Adam Lane
Amy Marling
Rachael Malerman
Christina Ricks
Stephanie Sabath
Carrie Ann Sharitt
Leanna Stetson
Susan Terra

2014 DuPont Challenge Science Essay Teacher Awardees

Junior Division

Grand-Prize Winner
Kris Thorson
Science Teacher
Northwest Junior High School
Coralville, Iowa

Senior Division

Grand-Prize Winner
Nicole A. Marsella-Jensen
English Teacher
Irving High School
Fremont, Calif.

2014–2015 Shell Science Lab Challenge, *sponsored by Shell Oil Company*

The Shell Science Lab Challenge, sponsored by Shell Oil Company 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 Vol. 2 for the "Do You Need a New Science Lab?" session and Vol. 3 for "The Shell Science Teaching Award: Fueling Success with Students."

Grand-Prize Winner
NSTA District XVI
(AM SAMOA, CA, GUAM, HI, NV)

Latiffe Amado
Teacher
Alliance Environmental Science and Technology High School
Los Angeles, Calif.

National Finalist
NSTA District III
(DE, DC, MD)

Steven Ward
Science Teacher
Cesar Chavez Public Charter Schools for Public Policy
Washington, D.C.

National Finalist

Dist. III Co-Applicant
Dave Yarmchuk
Curriculum Innovation Specialist for Math and Science
Cesar Chavez Public Charter Schools for Public Policy
Washington, D.C.

National Finalist
NSTA District VI
(NC, SC, TN)

H. Marie Lemon
Science Teacher
Greenville Early College
Greenville, S.C.

National Finalist
NSTA District XII
(IL, IA, WI)

Melissa Zwilling
Chemistry Instructor
St. Joseph's High School
Westchester, Ill.

National Finalist
NSTA District XVIII
(Canada)

Pamela Skinner
Teacher
Marantha Christian School
Williams Lake, B.C., Canada

— Courtesy of Jim Schulz/Chicago Zoological Society

See page 11 for a special offer for NSTA conference registrants to visit the Brookfield Zoo and page 65 for a behind-the-scenes educational trip at the zoo.

Is This Your First NSTA Conference?

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

See page 90 for details.

Ribbon-Cutting Ceremony

An opening ceremony is scheduled on Thursday at 11:00 AM in the Hall F2 of McCormick Place.

Wednesday, March 11 (Volume 1)

9:00 AM–4:00 PM	NSTA Professional Development Institutes and Work Sessions (check in between 8:00 and 9:00 AM) 54–56, 82
1:00–5:30 PM	Global Conversations in Science Education Conference (M-1) (in collaboration with ICASE and CESI) 50, 84–85

Thursday, March 12 (Volume 1)

8:00–9:00 AM	First-Timers' Breakfast 90
9:15–10:30 AM	General Session: Neil Shubin, *sponsored by HHMI BioInteractive* . . .107
11:00–11:05 AM	Exhibits Opening/Ribbon-Cutting Ceremony 112
11:00 AM–6:00 PM	First-Timers, Preservice Teachers, and New Teachers Lounge . . 114
11:05–11:30 AM	Meet the Presidents and Board/Council 114
11:05 AM–6:00 PM	Exhibits 114
12:30–1:30 PM	Featured Presentation: Secretary Arne Duncan 120
12:30–1:30 PM	Mary C. McCurdy Lecture: Okhee Lee 120
2:00–3:00 PM	Featured Presentation: Stephen L. Pruitt 132
2:00–3:00 PM	Featured Presentation: James Pellegrino 132
3:30–4:30 PM	Featured Presentation: Aída Walqui, *sponsored by Shell* 150
3:30–5:30 PM	The Planetary Society Lecture: Bill Nye 158

Friday, March 13 (Volume 2)

See Conference Highlights, Volume 2, for page numbers.

7:30–9:00 AM	High School Breakfast (M-2): Ann Brokaw
8:00–10:00 AM	Elementary Extravaganza
8:00 AM–5:00 PM	NGSS@NSTA Forum
9:00 AM–5:00 PM	Exhibits
9:30–10:30 AM	Robert H. Carleton Lecture: Jack Rhoton
9:30–10:30 AM	Featured Presentation: Peter Exley
10:00 AM–4:00 PM	Meet Me in the Middle Day
11:00 AM–12 Noon	Featured Presentation: Liam Heneghan
12 Noon–2:00 PM	NSELA/ASTE Luncheon *(tickets on NSELA website):* Jeanne Century
12:30–1:30 PM	SCST Marjorie Gardner Lecture: Mike Jackson
1:30–2:30 PM	NSTA Chapter and District Meet and Greet in Honor of Wendell Mohling, *sponsored by GEICO*
2:00–3:00 PM	AGU Lecture: Jim White
6:00–8:45 PM	NSTA Teacher Awards Gala (M-3)
9:00 PM–12 Mid.	President's Mixer with DJ and cash bar

General Session

Thursday, March 12, 9:15–10:30 AM

Neil Shubin
Robert R. Bensley Professor
at The University of Chicago

Your Inner Fish

According to Neil Shubin, host of the PBS show *Your Inner Fish*, we can thank our fishy origins for many of our human traits. This is no typical fish tale; did you know our hands evolved from the fins of prehistoric fish? Join Neil as he shares these and other insights as he tells the story of evolution by tracing the organs of the human body back millions of years, long before the first creatures walked Earth.

Sponsored by HHMI BioInteractive
(See page 107 for details.)

Saturday, March 14 (Volume 3)

See Conference Highlights, Volume 3, for page numbers.

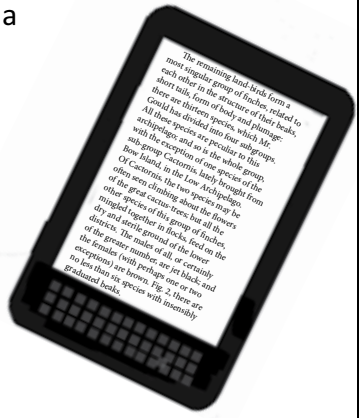
8:30 AM–3:30 PM	Teacher Researcher Day
9:00 AM–3:00 PM	Exhibits
11:00 AM–12 Noon	Paul F-Brandwein Lecture: Curt Meine
12 Noon–1:30 PM	NSTA/SCST College Luncheon (M-4): Marcy Towns
12 Noon–2:00 PM	CESI/NSTA Elementary Science Luncheon (M-5): Traci Wierman and Rebecca Abbott
2:00–3:00 PM	NSTA/ASE Honors Exchange Lecture: Chris Harrison
3:30–4:30 PM	Featured Presentation: Samuel Dyson
4:00–6:00 PM	Pi Day Celebration for Preservice/New Teachers and First-Time Conference Attendees (M-6)
8:00–10:00 PM	Einstein's Birthday…with a Tribute to the Blues Brothers

Help us with your feedback…and get a chance for a free Kindle Fire HDX 7"

We're giving you one more reason to evaluate conference sessions.

When you log on to *www.nsta.org/chicagobrowser* and fill out an evaluation by clicking on the "evaluate session" button below the session you attended, you get entered into a drawing for a chance to win a Kindle Fire HDX 7" *courtesy of the NSTA Conference Department*.

Your feedback helps us in creating the best conference experience for you and other attendees.



- **WE'RE GIVING AWAY TWO KINDLE FIRES HDX 7", 16 GB**

- **CONFERENCE APP**

- Scan QR code below to access our NSTA Conference App.

NSTA National Science Teachers Association

The Chicago 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.

Teaching Every Child by Embracing Diversity

All classrooms are diverse. Learners bring a variety of cultures, backgrounds, and experiences to the study of science. Educators must provide opportunities to meet the needs of all students, including English language learners, students with special needs, and those with diverse learning styles and abilities. Successful instructional approaches must address methods, materials, facilities, and partnerships. These sessions will confirm the belief that every student can excel in science.

The Science of Design: Structure and Function

Architecture and engineering provide the infrastructure for human-made systems. Designing for the future requires imagination and a commitment to sustainability. It also involves the crosscutting concepts of structure and function and the practices of science and engineering. Communities like Chicago provide examples of great design and great science.

Student Learning—How Do We Know What They Know?

The goal of every teacher is to maximize student learning. Monitoring learning is the responsibility of both the teacher and the student. To successfully monitor learning requires authentic assessment, including formative and summative strategies. The progressions embedded in the *NGSS* provide opportunities for students to engage in the practices of science and engineering; these should be assessed through a variety of modalities.

Natural Resources, Natural Partnerships

Sustaining natural resources requires collaborative partnerships among many stakeholders, and science is the key to making smart decisions about resources. Educators and students can engage with environmental groups, agencies, and businesses to build and support a sustainable future. This strand will help teachers identify possibilities and potential partnerships.

Student Learning—How Do We Know What They Know?

Thursday, March 12

8:00–9:00 AM
What Do Students Think They Know? Improving Assessment Through Student Choice and Self-Reflection

12:30–1:30 PM
Assessment Matters! Using Formative Assessment Strategies to Improve K–6 Teaching

2:00–3:00 PM
Beyond Engineering: Assessment for Learning

Featured Presentation: Measuring What Matters: Challenges and Opportunities in Assessing Science Proficiency
(Speaker: James W. Pellegrino)

3:30–4:30 PM
Formative Assessment and Argumentation: Supporting Practice Over Time

Friday, March 13

8:00–9:00 AM
Student Assessment: Reviewing *NGSS* and Critical Assessment Components

9:30–10:30 AM
Standards-based Grading and the *NGSS*

11:00 AM–12 Noon
Sound and Waves: An Integrated K–8 Hands-On Approach Supporting the *NGSS* and *CCSS*

12:30–1:30 PM
Immediate $tudent Feedback Without Tho$e Expen$ive Clicker$

1:00–5:00 PM
Short Course: Integrating STEM and Art with Pretty Astronomy Pictures
(By Ticket: SC-9)

2:00–3:00 PM
Transitioning Curriculum, Instruction, and Assessments to Meet the *NGSS*

3:30–4:30 PM
Creating Assessments for Physical Science that Integrate the Three Dimensions of the *NGSS*

5:00–6:00 PM
The Flipped Classroom: Now There's Time for More Meaningful Assessments

Saturday, March 14

8:00–9:00 AM
Formative Assessment with Developing and Using Models

8:30–9:30 AM
Teacher Researcher Day Session: Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching

9:30–10:30 AM
Power Learning: Success Strategies for Meaningful Understanding in the Middle School Science Classroom

11:00 AM–12 Noon
Using Technology to Prepare for the Next Generation of Science Assessments

12:30–1:30 PM
Authentic Assessment and the *NGSS*

1:30–4:30 PM
Short Course: Using Science Phenomena to Assess Student Understanding of *NGSS* Performance Expectations
(By Ticket: SC-14)

2:00–3:00 PM
Using a Graphic Organizer for Formative Assessment Opportunities in the Preschool Classroom

3:30–4:30 PM
Astronomical Assessments

ABCs with DEs: Addressing Basic Concepts with Discrepant Events

5:00–6:00 PM
What Do I Do with My LOVE Lessons?

Sunday, March 15

8:30–9:00 AM
Classroom-ready Inquiry Labs for Biology and Chemistry

9:30–10:30 AM
Interactive Science Notebooks as Integrative Assessment Tools

The Science of Design: Structure and Function

Thursday, March 12

8:00–9:00 AM
Teaching Science and Engineering Practices Using Energy-Efficient Buildings with an Open-Access Smart CAD Program

12:30–1:30 PM
From the Love Canal to Phytoremediation: What's New in Environmental Engineering?

1:00–5:00 PM
Short Course: Engineering a Story: Integrating Literacy with Engineering Practices (By Ticket: SC-2)

2:00–3:00 PM
STEM Learning Community: Making STEM Integration a Reality

3:30–4:30 PM
Understanding Car Crashes: Engineering Truly Impactful STEM Lessons

5:00–5:30 PM
Engineering for All: Engaging Girls in Engineering Through Community Service

5:30–6:00 PM
West Tennessee STEM Hub Challenge Competition

Friday, March 13

8:00–8:30 AM
The Maker Movement

8:00–11:00 AM
Short Course: Engineering Understanding: Applying Science Concepts and Building Academic Language (By Ticket: SC-6)

8:30–9:00 AM
Helping Middle School Students "Discover Engineering"

9:30–10:30 AM
Featured Presentation: The Power of Play (Speaker: Peter Exley)

Facilitating Interdisciplinary STEM Learning Through Biomechanics

11:00 AM–12 Noon
Eco-Structure and Function: Analyzing River Health with Engineering Practices in Problem-based Situations

12:30–1:30 PM
"Buddy Up" to *NGSS* Through Companion Lessons

2:00–3:00 PM
Integrating Computing Principles to Enhance Science Classes

3:30–4:30 PM
Engineering Design Inspired by Nature

5:00–6:00 PM
Bioengineering Challenges and Middle School Life Science

Saturday, March 14

8:00–9:00 AM
Operation Rescue: A Project Approach to STEM Education

9:30–10:30 AM
Integrating Art, STEM, and ELA by Creating a Mechanism that Animates a Story

11:00 AM–12 Noon
Color Your World: Learn How LEDs Can Mix and Match Colors, and Use Them to Design a Scene

12:30–1:30 PM
Novel Engineering: Integrating Engineering and Literacy to Engage Students in Engineering Design Challenges

2:00–3:00 PM
Science by Design: Addressing Science Concepts Through Engineering

3:30–4:30 PM
Children's Innovation Project

5:00–6:00 PM
Advancing Science Learning: Teaching Elementary Physical Science Concepts Through Engineering Problems

Sunday, March 15

8:00–8:30 AM
Think Tank to Shark Tank: Engineering to Entrepreneurship

8:30–9:00 AM
Designing a Bioretention Basin

9:30–10:30 AM
Discovery Box Engineers: Growing a STEM Classroom

Natural Resources, Natural Partnerships

Thursday, March 12

8:00–8:30 AM
The Biodiversity Project

8:30–9:00 AM
Creating a Culture of Conservation Using the *NGSS* Practices

12:30–1:00 PM
Developing Partnerships: A Model of Outdoor Education

1:00–1:30 PM
A Bird in the Hand

1:30–4:30 PM
Short Course: Ocean Plastic Pollution: Issues and Solutions
(By Ticket: SC-3)

2:00–3:00 PM
Collaborative Conservation Through Birds and Citizen Science

3:30–4:30 PM
Sharing the Night Sky with Your Students

5:00–6:00 PM
Student Choice, Student Voice: Empowering the Next Generation of Environmental Stewards

Friday, March 13

9:30–10:30 AM
Trout in the Classroom

11:00 AM–12 Noon
NASA and GLOBE Connect K–12 Students to *NGSS* with Big-Data Applications

Featured Presentation: Beasts at Bedtime: Revealing the Embedded Environmental Curriculum in Classic Children's Literature (Speaker: Liam Heneghan)

12:30–1:30 PM
Nature, One Game at a Time: Eco Stewardship via Augmented Reality Games

2:00–2:30 PM
Project-based Explorations of the Kentucky River Watershed

2:30–3:00 PM
Making STEM Meaningful with Sea Turtles

3:30–4:30 PM
Doing Service and Science in Your Local Forest Preserves

5:00–6:00 PM
Stormwater Literacy Project

Saturday, March 14

8:00–9:00 AM
Watering the Grassroots of Change: Integrated Outdoor Science and Community-based Water Resource Education

8:00 AM–12 Noon
Short Course: Explore Local Biodiversity with Encyclopedia of Life and OBIS
(By Ticket: SC-12)

11:00 AM–12 Noon
DataStreme: Earth's Climate System

12:30–1:30 PM
Birds and Buds: Citizen Science in Your School Yard

2:00–3:00 PM
On-the-Ground Stewardship + Great Lakes Science = A Five Star Place-based Education Program

3:30–4:30 PM
(Scientific) Inquiry Minds Want to Know: Creating a School-University-Park Partnership

5:00–6:00 PM
No Child Left Inside

Sunday, March 15

8:00–9:00 AM
Green Proposals to Meet *NGSS* and *CCSS ELA*

9:30–10:00 AM
The Science of Sustainable Energy

10:00–10:30 AM
NOAA Science On a Sphere®: Earth and Space Science Data Visualizations in the Classroom

11:00–11:30 AM
HAWK: Honoring Urban Resources and Acting with Knowledge

11:30 AM–12 Noon
Bringing the *NGSS* Outdoors

Teaching Every Child by Embracing Diversity

Thursday, March 12

8:00–9:00 AM
Zombie Apocalypse! Scaffolding Claims, Evidence, and Reasoning

2:00–3:00 PM
The *NGSS* Collaborative

3:30–4:30 PM
Featured Presentation: Next Generation Science Standards and English Language Learners: The Development of Deep and Generative Practices
(Speaker: Aída Walqui)

Connect Students of Poverty to Their Community

5:00–6:00 PM
Girls Engaged in Math and Science (GEMS): Using Culturally Responsive Engineering Design Challenges to Promote STEM

They May Learn Differently, But They Can Learn, Can't They?

Friday, March 13

8:00–9:00 AM
Science for Bl(all)ck Children: Making Meaning Through Language and Culture

9:30–10:30 AM
Creating Classroom Access and Equity to Transform Student Science Outcomes

11:00 AM–12 Noon
El Club de Padres: Maximize Science Learning for Your Bilingual Students by Promoting a Learning Partnership with Their Parents

12:30–1:30 PM
Low Tech to No Tech with High-End Results

1:00–5:00 PM
Short Course: "All Standards, All Students" Appendix D and Case Studies
(By Ticket: SC-8)

2:00–3:00 PM
NGSS Science and Engineering Practices: Combining Science Learning and Language Development for ELLs

3:30–4:30 PM
Ready, Set, STEM!

5:00–6:00 PM
Aprendamos Juntos! (Let's Learn Together): Embracing Native Languages in Non-bilingual Classrooms to Build Intermediate Science Literacy in English

Saturday, March 14

8:00–9:00 AM
Which Plants Make Good Acid/Base Indicators?

8:00 AM–12 Noon
Short Course: STEM for ALL: Practices and Methods that Promote Equal Access to STEM
(By Ticket: SC-10)

9:30–10:30 AM
A New Movement: Thinking on Your Feet

11:00 AM–12 Noon
Mixed Media Journaling in the Diverse Science Classroom

12:30–1:30 PM
Implementing the 3-E Instructional Model to Enhance Science Learning Experiences for Students with Special Needs

2:00–3:00 PM
Using Universal Design for Learning (UDL) Principles to Enhance Science Learning Experiences for Students with Special Needs

3:30–4:30 PM
Any Time, Any Place, Any Pace Lab Science

5:00–6:00 PM
They May Learn Differently, But They Can Learn, Can't They?

Sunday, March 15

8:00–9:00 AM
Your Kids Can, Too! Scientific Argumentation for All Students

9:30–10:00 AM
Analysis of a Speed and Velocity Lesson: Implications for Students with Learning Disabilities

10th Annual NSTA Global Conversations in Science Education Conference

(in collaboration with ICASE and CESI)

Sharing International Classroom Perspectives of Science: PreK–16

Wednesday, March 11, 1:00–5:30 PM
Regency A, Hyatt Regency McCormick Place
By Preregistration Only (M-1)

NSTA has planned an afternoon dedicated to sharing science education from an international perspective. This mini-conference includes plenary talks by distinguished international scholars and includes a series of interactive panels consisting of teachers, researchers, and policy makers on special topics; roundtable discussions involving all participants; and a poster session providing opportunities to build international connections in science classrooms. 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 page 84.*

Wednesday, March 11

6:30 AM–12:10 PM	W-1 Educational Trip (off-site) *See page 64 for details.*
1:00–5:30 PM	Global Conversations Conference (M-1) Plenary Talks Interactive Panels Roundtable Discussions Poster Session
6:00–7:00 PM	NSTA President's International Reception *Sponsored by ExxonMobil Foundation* (Regency B)

Meet Me in the Middle Day

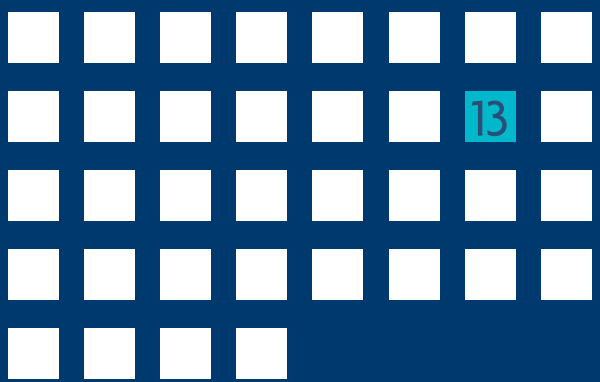
Friday, March 13, 10:00 AM–4:00 PM
Vista S406a, McCormick Place
(breakouts: S404b/c, S404d, S405a, and S405b)

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. Sponsored in part by Carolina Biological Supply, It's About Time, LAB-AIDS, the National Middle Level Science Teachers Association (NMLSTA), and PASCO scientific.

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
12:30–1:00 PM	Concurrent Sessions
1:15–1:45 PM	Concurrent Sessions
2:00–4:00 PM	Middle Level Share-a-Thon

ALL NGSS ALL DAY



12 EXPERTS

6 SESSIONS

1 ROOM

SPECIAL ONE-DAY EVENT

FREE TO ALL CONFERENCE ATTENDEES.
PARTICIPATE IN ONE OR MORE PRESENTATIONS.

For more details, visit ***www.nsta.org/ngss.***

NGSS@NSTA FORUM

FRIDAY, MARCH 13, 2015

McCormick Place, W183a/b

Take a deep dive into the *Next Generation Science Standards* with writers, state science supervisors, assessment experts, and more.

8:00–9:00 A.M.	Implementing the Vision of the *Framework* and *Next Generation Science Standards* Michael Lach
9:30–10:30 A.M.	Helping Students Make Sense of the World with Next Generation Science and Engineering Practices Brian Reiser
11:00 A.M.–12:00 P.M.	Developing and Evaluating Three-Dimensional Curriculum Materials Joe Krajcik
12:30–1:30 P.M.	Assessing *NGSS* in the Classroom Christopher Harris, Angela DeBarger, & Bill Penuel
2:00–3:00 P.M.	Curriculum Planning the *NGSS* Way Stephen Pruitt
3:30–5:00 P.M.	Implementing *NGSS*: Stories From the Front Lines Panel Discussion moderated by NSTA Executive Director David Evans

NEXT GENERATION SCIENCE STANDARDS

NGSS@NSTA
STEM STARTS HERE

Teacher Researcher Day

Saturday, March 14, 8:30 AM–5:00 PM

Regency A/B, Hyatt Regency McCormick Place

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 Volume 3.*

8:30–9:30 AM	Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching
9:30–11:00 AM	Panel Discussion: *Embracing Diversity in Science: Benefits and Challenges of Equitable Science Education from Multiple Perspectives*
11:00 AM–12 Noon	Concurrent Sessions
12 Noon–12:30 PM	Brown Bag Lunch Conversation with Teacher Researchers
12:30–1:30 PM	Concurrent Sessions
1:30–2:00 PM	Concurrent Sessions
2:00–3:00 PM	Concurrent Sessions
3:00–4:00 PM	Concurrent Sessions
4:00–5:00 PM	Next Year Planning and Summary

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 12

12:30–1:30 PM

Thinking Maps and Literacy Strategies to Structure *Solving Everyday Science Mysteries*

K–5 STEM: Engaging Students in the Practices of Science, Engineering, and Mathematics

2:00–3:00 PM

Whole Class Inquiry—Improving Participation, Keeping Students Engaged

Next Time You See...

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

3:30–4:30 PM

Get the FACTs! A Strategy Harvest of Formative Assessment Classroom Techniques

Citizen Science: Diverse Projects that Bring Biology to Life

Friday, March 13 (Volume 2)

8:00–9:00 AM

Models and Approaches to STEM Professional Development

Scientific Argumentation in Biology: 30 Classroom Activities

9:30–10:30 AM

CCSS, Mathematics + *NGSS* = More Brain-powered Science

What Are They Really Thinking? Probe Formats that Uncover K–16 Students' and Teachers' Ideas

11:00 AM–12 Noon

Teaching STEM Subjects to Students with Special Needs

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

12:30–1:30 PM

Project Based Learning—the Why and How

What Students Think about and Learn from the Whole-Class Inquiry Curriculum

2:00–3:00 PM

Introducing the *NGSS* to Teachers and Administrators

Cracking The Case: Decoding Engineering Principles Using Case Studies

3:30–4:00 PM

Beyond the Numbers: Making Sense of Statistics

3:30–4:30 PM

Pendulums and Porch Swings

5:00–6:00 PM

Earth Science Puzzles—Making Meaning from Data

Saturday, March 14 (Volume 3)

8:00–9:00 AM

Doing Good Science in Middle School

Using Predict, Observe, Explain Sequences in Your Classroom

9:30–10:30 AM

Bringing Outdoor Science In

An Introduction to Scientific Argumentation in the Classroom

11:00 AM–12 Noon

What Are They Thinking? Supporting Elementary Learning Through Formative Assessment Probes and Strategies

11:00 AM–12:30 PM

Planning for Hard-to-Teach Biology Concepts Included in the *NGSS*

12:30–1:30 PM

Teaching Science for Conceptual Understanding—Building a Bridge Between Students' Ideas and Scientific Concepts

2:00–3:00 PM

Teaching Science Through Trade Books—Exemplars from the Book and Featured Columns

Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12

3:30–4:30 PM

Phenomenon-based Learning: Fun, Hands-On, Cooperative Learning

Teaching Science Through Integrating Children's Literature and Outdoor Investigations

Out in the Field. Showcasing Elementary Preservice Interns Teaching *Inside-Out*

5:00–6:00 PM

Everyday Engineering

Sunday, March 15 (Volume 3)

8:00–9:00 AM

Inquiry and Literacy for Grades 3–5 Science: A Perfect Pair for Making Meaning of the Natural World

The Basics of Data Literacy: Helping Your Students (and You!) Make Sense of Data

9:30–10:30 AM

Activating Adolescent Science Identity: Research and Practice

The Method—A Systematic Approach to Problem Solving

11:00 AM–12 Noon

Forensics in Chemistry

CCSS, ELA and Literacy + the *NGSS* = Even More Brain-powered Science

NSTA Professional Development Institutes

Wednesday, March 11
9:00 AM–4:00 PM

PDIs and work sessions were available by preregistration only.

Professional Development Institutes (PDIs) are focused, content-based programs that explore key topics in significant depth. Each institute begins with a full-day preconference session, followed by two days of pathways sessions that offer further exploration of the topics covered. PDIs are presented by experts in science education, professional development, and materials development. Institutes are offered in conjunction with the NSTA National Conference on Science Education and require conference registration. Check in between 8:00 and 9:00 AM.

Moving Standards into Practice: Five Tools and Processes for Translating the *NGSS* into Instructional Sequences and Classroom Assessments (PDI-1)

Provider: American Museum of Natural History

Jim Short and **Dora Kravitz,** American Museum of Natural History, New York, N.Y.
Jody Bintz, BSCS, Colorado Springs, Colo.
Kathy DiRanna, K–12Alliance/WestEd, Huntington Beach, Calif.
Jo Topps, K–12 Alliance/WestEd, San Francisco, Calif.
Level: Grades K–12
Location: W178b, McCormick Place

This PDI will share a set of tools and processes that will help deepen teachers' knowledge and enable them to translate the *NGSS* into instructional sequences that will 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.

AMNH Pathway Sessions
All sessions are located in W178b. See daily program for details.

Thursday, March 12
8:00–11:00 AM
Using a Tool and the *NGSS* to Plan a Unit of Instruction

12:30–2:30 PM
Using a Tool and the *NGSS* Performance Expectations to Plan for Classroom Assessments

3:30–5:30 PM
Learning about the BSCS 5E Instructional Model to Design *NGSS* Learning Sequences

Friday, March 13
8:00–10:00 AM
Using the BSCS Instructional Model to Design Learning Sequences

12:30–2:30 PM
Using a Tool and *NGSS* Performance Expectation Specifications to Develop Assessment Tasks

Designing Effective STEM Lessons Incorporating *NGSS*: What Does It Look Like? (PDI-2)

Provider: McREL International

Anne Tweed, 2004–2005 NSTA President, and McREL International, Denver, Colo.
Whitney Cobb and **Laura Arndt,** McREL International, Denver, Colo.
Level: Grades 3–12
Location: W175 a/b, McCormick Place

Participants will work with key strategies for planning STEM/*NGSS* lessons; explore effective strategies that develop student understanding; promote a positive learning environment and address NGSS; review sample STEM lessons to recognize which types of lessons are most appropriate for different STEM models; and survey a variety of community-based STEM programs (Citizen Science) to identify ongoing science research that can make learning relevant for your students.

McREL Pathway Sessions
All sessions are located in W175 a/b. See daily program for details.

Thursday, March 12
8:00–9:30 AM
Discourse in the Classroom: Supporting Science and Engineering Practices

10:00–11:30 AM
Green STEM in Elementary Classrooms

12:30–2:00 PM
Implementing Formative Assessment in the High School Classroom to Realize the Vision of the *NGSS*

3:30–5:00 PM
Implementing Formative Assessment in the Elementary Classroom to Realize the Vision of *NGSS*

Friday, March 13
8:00–9:30 AM
Incorporating Emerging Science and Engineering Content to Meet the Expectations of the *NGSS*

11:00 AM–12 Noon
Leveraging Virtual Manipulatives and Visual Tools to Develop Student Understanding (sTem)

12:30–2:00 PM
Integrating Engineering and Science Using Space Science as a Pathway

3:30–4:30 PM
Ed Tech in Elementary STEM Lessons

5:00–6:00 PM
Fostering Self-Assessment (Metacognition) to Support Positive Environments

Leadership for the *Next Generation Science Standards'* Practices of Science (PDI-3)

Provider: BSCS

Paul Numedahl, BSCS, Colorado Springs, Colo.
Level: Grades K–12
Location: 176a, McCormick Place

How well do educators with whom you work understand the *NGSS*? How well are they able to support student learning at the nexus of the three dimensions of the *NGSS*? Participants will engage in a short science-based learning experience to launch conversations and the study of the *NGSS*, consider supports needed by teachers and their students to learn at the intersection of the three dimensions, and explore professional development strategies that support teacher learning. We will analyze video of both classroom practice and the practice of PD leaders.

BSCS Pathway Sessions
All sessions are located in W176a. See daily program for details.

Thursday, March 12
8:00–9:00 AM
Designing Effective Professional Development for the *NGSS*

9:30–11:30 AM
Engaging Students in Making Sense of Phenomena with Data and Models—Practices 2 and 4

12:30–3:30 PM
Taking the Lead with the *NGSS*

Friday, March 13
8:00–10:00 AM
Developing the *NGSS* Capacity Through Professional Development Partnerships

12:30–2:30 PM
The Practices of Science in the Elementary Classroom

3:30–5:30 PM
Engaging Students in Explanations and Argumentation—Practices 6 and 7

One-Day Work Session: Developing Next Generation Science Assessments (PDI-4)

Christopher Harris, SRI International, Menlo Park, Calif.
Angela DeBarger, The George Lucas Educational Foundation, San Rafael, Calif.
William Penuel, University of Colorado Boulder
Yves Beauvineau, Culturally Responsive Science Pedagogies, LLC, Nederland, Colo.
Level: K–12
Location: W192a, McCormick Place

We'll introduce you to a design process for creating summative and formative assessments aligned to the *NGSS*. You'll learn how to interpret the *NGSS* performance expectations (PEs) with a focus on using PEs to design classroom-based assessments. Through group work, discussion, and video, discover formative assessment strategies to apply when engaging students actively in using disciplinary core ideas through argumentation, modeling, and constructing explanations. You'll also learn strategies that recognize and draw on the diverse cultural and linguistic resources that students bring to the science classroom.

One-Day Work Session: Promoting Equity and Alignment to the *NGSS* in Curriculum and with Teaching Using the EQuIP and the Equals Rubrics (PDI-5)

Joseph Krajcik, CREATE for STEM Institute, Michigan State University, East Lansing
Emily Miller, Madison (Wis.) Metropolitan School District
Level: Grades K–12
Location: W192c, McCormick Place

The *Framework* and *NGSS* lead the charge in promoting equity in STEM learning and equal access to STEM colleges and careers for all learners. The *Framework* and *NGSS* have major implications for curriculum materials, because curriculum can enable students to navigate the shifts in the *NGSS* and meet the three-dimensional learning goals when paired with instruction. The EQuIP Rubric provides criteria for measuring the alignment and overall quality of lessons and units with respect to the *NGSS*. The Equals Rubric is designed to break down key criteria for equal access and ownership of learning that should be present in science lessons to assist reflective teaching. This in-depth workshop will arm you with the expertise needed to use these tools to evaluate, design, develop, and modify curriculum and teaching for three-dimensional learning, and meet the needs of all students to support achieving the *NGSS*.

One-Day Work Session: Building STEM Capacity with *NGSS:* Addressing Science and Engineering in the *Next Generation Science Standards* (PDI-6)

Mariel Milano, Orange County Public Schools, Orlando, Fla.
Cary Sneider, Portland State University, Portland, Ore.
Level: Grades K–12
Location: W196a, McCormick Place

Engineering in the *NGSS* has two different but complementary meanings—as a practice and as a core idea. This PDI will help educators in states, districts, and schools develop a systematic way of thinking about how best to incorporate the core ideas of engineering in science curricula. The goal of this effort is for students to develop an explicit understanding of the core ideas of engineering, while they also become more skillful in using engineering practices. At the end of the PDI, participants will be able to plan an integrated unit.

Special Pathway Sessions

NSTA is proud to partner with national leaders to offer attendees a pathway of sessions addressing important topics in effective instruction in science and STEM—from integrated engineering to literacy, and from *NGSS* in practice to the what, why, and how of teaching epidemiology! All sessions are located in W175a/b. See daily program for details.

Thursday, March 12
8:00–9:30 AM
CDC: The Why, What, and How of Teaching Epidemiology and Public Health Science in Middle and High School

10:00 AM–12 Noon
NGSS Base Camp: An Introduction to the *Next Generation Science Standards*

12:30–2:30 PM
Building K–6 Integrative STEM Through Technology, Engineering, Environment, Mathematics, and Science (TEEMS): A Project-based Student-centered Approach

3:30–5:00 PM
Disciplinary Literacy in the STEM Classroom

Friday, March 13
8:00–10:00 AM
Shifts in High School Instruction to Meet the *Next Generation Science Standards*

11:00 AM–12:30 PM
Formative Assessment: Lessons Learned

2:00–4:00 PM
Get Grounded—Experience the *NGSS* in Practice

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.

Using Manipulatives to Teach Science in Special Education and Inclusion Classrooms (SC-1)

Shari Weaver (*sweaver@wpi.edu*), Massachusetts Academy of Math & Science at WPI, Worcester
Jacob Landmesser (*jlandmesser@siskiyoucoe.net*), Happy Camp Elementary School, Happy Camp, Calif.
Level: Grades 6–12
Date/Time: Thursday, March 12, 1:00–5:00 PM
Location: Crystal, Palmer House
Ticket Price: $42

This short course will introduce participants to the use of manipulatives to teach science concepts to high school students with learning disabilities ranging from mild/moderate disabilities in an inclusion setting to moderate/severe disabilities in a substantially separate classroom. The presenters will begin by defining the term "manipulative" and briefly outlining the research supporting the effectiveness of the use of manipulatives in teaching mathematics in both special education and general education settings. In groups, engage in several activities using manipulatives to teach content in the areas of biology, chemistry, and physics. Then, develop your own manipulatives and consider how to implement their use in your individual classrooms. Finally, the presenters will provide evidence of student learning via video and sample work. Take home electronic handouts and templates for all developed activities.

Engineering a Story: Integrating Literacy with Engineering Practices (SC-2)

Mia Dubosarsky (*mdubosarsky@wpi.edu*), The STEM Education Center at WPI, Worcester, Mass.
Level: PreK–8
Date/Time: Thursday, March 12, 1:00–5:00 PM
Location: Salon 7, Palmer House
Ticket Price: $45

This short course provides preK–8 teachers with practical methods for integrating engineering practices with literacy. Participants unpack the engineering design process (EDP) by creating an EDP visual that they could share with their students and then follow the process to solve problems found in a children's book. Working in small groups, participants identify problems, develop solutions, prototype, test/evaluate, and share their solutions. At the end, we'll review of the process with different classroom texts. Hundreds of teachers have found this short course extremely helpful in unpacking the engineering practices and connecting them with classroom texts. *Note:* Participants should bring a book/text that they use in their classrooms (additional preK–8 books will be provided by the presenter for those participants who did not bring a book).

Ocean Plastic Pollution: Issues and Solutions (SC-3)

Mary Whaley *(mwhaley@mbayaq.org)*, Monterey Bay Aquarium, Monterey, Calif.
Level: Grades 6–8
Date/Time: Thursday, March 12, 1:30–4:30 PM
Location: Salon 1, Palmer House
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. We will not just look at the impacts of prolific plastic use but also explore 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!

Making Sense of Student Work: A Protocol for Teacher Collaboration (SC-4)

Kirsten Daehler (*kdaehle@wested.org*) and **Staceylyn Machi** *(smachi@wested.org),* K–12 Alliance/WestEd, San Francisco, Calif.
Kathy Huncosky, Madison Metropolitan School District, Madison, Wis.
Level: Grades 4–12
Date/Time: Friday, March 13, 8:00–11:00 AM
Location: Crystal, Palmer House
Ticket Price: $62

Participants will take home a copy of WestEd's new book *Making Sense of Student Work* and have the opportunity to experience this research-based approach designed to support groups of teachers looking together at student work in a way that models collaborative inquiry, maintains a focus on evidence, and encourages reflective instructional practices. Explore the five modules in this protocol:

—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. Learn more at SC-3: Ocean Plastic Pollution. At left, some contents found in albatross stomachs.

Mental Models, Learning Gaps, Next Steps, Analyzing Tasks, and Modifying Tasks. After exploring the topic of matter from the lens of student learners, you will reflect on how this protocol and sequence of five modules can be used in your own school, district, or other professional learning community. For more information, visit *we-mss.weebly.com/making-sense-of-student-work-protocol.html*.

Supporting K–12 Students in Argumentation Across Reading, Writing, and Talking (SC-5)

Katherine L. McNeill *(kmcneill@bc.edu)*, Boston College, Chestnut Hill, Mass.
Pamela Pelletier *(bps.science@gmail.com)* and **Dean Martin**, *(dean.bpsscience@gmail.com)*, Boston Public Schools, Boston, Mass.
Nancy Blasi *(nancy.m.blasi@gmail.com)*, James P. Timilty Middle School, Boston, Mass.
Level: K–12
Date/Time: Friday, March 13, 8:00–11:00 AM
Location: Salon 3, Palmer House
Ticket Price: $27

The *NGSS* and the *CCSS, ELA* stress the importance of having students engage in argumentation using evidence. In this short course, we will focus on how to support students in this important scientific practice in K–12 classrooms. We have worked with teachers successfully using a framework that consists of four components: claim, evidence, reasoning, and rebuttal. A claim is a conclusion about a problem. Evidence is scientific data, such as measurements and observations. Reasoning explains why the evidence supports the claim using important disciplinary core ideas. Finally, a rebuttal critiques the quality of alternative claims using appropriate evidence and reasoning. We will also engage in an investigation using the framework to make sense of phenomenon in both talking and writing and analyze an argumentation reading in terms of the quality of the claim and scientific evidence provided. Samples of K–12 student work will be shared.

Engineering Understanding: Applying Science Concepts and Building Academic Language (SC-6)

Diana Velez *(dvelez@berkeley.edu)*, The Lawrence Hall of Science, Berkeley, Calif.
Claudio Vargas *(claudio.vargas@ousd.k12.ca.us)*, Oakland Unified School District, Oakland, Calif.
Level: Grades 4–8
Date/Time: Friday, March 13, 8:00–11:00 AM
Location: Salon 1, Palmer House
Ticket Price: $35

Come problem-solve and design with us as we explore lessons and strategies that provide authentic engineering challenges that further science content learning for all students. Join us as we delve into the *NGSS* core components of engineering design: defining and delimiting engineering problems, designing solutions to engineering problems, and optimizing the design solution. We will model strategies and scaffolds for promoting academic discussions that include argumentation. Discussion also includes how engineering helps diverse students see science as relevant to their lives and future—and as a way to engage in science in socially relevant and transformative ways.

Classroom Redesign: Putting the *NGSS* into Practice in Elementary, Middle School, and High School (SC-7)

SOLD OUT

Zoe Evans *(zoe.evans@carrollcountyschools.com)*, Central Middle School, Carrollton, Ga.
Chris Embry Mohr *(chrisembry.mohr@olympia.org)*, Olympia CUSD 16, Stanford, Ill.
Julie A. Olson *(julie.olson@k12.sd.us)*, Mitchell Senior High School, Mitchell, S.Dak.
Jeremy Peacock *(jeremy.peacock@negaresa.org)*, Northeast Georgia Regional Educational Service Agency, Winterville, Ga.
Elizabeth O'Day *(betsy.oday@gmail.com)*, Hallsville Intermediate, Hallsville, Mo.
Level: General
Date/Time: Friday, March 13, 8:00–11:00 AM
Location: Salon 2, Palmer House
Ticket Price: $27

Join members of the *NGSS* writing team as they guide participants through the 5 E's (Engage, Explore, Explain,

Elaborate, and Evaluate) to develop lessons that put the *NGSS* into practice. Participants should bring copies of units/lessons they currently use in their classrooms to be remodeled and redesigned in *NGSS* fashion. Rubrics produced by Achieve and NSTA will be used to assist participants in the development of these lessons.

"All Standards, All Students" Appendix D and Case Studies (SC-8)

Rita Januszyk *(ritajanuszyk@gmail.com)*, Retired Educator, Hinsdale, Ill.
Emily Miller *(emilycatherine329@gmail.com)*, Madison Metropolitan School District, Madison, Wis.
Bernadine Okoro *(bernadine.okoro@dc.gov)*, Theodore Roosevelt Senior High School, Washington, D.C.
Elizabeth O'Day *(betsy.oday@gmail.com)*, Hallsville Intermediate, Hallsville, Mo.
Level: Grades 1–9
Date/Time: Friday, March 13, 1:00–5:00 PM
Location: Salon 3, Palmer House
Ticket Price: $27

Join members of the Diversity and Equity writing team of the *NGSS* as they present Appendix D and case studies. This short course is designed to help prepare teachers to make the instructional shifts that enable all students to be college and career ready. The seven case studies that will be shared illustrate how teachers provide access to the *NGSS* through blending of the three dimensions, connecting to the *CCSS* for English language arts and mathematics, and employing research-based classroom strategies. Participants will leave with a practical and tangible route toward effective science instruction with diverse student groups. For more information, go to *www.ista-il.org/NGSSAllstandardsAllstudents.html*.

Integrating STEM and Art with Pretty Astronomy Pictures (SC-9)

Sharon Schleigh *(schleighs@yahoo.com; sharonpschleigh@gmail.com)*, Purdue University Calumet, Hammond, Ind.
Level: Grades 6–college
Date/Time: Friday, March 13, 1:00–5:00 PM
Location: Salon 2, Palmer House
Ticket Price: $117

Create beautiful astronomical images using technology, core concepts in science, and art applications. This short course involves real data-set images and robotic telescope access—a great way to use authentic science. Receive lesson material and content information that you can use in your classroom. This material encourages students to learn through the natural integration that exists between STEM and art involving astronomy, chemistry, biology, and physics concepts. Join us and experience a hands-on approach that supports the *NGSS* and can be modified for middle grades on up to undergraduate level courses. Bring your laptop, if possible. For more information, visit *www.smartpd.org*.

STEM for ALL: Practices and Methods that Promote Equal Access to STEM (SC-10)

Mia Dubosarsky *(mdubosarsky@wpi.edu)*, The STEM Education Center at WPI, Worcester, Mass.
Level: Grades 5–16
Date/Time: Saturday, March 14, 8:00 AM–12 Noon
Location: Salon 7, Palmer House
Ticket Price: $42

This interactive short course begins by addressing bias, stereotypes, and other societal factors that prevent certain student groups from pursuing STEM majors and careers. Then we will discuss research-based methods and classroom practices that make STEM accessible for all students, including girls, students with learning or physical disabilities, students who live in poverty, and students from non-English speaking families. Shared resources for educators include *NGSS* case studies and Universal Design for Learning.

Authentic Performance Assessments: Creating a Common Lab Report Rubric (SC-11)

Paul Fraser *(pfraser1011@gmail.com)* and **Lee Ann Haralambakis** *(leeannie1680@gmail.com),* Rolling Meadows High School, Rolling Meadows, Ill.
Level: High School
Date/Time: Saturday, March 14, 8:00 AM–12 Noon
Location: Salon 2, Palmer House
Ticket Price: $42

For many students, the lab report is a tedious and confusing assignment coupled with vague expectations. For teachers, the lab report fails to truly capture students' demonstration of scientific practices or support the progressive development of scientific skills. In this short course, we will alleviate these frustrations as we share our experiences and guide teachers through the development of a common, standards-based summative lab report rubric. In groups, participants will work together to analyze and relate *NGSS* science practices to their formal lab reports. For more information, visit *www.tinyurl.com/performassess*.

Explore Local Biodiversity with Encyclopedia of Life and OBIS (SC-12)

Joanna Snyder *(joanna_snyder@berkeley.edu)* and **Erica Beck Spencer** *(ebspencer@berkeley.edu),* The Lawrence Hall of Science, Berkeley, Calif.

Level: Grades 4–10
Date/Time: Saturday, March 14, 8:00 AM–12 Noon
Location: Salon 3, Palmer House
Ticket Price: $27

Encyclopedia of Life (EOL) and Outdoor Biology Instructional Strategies (OBIS) have teamed up to help educators explore local biodiversity through hands-on STEM learning opportunities. While OBIS offers educators activities and strategies to guide exploration of ecological concepts in the local environment, EOL offers extensive information about biodiversity and tools, such as EOL Collections and customizable field guides, built upon the interactive iNaturalist observation platform. *Note:* Participants should bring a notebook and be dressed to go outdoors. For more information, visit *www.outdoorbiology.com* and *education.eol.org*.

Modeling Key Mechanisms of Evolution and Population Biology (SC-13)

Michael Novak *(mnovakccl@gmail.com)* and **Corey Brady** *(cbrady@northwestern.edu)*, Northwestern University, Evanston, Ill.
Katahdin Cook Whitt *(kate.cook@wright.edu)*, The Dayton Regional STEM School, Kettering, Ohio

Level: High School
Date/Time: Saturday, March 14, 8:00 AM–5:00 PM
Location: Salon 1, Palmer House
Ticket Price: $94

Receive a hands-on introduction to free research-based curriculum using NetLogo, developed at Northwestern University and currently being implemented in more than 100 biology classrooms in the Chicagoland area. NetLogo is a free and open-source agent-based modeling language and simulation environment. The activities involve creating, exploring, and modifying simulated ecosystems. Participants will need to bring a laptop with Chrome or Firefox web browser and latest version of Java installed. A boxed lunch is included. For more information, visit *modelsim.tech.northwestern.edu/info*.

Using Science Phenomena to Assess Student Understanding of *NGSS* Performance Expectations (SC-14)

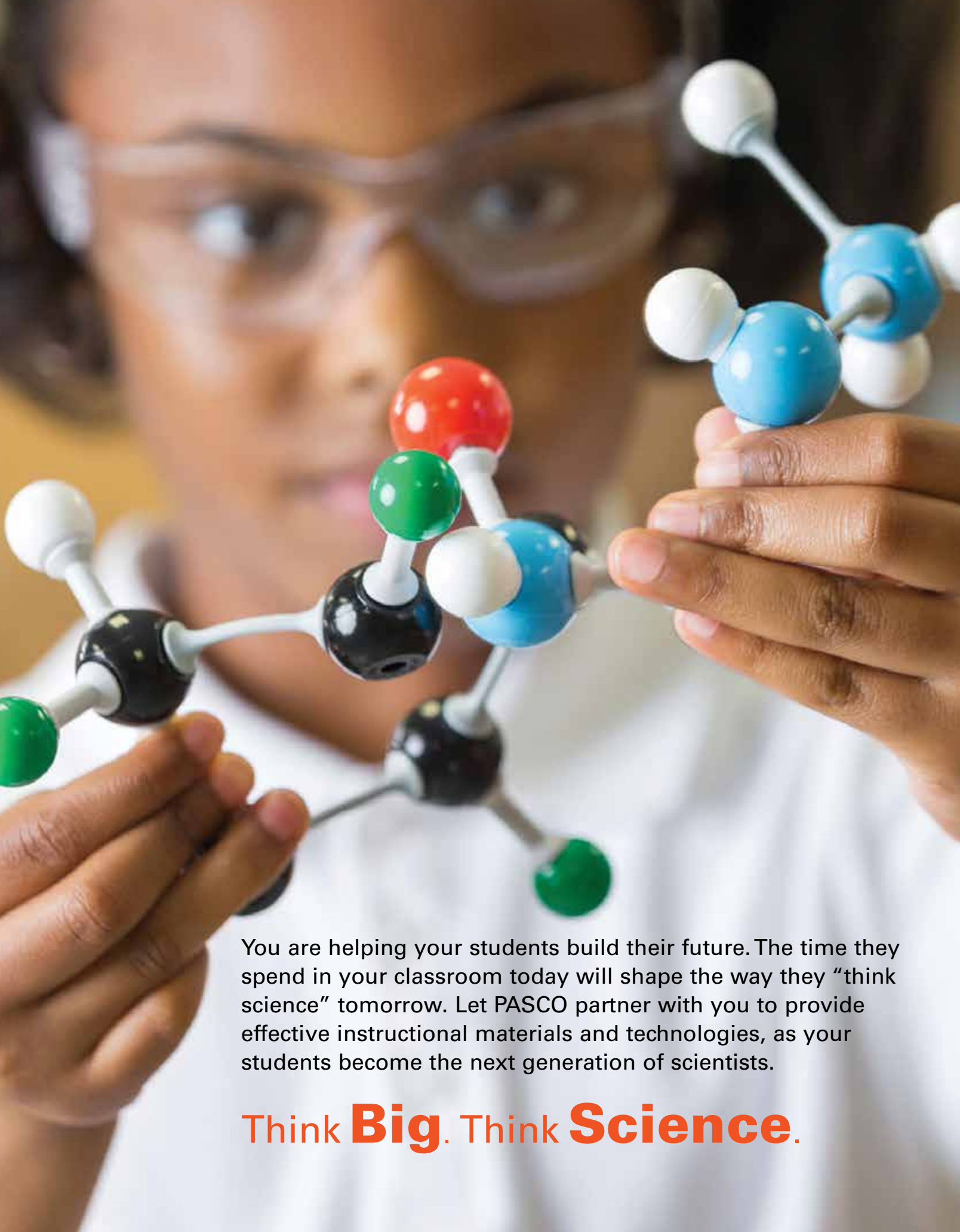
Brett Moulding *(mouldingb@ogdensd.org)*, Partnership for Effective Science Teaching and Learning, Ogden, Utah

Level: K–12
Date/Time: Saturday, March 14, 1:30–4:30 PM
Location: Salon 3, Palmer House
Ticket Price: $62

We will use a framework to assess students' ability to make sense of novel phenomena and engage in hands-on science performances to model classroom instruction and assessment. The performances occur at the intersection of the *NGSS* three dimensions. The framework will be further illustrated through video of teachers assessing students' ability to make sense of novel phenomena as a formative assessment tool. Take home a copy of the book *A Vision and Plan for Science Education*. Participants are encouraged to bring a tablet/laptop.

—courtesy of Dean Martin

Supporting K–12 Students in Argumentation Across Reading, Writing, and Talking. (SC-5)



You are helping your students build their future. The time they spend in your classroom today will shape the way they "think science" tomorrow. Let PASCO partner with you to provide effective instructional materials and technologies, as your students become the next generation of scientists.

Think **Big**. Think **Science**.


Visit our booth to Think **Big**. Think **Science**.
Big News.
Be among the first to see our newest products including the 550 Universal Interface, Smart Gate, and Wireless Spectrometer.
Big Event.
Join us Friday from 5–7pm in Skyline W375A for our free "More Than Just Physics" event featuring dynamic demos in physics and chemistry.
Big Selection.
Pick up a schedule for our 12 hands-on, sensor-based workshops on Thursday and Friday in W179B. Be sure to enter our drawings to win prizes at each workshop.
Big Ideas.
Join hands-on demos taking place every hour covering NGSS, biology, chemistry and physics, and walk away with ideas on how to tackle tough topics in your class.
Big Winners.
Enter our booth drawing for a chance to win a free classroom set of science technology. Prizes are also available at each workshop.
Booth #1522
PASCO scientific
A PROUD SPONSOR OF
STEM EDUCATOR AWARD

Tickets for educational trips can be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your trip leader at Gate 41 of McCormick Place (level 1, West Bldg.), 2301 S. Indiana Ave., on the corner of Indiana and Cermak (E. 22nd St.) at least 15 minutes prior to departure time.

—Courtesy of Jim Schulz/Chicago Zoological Society

Global Conversations, Welcome to My Classroom
$33; *by preregistration only*

W-1 Wednesday, March 11 6:30 AM–12:10 PM

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 Stevenson High School and Daniel Wright Middle School, both located in Lincolnshire, Illinois. Participants will be divided into two groups: one will proceed to the middle school to observe either a 5th, 7th, or 8th grade lab class and the other will go to the high school to observe a 9th, 10th, 11th, or 12th grade class.

Note: This field trip will have two bus-loading options: one at the Hyatt Regency McCormick Place and the second at Palmer House Hilton. See shuttle schedule on page 12 for pick-up details.

World-Class Neutrino Science on the Prairie $52

T-1 Thursday, March 12 11:30 AM–6:00 PM

Join us for this visit to Fermilab, America's world-class neutrino laboratory. Hear from scientists and engineers about what they do. This educational trip also includes a choice of one of two hands-on programs: the prairie program (appropriate for grades K–8 teachers) and the physics program (appropriate for grades 6–12 teachers). You will learn about the extensive STEM instructional resources at the Teacher Resource Center. Lunch is not included, however, a small snack will be provided for the trip back to Chicago. Travel time is 1.5 hours each way. For more information, visit *ed.fnal.gov*.

A Guided Tour of the History and Features of Burnham Park, Chicago $14

T-2 Thursday, March 12 1:00–5:15 PM

A short distance from McCormick Place, Burnham Park is located on the beautiful Lake Michigan shoreline. Join the Illinois State Geological Survey and the Chicago Park District as we explore the park and the natural beach processes of Lake Michigan. As the weather in March may be cool, participants will be bused through the park and features of the park will be explored on foot as weather permits. While visiting the Northerly Island Visitor Center, participants will see how the Chicago Park District inspires families to get outdoors and appreciate nature. Learn about fossils and mineral resources of Illinois as well as listen as historians and archaeologist describe historic park events, such as the 1933 World's Fair. This educational trip is funded, in part, by an Illinois Department of Natural Resources, Coastal Management Grant with funds from NOAA.

Note: Remember to dress for the weather.

Modern Skyscrapers (1950s to Present)
$44; *by preregistration only*

SOLD OUT

T-3 Thursday, March 12 1:15–4:15 PM

Internationally renowned for its historic and modern architecture, Chicago is home to the second tallest building in the Western Hemisphere and where the world's first skyscraper was built. In the years following World War II, Chicago established itself as a world capital of modern architecture. On this field trip, we will examine many of the buildings that helped earn Chicago this reputation, from the elegant minimalism of Mies van der Rohe's Federal Center to the

brawny expressiveness of the Richard J. Daley Center.

Note: Remember to dress for the weather and wear comfortable shoes. Must be able to walk long distances.

Shedd Science: The Greatness of the Great Lakes

SOLD OUT

$48; *by preregistration only*

F-1 Friday, March 13 8:30 AM–1:00 PM

Connect with Shedd Aquarium scientists and learning experts to explore the greatness of the Great Lakes. Attendees will get an exclusive look at the Great Lakes exhibit of the Shedd Aquarium, including one-on-one conversations with Shedd scientists studying the Great Lakes and its biodiversity. Learn about citizen science opportunities for you and your students and other stewardship activities to help make your classroom green. This educational trip will include hands-on activities around sustainability and ideas to take back to the classroom. Outdoor activities included, weather permitting. Come prepared with comfortable walking shoes and outerwear as appropriate for weather conditions. Meals are not included; there will be an opportunity to purchase a meal at the aquarium at the conclusion of the trip.

A Day of Learning and Fun at Brookfield Zoo

SOLD OUT

$89; *by preregistration only*

F-2 Friday, March 13 8:45 AM–4:15 PM

Come enjoy the magic and beauty of Brookfield Zoo. Get up-close and personal with the animals during your behind-the-scenes tour. Experience one of 16 behind-the-scenes tours and then the zoo is yours to enjoy during the day. Go to *www.nsta.org/docs/2015NationalBrookfieldZoo.pdf* for complete descriptions of each of the tours. Each behind-the-scenes tour is limited to 8 to 16 people. The day also includes a box lunch and tickets to the 2:30 PM Dolphins in Action presentation. This is a rare opportunity to explore a zoo area/animal that has always interested you.

Note: Remember to dress for the weather and wear comfortable walking shoes. Each participant must sign a medical waiver/guest agreement. No photography is allowed during the behind-the-scenes tours.

Learning Through Collections 101: Using Objects in Your Classroom

SOLD OUT

$43; *by preregistration only*

F-3 Friday, March 13 11:45 AM–3:15 PM

Turn your classroom into an interactive space where students take learning into their own hands—literally! Practice new teaching strategies that prepare you to bring real artifacts and specimens into the classroom to develop students' critical thinking, questioning, and discussion skills. The Field Museum is home to a collection of more than 24 million specimens, with scientists adding to and accessing that collection daily. Learn how researchers use collections to advance science and how you can use these same skills with your students. During this interactive educational trip/workshop, participants will discuss the merits of objects as an alternative to text-based learning. Presenters will frame objects as an "informational text" that participants will learn to "read" for understanding. Explore how students can piece together multiple objects and curate their own science stories. Learn simple techniques to challenge your students to move from basic observations to deeper questioning, carrying out investigations, and drawing conclusions. Lunch not included. For more information, visit *www.fieldmuseum.org*.

F-1: Shedd Science: The Greatness of the Great Lakes

—*courtesy of Michael Weiss*

Argonne National Laboratory Tour **$31;** *by preregistration only*

S-1 SOLD OUT Saturday, March 14 8:00 AM–1:00 PM

The nation's first national laboratory, Argonne conducts leading-edge basic and applied scientific research in virtually every scientific discipline. Participants will tour the Advanced Photon Source, the Argonne Tandem Linac Accelerator System (ATLAS), the world's first ion accelerator using superconducting devices for the energy gain, and the Nuclear Energy Exhibit, showcasing Argonne's rich heritage in the development of nuclear reactors and its current role in the development of next-generation reactors and fuel cycle technologies. Travel time is an hour each way.

Butterfly Biology **$64**

S-2 CANCELED Saturday, March 14 8:00 AM–1:00 PM

Join us at the Peggy Notebaert Nature Museum for content and hands-on activities focused on butterfly biology and conservation. Learn about butterfly bodies, behaviors, and life cycles and how to use real butterflies to add depth to your teaching. Attendees will also learn how to pin a butterfly and practice with a real specimen from the museum's Judy Istock Butterfly Haven. Leave with your own beautiful butterfly specimen and the ability to make authentic butterfly specimens to use in your classroom. After the workshop, there will be an hour to explore the museum on your own.

—*courtesy of Peggy Notebaert Nature Museum*

SeaWorld Parks & Entertainment

Inspire the Next Generation of Conservation Leaders with SeaWorld myActions

Student Actions

Students Saved Water

enough to fill **190** bathtubs

Kids Reduced Waste

44,924 items kept out of landfills

Community Impact

Students Organized

96 events/ cleanups

Youth Leadership

See How Easy It Is for Your Students to Join the Movement

text **#NSTA** to **21212**

or Visit the SeaWorld Booth

SeaWorld.myActions.org

Please note that the Hyatt referenced below is the Hyatt Regency McCormick Place.

Wednesday, March 11

FOSS Institute
By Invitation Only
Field A/B, Hyatt.....8:00 AM–5:00 PM

FOSS Middle School Meeting
By Invitation Only
Burnham A/B, Hyatt.....8:00 AM–5:00 PM

FOSS Third Edition K–6 Meeting
By Invitation Only
Clark A/B, Hyatt.....8:00 AM–5:00 PM

National Marine Educators Association Mid-Year Board Meeting
By Invitation Only
Off-site, Lincoln Park Zoo.....8:30 AM–5:00 PM

NSELA Professional Development Institute
By Registration Through NSELA
Hyde Park A/B, Hyatt..... 8:30 AM–5:30 PM

SESD Preconference and Annual Meeting
By Registration Through SESD
Regency E, Hyatt.....8:30 AM–6:00 PM

FOSS Luncheon
By Invitation Only
Adler, Hyatt .....12 Noon–1:00 PM

Global Conversations in Science Education Conference (in collaboration with ICASE and CESI)
By Preregistration only (M-1 ticket required)
Regency A, Hyatt.....1:00–5:30 PM

Leadership Retreat for NSTA Districts 8, 9, 10, 12, 16, and 17
By Invitation Only
Prairie A, Hyatt.....2:00–7:30 PM

NSTA/CAEP Standards for Preservice Science Teachers Workshop
Adler C, Hyatt ..... 4:00–7:00 PM

NSTA President's International Reception
Sponsored by ExxonMobil Foundation
Open to international visitors and invited guests
Regency B, Hyatt..... 6:00–7:00 PM

NSELA/CSSS Reception
Prairie B, Hyatt..... 6:00–8:00 PM

Thursday, March 12

NSELA Membership Breakfast
By Invitation Only
Prairie B, Hyatt..... 7:30–8:30 AM

Welcome to NSTA and DuPont Breakfast
By Invitation Only
Empire, Palmer House ..... 7:45–9:00 AM

First-Timers, Preservice Teachers, and New Teachers Breakfast
Sponsored by Ward's
W183a/b, McCormick Place.....8:00–9:00 AM

National Earth Science Teachers Association Board Meeting
Burnham C, Hyatt .....8:00 AM–5:00 PM

NSELA Annual Membership Meeting
Prairie B, Hyatt..... 8:30–10:00 AM

NMLSTA Board Meeting
Huron, Hyatt..... 8:30–10:00 AM

Research in Science Teaching Committee Meeting
Boardroom 1, Hyatt.....8:30–10:30 AM

Retired Members Advisory Board Meeting
Boardroom 2, Hyatt ..... 9:00–10:30 AM

Science Safety Advisory Board Meeting
Boardroom 3, Hyatt ..... 9:00–10:30 AM

AMSE Board Meeting
By Invitation Only
Boardroom 5, Hyatt .....9:00 AM–12 Noon

NSTA International Lounge
Michigan, Hyatt .....9:00 AM–5:00 PM

Polar Educators International Open Meeting
Regency D, Hyatt.....10:30 AM–12 Noon

Awards and Recognitions Committee Meeting
Erie, Hyatt..... 10:30 AM–12:30 PM

High School Science Teaching Committee Meeting
Boardroom 4, Hyatt ..... 11:00 AM–12:30 PM

Science & Children Advisory Board Meeting
Dusable B, Hyatt ..... 11:00 AM–12:30 PM

Science Scope Advisory Board Meeting
Dusable C, Hyatt ..... 11:00 AM–12:30 PM

First-Timers, Preservice Teachers, and New Teachers Lounge
Hall F2, McCormick Place ..... 11:00 AM–6:00 PM

Special Needs Advisory Board Meeting
Boardroom 1, Hyatt.....11:30 AM–1:00 PM

Informal Science Committee Meeting
Huron, Hyatt..... 12:30–2:30 PM

College Science Teaching Committee
Dusable C, Hyatt ..... 1:00–3:00 PM

Coordination and Supervision of Science Teaching Committee Meeting
Boardroom 5, Hyatt ..... 1:00–3:00 PM

Multicultural/Equity in Science Education Committee Meeting
Boardroom 2, Hyatt ..... 1:00–3:00 PM

Preschool–Elementary Science Teaching Committee Meeting
Dusable B, Hyatt ..... 1:00–3:00 PM

Preservice Teacher Preparation Committee Meeting
Boardroom 4, Hyatt ..... 1:00–3:00 PM

Professional Development in Science Education Committee Meeting
Boardroom 3, Hyatt ..... 1:00–3:00 PM

Nominations Committee Meeting
Erie, Hyatt ..... 1:30–3:00 PM

Technology Advisory Board Meeting
Boardroom 1, Hyatt ..... 1:30–3:00 PM

Middle Level Science Teaching Committee Meeting
Adler C, Hyatt ..... 1:30–3:30 PM

CESI Board Meeting
By Invitation Only
Huron, Hyatt ..... 3:00–6:00 PM

Journal of College Science Teaching Advisory Board Meeting
Dusable C, Hyatt ..... 3:30–5:00 PM

Science Matters Advisory Board Meeting
Boardroom 3, Hyatt ..... 3:30–5:00 PM

The Science Teacher Advisory Board Meeting
Boardroom 4, Hyatt ..... 3:30–5:00 PM

Outstanding Science Trade Books Committee Meeting
By Invitation Only
Erie, Hyatt ..... 4:00–5:00 PM

International Advisory Board Meeting
Boardroom 5, Hyatt ..... 4:00–6:00 PM

NSTA Board/Council Meet and Greet
By Invitation Only
Regency C, Hyatt ..... 4:30–6:00 PM

APAST Board of Directors Meeting
By Invitation Only
Ontario, Hyatt ..... 4:30–6:30 PM

NSTA Student/Student Chapter Showcase and Reception
Open to all preservice teachers and those who work with them
Regency A, Hyatt ..... 5:30–7:00 PM

Howard Hughes Medical Institute Movie Night
Skyline W375d, McCormick Place ..... 6:00–7:30 PM

Teach for America Networking Reception
Regency B, Hyatt ..... 6:00–8:00 PM

Friday, March 13

High School Breakfast (M-2)
(Tickets Required: $50)
Regency D, Hyatt ..... 7:30–9:00 AM

AMSE Alice J. Moses Breakfast
By Invitation Only
Regency B, Hyatt ..... 7:30–9:30 AM

Welcome to NSTA and DuPont Breakfast
By Invitation Only
Regency D/E, Hyatt ..... 7:45–9:00 AM

NMLSTA Board Meeting
Huron, Hyatt ..... 8:30–10:00 AM

Aerospace Programs Advisory Board Meeting
Boardroom 2, Hyatt ..... 8:30–10:30 AM

NSTA Reports Advisory Board Meeting
Boardroom 3, Hyatt ..... 9:00–10:30 AM

First-Timers, Preservice Teachers, and New Teachers Lounge
Hall F2, McCormick Place ..... 9:00 AM–5:00 PM

NSTA International Lounge
Michigan, Hyatt ..... 9:00 AM–5:00 PM

Development Advisory Board Meeting
By Invitation Only
Boardroom 1, Hyatt ..... 9:30–10:30 AM

Urban Science Education Advisory Board Meeting
Boardroom 2, Hyatt ..... 10:30 AM–12 Noon

Illinois Science Teachers Association Annual Meeting
(Visit ISTA website for more information)
Regency A, Hyatt ..... 12 Noon–1:00 PM

NSELA/ASTE Luncheon
(Tickets Required: $25 through NSELA website)
Regency B, Hyatt ..... 12 Noon–2:00 PM

NSTA Chapter and District Director Social in Honor of Wendell Mohling (*sponsored by GEICO*)
Hall F2, McCormick Place ..... 1:30–2:30 PM

NSTA/GLBT Science Teachers Annual Meeting
Dusable A/B, Hyatt..... 2:00–3:00 PM

Association for Multicultural Science Education (AMSE) Membership Meeting
Dusable A/B, Hyatt..... 3:15–5:15 PM

NSTA Chapter and Associated Group Leader Roundtable and Reception
Regency C, Hyatt..... 3:30–4:30 PM

SCST Business Meeting
Clark C, Hyatt ..... 3:30–5:00 PM

Youth Environmental Science Medal Presentation
Burnham C, Hyatt ..... 3:30–5:00 PM

APAST Business Meeting and Social
Regency D, Hyatt.....3:30–5:30 PM

NSTA Recommends Meeting
Ontario, Hyatt ..... 4:00–5:00 PM

NMLSTA Board Meeting
(Visit NMLSTA website for details)
Huron, Hyatt..... 4:00–5:30 PM

Shell Reception
By Invitation Only
State Ballroom, Palmer House ..... 5:00–5:45 PM

NSTA Teacher Awards Gala (M-3)
(Tickets Required: $80)
Red Lacquer Ballroom, Palmer House ..... 6:00–8:45 PM

NESTA Friends of Earth Science Reception
Regency C/D, Hyatt..... 6:30–8:00 PM

SCST Dessert Social and Poster Session
Regency C/D, Hyatt..... 7:00–9:00 PM

President's Mixer
State Ballroom, Palmer House..... 9:00 PM–12 Mid.

Saturday, March 14

APAST Breakfast Meeting
By Invitation Only
Adler A/B, Hyatt.....7:00–9:00 AM

NSTA Past Presidents' Breakfast
By Invitation Only
Regency C, Hyatt Regency McCormick Place .. 7:30–8:15 AM

AMSE/NSTA Minority Caucus George Washington Carver Breakfast
By Invitation Only
Prairie B, Hyatt..... 8:00–10:00 AM

Past Presidents Advisory Board Meeting
Boardroom 2, Hyatt .....8:15–9:15 AM

Shell Award Judging Panel Meeting
By Invitation Only
Huron, Hyatt..... 8:30–10:00 AM

First-Timers, Preservice Teachers, and New Teachers Lounge
Hall F2, McCormick Place .....9:00 AM–3:00 PM

NSTA International Lounge
Michigan, Hyatt .....9:00 AM–5:00 PM

NSTA/SCST College Luncheon (M-4)
(Tickets Required: $65)
Prairie A, Hyatt.....12 Noon–1:30 PM

CESI/NSTA Elementary Science Luncheon (M-5)
(Tickets Required: $65)
Regency C, Hyatt..... 12 Noon–2:00 PM

NSTA Council Roundtable
By Invitation Only
Regency D, Hyatt..... 2:00–4:00 PM

Association for Multicultural Science Education (AMSE) Town Hall Meeting
Clark A&B, Hyatt ..... 3:00–5:00 PM

Pi Day Celebration for Preservice/New Teachers and First-Time Conference Attendees (M-6)
(Tickets Required: $20)
W196b, McCormick Place .....4:00–6:00 PM

National Earth Science Teachers Association Annual Meeting
Skyline W375e, McCormick Place..... 5:00–6:00 PM

Equity in Science Reception, Sponsored by National Geographic Society
Prairie B, Hyatt.....5:30–7:30 PM

Celebrate Einstein's Birthday...with a Tribute to the Blues Brothers!
Regency Ballroom, Hyatt .....8:00–10:00 PM

Association for Multicultural Science Education (AMSE)

President: Robert Ferguson

Thursday, March 12

8:00–9:00 AM	What Else I Learned in Science Class (Besides Science)	Prairie A, Hyatt Regency McCormick Place
9:00 AM–12 Noon	AMSE Board Meeting (By Invitation Only)	Boardroom 5, Hyatt Regency McCormick Place
12:30–1:30 PM	AIM (Allocate-Initiate-Model) to Lead Diverse Student Populations in the Next Generation	Prairie A, Hyatt Regency McCormick Place
2:00–3:00 PM	Designing Rubber Band Racers to Ignite the Curiosity of Diverse Learners!	Prairie A, Hyatt Regency McCormick Place
3:30–4:30 PM	Critical Civic Inquiry In Science Contexts: Lessons from Teachers Engaging in Consciousness Raising and YPAR	Prairie A, Hyatt Regency McCormick Place
5:00–6:00 PM	Using Games and Challenges to Formatively Assess Students' Conceptual Understanding in Science	Prairie A, Hyatt Regency McCormick Place

Friday, March 13

7:30–9:30 AM	AMSE Alice J. Moses Breakfast (By Invitation Only)	Regency B, Hyatt Regency McCormick Place
11:00 AM–12 Noon	Classroom Teachers as Leaders: A Panel Discussion	Prairie A, Hyatt Regency McCormick Place
12:30–1:30 PM	Opening the Gateway to Success Using Case Studies to Help Implement Scientific Concepts	Prairie A, Hyatt Regency McCormick Place
3:15–5:15 PM	AMSE Membership Meeting	Dusable A/B, Hyatt Regency McCormick Place
3:30–4:30 PM	Navigating Racial Differences Between Teachers and Students	Prairie A, Hyatt Regency McCormick Place

Saturday, March 14

8:00–10:00 AM	AMSE/NSTA Minority Caucus George Washington Carver Breakfast (By Invitation Only)	Prairie B, Hyatt Regency McCormick Place
11:00 AM–12 Noon	Problems and Solutions Facing Teachers with the *NGSS*	Clark A/B, Hyatt Regency McCormick Place
	Preparing Preservice Teachers for STEM Project-based Instruction Classrooms	Field C, Hyatt Regency McCormick Place
3:00–5:00 PM	AMSE Town Hall Meeting	Clark A/B, Hyatt Regency McCormick Place

Association for Science Teacher Education (ASTE)

President: Joanne K. Olson

Thursday, March 12

8:00–8:30 AM	Summer Camp Science and Engineering: Changing Students' Understanding About Scientific Inquiry	Dusable A, Hyatt Regency McCormick Place
12:30–1:00 PM	Use of Electronic Simulations in Grades 7–12 Science Teaching	Dusable A, Hyatt Regency McCormick Place
2:00–3:00 PM	A Pedagogy of Kindness for the Science Classroom	Dusable A, Hyatt Regency McCormick Place

Friday, March 13

9:30–10:30 AM	Lessons that Create Opportunities for Students to Develop Proficiency in the 21st-Century Standards	Dusable A/B, Hyatt Regency McCormick Place
11:00 AM–12 Noon	Making Time for Science and Engineering in Early Childhood Classrooms	Dusable A/B, Hyatt Regency McCormick Place
12 Noon–2:00 PM	NSELA/ASTE Luncheon (Tickets Required) Speaker: Jeanne Century	Regency B, Hyatt Regency McCormick Place
2:00–2:30 PM	Supporting New Science Teachers: What the Research Says About How to Support Them	Field C, Hyatt Regency McCormick Place
2:30–3:00 PM	Bridging Policy and Practice—Science Teacher Education for the Next Generation	Field C, Hyatt Regency McCormick Place
3:30–4:30 PM	It's Alarming! Using Engineering Design to Build Students' Understanding of Simple Circuits	Grant Park D, Hyatt Regency McCormick Place

Saturday, March 14

8:00–9:00 AM	Experiencing Communication Barriers: Building Teacher Empathy for English Language Learners	Grant Park D, Hyatt Regency McCormick Place
9:30–10:30 AM	Let's Hear It for Sound!	Grant Park D, Hyatt Regency McCormick Place

Association of Science-Technology Centers (ASTC)

President: Sharon A. Kortman

Thursday, March 12

8:00–9:00 AM	Building a STEM Foundation for Tomorrow's Leaders	Clark A/B, Hyatt Regency McCormick Place
12:30–1:30 PM	Formal and Informal Educators Collaborate at the Museum of Science in Boston: Opportunities for Enhanced Synergy and Creativity	Burnham A/B, Hyatt Regency McCormick Place
2:00–3:00 PM	Full STEAM Ahead! STEAM Education for All Learners	Burnham A/B, Hyatt Regency McCormick Place
3:30–5:30 PM	Informal Science for the Next Generation—Bridging Research and Practice	Burnham A/B, Hyatt Regency McCormick Place

Saturday, March 14

8:00–9:00 AM	Bridging the Gap—Successful Formal/Informal Partnerships for Advancing STEM Education	Clark A/B, Hyatt Regency McCormick Place
9:30–10:30 AM	Science Center Partnerships that Support Science Learning	Burnham A/B, Hyatt Regency McCormick Place
11:00 AM–12 Noon	Successes and Challenges of Documenting Design with Elementary Students	Burnham A/B, Hyatt Regency McCormick Place
12:30–1:30 PM	Energize NM: How Informal Learning Institutions Are Supporting the *NGSS*	Burnham A/B, Hyatt Regency McCormick Place
2:00–3:00 PM	STEM Pathways: Informal Science Institutions and a School District United to Improve STEM Engagement and Learning	Burnham A/B, Hyatt Regency McCormick Place
3:30–4:30 PM	STEM Learning Through Partnerships	Burnham A/B, Hyatt Regency McCormick Place

Council for Elementary Science International (CESI)

President: Julie Thomas

Wednesday, March 11

1:00–5:30 PM	10th Annual NSTA Global Conversations in Science Education Conference *(in collaboration with ICASE and CESI)* (Tickets Required: M-1)	Regency A, Hyatt Regency McCormick Place

Thursday, March 12

12:30–1:30 PM	Dumbledore's Transfiguration Class: Science and Magic from Hogwart's Academy	W185 b/c, McCormick Place
3:00–6:00 PM	Council for Elementary Science International (CESI) Board Meeting (By Invitation Only)	Huron, Hyatt Regency McCormick Place

Friday, March 13

11:00 AM–12 Noon	Butterfly Gardening Using Native Plants	W192c, McCormick Place
12:30–1:30 PM	Integrating Art and STEM	W192c, McCormick Place
3:30–4:30 PM	Using Mobile Learning to Engage K–6 Students in Becoming Stewards of Their Environment	W192c, McCormick Place

Saturday, March 14

8:00–9:00 AM	Family Science Events: Logistics, Engaging Science, and Parent Involvement	W192c, McCormick Place
9:30–10:30 AM	Integrating Elementary Science and Social Studies	W192c, McCormick Place
12 Noon–2:00 PM	CESI/NSTA Elementary Science Luncheon (Tickets Required: M-5) Speakers: Traci Wierman and Rebecca Abbott	Regency C, Hyatt Regency McCormick Place
3:30–4:30 PM	Get Real! STEM Career Awareness Strategies to Enhance Science Learning	W192c, McCormick Place

Council of State Science Supervisors (CSSS)

President: Juan-Carlos Aguilar

Wednesday, March 11

6:00–8:00 PM	NSELA/CSSS Reception (By Invitation Only)	Prairie B, Hyatt Regency McCormick Place

Thursday, March 12

12:30–2:30 PM	Knowing What Elementary Students Know and Can Do: Hands-On Performance Assessment Tasks Measure Mastery of the *CCSS* and *NGSS*	Clark A/B, Hyatt Regency McCormick Place

Friday, March 13

8:00–10:00 AM	Model Course Mapping to the *NGSS* in Middle School and High School	Regency A, Hyatt Regency McCormick Place
11:00 AM–12 Noon	By Teachers for Teachers: Engaging Colorado Educators as the Creators of 21st-Century Science Curricula	Field C, Hyatt Regency McCormick Place
2:00–3:00 PM	A Vision for Science Education: The Integration of Engineering into Classroom Instruction Through the *NGSS* Practices	Regency A, Hyatt Regency McCormick Place
3:30–5:30 PM	3-D Instruction: Mapping Instruction for Three-Dimensional Performance Expectations	Field C, Hyatt Regency McCormick Place

Saturday, March 14

8:00–10:00 AM	Aligning Classroom Instruction and Formative Assessment to Support the *NGSS* Performance Expectations	Regency D, Hyatt Regency McCormick Place

National Association for Research In Science Teaching (NARST)

President: Valarie Akerson

Thursday, March 12

8:00–9:00 AM	Implementing Project Based Learning in an Inclusive STEM-focused Secondary School	Burnham A/B, Hyatt Regency McCormick Place
12:30–1:30 PM	The Relative Influence of the Professional Community on Changes in Science Teaching	Field C, Hyatt Regency McCormick Place
2:00–3:00 PM	The Strange Case of the Scientific Method: Lessons for the Multiple Communities of Science Education	Field C, Hyatt Regency McCormick Place
3:30–4:30 PM	Creationism *vs.* Evolution: A Study of the Opinions of Georgia Biology Teachers	Field C, Hyatt Regency McCormick Place
3:30–5:30 PM	Informal Science for the Next Generation—Bridging Research and Practice	Burnham A/B, Hyatt Regency McCormick Place

Friday, March 13

8:00–9:00 AM	Critical Thinking in Earth Science: Using the Model-Evidence Link Diagram	Dusable A/B, Hyatt Regency McCormick Place
9:30–10:30 AM	Reconceptualizing High School Chemistry to Focus on Authentic Practices	Burnham C, Hyatt Regency McCormick Place
11:00 AM–12 Noon	Science Youth Action Research: Empowering Students to Take Action Through Science	Burnham C, Hyatt Regency McCormick Place
12:30–1:30 PM	Teaching Global Climate Change and Assessing Student Understanding	Burnham C, Hyatt Regency McCormick Place
2:00–2:30 PM	Culturally Relevant Principles for Curricular Contextualization	Burnham C, Hyatt Regency McCormick Place

National Middle Level Science Teachers Association (NMLSTA)

President: Todd Hoover

Friday, March 13

8:30–10:00 AM	NMLSTA Board Meeting	Huron, Hyatt Regency McCormick Place
10:00 AM–4:00 PM	Meet Me in the Middle Day (See page 50)	Vista/S406a, S404abcd, S405ab, McCormick Place
4:00–5:30 PM	NMLSTA Board Meeting	Huron, Hyatt Regency McCormick Place

National Science Education Leadership Association (NSELA)

President: Craig Gabler

Wednesday, March 11

8:30 AM–5:30 PM	NSELA Professional Development Institute Registration through NSELA (with breakout sessions)	Hyde Park A/B, Hyatt Grant Park A, B, C Hyatt
6:00–8:00 PM	NSELA/CSSS Reception By Invitation Only	Prairie B, Hyatt Regency McCormick Place

Thursday, March 12

7:30–8:30 AM	NSELA Membership Breakfast By Invitation Only	Prairie B, Hyatt
8:30–10:00 AM	NSELA Annual Membership Meeting	Prairie B, Hyatt
12:30–1:30 PM	Back to Basics for Conducting Professional Development	Field A/B, Hyatt Regency McCormick Place
2:00–3:00 PM	In the Heat of the Argument: Using Argument-driven Inquiry to Promote Scientific Literacy	Field A/B, Hyatt Regency McCormick Place
3:30–4:30 PM	Close Reading in Science—Applying the *CCSS ELA*	Field A/B, Hyatt Regency McCormick Place
5:00–6:00 PM	Knowing What Students Know and Can Do: Using Hands-On Performance Tasks as Formative Assessment Tools	Field A/B, Hyatt Regency McCormick Place

Friday, March 13

8:00–9:00 AM	Leadership Strategies for Ensuring Each Student Has a STEM Future	Field A/B, Hyatt Regency McCormick Place
9:30–10:30 AM	Tools for Science Leaders	Field A/B, Hyatt Regency McCormick Place
11:00 AM–12 Noon	Got Diversity?	Field A/B, Hyatt Regency McCormick Place
12 Noon–2:00 PM	NSELA/ASTE Luncheon (Tickets Required) Speaker: Jeanne Century	Regency B, Hyatt Regency McCormick Place
2:00–3:00 PM	Supporting Novice AND Experienced Teachers Through Mentoring and Leadership	Field A/B, Hyatt Regency McCormick Place
3:30–4:30 PM	*NGSS* Engineering: How to Help Every Science Teacher Move from Panic to Plan	Field A/B, Hyatt Regency McCormick Place
5:00–6:00 PM	Engaging in Argument from Evidence: *CCSS* and *NGSS*	Field A/B, Hyatt Regency McCormick Place

Society for College Science Teachers (SCST)

President: Nancy Elwess

Thursday, March 12

8:00–8:20 AM	Distilling "Best Practices" for Teaching and Learning in Anatomy and Physiology	Clark C, Hyatt Regency McCormick Place
8:20–8:40 AM	Turning Students into Teachers. Two Methods to Get Anatomy and Physiology Students to Think About Teaching Complex Ideas	Clark C, Hyatt Regency McCormick Place
8:40–9:00 AM	A Sustainable Professional Development Model for Inquiry Teaching in Introductory College Biology Courses	Clark C, Hyatt Regency McCormick Place
11:00–11:20 AM	OSU National Lab Day: Introducing High School Students to STEM Research and Careers	Clark C, Hyatt Regency McCormick Place
11:20–11:40 AM	The Merit Model and Recruitment/Retention of STEM Majors: How It Works and How We Know	Clark C, Hyatt Regency McCormick Place
11:40 AM–12 Noon	Enhancing an Undergraduate Research Experience: NSF-style Review Board	Clark C, Hyatt Regency McCormick Place
12:30–12:50 PM	Peer-Review in the College Science Classroom: Scientific Communication's "Missing Link"	Clark C, Hyatt Regency McCormick Place
12:50–1:10 PM	Is It Working? Assessing the Effects of Study Groups and Tutoring on Science Student Performance	Clark C, Hyatt Regency McCormick Place
1:10–1:30 PM	Initial Results from Revamping an Introductory Biology Course: Focusing on Inquiry	Clark C, Hyatt Regency McCormick Place
2:00–2:20 PM	Flipping Out Over What We've Learned: Insights into the Implementation of a Flipped Classroom	Clark C, Hyatt Regency McCormick Place
2:20–2:40 PM	Flip or Flop—Does Flipping the Classroom in Introductory Biology Result in Better Student Success in a Two-Year College?	Clark C, Hyatt Regency McCormick Place
2:40–3:00 PM	Creating Creative Memories: Teaching Students to Use What They Know to Learn What They Don't	Clark C, Hyatt Regency McCormick Place
3:30–4:00 PM	Science Literacy for All: A Necessity in Today's World	Clark C, Hyatt Regency McCormick Place
4:00–4:30 PM	How to Make a Campus-wide Initiative Educational and Fun for Students	Clark C, Hyatt Regency McCormick Place
5:00–5:20 PM	Preparing to Teach Chemical Transformation Pathways—Identifying the Chemistry Biology Students Have to Know to Understand Cellular Respiration	Clark C, Hyatt Regency McCormick Place
5:20–5:40 PM	The First Application of the Measurement of Attitudes Toward Evolution (MATE) Survey Across Two Regionally Distinct Colleges	Clark C, Hyatt Regency McCormick Place
5:40–6:00 PM	Faculty and Student Perceptions of a Multisection Inquiry-based Introductory Biology Course with Common Assessments	Clark C, Hyatt Regency McCormick Place

Society for College Science Teachers (SCST), continued

Friday, March 13

8:00–8:20 AM	Using Instrumentation in Undergraduate Science Classes: Doppler on Wheels, Dropsondes, Circuits, and More!	Clark C, Hyatt Regency McCormick Place
8:20–8:40 AM	Electronic Lab Books and Notebooks for Instilling Science and Technology Workforce Skills	Clark C, Hyatt Regency McCormick Place
8:40–9:00 AM	Online Interdisciplinary Resources for Teaching Undergraduates in the Health Sciences: The Pre-Health Collection within AAMC's MedEdPORTAL iCollaborative	Clark C, Hyatt Regency McCormick Place
9:30–9:50 AM	Creating an Interdisciplinary Course Using a Trade Book	Clark C, Hyatt Regency McCormick Place
9:50–10:10 AM	Implementation of a New Science Methods Course to Shift Teacher Candidate's Views of Nature and Science	Clark C, Hyatt Regency McCormick Place
10:10–10:30 AM	Growing Communities of Learners: A Gardening, Cooking, Science, and *CCSS ELA* Workshop for Teachers	Clark C, Hyatt Regency McCormick Place
12:30–1:30 PM	SCST Marjorie Gardner Lecture: Strategies for Incorporating Research into the Undergraduate Curriculum (Speaker: Michael Jackson)	Clark C, Hyatt Regency McCormick Place
2:00–2:20 PM	Assessing Nonscience Majors' Learning in General Education Courses by Using Their Disciplinary Talents and Interests	Clark C, Hyatt Regency McCormick Place
2:20–2:40 AM	Understanding by Design (UbD) in Science Professional Development Programs: Success Depends upon Scientific Content, Creativity, and Applicability	Clark C, Hyatt Regency McCormick Place
2:40–3:00 PM	A Community College/Audubon Society Partnership: Mutualism in Action	Clark C, Hyatt Regency McCormick Place
3:30–5:00 PM	SCST Business Meeting	Clark C, Hyatt Regency McCormick Place
7:00–9:00 PM	SCST Dessert Social and Poster Session	Prairie B, Hyatt Regency McCormick Place

Saturday, March 14

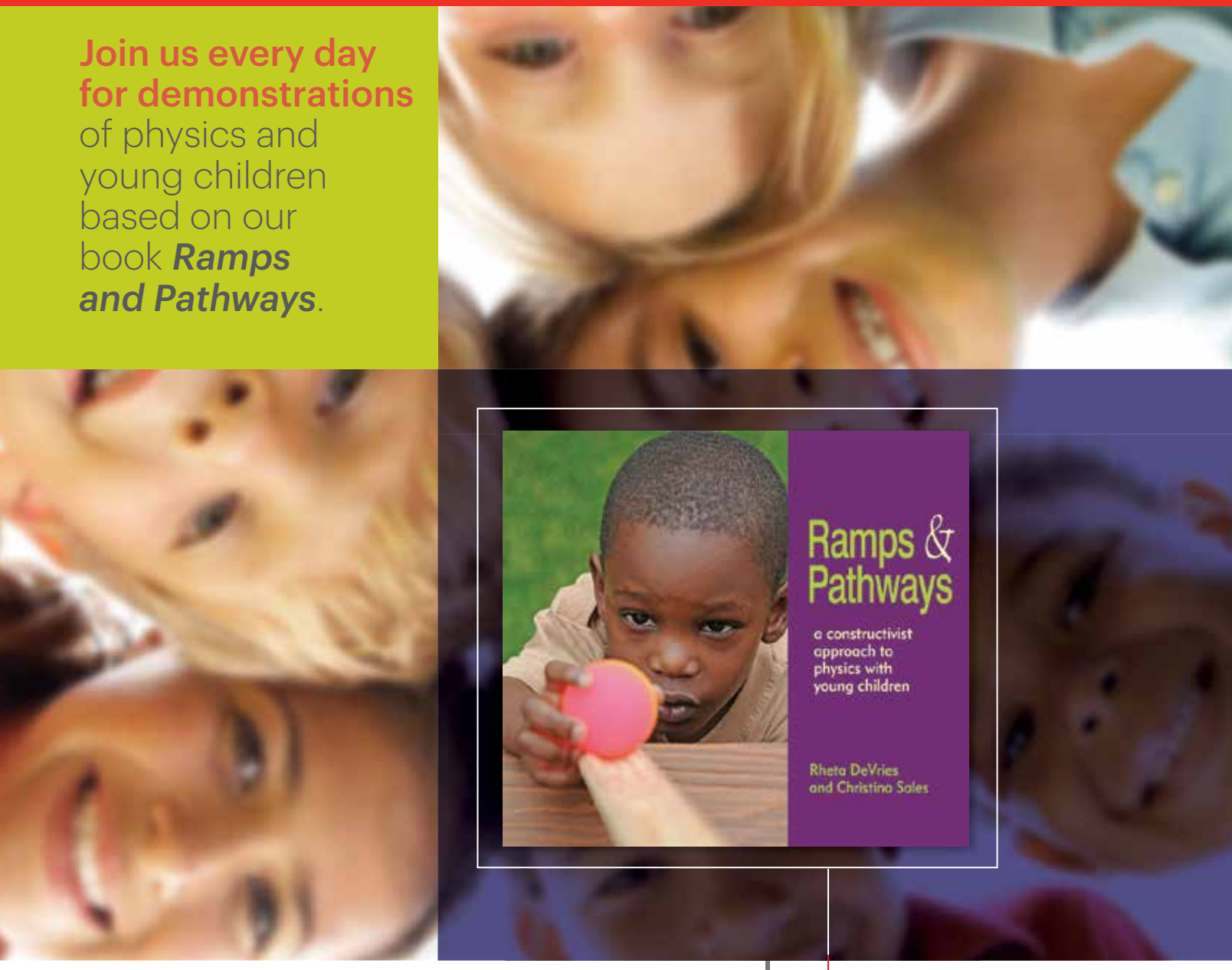
12 Noon–1:30 PM	NSTA/SCST College Luncheon (Tickets Required: M-4) Speaker: Marcy Towns	Prairie A, Hyatt Regency McCormick Place

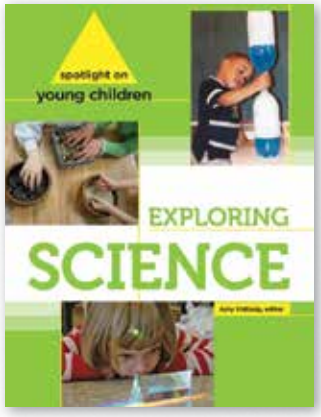
naeyc®

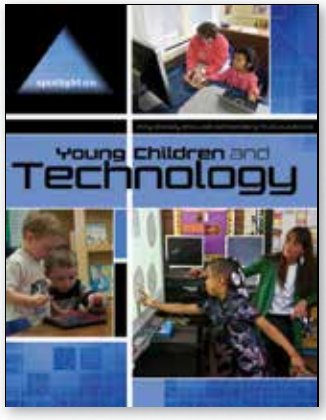
National Association for the Education of Young Children

Booth **559**

Join us every day for demonstrations of physics and young children based on our book ***Ramps and Pathways***.







Join us at the Elementary Extravaganza

Friday, March 13, 8–10AM

We'll be in Skyline W375c, McCormick Place.

8:00 AM–5:00 PM Meetings

FOSS Institute

(By Invitation Only) *Field A/B, Hyatt*

8:30 AM–5:00 PM Meeting

National Marine Educators Association Mid-Year Board Meeting

(By Invitation Only) *Lincoln Park Zoo (off-site)*

8:30 AM–5:30 PM Meeting

NSELA Professional Development Institute

(By Registration Through NSELA) *Hyde Park A/B, Hyatt*

To register, visit *www.nsela.org/pdi.* Breakout rooms are Grant Park A–D in the Hyatt.

8:30 AM–6:00 PM Meeting

SESD Preconference and Annual Meeting

Regency E, Hyatt

Science educators, special education teachers, parents, and/or administrators at all levels learn and share information and strategies on teaching science to students with disabilities. For more information and to register, please contact Rachel Zimmerman-Brachman via e-mail at *rachel.zimmerman-brachman@jpl.nasa.gov.*

Most conference sessions are scheduled in McCormick Place and Hyatt Regency McCormick Place (listed as "Hyatt" in this program), with short courses and a few other events scheduled at the Palmer House Hotel.

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 177, 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 87 for a complete list of the NGSS codes used in this program.

Strands

The Chicago 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 45.

Teaching Every Child by Embracing Diversity

The Science of Design: Structure and Function

Student Learning—How Do We Know What They Know?

Natural Resources, Natural Partnerships

The following icons will be used throughout this program.

INF **Informal Education Sessions**

NSTA Press® Sessions

PDI **Professional Development Institutes**

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

PDI **Designing Effective STEM Lessons Incorporating *NGSS:* What Does It Look Like? (PDI-2)**
(Grades 3–12) *W175 a/b, McCormick Place*
By Preregistration Only
Provider: McREL International
Anne Tweed (@TweedDESI), 2004–2005 NSTA President, and McREL International, Denver, Colo.
Whitney Cobb and **Laura Arndt,** McREL International, Denver, Colo.
For description, see page 55.

PDI **Leadership for the *Next Generation Science Standards'* Practices of Science (PDI-3)**
(Grades K–12) *W176a, McCormick Place*
By Preregistration Only
Provider: BSCS
Paul Numedahl, BSCS, Colorado Springs, Colo.
For description, see page 55.

PDI **Moving Standards into Practice: Five Tools and Processes for Translating the *NGSS* into Instructional Sequences and Classroom Assessments (PDI-1)**
(Grades K–12) *W178b, McCormick Place*
By Preregistration Only
Provider: American Museum of Natural History
Kathy DiRanna, K–12 Alliance/WestEd, Huntington Beach, Calif.
Jim Short and **Dora Kravitz** (@dora_elisabeth), American Museum of Natural History, New York, N.Y.
Jody Bintz, BSCS, Colorado Springs, Colo.
Jo Topps, K–12 Alliance/WestEd, San Francisco, Calif.
For description, see page 54.

9:00 AM–4:00 PM Professional Development Institute One-Day Work Sessions

PDI **One-Day Work Session: Developing Next Generation Science Assessments (PDI-4)**
(Grades K–12) *W192a, McCormick Place*
By Preregistration Only
Christopher Harris, SRI International, Menlo Park, Calif.
Angela DeBarger, The George Lucas Educational Foundation, San Rafael, Calif.
William Penuel, University of Colorado Boulder
Yves Beauvineau, Culturally Responsive Science Pedagogies, LLC, Nederland, Colo.
For description, see page 56.

PDI **One-Day Work Session: Promoting Equity and Alignment to the *NGSS* in Curriculum and with Teaching Using the EQuIP and the Equals Rubrics (PDI-5)**
(Grades K–12) *W192c, McCormick Place*
By Preregistration Only
Joseph Krajcik (@krajcikjoe), CREATE for STEM Institute, Michigan State University, East Lansing
Emily Miller, Madison (Wis.) Metropolitan School District
For description, see page 56.

PDI **One-Day Work Session: Building STEM Capacity with *NGSS:* Addressing Science and Engineering in the *Next Generation Science Standards* (PDI-6)**
(Grades K–12) *W196a, McCormick Place*
By Preregistration Only
Mariel Milano, Orange County Public Schools, Orlando, Fla.
Cary Sneider, Portland State University, Portland, Ore.
For description, see page 56.

12 Noon–1:00 PM Networking Opportunity

FOSS Luncheon
(By Invitation Only) *Adler, Hyat*

NSTA CONFERENCES ON SCIENCE EDUCATION

SAVE THE DATES 2015

RENO
NEVADA

OCTOBER 22–24

SCIENCE AND LITERACY: CREATING CONNECTIONS!

PHILADELPHIA
PENNSYLVANIA

NOVEMBER 12–14

REVOLUTIONARY SCIENCE

KANSAS CITY
MISSOURI

DECEMBER 3–5

RAISING THE STAKES IN SCIENCE

Professional Development Strands

- Bundling the *NGSS* and *CCSS*
- *NGSS:* Connecting Standards to Practice
- Creatively Engineering Future Resources

- Revolutionizing Engineering for the Future
- Integrating Literacy Strategies to Revolutionize PreK–12 Science Instruction
- Technology: Teaching Revolutionary Science in the Digital Age

- The Art and Craftsmanship of Teaching
- Combining Science with Agriculture
- Achieving Success with the *NGSS*

For more information and to register, visit:
www.nsta.org/conferences

NSTA National Science Teachers Association

1:00–5:30 PM 10th Annual NSTA Global Conversations in Science Education Conference (in collaboration with ICASE and CESI)

Sharing International Classroom Perspectives of Science: PreK–16 (M-1)

Regency A, Hyatt

By Preregistration Only

NSTA has planned an afternoon dedicated to sharing science education from an international perspective. This mini-conference includes plenary talks by distinguished international scholars, roundtable discussions involving all participants; and a poster session providing opportunities to build international connections in science classrooms.

1:00–1:10 PM **Welcome**

Juliana Texley, NSTA President

Teresa Kennedy, Global Conversations Cochair, NSTA International Advisory Board Chair, and ICASE President

Michael Padilla, Global Conversations Cochair, 2005–2006 NSTA President, and ICASE North America Regional Representative

1:10–1:25 PM **Global Conversations 10th Anniversary Opening Address**

Developing a World View for Science Education: The Journey Continues

Speaker: Frank Owens, 2002–2008 NSTA Associate Executive Director for Programs and 1992–2002 NASA Director of Education

Moderator: Teresa Kennedy

In celebration of the 10th anniversary of the NSTA Global Conservations in Science Education at the NSTA National Conference, Mr. Owens will reflect upon the rationale and past accomplishments of this significant effort and celebrate the richness that the international science education community has brought to the largest conversation of science educators in the world.

1:30–1:35 PM **Remarks**

Doug Young, Vice President, Missile Defense and Advanced Missions, Northrop Gumman Aerospace Systems

Northrop Grumman International Teacher Awardees

Diana Tomazos, Schools of Isolated and Distance Education, Australia

Kulvinder Kaur Johal, Northbury Primary School, United Kingdom

1:40–2:10 PM **Global Conversations 10th Anniversary Featured Keynote Address**

Perspectives from Eire (The Republic of Ireland): Curricular Designs Engaging the Practices of Inquiry

Speakers: Aine Hyland, Emeritus Professor of Education; Rory Geogheganm, Hon. Editor of *SCIENCE;* and Declan Kennedy, Senior Lecturer in Science Education, University College Cork, Ireland

Moderator: Michael Padilla

Research results on syllabus design, Inquiry-Based Science Education (IBSE) activities, and the ICASE EU–supported Profiles Project will be shared.

2:10–2:30 PM **Roundtable Discussion**

Facilitators: International Council of Associations for Science Education (ICASE) executive committee members and Association of Presidential Awardees in Science Teaching (APAST) board members will be dispersed at tables to facilitate and record discussions.

We'll discuss similarities and differences in programs around the world. What is best practice in the design of curricula and creation of student performance expectations to help promote IBSE and generate motivation and enthusiasm for science teaching and learning?

2:30–2:35 PM **Speaker Transition and Participant Break**

2:35–3:05 PM **Early Childhood and Elementary School Science Presentations** (15 minutes each)

Moderator: Julie Thomas, CESI President

Science Learning Starts Here! Importance of the Early Years

Speaker: Sue Dale Tunnicliffe, Commonwealth Association for Science, Technology and Mathematics Educators (CASTME), United Kingdom

Preshool children's everyday experiences are critical in providing a firm foundation for science literacy development.

Co-Learning About Primary Science and Technology in China

Speaker: Guy Tranin, University of Nebraska–Lincoln

A collaborative project in China and the United States, TechEDGE seeks to integrate mobile devices into elementary curricula. Lessons learned and firsthand knowledge of the process in science teaching and learning in less visited provinces will be shared.

3:05–3:25 PM **Roundtable Discussion**

Facilitators: Kathy Horstmeyer, NSTA International Advisory Board Member and SEPA President; Council for Elementary Science International (CESI) executive committee members; and Society of Elementary Presidential Awardees (SEPA) will be dispersed at tables to facilitate and record discussions.

We'll discuss similarities and differences in programs around the world. How do we ensure that science is viewed as an important subject and that efforts are made to implement science as a basic component of early childhood and elementary school curricula and performance expectations?

1:00–5:30 PM 10th Annual NSTA Global Conversations in Science Education Conference, cont.

3:25–3:30 PM **Speaker Transition and Participant Break**

3:30–4:00 PM **Science Education and Technology in Upper Grades Presentation**
Moderator: Bulent Cavas, ICASE President-Elect and Web Communications, Turkey

Reactions in Motion: iPad Use to Increase Student Interest in Chemistry
Speaker: Martha Patricia Pérez Villegas, México
This presentation focuses on the outcomes of a successful pilot project at the Prepa UDEM utilizing iPads in the chemistry classroom.

4:00–4:15 PM **Poster Presentation Transition and Participant Break**

4:15–5:15 PM **Poster and Networking Session** *(see below)*

5:20–5:30 PM **Closing**
Teresa Kennedy and Michael Padilla

6:00–7:00 PM **NSTA President's International Reception, sponsored by ExxonMobil Foundation**
By Invitation Only, Regency B, Hyatt

Global Conference Poster and Networking Session
4:15–5:15 PM

Moderator: Carolyn Hayes, NSTA President-Elect

Computers, Coding, the NGSS, and Science Classrooms: Looking at Connections
Michael Bowen *(gmbowen@yahoo.com),* Mount Saint Vincent University, Halifax N.S., Canada, and **Anthony Bartley** *(abartley@lakeheadu.ca),* Lakehead University, Thunder Bay, Ont., Canada

A PROFILES Project-based Teaching and Learning Module
Bulent Cavas *(bulentcavas@gmail.com),* Dokuz Eylul University, Turkey, and **Jack Holbrook** *(jack@ut.ee),* International Council of Associations of Science Education, Estonia

Group Activities to Develop Inquiry Skills
Rory Geoghegan *(rorylgeoghegan@gmail.com),* University College Cork, Ireland

Inquiry-Based Science Education via PROFILES Project
Declan Kennedy *(d.kennedy@ucc.ie),* University College Cork, Ireland

The Professor Within the Machine: How to Teach and Learn Globally
Oliver Grundmann *(grundman@ufl.edu),* University of Florida

Ocean for Life
Tracy Hajduk *(tracy.hajduk@noaa.gov)* and **Marlies Tumolo** *(marlies.tumolo@noaa.gov),* NOAA Office of National Marine Sanctuaries, Maryland; **Claire Fackler** *(claire.fackler@noaa.gov),* Channel Islands National Marine Sanctuary, California

Introducing PROFILES Modules
Jack Holbrook *(jack@ut.ee),* University of Tartu, Estonia

Overcoming Anti-Science Biases Among International Students in the Caribbean Region Through Evidence-based Instruction
Anthony Husemann *(anthony.husemann@myicci.com),* International College of the Cayman Islands

Reactions in Motion: iPad Use to Increase Student Interest in Chemistry
Martha Perez *(mpatty_p@hotmail.com),* Universidad de Monterrey, Mexico

Optional Course on PROFILES
Miia Rannikmae *(miia@ut.ee),* International Council of Associations for Science Education, Estonia

Using Concept Mapping in Science Classroom
Priit Reiska *(priit@tlu.ee),* Tallinn University, Estonia, and **Alberto Canas** *(acanas@ihmc.us),* Institute for Human and Machine Cognition, Florida

Enhancing Middle School Science Learning Through Exploration Curriculum and Service Learning
Chih-Che Tai *(cctai59@gmail.com),* East Tennessee State University, and **Mao-Cheng Lin,** Guang Wu Junior High School, Taiwan

Will the Chunks Be Broken Down to Be Swallowed So Choking Doesn't Result?
Lindiwe Tsabedze *(lptsabedze@gmail.com),* Swazi National High School, Swaziland

What Is Zoo Education?
Sue Dale Tunnicliffe *(lady.tunnicliffe@mac.com),* UCL Institute of Education, University College London

Safety in Science
Sandra West *(sw04@txstate.edu),* Texas State University

Japanese Lower Secondary Science Lessons After TIMSS 1999 Video Study
Shuichi Yamashita *(syama@faculty.chiba-u.jp),* Chiba University, Japan

2:00–7:30 PM Meeting

Leadership Retreat for NSTA Districts 8, 9, 10, 12, 16, and 17

(By Invitation Only) *Prairie A, Hyatt*

Chapter leadership will meet with one another and their district directors to discuss science education issues and topics related to association and conference management.

4:00–7:00 PM Meeting

NSTA/CAEP Standards for Preservice Science Teachers Workshop

(By Invitation Only) *Adler C, Hyatt*

Please visit *www.nsta.org/preservice* for more information.

6:00–7:00 PM Networking Opportunity

NSTA President's International Reception, sponsored by ExxonMobil Foundation

Regency B, Hyatt

Open to international visitors and invited guests.

6:00–8:00 PM Networking Opportunity

NSELA/CSSS Reception

(By Invitation Only) *Prairie B, Hyatt*

Visit *www.nsela.org/pdi* for more information.

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

Science and Engineering Practices

SEP1 Asking Questions and Defining Problems
SEP2 Developing and Using Models
SEP3 Planning and Carrying Out Investigations
SEP4 Analyzing and Interpreting Data
SEP5 Using Mathematics and Computational Thinking
SEP6 Constructing Explanations and Designing Solutions
SEP7 Engaging in Argument from Evidence
SEP8 Obtaining, Evaluating, and Communicating Information

Crosscutting Concepts

CCC1 Patterns
CCC2 Cause and Effect: Mechanism and Explanation
CCC3 Scale, Proportion, and Quantity
CCC4 Systems and System Models
CCC5 Energy and Matter: Flows, Cycles, and Conservation
CCC6 Structure and Function
CCC7 Stability and Change

Disciplinary Core Ideas

Disciplinary Core Ideas in Physical 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

Disciplinary Core Ideas in Life Science

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

Disciplinary Core Ideas in Earth and Space Science

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

Disciplinary Core Ideas in Engineering, Technology, and the Application of Science

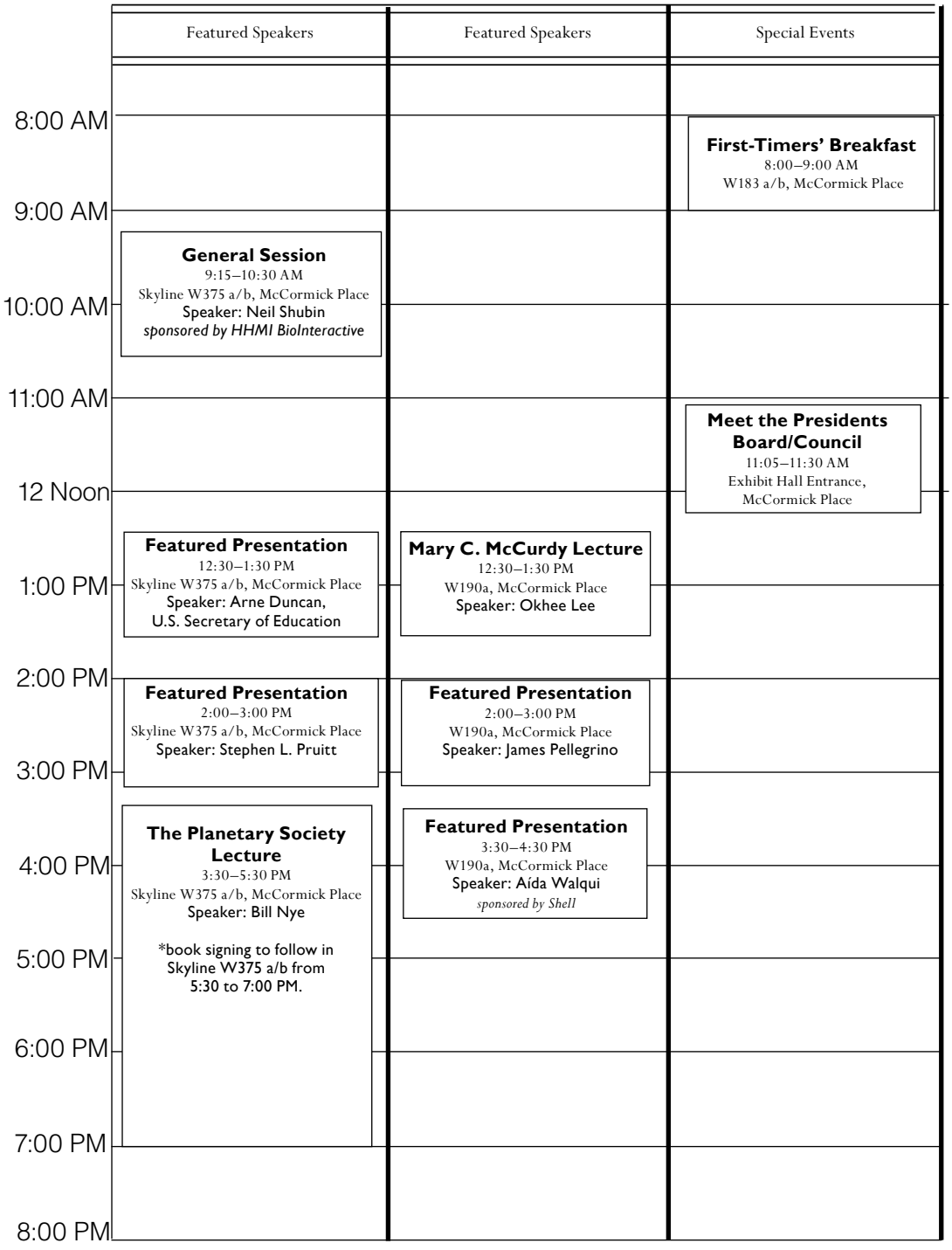
ETS1: Engineering Design
ETS1.A: Defining and Delimiting an Engineering Problem
ETS1.B: Developing Possible Solutions
ETS1.C: Optimizing the Design Solution

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

—©City of Chicago/Choose Chicago

Photo of Magnificent Mile, a section of Michigan Avenue that runs from the Chicago River to Oak Street.

Thursday, March 12



7:30–8:30 AM Networking Opportunity

NSELA Membership Breakfast

(By Invitation Only) *Prairie B, Hyatt*

7:45–9:00 AM Networking Opportunity

Welcome to NSTA and DuPont Breakfast

(By Invitation Only) *Empire, Palmer House*

8:00–8:30 AM Presentations

SCST Session: Distilling "Best Practices" for Teaching and Learning in Anatomy and Physiology

(Grades 11–College) *Clark C, Hyatt*

Science Focus: LS

Murray Jensen *(msjensen@umn.edu),* University of Minnesota, Minneapolis

Leave with a list of "best practices" for teaching and learning of anatomy and physiology produced on behalf of a high school/university partnership.

ASTE Session: Summer Camp Science and Engineering: Changing Students' Understanding About Scientific Inquiry

(Grades 6–8) *Dusable A, Hyatt*

Science Focus: ETS

Allison Antink-Meyer *(aameyer@ilstu.edu),* Illinois State University, Normal

I'll describe an annual two-week summer science camp collaboration between a U.S. university and a Taiwanese middle school. Join us as we review findings on the changes in students' understanding about scientific inquiry as a result of their participation.

AMS DataStreme Project and the *NGSS*

(General) *Jackson Park D, Hyatt*

Science Focus: GEN, NGSS

James Brey (@AMSeducation; *brey@ametsoc.org),* American Meteorological Society, Washington, D.C.

Come learn about the American Meteorological Society's free professional development opportunities and how they support the *NGSS* and can be easily adapted for use in your classroom.

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 177, 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 87 for a complete list of the NGSS codes used in this program.

Strands

The Chicago 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 45.


Teaching Every Child by Embracing Diversity


The Science of Design: Structure and Function


Student Learning—How Do We Know What They Know?


Natural Resources, Natural Partnerships

The following icons will be used throughout this program.

INF **Informal Education Sessions**

NSTA Press® Sessions

PDI **Professional Development Institutes**

Connecting the Universal Wonder of Science and Story for ALL Learners

(Grades K–5) *S504 b/c, McCormick Place*

Science Focus: LS3.B, CCC2, CCC4, CCC6

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

Leigh Haefner *(lab194@psu.edu),* Penn State Altoona, Pa.

Carla Zembal-Saul (@czem; *czem@psu.edu),* Penn State, University Park, Pa.

Kimber Hershberger *(khm12@scasd.org),* Radio Park Elementary School, State College, Pa.

Join us as we share an exciting adventure in South Africa working with English language learners in village schools in the Eastern Cape.

Consumers or Producers? Teaching Science to English Language Learners

(Grades 2–5) *S504d, McCormick Place*

Science Focus: GEN

Oksana Afitska, The University of Sheffield, U.K.

Drawing on data from five primary schools in the U.K. with nonnative English speaking students, discussion centers on challenges of teaching science and language to these learners and ways to improve current pedagogical practices.

The Biodiversity Project

(General) *W187a, McCormick Place*

Science Focus: LS, INF, CCC, SEP1, SEP2, SEP3, SEP4, SEP6, SEP8

Jennifer Donovan-Stump (@JDonovanstump; *jennifer.donovan@trinityschoolnyc.org),* Trinity School, New York, N.Y.

Donald Clabaugh (@LamontClabaugh; @Biodiversity13; *lclabaugh@sheridan.k12.wy.us)* and **Laurie Graves** (@Biodiversity13; *graves@sheridan.k12.wy.us),* Big Horn Elementary School, Big Horn, Wyo.

Hear about a collaborative research effort conducted by preK–16 students, teachers, and scientists that focuses on fostering conversation and learning on issues of biodiversity and conservation. Connections to the *NGSS* included.

8:00–9:00 AM Breakfast

First-Timers, Preservice Teachers, and New Teachers Session

(General) *W183 a/b, McCormick Place*

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 and participatory (fun!) walk through the conference program book. By the end of the session we guarantee you'll know just how to get the most from your conference experience. Refreshments included! This session is generously supported by Ward's Science.

8:00–9:00 AM Presentations

Adapt Your Teaching to Support the *NGSS* Practices Using PhET Interactive Simulations

(Grades 3–College) *Adler A/B, Hyatt*

Science Focus: ESS, PS, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7

Trish Loeblein *(patricia.loeblein@colorado.edu),* University of Colorado Boulder

Encounter ideas for leveraging PhET's free simulations *(phet.colorado.edu)* to address the *NGSS* practices, core ideas, and crosscutting concepts in the classroom, with an emphasis on the practices.

NARST Session: Implementing Project Based Learning in an Inclusive STEM-focused Secondary School

(Middle Level–College) *Burnham A/B, Hyatt*

Science Focus: GEN

Tamara Nelson (@tbuddhiker; *tnelson1@vancouver.wsu.edu),* Washington State University Vancouver

Christina Iremonger *(christina.iremonger@vansd.org),* Vancouver (Wash.) School District

We will report on the design and implementation of Project Based Learning in the first year of an inclusive STEM middle school/high school.

First-timers, Preservice Teachers and New Teacher Session

Are you an experienced teacher attending your very first NSTA conference? Or a new (or preservice) teacher anxious about the vast number of sessions and would like some guidance? Join us for this interactive session, including breakfast and opportunities to win prizes.

First-Timer Conference Attendees Orientation:
Is This Your First NSTA Conference?
Thursday, March 12
8:00-9:00 AM
McCormick Place W183a/b

ward's science

NSTA National Science Teachers Association

The STEM Challenge: Integrating Engineering into a College Physical Science Course
(College) *Grant Park A, Hyatt*
Science Focus: ETS1.B, CCC2, SEP6, SEP8
Anthony Cerqua (@acerque_edu; *anthony.cerqua@d303.org),* St. Charles (Ill.) Community Unit School District 303
Presider: Vito Dipinto *(vdipinto@nl.edu),* National-Louis University, Wheeling, Ill.
Hear about a ball-and-ramp activity used as a way to start secondary science teacher candidates on the path of inviting their future students into the practices of engineers.

Students to Stewards: Shaping Science Education Through Community Partnerships
(Grades 5–12) *Hyde Park A, Hyatt*
Science Focus: GEN, SEP
Michael Posthumus (@mike_posthumus; *posthumi@gvsu.edu),* Grand Valley State University, Grand Rapids, Mich.
Michigan's Groundswell stewardship education network shares how strategic partnerships are helping change the culture of science education at two large school districts.

INF **STEM After-School Programming: Engaging All Students Through Engineering and Robotics**
(Grades 2–12) *Hyde Park B, Hyatt*
Science Focus: ETS, INF, SEP
Angela Palo *(apalo@bostonpublicschools.org),* Horace Mann School for the Deaf and Hard of Hearing, Boston, Mass.
Fiona Bennie *(fbennie@boston.k12.ma.us),* Jackson/Mann K–8 School, Allston, Mass.
Find out how teachers at an urban public school worked with community partners to develop a STEM after-school program for English language learners and deaf and hard-of-hearing students.

Using Research to Support Your Teaching
(General) *Jackson Park A, Hyatt*
Science Focus: GEN, NGSS
Norman Lederman *(ledermann@iit.edu),* Illinois Institute of Technology, Chicago
Presider: John Tillotson, NSTA Director, Research, and Syracuse University, Syracuse, N.Y.
This NSTA Research Division–sponsored session will summarize the most teacher relevant research as derived from the new *Handbook of Research on Science Teaching*, Vol. II.

AMSE Session: What Else I Learned in Science Class (Besides Science)
(General) *Prairie A, Hyatt*
Science Focus: GEN
Melissa Campanella, Noel Community Arts School, Denver, Colo.
We spend a great deal of time planning out our content and language objectives, but what else are students learning in our classrooms that we might not intentionally be teaching? Join me for a deep dive into what the late Elliot Eisner called the "explicit, implicit, and null curricula."

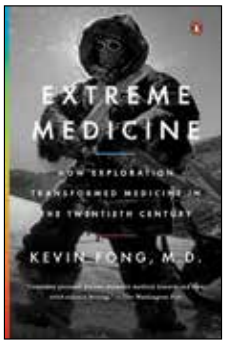
Assessment for Learning: Assessment Practices That Lead to Content Mastery in Biology
(Grades 6–12) *S401d, McCormick Place*
Science Focus: LS
Michelina MacDonald *(mmacdonald@pky.ufl.edu),* P.K. Yonge Developmental Research School, Gainesville, Fla.
Explore multiple formative assessment strategies that gauge biology student understanding and progress toward achieving learning goals without tracking.

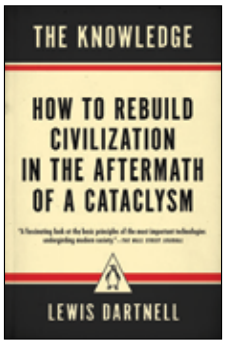
Does That Life Science Resource Really Meet the *NGSS?*
(Grades 6–12) *S402a, McCormick Place*
Science Focus: LS, CCC, SEP
Jeremy Peacock (@jeremy_peacock; *peacock.jeremy@gmail.com),* Northeast Georgia RESA, Winterville, Ga.
Zoe Evans *(zoeevans@charter.net),* Central Middle School, Carrollton, Ga.
Janet Dykstra, Southern New Hampshire University, Hooksett
Ramona Lundberg, Deuel High School, Clear Lake, S.Dak.
Sheila Smith, Science Consultant, Ridgeland, Miss.
Gabriela Rose *(gabriela.rose@aiu3.net),* Allegheny Intermediate Unit, Homestead, Pa.
Join NGSS@NSTA high school life science curators as they share resources they have identified that are aligned to the *NGSS* and that guide you in using the EQuIP rubric to evaluate a resource of your own choice.

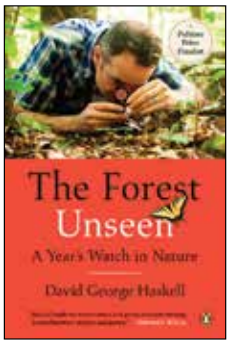
Arctic Dinosaurs and Climate Change
(Grades 5–12) *S403a, McCormick Place*
Science Focus: GEN, NGSS
Jason Petula *(jpetula@millersville.edu),* Millersville University of Pennsylvania, Millersville
The mystery of the Arctic dinosaurs will set the stage for exploring energy and matter, climate change, and argumentation from evidence.

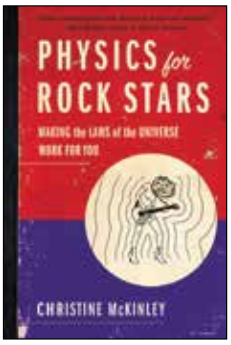
PENGUIN GROUP (USA)

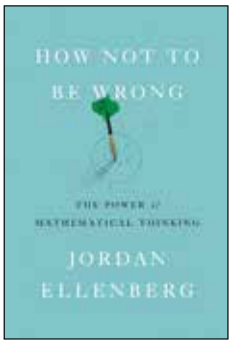
COME VISIT US AT THE PENGUIN GROUP BOOTH #652

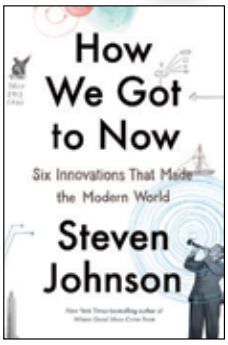












KEVIN FONG
EXTREME MEDICINE
How Exploration Transformed Medicine in the Twentieth Century
Penguin • 978-0-14-312629-4

ALICE DREGER
GALILEO'S MIDDLE FINGER
Heretics, Activists, and the Search for Justice in Science
Penguin Press • 978-1-59420-608-5

NATE SILVER
THE SIGNAL AND THE NOISE
Why So Many Predictions Fail—But Some Don't
Penguin • 978-0-14-312508-2

JO BOALER
WHAT'S MATH GOT TO DO WITH IT?
How Parents and Teachers Can Help Children Learn to Love Their Least Favorite Subject
Penguin • 978-0-14-311571-7

MENNO SCHILTHUIZEN
NATURE'S NETHER REGIONS
What the Sex Lives of Bugs, Birds, and Beasts Tell Us About Evolution, Biodiversity, and Ourselves
Viking • 978-0-670-78591-9

JERRY A. COYNE
WHY EVOLUTION IS TRUE
Penguin • 978-0-14-311664-6

ERNEST FREEBERG
THE AGE OF EDISON
Electric Light and the Invention of Modern America
Penguin • 978-0-14-312444-3

MARCUS WOHLSEN
BIOPUNK
Current • 978-1-61723-007-3

LEWIS DARTNELL
THE KNOWLEDGE
How to Rebuild Civilization in the Aftermath of a Cataclysm
Penguin • 978-0-14-312704-8

ROBERT M. HAZEN
THE STORY OF EARTH
The First 4.5 Billion Years, from Stardust to Living Planet
Penguin • 978-0-14-312364-4

JON GERTNER
THE IDEA FACTORY
Bell Labs and the Great Age of American Innovation
Penguin • 978-0-14-312279-1

NOAH STRYCKER
THE THING WITH FEATHERS
The Surprising Lives of Birds and What They Reveal About Being Human
Riverhead • 978-1-59463-341-6

THOMAS GOETZ
THE REMEDY
Robert Koch, Arthur Conan Doyle, and the Quest to Cure TB
Gotham • 978-1-59240-917-4

JIM BELL
THE INTERSTELLAR AGE
Inside the Forty-Year *Voyager* Mission
Dutton • 978-0-525-95432-3

LIZ CARLISLE
LENTIL UNDERGROUND
Renegade Farmers and the Future of Food in America
Gotham • 978-1-592-40920-4

KATHERINE HARMON COURAGE
OCTOPUS!
The Most Mysterious Creature in the Sea
Current • 978-1-61723-014-1

DAVID GEORGE HASKELL
THE FOREST UNSEEN
A Year's Watch in Nature
Penguin • 978-0-14-312294-4

CHRISTINE McKINLEY
PHYSICS FOR ROCK STARS
Making the Laws of the Universe Work for You
Perigee • 978-0-399-16586-3

TERRIE M. WILLIAMS
THE ODYSSEY OF KP2
An Orphan Seal and a Marine Biologist's Fight to Save a Species
Penguin • 978-0-14-312352-1

STEVE LEVINE
THE POWERHOUSE
Inside the Invention of a Battery to Save the World
Viking • 978-0-670-02584-8

EDWARD HUMES
GARBOLOGY
Our Dirty Love Affair with Trash
Avery • 978-1-58333-523-9

DAVID ELIOT BRODY & ARNOLD R. BRODY
THE SCIENCE CLASS YOU WISH YOU HAD
The Seven Greatest Scientific Discoveries in History and the People Who Made Them
Revised Edition
Perigee • 978-0-399-16032-5

DAVID CASARETT
SHOCKED
Adventures in Bringing Back the Recently Dead
Current • 978-1-59184-671-0

ANDREAS WAGNER
ARRIVAL OF THE FITTEST
Solving Evolution's Greatest Puzzle
Current • 978-1-59184-646-8

JORDAN ELLENBERG
HOW NOT TO BE WRONG
The Power of Mathematical Thinking
Penguin Press • 978-1-59420-522-4

ADAM RUTHERFORD
CREATION
How Science Is Reinventing Life Itself
Current • 978-1-61723-011-0

JAMES KAKALIOS
THE PHYSICS OF SUPERHEROES
Spectacular Second Edition
Gotham • 978-1-592-40508-4

LEE BILLINGS
FIVE BILLION YEARS OF SOLITUDE
The Search for Life Among the Stars
Current • 978-1-61723-016-5

DAVID EPSTEIN
THE SPORTS GENE
Inside the Science of Extraordinary Athletic Performance
Current • 978-1-61723-012-7

ARMAND MARIE LEROI
THE LAGOON
How Aristotle Invented Science
Viking • 978-0-670-02674-6

DIANDRA LESLIE-PELECKY
THE PHYSICS OF NASCAR
The Science Behind the Speed
Foreword by Ray Evernham
Plume • 978-0-452-29022-8

JON MOOALLEM
WILD ONES
A Sometimes Dismaying, Weirdly Reassuring Story About Looking at People Looking at Animals in America
Penguin • 978-0-14-312537-2

STEVEN JOHNSON
HOW WE GOT TO NOW
Six Innovations That Made the Modern World
Riverhead • 978-1-59463-296-9

J. CRAIG VENTER
LIFE AT THE SPEED OF LIGHT
From the Double Helix to the Dawn of Digital Life
Penguin • 978-0-14-312590-7

TOM ZOELLNER
TRAIN
Riding the Rails That Created the Modern World—from the Trans-Siberian to the Southwest Chief
Penguin • 978-0-14-312634-8

NATHALIA HOLT
CURED
The People Who Defeated HIV
Plume • 978-0-14-218184-3

BARBARA OAKLEY
A MIND FOR NUMBERS
How to Excel at Math and Science (Even If You Flunked Algebra)
Penguin • 978-0-399-16524-5

CHARLES SEIFE
VIRTUAL UNREALITY
Just Because the Internet Told You So, How Do You Know It's True?
Viking • 978-0-670-02608-1

DAVE GOLDBERG
THE UNIVERSE IN THE REARVIEW MIRROR
How Hidden Symmetries Shape Reality
Plume • 978-0-14-218104-1

SHAUN GALLAGHER
CORRELATED
Surprising Connections Between Seemingly Unrelated Things
Perigee • 978-0-399-16247-3

Solar System Scale Models in Google Earth
(Grades 4–College) *S404 b/c, McCormick Place*
Science Focus: ESS1.B, INF, CCC3, CCC4, SEP2, SEP4, SEP5
Brian Levine (@brianwlevin; *blevine@amnh.org),* American Museum of Natural History, New York, N.Y.
The solar system is huge! Learn how to use Google Earth to construct your own scale model using landmarks near your school.

RIPD 3-D: Rigorous Inquiry-based Professional Development
(Grades 6–8) *S404d, McCormick Place*
Science Focus: GEN, INF, SEP2, SEP4, SEP5
Erik Skramstad *(eskramstad@interact.ccsd.net),* Clark County School District, Las Vegas, Nev.
Hear how Clark County School District's Investing in Innovation (i3) project provided middle school science teachers and students with collaborative professional development opportunities to implement 3-D engineering and 3-D printing activities during formal and informal education activities.

Increasing Science Literacy for All While Differentiating Content Through Pedagogical Strategies
(Grades 6–12) *S501a, McCormick Place*
Science Focus: PS
Andrew Miller, Cambridge Rindge and Latin School, Cambridge, Mass.
Attention will be paid to address the challenges of differentiating classroom instruction to reach all levels of learners. Hear from presenters who co-teach freshmen physics designed to be college prep in an urban school district with an incredibly diverse population.

Investigations in Transportation: Partnering Industry Professionals and Elementary Teachers in a STEM Unit of Study
(Grades 2–6) *S505b, McCormick Place*
Science Focus: GEN, INF, NGSS
Carol Biskupic Knight *(bisz@pdx.edu),* Portland State University and Portland Metro STEM Partnership, Beaverton, Ore.
Wendy Gould *(wendy_gould@beaverton.k12.or.us),* Chehalem Elementary School, Beaverton, Ore.
Investigations in Transportation program—an elementary school partnership and curriculum development project—engages STEM professionals in school-based design projects bringing real-world applications to elementary classrooms.

Teaching Science and Engineering Practices Using Energy-Efficient Buildings with an Open-Access Smart CAD Program
(Grades 6–12) *W186c, McCormick Place*
Science Focus: GEN, SEP
Senay Purzer, Purdue University, West Lafayette, Ind.
Find out how to simultaneously promote science and engineering practices using an open-access, computer-assisted design software, Energy3D. Laptops/tablets encouraged.

Zombie Apocalypse! Scaffolding Claims, Evidence, and Reasoning
(Grades 3–12) *W187b, McCormick Place*
Science Focus: GEN, SEP7, SEP8
Katrina Scherben, Innovate Manhattan Charter School, New York, N.Y.
Engaging experiments provide powerful opportunities for students to use evidence to explain and support scientific claims. I'll share differentiated science and writing activities.

iPad Invasion in the Middle School Science Classroom
(Grades 5–12) *W187c, McCormick Place*
Science Focus: GEN
Maggie Mabery (@MBMSScience; *mmabery@mbusd.org)* and **James Locke** *(jlocke@mbusd.org),* Manhattan Beach Middle School, Manhattan Beach, Calif.
Tablets/iPads are invading classrooms. Hear how two science teacher successfully implemented these tools into their science labs. Leave with actual lesson ideas that you can implement immediately!

All Students Can Be STEM Students: Opening the Doors to the Unconverted
(Grade 12) *W196c, McCormick Place*
Science Focus: GEN, SEP1, SEP7
Serena Magrogan *(smagrogan@collegeboard.org),* The College Board, Duluth, Ga.
Can a student who is "not a science person" become interested in STEM? Yes! Welcome to AP Research.

8:00 AM–9:00 AM Hands-On Workshops

ASTC Session: Building a STEM Foundation for Tomorrow's Leaders

(Grades 3–5) *Clark A/B, Hyatt*

Science Focus: ETS, CCC6, SEP1, SEP2, SEP3, SEP5, SEP6, SEP8

Nasia Hareras *(nhareras@assetinc.org)* and **Sandra Calgaro** *(scalgaro@assetinc.org),* ASSET STEM Education, Pittsburgh, Pa.

Our focus is to engage informal educators in an engineering design challenge that integrates the crosscutting concept of structure and function along with 21st-century skills.

Teaching Statistical Analysis Using Spreadsheets Simulation Models and Resampling in AP Biology

(Grades 10–College) *Grant Park B, Hyatt*

Science Focus: LS, SEP2, SEP4, SEP5

Brad Williamson,.The University of Kansas Center for STEM Learning, Lawrence

Let's explore models and spreadsheet simulations to help students develop and apply quantitative skills in the new AP biology. Laptops recommended.

Tricks of the Trade: Reading

(Grades 4–College) *Jackson Park B, Hyatt*

Science Focus: GEN

David Black (@davidablack77; *dblack3@murraystate.edu),* Murray State University, Murray, Ky.

Discover proven instructional methods that help students learn and increase their interest and comprehension through reading.

What's a Scientific Model?

(Grades 4–12) *Jackson Park C, Hyatt*

Science Focus: GEN, SEP

Misty Richmond *(mjrichmond@cps.edu),* Agustin Lara Elementary Academy, Chicago, Ill.

Cynthia Sanchez *(cosr22@sbcglobal.net),* Little Village Academy, Chicago, Ill.

Leave this session able to define a scientific model and be better equipped to explain and use them with your students.

Plant Virus: Biology, Ecology, and Management
(Grades 6–12) *S402b, McCormick Place*
Science Focus: ESS, LS, SEP1, SEP3, SEP4, SEP8
Irene Grimberg *(grimberg@montana.edu),* Montana State University, Bozeman
Investigate biological and ecological principles of plant virus disease transmission. Emphasis will be placed on a blended curriculum of online resources and hands-on activities suitable to grades 6–12 classrooms. Science content and explorations are framed by the *NGSS*.

Using Macroinvertebrates to Measure Water Quality—With or Without Water!
(Grades 9–12) *S403b, McCormick Place*
Science Focus: ESS
James Doyiakos *(doyiakos1@aol.com),* Amundsen High School, Chicago, Ill.
Claire Snyder (@chicagoriver; *csnyder@chicagoriver.org),* Friends of the Chicago River, Chicago, Ill.
Delve into using macroinvertebrates to measure water quality by a river or in the classroom. Take home free classroom materials.

Teaching About Severe Weather
(Grades 7–12) *S404a, McCormick Place*
Science Focus: ESS2.D, ESS3.B, ESS3.C
Lisa Gardiner (@lisagard2; @UCARSciEd); UCAR Center for Science Education, Boulder, Colo.
Fill your classroom with natural hazards like tornadoes, hurricanes, and winter storms. Join me as I share activities that explore severe weather and the consequences of these events for people and places.

Engineering Design Experiments for Middle School Classrooms
(Grades 6–8) *S405a, McCormick Place*
Science Focus: ETS, CCC, SEP
Karen Saur (@karen)saur; *ksaur@nysci.org),* New York Hall of Science, Queens
Sephali Thakkar (@SephaliRay; *sephali@gmail.com),* Columbia Secondary School for Math, Science and Engineering, New York, N.Y.
Crystal Marsh (@teachandthecity; *crystal.marsh@salkschool.org),* Salk School of Science, New York, N.Y.
Catherine Burke *(catherine.l.burke@gmail.com),* American Museum of Natural History, New York, N.Y.
Find out how to integrate rigorous (but manageable) design experiments into your classroom while following the *NGSS* engineering design process.

Using the *Next Generation Science Standards* in Chemistry Classes
(Grades 9–12) *S501 b/c, McCormick Place*
Science Focus: PS, CCC, SEP
Michael Mury *(m_mury@acs.org),* American Chemical Society, Washington, D.C.
With the development of the *NGSS*, including connections among the sciences is even more vital. Attend this workshop for suggestions on including aspects of the standards in your chemistry class. A chemistry course can definitely integrate physics, environmental science, Earth and space science, and life sciences.

Eureka! Causal Thinking About Molecules and Matter
(Grades 6–8) *S501d, McCormick Place*
Science Focus: PS1.A, CCC1, CCC2, CCC4, SEP2, SEP4, SEP6
Deena Gould *(DNAmartin@cox.net),* Arizona State University, Tempe
Challenge persistent misconceptions with contrasting activities (one linear and two nonlinear) that pair cause-and-effect models and explanations with core concepts about the structure and properties of matter.

Kinetic Science: Models of Understanding
(Grades 4–8) *S502a, McCormick Place*
Science Focus: ESS, ETS, LS, PS, CCC3, CCC4, SEP2, SEP5, SEP8
Matthew Cushing *(mpc3@rice.edu),* Rice University, Houston, Tex.
Use circuitry and interactive electronics paired with everyday objects to engineer kinetic models through STEM inquiry in order to demonstrate understanding of science concepts.

Which Way Did the DNA Go? Fun with Electrophoresis!
(Grades 6–12) *S502b, McCormick Place*
Science Focus: LS, INF
Barbara Bielec (*barbara.bielec@btci.org*), BTC Institute, Madison, Wis.
Learn quick, fun, and easy ways to teach about DNA and electrophoresis. Appropriate for middle and high school teachers.

JOIN US AT THE NSTA EXPO #967

GIVEAWAYS
SOCIAL MEDIA HUB
FREE HANDOUTS

- Find out what's new with NGSS@ NSTA and connect with NGSS curators
- Hear about and sign up for upcoming webinars based around critical topics in science education
- Learn more about NSTA professional programs and how they benefit you
- Learn all about our special benefits for members, and why joining NSTA is a smart career choice

WE CAN'T WAIT TO MEET YOU!

NSTA National Science Teachers Association

Culturally Relevant Pedagogy: How to Handle Diversity in the Elementary Classroom
(Grades P–6) *S503b, McCormick Place*
Science Focus: GEN, NGSS
Deb Morrison (@educatordeb; *educator.deb@gmail.com),* TREE Educational Services, Boulder, Colo.
Emphasis will be placed on helping elementary teachers gain confidence to enact culturally relevant pedagogy in their science teaching to meet the learning needs of all students.

Early Childhood Engineering Design with Engineers and Scientists Based on Unique and Diverse Features of the Island of Guam
(Grades K–5) *S504a, McCormick Place*
Science Focus: ETS1, LS1.A, LS1.B, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP8
Naomi Mayer *(mayer_naomi@hotmail.com),*, Department of Defense Education Activity Guam Schools
Hear about a relationship forged between Guam STEM professionals and teachers to collaboratively plan experiences based on real problems that face the community.

NMEA Session: Whale-of-a-Tale Share-a-Thon
(General) *Skyline W375e, McCormick Place*
Science Focus: ESS, INF
Lauren Rader *(lrader@oceanology.org),* Project Oceanology, Groton, Conn.
Diana Payne (@DianaPayne22; *diana.payne@uconn.edu),* Connecticut Sea Grant, Groton
David Christopher *(dchristopher@aqua.org),* National Aquarium, Baltimore, Md.
Tami Lunsford *(tami.lunsford@gmail.com),* Newark Charter Junior/Senior High School, Newark, Del.
Presider: E. Howard Rutherford, University of South Florida College of Marine Science, St. Petersburg
The National Marine Educators Association invites you to engage in hands-on activities and take home resources for your classroom. Join us to discover how you can become involved in both ocean and freshwater initiatives from local and national organizations to promote ocean and climate literacy.

PDI **BSCS Pathway Session: Designing Effective Professional Development for the *NGSS***
(General) *W176a, McCormick Place*
Science Focus: GEN, NGSS
Paul Numedahl *(pnumedahl@bscs.org)* and **Jody Bintz** *(jbintz@bscs.org),* BSCS, Colorado Springs, Colo.
What professional development experiences will help teachers understand the *NGSS* and how it impacts classroom teaching? How can these changes be systemic and sustainable? We will introduce a model for planning effective science professional development experiences that support the *NGSS* and explore questions that district leaders, teacher leaders, and PD providers need to ask before PD begins.

What Do Students Think They Know? Improving Assessment Through Student Choice and Self-Reflection
(Grades 9–College) *W190b, McCormick Place*
Science Focus: LS, PS
Stephen Traphagen (@mrtraphagen; *stephen@mrtraphagen.com)* and **Paul Fraser** *(paul.fraser@d214.org),* Rolling Meadows High School, Rolling Meadows, Ill.
Don't have time to evaluate all the work your students produce? Share the work! Come see routines that support student self-assessment and change your class.

Drivers, Start Your Glue Guns! Engineering by Design
(Grades 3–College) *W192a, McCormick Place*
Science Focus: PS2.A, PS2.B, CCC2, SEP
Julie Angle *(julie.angle@okstate.edu),* Oklahoma State University, Stillwater
Speed on the track translates into excitement in the classroom as teachers learn to facilitate an engineering design process through the construction of a NASCAR pasta pod.

Using NASA to Explore Your Universe from Inner to Outer Space
(Grades 1–8) *W192c, McCormick Place*
Science Focus: ESS
Linda Smith, Retired Educator, Elmer, N.J.
In this workshop, participants will use objects NASA has found to play a game while creating their own scale model of size and time. Explore measurement by arranging objects as small as the radius of a proton to as large as the size of our universe. Free NASA posters.

8:00–9:00 AM Exhibitor Workshops

Supporting *NGSS* Requirements for Data Collection on Chromebooks

(Grades K–12) *W179b, McCormick Place*

Science Focus: PS2, SEP

Sponsor: PASCO scientific

Joe Todd *(jtodd@pasco.com),* PASCO scientific, Roseville, Calif.

SPARKvue software can help you integrate *NGSS* science and engineering practices through lab explorations and help students reach key performance expectations. Learn how to get started with data collection, and how to use data sharing for easy classroom management and to foster student collaboration on any computing platform.

The EQuIP Rubric: Evaluating Middle School Resources for *NGSS*

(Grades 6–8) *W194b, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: It's About Time

Joseph Krajcik (@krajcikjoe), CREATE for STEM Institute, Michigan State University, East Lansing

Emily Miller, Madison (Wis.) Metropolitan School District

The *Framework* and *NGSS* provide a bold new vision for science education in which students make sense of phenomena and design solutions to problems using science and engineering practices, crosscutting concepts, and disciplinary core ideas. The EQuIP Rubric provides criteria by which to determine how the overall quality of lessons and units in a curriculum align to the *NGSS*. In this session, participants will learn how to use the EQuIP rubric to evaluate how Project Based Learning materials align to *NGSS*.

8:00–9:15 AM Exhibitor Workshop

Gorongosa: A Case Study in Conservation

(Grades 9–College) *W183c, McCormick Place*

Science Focus: ESS3, LS2

Sponsor: HHMI BioInteractive

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

Bridget Conneely, Howard Hughes Medical Institute, Chevy Chase, Md.

Amanda Briody, Frederick Douglass High School, Croom, Md.

The next 50 years are a critical time for our planet's future. In this workshop, Gorongosa National Park in Mozambique is used as a case study for real-world conservation. Participants will use BioInteractive resources, such as an interactive map, timeline, and trail camera photos to connect ecology with conservation.

8:00–9:30 AM Presentation

Special Pathway Session: CDC: The Why, What, and How of Teaching Epidemiology and Public Health Science in Middle and High School

(Grades 7–College) *W175c, McCormick Place*

Science Focus: LS

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

Join representatives from the Centers for Disease Control and Prevention (CDC) as they outline the rationale for teaching epidemiology and public health science in grades 7–16 classrooms, present *NGSS*-based educational standards to guide course development, and discuss how to adapt CDC resources for classroom use.

8:00–9:30 AM Hands-On Workshop

PDI **McREL Pathway Session: Discourse in the Classroom: Supporting Science and Engineering Practices**

(Grades 4–College) *W175 a/b, McCormick Place*

Science Focus: GEN, INF, SEP

Anne Tweed *(atweed@mcrel.org),* 2004–2005 NSTA President, and McREL International, Denver, Colo.

To understand science ideas and demonstrate that understanding, students need to talk about their ideas to clarify their thinking. Learn how to use science and engineering practices from the *NGSS* to get students to discuss their ideas and evidence to make sense of their learning experiences.

8:00–9:30 AM Exhibitor Workshops

Using Problem-Based Learning to Up Your *NGSS* Game

(Grades K–12) *W179a, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Pearson

Michael Padilla, 2005–2006 NSTA President, and Professor Emeritus, Clemson University, Clemson, S.C.

The *NGSS* seeks to incorporate more scenario-based and Problem-Based Learning. To help prepare students in school and beyond, students need to be doing science and seeing how it fits into their daily lives. Join Pearson author Mike Padilla as he brings PBL into the science classroom to help prepare students for future science and technology careers.

Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs

(Grades 9–12) *W181a, McCormick Place*

Science Focus: LS

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! Participants dissect a Carolina's Perfect Solution pig by modeling the protocols of a forensic pathologist. Free materials and door prizes.

Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher

(Grades 9–12) *W181c, McCormick Place*

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, and safe chemistry activities that are sure to produce a reaction from your students. Whether you're new to chemistry or feeling out of your element, you'll learn new ways to create excitement. Free materials and giveaways!

Science, the Literacy Connection, and the *CCSS ELA*

(Grades K–6) *W184a, McCormick Place*

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Learn how your students can experience the enjoyment of learning science using Delta Science Modules and make the literacy connection with Delta Science literacy resources to the *CCSS ELA*. Receive a workshop packet containing *Common Core* strategy templates and other related Delta literacy materials.

CPO's Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design

(Grades 6–12) *W184bc, McCormick Place*

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Cory Ort,** CPO Science/School Specialty Science, Nashua, N.H.

CPO's new Link Wind Turbine learning module lets students learn in a tablet-based learning environment and engineer a wind turbine. Students build, test, and revise their designs. Link uses STEM activities and an *NGSS* approach to give students an understanding of how to apply the engineering cycle in science class.

Engineering Design in the FOSS Next Generation Program

(Grades 1–5) *W184d, McCormick Place*

Science Focus: ETS

Sponsor: Delta Education/School Specialty Science–FOSS

Linda De Lucchi, and **Brian T. Campbell**, The Lawrence Hall of Science, University of California, Berkeley

FOSS Next Generation modules provide students with opportunities to engage in engineering experiences to develop solutions to problems, construct models, and use systems thinking. We'll describe transitioning to FOSS Next Generation, and display the engineering opportunities in a new module, Motion and Matter.

Integrate Chromebook and BYOD with Vernier Technology

(Grades 3–College) *W185a, McCormick Place*

Science Focus: GEN, SEP4

Sponsor: Vernier Software & Technology

Matthew Anthes-Washburn *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors in this hands-on workshop to conduct a variety of experiments using Chromebooks and BYOD technology. Experience data collection using Graphical Analysis for Chrome and Vernier Data Share for BYOD environments. See how Vernier has been incorporating principles of the *NGSS* science and engineering practices for 34 years!

Investigating Wind Energy with Vernier

(Grades 3–8) *W185d, McCormick Place*

Sponsor: Vernier Software & Technology

Science Focus: PS3.A, PS3.B, PS3.C, SEP4, SEP3, SEP6

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

Learn to teach engineering design using KidWind Experiment Kits and Vernier data-collection technology as you design, test, and refine a device that converts energy from one form to another. This hands-on workshop, appropriate for elementary and middle school teachers, is based on activities from our new book, *Investigating Wind Energy*.

Case of the Missing Records

(Grades 8–College) *W186a, McCormick Place*

Science Focus: LS, INF

Sponsor: Edvotek, Inc.

Brian Ell *(info@edvotek.com)* and **Maria Dayton** *(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 flash drive/T-shirt drawing entry.

MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started

(Grades 6–9) *W186b, McCormick Place*

Science Focus: ETS

Sponsor: LEGO® Education

Laura Jackson, Retired Teacher/LEGO® Education Trainer, Greenwood, Mo.

Cindy Howard, Retired Teacher/LEGO® Education Trainer, Kansas City, Mo.

Learn firsthand how LEGO® Education MINDSTORMS EV3 can get your students excited as they model real-life mechanisms and solve real-world challenges, all while building the critical-thinking and creative problem-solving skills that will serve them well for a lifetime.

Blood Ties: Switched at Birth?

(Grades 6–12) *W192b, McCormick Place*

Science Focus: LS

Sponsor: Ward's Science

Michelle Pagani, VWR Education, Rochester, NY

Experience our renowned simulated blood typing lab, unmatched in quality and newly *NGSS* aligned. Perform a blood typing reaction using Ward's Simulated Blood to investigate familial ties of two infants suspected to be switched at birth. Explore techniques for extending student learning beyond the basics using blood pathology microscope slides. Receive a free sample of simulated blood.

Jump-start Your Transition to *NGSS* and *CCSS, ELA* Through Integration—From The Lawrence Hall of Science

(Grades K–5) *W194a, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Amplify

Traci Wierman (@seedsroots; *twierman@berkeley.edu)* and **Rebecca Abbott** (@seedsroots; *rebabbott@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley

Back by popular demand. Explore how *Seeds of Science/Roots of Reading*® implements the three dimensions of the *NGSS,* using its unique approach to science and literacy integration. Students access, learn, and express science concepts through practice with core ideas integrated with explicit disciplinary literacy instruction. Free materials provided.

Where big ideas become the next big thing.

By hosting **Camp Invention**, **Club Invention** or **Invention Project**, you are partnering with the only nationally recognized programs backed by **The National Inventors Hall of Fame**.

We provide educators the strategies and environment necessary to nurture curiosity into big ideas through STEM based curricula in an out of school time setting.

Programs for 1st through 8th grade students.

800.968.4332
campatmyschool@invent.org

For more information please visit us at booth #1563

Camp Invention®

Invention Project®

Club Invention Afterschool®

National Inventors Hall of Fame®

In partnership with the United States Patent and Trademark Office, an Agency of the Department of Commerce

Modeling Convection Currents and Plate Motion
(Grades 6–8) *W195, McCormick Place*
Science Focus: ESS, SEP2
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Investigate and model convection currents using unique LAB-AIDS/SEPUP materials to develop an operational understanding of water temperature and its movement. This hands-on experience with convection in water coupled with the knowledge of Earth's interior is combined to explain the motion of Earth's tectonic plates and how that motion causes major geological events.

Spicing Up Classical Physics with Modern Examples
(Grades 7–College) *W471a, McCormick Place*
Science Focus: PS, CCC, SEP
Sponsor: Perimeter Institute
Kelly Foyle and **Kevin Donkers,** Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada
Tired of using the same examples to illustrate concepts in classical physics every year? Looking for ways to expose your students to modern physics without taking up extra time? This session will show how to apply what you do every day in class to new, interesting concepts in modern physics.

STEM—Discover, Collaborate, Innovate
(Grades K–11) *W471b, McCormick Place*
Sponsor: Discovery Education
Science Focus: GEN
Patti Duncan (*educataionpartnerships@discovery.com*), Discovery Education, Silver Spring, MD
In a STEM learning environment, we want students to ask deep real-world questions, collaborate with their peers, arrive at meaningful conclusions, and explore STEM careers. Join us to learn about a variety of digital resources and professional development strategies that help make this possible.

8:00–11:00 AM Hands-On Workshops

Implementing *NGSS* in a Fourth-Grade Classroom: Integrating *CCSS ELA* Through Science Notebooks, Scientist Meetings, and NSTA Outstanding Trade Books
(Grades K–5) *Field A/B, Hyatt*
Science Focus: GEN, SEP
Kathy Renfrew ((@KRScienceLAdy; *kathy.renfrew@state.vt.us),* Vermont Agency of Education, Barre
It's time for science instruction! Participants will be engaged in the science and engineering practices as they are walked through a piloted *NGSS* instructional sequence. See how *NGSS, CCSS,* and an NSTA Outstanding Trade Book can be used to develop quality science instruction.

PDI **AMNH Pathway Session: Using a Tool and the *NGSS* to Plan a Unit of Instruction**
(Grades 6–12) *W178b, McCormick Place*
Science Focus: GEN, NGSS
Jim Short *(jshort@amnh.org) Iabd* **Dora Kravitz** *(dkravitz@amnh.org),* American Museum of Natural History, New York, N.Y.
Participants will plan for instruction using a tool and *NGSS* card sets to deepen their understanding of the three dimensions and consider what students need to know.

8:00 AM–5:00 PM Meeting

National Earth Science Teachers Association Board Meeting
Burnham C, Hyatt
Members of the NESTA Board will meet to review progress and plan for the coming year. Attendance is open for those interested in listening. For further information, visit *www.nestanet.org.*

8:30–9:00 AM Presentations

SCST Session: A Sustainable Professional Development Model for Inquiry Teaching in Introductory College Biology Courses

(College) *Clark C, Hyatt*

Science Focus: LS

Helen McDowell *(helen.e.mcdowell@lonestar.edu),* **Joseph Trackey** *(joseph.l.trackey@lonestar.edu),* and **Linda Crow** *(lcrow@lonestar.edu),* Lone Star College–Montgomery, Conroe, Tex.

A sustainable online program developed both for adjunct and full-time biology faculty at a community college is needed to support the change to inquiry. We'll cover basic descriptions and challenges with implementation.

Arctic and Antarctic E-Books in the Classroom: A New Polar Resource for Educators

(Grades K–12) *Jackson Park D, Hyatt*

Science Focus: GEN, INF

Gary Wesche *(wesche_family@yahoo.com),* PolarTREC, Kansas City, Mo.

Polar e-books bring the excitement and adventure of living and working in the Polar regions to a wide range of grade levels.

To Look Closely: Science and Literacy in the Natural World

(Grades 1–6) *S504d, McCormick Place*

Science Focus: ESS3.C, ETS1.B, LS1, LS2.A, LS2.B, LS2.D, LS4.B, LS4.C, LS4.D, PS1.A, PS2.A, CCC1, CCC2

Laurie Rubin *(lrubin55@verizon.net),* Ithaca (N.Y.) City School District

Discover how nature study can help you create an integrated curriculum that informs and enhances your students' learning in science, mathematics, and language arts.

Creating a Culture of Conservation Using the *NGSS* Practices

(Grades P–12) *W187a, McCormick Place*

Science Focus: GEN, INF, SEP

Jessica MacManus, Mass Audubon's Wellfleet Bay Wildlife Sanctuary, Wellfleet, Mass.

Learn to use the *NGSS* practices outside, build curricula around local conservation issues, and help students take stewardship over the environment.

Faculty Preparedness for Engineering Design and *NGSS*

(General) *W475b, McCormick Place*

Science Focus: ETS

Ken Turner Jr. *(klturner1216@gmail.com),* University of Dubuque, Iowa

Join me as I outline a formative evaluation of a high school science faculty's preparedness to teach engineering design and their familiarity with the *NGSS*. Discussion includes re-prioritization and implications for teacher education programs and college/university science programs.

8:30–10:00 AM Meeting

NSELA Annual Membership Meeting

Prairie B, Hyatt

8:30–10:00 AM Exhibitor Workshop

Struggling with How to Integrate Inquiry into Your AP Biology Course? (AP Big Idea 3)

(Grades 9–College) *W474b, McCormick Place*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

Damon Tighe (*damon_tighe@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.

Join us to learn new ways to advance inquiry in the classroom—from guided to open—by establishing a strategy that integrates essential and real-world scientific practices encouraging students to direct the investigation. From generating scientifically reasonable questions to developing the procedure to interpret data, this model process will help you implement inquiry in your classroom laboratory!

8:30–10:30 AM Meeting

Research in Science Teaching Committee Meeting

Boardroom 1, Hyatt

9:00–10:30 AM Meetings

Retired Members Advisory Board Meeting

Boardroom 2, Hyatt

Science Safety Advisory Board Meeting

Boardroom 3, Hyatt

9:00–11:00 AM Exhibitor Workshop

The GMO Debate Rages On!

(Grades 9–College) *W474a, McCormick Place*

Science Focus: PS

Sponsor: Bio-Rad Laboratories

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

Are GM crops a good thing? Do all countries have the same GM food labeling requirements? Wouldn't it be interesting to know which foods you eat are GM foods? Discover the basics of DNA extraction, PCR, and gel electrophoresis, and how these techniques are used to test common grocery food products for the presence of GM foods.

9:00 AM–12 Noon Meeting

AMSE Board Meeting

(By Invitation Only) *Boardroom 5, Hyatt*

9:00 AM–5:00 PM Networking Opportunity

NSTA International Lounge

Michigan, Hyatt

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

INF **Your Inner Fish**

(General) *Skyline W375 a/b, McCormick Place*

Science Focus: LS, INF

Speaker sponsored by HHMI BioInteractive

Neil Shubin (@NeilShubin), Host of *Your Inner Fish* and Robert R. Bensley Professor, Organismal Biology and Anatomy, and Associate Dean for Academic Strategy, The University of Chicago, Ill.

Presider and Introduction: Juliana Texley, NSTA President, Boca Raton, Fla.

Platform Guests: Neil Shubin; Juliana Texley; Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Math and Science Partnership, Cleveland Heights, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; Mary Gromko, NSTA President-Elect-Elect, Colorado Springs, Colo.; Paul Ritter, President, Illinois Science Teachers Association (ISTA), and Pontiac Township High School, Pontiac, Ill.; Tammy Huenink, President-Elect, Wisconsin Society of Science Teachers (WSST), and Sheboygan Falls Middle School, Sheboygan Falls, Wis.; David L. Evans, NSTA Executive Director, Arlington, Va.; Wendy Jackson, Chairperson, NSTA Chicago National Conference, STEM Center, DePaul University, Chicago, Ill.; Natacia Campbell, Program Coordinator, NSTA Chicago National Conference, NSTA Director, District XII, and Victor J. Andrew High School, Tinley Park, Ill.; Judith Scheppler, Local Arrangements Coordinator, NSTA Chicago National Conference, and Illinois Mathematics and Science Academy, Aurora

According to Neil Shubin, we can thank our fishy origins for many of our human traits. This is no typical fish tale; did you know our hands evolved from the fins of prehistoric fish? Join Neil as he shares these and other insights as he tells the story of evolution by tracing the organs of the human body back millions of years, long before the first creatures walked Earth.

Neil Shubin is the Robert Bensley Distinguished Service Professor at The University of Chicago and associate dean for academic strategy of the university's Biological Sciences Division. He's also the author of two popular science books—The Universe Within: The Deep History of the Human Body *(2013) and the best-selling* Your Inner Fish: A Journey into the 3.5-Billion-Year History of the Human Body *(2008).* Your Inner Fish *was named best book of the year by the National Academy of Sciences. He is also host of the PBS show* Your Inner Fish.

9:30 AM–10:30 AM Hands-On Workshop

NMEA Session: Great Lakes Literacy…Coming Soon to a Classroom Near You

(Grades 4–College) *Skyline W375e, McCormick Place*

Science Focus: ESS3.A, ESS3.C, INF, CCC3, SEP2, SEP8

Kristin TePas *(ktepas@illinois.edu)* and **Terri Hallesy** *(thallesy@illinois.edu),* Illinois-Indiana Sea Grant, Urbana

Lyndsey Manzo (@CGLLiteracy; *manzol@wcsoh.org),* The Ohio Sea Grant College Program, Columbus

Cynthia Hagley *(chagley@umn.edu),* Minnesota Sea Grant, Duluth

Dive into curricula and professional development opportunities bringing together scientists and educators to foster the inclusion of Great Lakes science into K–12 classrooms.

9:30 AM–10:30 AM Exhibitor Workshops

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

(Grades 9–12) *W179b, McCormick Place*

Sponsor: PASCO scientific

Amanda Zullo *(zulloama@slcs.org),* Saranac Lake High School, Saranac Lake, N.Y.

Science Focus: PS1.B, PS3.D, PS4.A, CCC1, SEP4

Use PASCO's new Wireless Spectrometer and free Spectrometry software to perform introductory spectroscopy experiments for chemistry, biology, and physics on computers and iPads. In this hands-on workshop, you'll analyze emission spectra, absorbance/transmittance spectra, solution concentration data, and reaction kinetics data. One attendee will win a Spectrometer!

Merging the Three Dimensions of the *NGSS* in *Project-Based Inquiry Science*™ (PBIS) for Middle School

(Grades 6–8) *W194b, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: It's About Time

Cary Sneider, Portland State University, Portland, Ore.

Discover science in 3D! Unlike previous standards, the *Next Generation Science Standards* merge core ideas in science and engineering with practices and crosscutting concepts. This workshop, led by *NGSS* lead author Cary Sneider, will illustrate how *Project-Based Inquiry Science* (PBIS), a middle school NSF-funded program, combines all three dimensions. Using PBIS, teachers will design, build, and test solutions to an engaging challenge—just as your students would—incorporating *NGSS* and a STEM approach.

9:30–11:30 AM Hands-On Workshop

PDI

BSCS Pathway Session: Engaging Students in Making Sense of Phenomena with Data and Models—Practices 2 and 4

(Grades 6–12) *W176a, McCormick Place*

Science Focus: GEN, SEP2, SEP4

April Gardner *(agardner@bscs.org)* and **Paul Numedahl** *(pnumedahl@bscs.org),* BSCS, Colorado Springs, Colo.

Students are often overwhelmed when confronted with the task of analyzing and interpreting data. Likewise, they often struggle connecting models to the real-life phenomena that the models represent. Success in science requires students to make sense of data presented and gathered in multiple ways as well as reason about abstract phenomena that is presented using models and representations. Come learn to use two sense-making strategies as tools to help students with analyzing and interpreting data and using models to understand the natural world—Practices 2 and 4. Participants will also be introduced to a free online course for middle school that incorporates these strategies as part of the curriculum.

10:00–11:30 AM Hands-On Workshop

PDI INF

McREL Pathway Session: Green STEM in Elementary Classrooms

(Grades P–6) *W175 a/b, McCormick Place*

Science Focus: GEN, INF, NGSS

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

Trying to include science and STEM content into an already crowded curriculum is the largest barrier to developing student understanding of elementary science ideas. Find out how to make decisions about essential Green STEM learning goals, integrating learning experiences, linking to environmental issues, and developing performance criteria for student success.

10:00–11:30 AM Exhibitor Workshops

Student Engagement and Preparedness in High School Science Labs

(Grades 9–12) *W178a, McCormick Place*

Sponsor: Late Nite Labs

Nikki Jones, Late Nite Labs, New York, N.Y.

Science Focus: GEN

We invite you to join a workshop on student engagement and preparedness in high school science labs. The discussion will focus on the use of digital science labs to drive increased engagement and better outcomes in introductory science courses.

Understanding Global Change: Welcome to the Anthropocene!

(Grades 6–College) *W179a, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Pearson

Joseph Levine, Author, Boston, MA

Interdisciplinary approaches to global human ecology address the nature of science, social relevance of STEM subjects and core concepts, and an *NGSS*-inspired approach to teaching.

Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments

(Grades 9–12) *W180, McCormick Place*

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Jillian Saddler *(jsaddler@flinnsci.com)* and **Mike Frazier** *(mfrazier@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.

Join us as we showcase the features of our Exploring Chemistry line of kits! We will highlight integrated lab and learning activities on some major chemistry topics! These experiments, demonstrations, and POGIL™ activities ensure that students really understand the concepts and get a glimpse of the underlying simplicity and beauty of chemistry!

Introduction to Wisconsin Fast Plants®
(Grades K–12) *W181a, McCormick Place*
Science Focus: LS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Experience the versatility of Wisconsin Fast Plants. These small, quick-growing plants are ideal classroom tools for all learning levels. Learn basics for successful planting, flower dissections, and pollination. Integrate plant development, life cycle, environmental effects, genetics, and evolution into your class with these amazing plants. Door prizes!

Engineering for K? Yes!
(Grades P–K) *W181b, McCormick Place*
Science Focus: ETS, SEP
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Yes, kindergartners can master the E in STEM. Engage with us as we complete a variety of engineering projects specifically designed for kindergarten students that support the *NGSS*.

Flipping Out Over Chemistry!
(Grades 9–12) *W181c, McCormick Place*
Science Focus: PS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Wish you had time to increase individual instruction and improve student understanding of key concepts? Explore a blend of digital and hands-on activities that allow students to review content as "homework" so you can devote valuable classroom time to inquiry activities, assignments, and tests. Free materials and giveaways.

PEASE in Our Time—Memory Lanes of the Brain
(Grades K–6) *W184a, McCormick Place*
Science Focus: GEN
Sponsor: Delta Education/School Specialty Science
John Cafarella, Consultant, Canadensis, Pa.
Retrieved memories are the only proof we have that learning has taken place. Where is knowledge/understanding stored in the brain? How will the student find it for an assessment? We'll look at the PEASE (procedural, episodic, automatic, semantic, and emotional) lanes of the brain through a lens of STEM/FOSS/DELTA lessons and assessments.

Solving the Mystery of STEM Using Forensic Science
(Grades 6–12) *W184bc, McCormick Place*
Science Focus: GEN
Sponsor: Frey Scientific/School Specialty Science
Lou Loftin, Nevada's Northwestern RPDP, Reno
Conduct a number of STEM-focused forensic activities that link the scientific method with analysis and investigative skills to solve multifaceted "cases" involving fingerprint, trace, DNA, and document evidence. Examine additional STEM-focused assets. See how the program software allows the integration of virtual labs, investigative activities, the preparation of web-based content, and individualized assessment.

Scientific Practices: What Does Argumentation Look Like in a FOSS Elementary Classroom?
(Grades 1–5) *W184d, McCormick Place*
Science Focus: GEN
Sponsor: Delta Education/School Specialty Science–FOSS
Brian T. Campbell, The Lawrence Hall of Science, University of California, Berkeley
Join FOSS Next Generation Program developers to learn about the science practices within the context of the student investigations. Experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within FOSS lessons. Find out about transitioning to FOSS Next Generation.

Biology with Vernier
(Grades 9–College) *W185a, McCormick Place*
Science Focus: LS, SEP4
Sponsor: Vernier Software & Technology
Colleen McDaniel *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Use Vernier sensors to conduct a variety of biology experiments from our popular lab books in this engaging, hands-on workshop. Experience data collection using LabQuest 2, Logger *Pro* computer software, and mobile devices. See how Vernier has been incorporating principles of the *NGSS* science and engineering practices for 34 years!

Renewable Energy with KidWind and Vernier
(Grades 7–College) *W185d, McCormick Place*
Sponsor: Vernier Software & Technology
Fran Poodry *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Science Focus: PS3.A, PS3.B, PS3.C, SEP3, SEP4
Learn how you can incorporate the principles of the *NGSS* science and engineering practices into lessons focusing on renewable energy using KidWind Wind Experiment Kits and Vernier data-collection technology. These hands-on activities, appropriate for middle school and high school students, embody the spirit of STEM education through this highly relevant topic.

Detecting the Silent Killer: Clinical Detection of Diabetes
(Grades 8–College) *W186a, McCormick Place*
Science Focus: LS, INF
Sponsor: Edvotek, Inc.
Brian Ell *(info@edvotek.com)* and **Maria Dayton** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
More than 380 million people worldwide have diabetes, a disease that causes high blood sugar. Due to genetic predisposition and high-calorie, low-activity lifestyles, that number continues to grow. Without early treatment, diabetes causes severe medical complications. We will diagnose diabetes using simulated urinalysis and ELISA tests. Free flash drive/T-shirt drawing.

MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started
(Grades 6–9) *W186b, McCormick Place*
Science Focus: ETS
Sponsor: LEGO® Education
Laura Jackson, Retired Teacher/LEGO Education Trainer, Greenwood, Mo.
Cindy Howard, Retired Teacher/LEGO Education Trainer, Kansas City, Mo.
Learn firsthand how LEGO Education MINDSTORMS EV3 can get your students excited as they model real-life mechanisms and solve real-world challenges, all while building the critical-thinking and creative problem-solving skills that will serve them well for a lifetime.

CTE: Real-Life Forensics Brought to the Classroom, Solving the Case
(Grades 9–12) *W192b, McCormick Place*
Science Focus: PS
Sponsor: Ward's Science
Lisabeth Hoffman, VWR Education, Rochester, N.Y.
Forensic chemistry is the application of chemistry to aid law enforcement, using a variety of analytical methods to reveal chemical changes that have occurred during a crime or incident. Learn how to investigate chemical compounds using common analytical techniques in your chemistry classroom to solve crime scenarios. Take home free simulated blood and luminol samples.

Program or Programmed—Integrating Electronics and Code in the Science Classroom
(Grades 8–College) *W193a, McCormick Place*
Science Focus: ETS2.A, CCC3, CCC4, CCC6, SEP1, SEP4, SEP5, SEP6, SEP8
Sponsor: SparkFun Electronics
Jeff Branson and **Brian Huang,** Sparkfun Electronics, Longmont, Colo.
The Hour of Code and programming know-how are key components to 21st-century learning. Processing is a simple, easy-to-learn open-source programming language used by artists and scientists alike. Integrating this tool and real-time data enables students to creatively build their own visualizations for interpreting data of varying scales, while exploring the Internet of Things. This workshop aims at being an immersive experience.

Presidential STEM Teachers: PAEMST Success for K–12 Educators
(Grades K–12) *W193b, McCormick Place*
Science Focus: GEN
Sponsor: Presidential Awards for Excellence in Mathematics and Science Teaching
Marilyn Suiter, National Science Foundation, Arlington, Va.
K–12 teachers are invited to apply to the Presidential Awards for Excellence in Mathematics and Science Teaching. Recipients receive a paid trip to Washington, D.C.; a citation signed by the President of the United States; and $10,000. Past awardees will discuss the application process and their leadership roles as PAEMST alumni.

A Cell So Small
(Grades 6–8) *W195, McCormick Place*
Science Focus: LS1.A
Sponsor: LAB-AIDS®, Inc.
Mark Koker *(mkoker@1lab-aids.com),* LAB-AIDS, Inc., Ronkonkoma, N.Y.
Why are cells so small? Why aren't multicellular organisms made up of one big cell instead? Students model large and small cells in an effort to investigate diffusion, surface area, and other factors that determine the limits of cell size. This activity uses kit and print materials from the SEPUP middle level life science program.

Cool Tools for Force and Motion
(Grades 6–College) *W470a, McCormick Place*
Science Focus: PS, INF
Sponsor: Arbor Scientific
Dwight Putnam *(buzzputnam@gmail.com),* Whitesboro High School, Marcy, N.Y.
These engaging demos are presented by award-winning teacher Buzz Putnam. Classroom-ready activities include Stunt Car Lab, the Monkey-Hunter "problem," the vertical *vs.* horizontal acceleration demo, a simple way to prove "g" is always the same, and the Human Dynamics Cart. Learn about great tools that support STEM inquiry. Lesson plans and door prizes.

Engaging Students Effectively: The BIOZONE Solution
(Grades 9–12) *W470b, McCormick Place*
Science Focus: GEN
Sponsor: BIOZONE International
Richard Allan (*richard@biozone.co.nz*), BIOZONE International Ltd., Hamilton, New Zealand
Find out how and why teachers of *NGSS*-focused biology, AP biology, environmental science, and anatomy/physiology are using BIOZONE's workbooks to significantly improve student outcomes. BIOZONE's unique 3-in-1 solution is part textbook/study guide/activity workbook. Fabulous graphics matched to critical-thinking questions enhance student engagement. Attendees receive free books.

Pluto: The Once and Future Planet?
(Grades 6–12) *W471a, McCormick Place*
Science Focus: ESS1.B
Sponsor: Simulation Curriculum Corp
Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.
Using Simulation Curriculum's award-winning, interactive *Starry Night*, let's learn the facts about Pluto and the other dwarf planets. On the Big Screen, we'll watch the New Horizons space probe approach Pluto and its large moon, Charon, and speculate on how the probe's findings may affect Pluto's future status.

Read, Write, and Think SCIENCE!
(Grades K–12) *W471b, McCormick Place*
Science Focus: GEN
Sponsor: Discovery Education
Mike Bryant (*educationpartnerships@discovery.com*), Discovery Education, Silver Spring, MD
Developing literacy and critical-thinking skills is key to quality science instruction. Discovery Education Science Techbook has a plethora of resources and strategies for developing key literacy skills, scientific literacy, and critical-thinking skills in every student.

The "E" in STEM: 3-D STEM Engineering
(Grades 5–College) *W475a, McCormick Place*
Science Focus: ETS
Sponsor: WhiteBox Learning
Graham Baughman *(graham@whiteboxlearning.com)* and **Michelle Shafer** *(michelle@whiteboxlearning.com),* Whitebox Learning, Louisville, Ky.
Engage your students in the complete engineering design process. WhiteBox Learning provides standards-, web-, and project-based applied STEM learning applications. Gliders2.0, Rover2.0, Structures2.0, Prosthetics2.0, MousetrapCar2.0, GreenCar2.0, Rockets2.0, and Dragster2.0 allow students to build, analyze, and simulate their designs and compete "virtually," 24/7, all around the world…how cool is that?!?

Molecular-Level Visualization and the *NGSS:* Engaging Your Students
(Grades 7–College) *W476, McCormick Place*
Science Focus: PS
Sponsor: Wavefunction, Inc
Paul Price *(sales@wavefun.com),* Wavefunction, Inc., Irvine, Calif.
Do you notice persistent misconceptions in your students' understanding of molecular phenomena? Would your classroom benefit from molecular models and simulations that are scientifically sound? Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to improve student comprehension with Odyssey Molecular Explorer—an interactive and content-rich tool for introductory chemistry.

10:00 AM–12 Noon Presentation

Special Pathway Session: *NGSS* Base Camp: An Introduction to the *Next Generation Science Standards*

(Grades 1–12) *W175c, McCormick Place*

Science Focus: GEN, NGSS

Zoe Evans (@zoe_evans; *zoe.evans@carrollcountyschools.com),* Central Middle School, Carrollton, Ga.

Join *NGSS* writers and educators as they discuss the origins, development, and structure of the *NGSS.* Explore the standards through interactive hands-on activities emphasizing the importance of three-dimensional learning and how it leads to transformed science classrooms. Leave with new knowledge and skills that can form a firmly established foundation to continue your journey with the *NGSS*.

10:00 AM–12 Noon Meeting

National Marine Educators Association Chapter Reps Meeting

(By Invitation Only) *Adler C, Hyatt*

10:30 AM–12 Noon Exhibitor Workshops

Unpacking *NGSS:* Guiding Students to Become Evidence-based Thinkers, Speakers, Readers, and Writers

(Grades K–8) *W194a, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Amplify

Traci Wierman (@seedsroots; *twierman@berkeley.edu),* **Rebecca Abbott** (@seedsroots; *rebabbott@berkeley.edu),* and **Jacqueline Barber** *(jbarber@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley

Looking to transition to the *Next Generation Science Standards*? Explore the three-dimensionality of the *NGSS* with experts from The Lawrence Hall of Science and learn how *NGSS* and *CCSS* can work together. Get a peek at concrete examples of what *NGSS*-designed instruction looks like, from the Hall's newest curriculum program.

Contagion! Track the Progress of Dangerous Viruses That Are Spreading Throughout the Country

(Grades 9–College) *W474b, McCormick Place*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

Damon Tighe *(damon_tighe@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.

Disease can spread like wildfire through populations. In this hands-on workshop, you will become an epidemiologist and track diseases like ebola, bird flu, SARS, and HIV to name a few. See if you can track down patient zero.

10:30 AM–12 Noon Meeting

Polar Educators International Open Meeting

Regency D, Hyatt

Join Polar Educators International (PEI) at our annual meeting for new and old members to learn more, and for all to make an impact on education in a global way! The polar regions are integral to science education for the future in a rapidly changing climate.

For more information, please *visit www.polareducator.org.*

10:30 AM–12:30 PM Meeting

Awards and Recognitions Committee Meeting

Erie, Hyatt

11:00–11:05 AM Exhibits Opening/Ribbon-Cutting Ceremony

Hall F2, McCormick Place

Presider: Juliana Texley, NSTA President, Boca Raton, Fla.

Welcoming Remarks: Wendy Jackson, Chairperson, NSTA Chicago National Conference, and STEM Center, DePaul University, Chicago, Ill.

Musical Entertainment: Whitney M. Young Magnet High School String Quartet under the direction of Michael Mascari, Orchestra Director

Special Guests: Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Math and Science Partnership, Cleveland Heights, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; Mary Gromko, NSTA President-Elect-Elect, Colorado Springs, Colo.; Paul Ritter, President, Illinois Science Teachers Association (ISTA), and Pontiac Township High School, Pontiac, Ill.; Tammy Huenink, President-Elect, Wisconsin Society of Science Teachers (WSST), and Sheboygan Falls Middle School, Sheboygan Falls, Wis.; David L. Evans, NSTA Executive Director, Arlington, Va.; Natacia Campbell, Program Coordinator, NSTA Chicago National Conference, NSTA Director, District XII, and Victor J. Andrew High School, Tinley Park, Ill.; Judith Scheppler, Local Arrangements Coordinator, NSTA Chicago National Conference, and Illinois Mathematics and Science Academy, Aurora; Jason Sheldrake, NSTA Assistant Executive Director, Sales, Arlington, Va.

11:00–11:20 AM Presentation

SCST Session: OSU National Lab Day: Introducing High School Students to STEM Research and Careers

(College) *Clark C, Hyatt*

Science Focus: GEN

Julie Angle (@SCIEDU4U; *julie.angle@okstate.edu)* and **Donald French** *(dfrench@okstate.edu),* Oklahoma State University, Stillwater

Hear how National Lab Day matches teachers and students with STEM researchers on the Oklahoma State University campus, bringing an awareness of careers not previously on their academic radar.

11:00 AM–12 Noon Hands-On Workshop

INF **NMEA Session: Creatively Engaging Middle School in the Science of Ocean Acidification**

(Grades 5–9) *Skyline W375e, McCormick Place*

Science Focus: ESS, INF

Perrin Chick *(p.chick@seacentr.org)* and **Kate Leavitt** *(k.leavitt@seacentr.org),* Seacoast Science Center, Rye, N.H.

Translating ocean science to middle-schoolers is difficult. Join us and create your own ocean acidification art projects, receive lessons plans and a content overview, and learn what middle school students actually know about this current field of study.

11:00 AM–12 Noon Exhibitor Workshops

Adapting Traditional Biology Labs to Sensor Technology

(Grades 9–12) *W179b, McCormick Place*

Science Focus: LS1.C, LS2.B, CCC5

Sponsor: PASCO scientific

Jason Lee *(jlee@ega.edu),* East Georgia State College, Statesboro

Conduct hands-on inquiry investigations on enzyme activity and cellular respiration using PASCO sensors and SPARKvue software. See how sensors can transform tedious qualitative labs into short data-driven learning experiences for standards-based labs for grades 9–12 general, AP, and IB courses. One attendee will win a CO_2 sensor!

Active Physics: A Leading Project-based High School Physics Program Capturing the Essence of the *NGSS* and STEM Plus New Support Resources

(Grades 9–12) *W194b, McCormick Place*

Science Focus: PS

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.

Learn from Arthur Eisenkraft, author and former NSTA president, how you can implement STEM and *NGSS* in your physics, physics first, and/or physical science classroom. Gain an understanding of the benefits of the embedded engineering design cycle. Learn how physicists, teachers, and science educators collaborated to design this innovative, NSF-funded, and research-based project-driven curriculum that has demonstrated significant success to engage ALL students AND increase student performance. New resources include an *Active Physics* 24/7 online support site for teachers.

11:00 AM–12:30 PM Meetings

High School Science Teaching Committee Meeting

Boardroom 4, Hyatt

***Science & Children* Advisory Board Meeting**

Dusable B, Hyatt

***Science Scope* Advisory Board Meeting**

Dusable C, Hyatt

11:00 AM–6:00 PM Networking Opportunity

First-Timers, Preservice Teachers, and New Teachers Lounge

Hall F2, adjacent to Exhibit Hall Entrance, McCormick Place

This lounge is for first-time attendees, preservice teachers, and new teachers to connect with colleagues, learn about relevant NSTA resources, enjoy a refreshment, or just take a moment between sessions to relax. NSTA leaders and experienced educators will be on hand periodically to answer questions about the conference and NSTA resources in general.

11:05–11:30 AM Special Session

"Meet and Greet" the Presidents and Board/Council

(General) *Exhibit Hall Entrance, McCormick Place*

Science Focus: GEN

Be sure to stop by for this special session. Come "meet and greet" with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!

11:05 AM–6:00 PM Exhibits

Hall F2, McCormick Place

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

11:20–11:40 AM Presentation

SCST Session: The Merit Model and Recruitment/Retention of STEM Majors: How It Works and How We Know

(College) *Clark C, Hyatt*

Science Focus: GEN

Jennifer McNeilly *(jrmcneil@illinois.edu)* and **Gretchen Adams** *(gadams4@illinois.edu),* University of Illinois at Urbana–Champaign

Implementation of Illinois Merit Program collaborative learning techniques has increased recruitment and retention of students in STEM majors. Join us and take home MP curricular and evaluation materials.

11:30 AM–1:00 PM Meeting

Special Needs Advisory Board Meeting

Boardroom 1, Hyatt

11:40 AM–12 Noon Presentation

SCST Session: Enhancing an Undergraduate Research Experience: NSF-Style Review Board

(Grades 10–College) *Clark C, Hyatt*

Science Focus: GEN

Lynn Diener *(dienerl@mtmary.edu),* Mount Mary University, Milwaukee, Wis.

Join the presenter as she shares how she used an NSF-style review board to engage her students in the process of science. This method was used in an undergraduate research-based ecology class.

12 Noon–1:30 PM Exhibitor Workshops

***NGSS*, STEM, and *Common Core*...Connecting the Pieces to the Puzzle**

(Grades K–12) *W179a, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Pearson

Zipporah Miller, Anne Arundel County Public Schools, Annapolis, Md.

In this workshop, participants will engage in a challenge-based lesson that models how to enhance your science curriculum by using the engineering design process. Emphasis will be placed on grasping how to engage learners in student-centered activities that reinforce 21st-century skills. Connections to language arts and mathematics will be highlighted.

Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School

(Grades 5–8) *W180, McCormick Place*

Science Focus: GEN

Sponsor: Flinn Scientific, Inc.

Janet Hoekenga *(jhoekenga@flinnsci.com)* and **Jillian Saddler** *(jsaddler@flinnsci.com),* Flinn Scientific, Inc., Batavia, IL

Hands-on science leads to minds-on learning! Flinn Scientific presents relevant and age-appropriate activities for middle school—integrating life, Earth, and physical science topics. Workshop participants perform and observe experiments designed to capture the curiosity and engage the energy of adolescent students. Handouts provided for all activities.

Genetics Brought to Life: Gene-ius Model Organisms

(Grades 6–12) *W181a, McCormick Place*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Looking to breathe new life into your genetics activities, but not sure where to start? Combine model organisms such as *Drosophila*, corn, and Wisconsin Fast Plants® with hands-on activities to create engaging and impactful lessons. Demonstrate key concepts and prevent misconceptions. Free materials and door prizes.

Creating a New Generation of Learners PreK–5

(Grades P–5) *W181b, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Reflect on the makeup of the *Next Generation Science Standards*—disciplinary core ideas, science and engineering practices, crosscutting concepts, and performance expectations. Experience lessons that demonstrate the three-dimensional model of learning.

Bring Visual Science into K–5 Classrooms—It's a Game Changer!

(Grades K–5) *W181c, McCormick Place*

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Spark student interest by combining visual, auditory, and hands-on learning techniques. Harvey Bagshaw discusses and models how he teaches science with videos and activities to support blended learning. Learn how to integrate compelling visuals and video and receive a one-year subscription to Carolina's Tigtag online video-based learning program!

Extinctions Past and Present
(Grades 9–12) *W183c, McCormick Place*
Science Focus: ESS2, ESS3, LS2, LS4
Sponsor: HHMI BioInteractive
Mark Nielsen, Howard Hughes Medical Institute, Chevy Chase, Md.
Robin Bulleri, Carrboro High School, Carrboro, N.C.
Christopher Hedeen, Oregon City High School, Oregon City, Ore.
Extinction is a normal part of life on Earth, but the rate of extinction ranges widely including periods of mass extinctions. Join us to explore classroom resources that teach the science of extinction and answer the question: has a sixth mass extinction already begun?

Teaching Argumentation for Our Next Generation
(Grades 1–6) *W184a, McCormick Place*
Science Focus: GEN, NGSS
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, KY
Argumentation is an important component of the science reform movement and the *CCSS ELA*. Learn how to help students conduct investigations using claims and defend them with evidence and to construct explanations using scientific principles. Join us as we share Delta products and resources.

CPO's Link™ Learning Chemistry Models Module: Fun with Atom Building Games and the Periodic Table
(Grades 6–12) *W184bc, McCormick Place*
Science Focus: PS
Sponsor: CPO Science/School Specialty Science
Erik Benton and **Cory Ort,** CPO Science/School Specialty Science, Nashua, N.H.
CPO's new Link Chemistry Models module is a STEM- and *NGSS*-based approach that lets students experience innovative activities to learn atomic structure and the periodic table. Students work in a real-time tablet-based learning environment with hands-on equipment to study bonding, isotopes, subatomic particles, ions, balancing equations, and periodicity.

Crosscutting Concepts: What Do They Look Like in a FOSS Elementary Classroom?
(Grades 1–5) *W184d, McCormick Place*
Science Focus: GEN, CCC
Sponsor: Delta Education/School Specialty Science–FOSS
Brian T. Campbell, The Lawrence Hall of Science, University of California, Berkeley
FOSS modules provide students with opportunities to utilize crosscutting concepts to deepen their understanding of science content. Engage in experiences exposing cause and effect, patterns, and structure and function. We'll share different ways for students to progress in their understanding of crosscutting concepts.

Inquiry-based Biology with Vernier
(Grades 9–College) *W185a, McCormick Place*
Science Focus: LS, SEP1, SEP3, SEP4
Sponsor: Vernier Software & Technology
Colleen McDaniel *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Involving your students in inquiry-based biology can be fun and easy. Many investigations have been designed and tested in our lab book, *Investigating Biology through Inquiry*. In this engaging, hands-on workshop, you will conduct an inquiry-based biology investigation using Vernier sensors with a LabQuest 2 and Logger *Pro* software.

iPad and Wireless Sensors with Vernier
(Grades 3–College) *W185d, McCormick Place*
Science Focus: GEN, SEP4
Sponsor: Vernier Software & Technology
Verle Walters *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
In this hands-on workshop, you will conduct a variety of experiments using Vernier sensors, including Go Wireless Temp and Go Wireless pH. You will collect and analyze data using Graphical Analysis for iPad. See how Vernier has been incorporating principles of the *NGSS* science and engineering practices for 34 years!

Using the Polymerase Chain Reaction to Identify GM Foods
(Grades 8–College) *W186a, McCormick Place*
Science Focus: LS, INF
Sponsor: Edvotek, Inc.
Brian Ell *(info@edvotek.com)* and **Maria Dayton** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
For centuries, selective breeding and conventional hybridization were used to produce desirable qualities in crops. Today, genetic engineering directly manipulates the DNA, quickly producing these traits. Due to controversy, some companies removed GM ingredients from their foods. We will extract snack food DNA and analyze it using PCR and electrophoresis. Free flash drive/T-shirt drawing.

Multiple Subjects, One Platform: Tackle STEM Learning with LEGO® Education WeDo!
(Grades 1–5) *W186b, McCormick Place*
Science Focus: ETS
Sponsor: LEGO Education
Laura Jackson, Retired Teacher/LEGO Education Trainer, Greenwood, Mo.
Cindy Howard, Retired Teacher/LEGO Education Trainer, Kansas City, Mo.
Discover how elementary students can practice STEM learning through digital technology! LEGO Education WeDo consists of LEGO bricks, a simple age-appropriate software, and a variety of activity packs correlated to the *CCSS*. Experience how to create engaging cross-curricular lessons that develop 21st-century skills while inspiring students to become lifelong learners.

Alternative Energy Gets a Lift from STEM: Wind Turbines
(Grades 6–12) *W192b, McCormick Place*
Science Focus: ETS, PS
Sponsor: Ward's Science
Kelly Smith, VWR Education/Ward's Natural Science, Rochester, N.Y.
Put the fun back in physics and the "E" in your STEM curriculum with TeacherGeek Windlifts! Experience a hands-on, classroom-ready STEM lesson that integrates energy concepts with engineering practices, including design improvement. Design, build, and test your own windlift to take home, while modeling transformation of wind energy into mechanical energy.

Scratch for the Science Classroom: Introducing Coding as a Tool Earlier in Learning
(Grades 3–8) *W193a, McCormick Place*
Science Focus: GEN, CCC3, CCC4, CCC6, SEP1, SEP3, SEP4, SEP5, SEP8
Sponsor: SparkFun Electronics
Jeff Branson *(jeff.branson@sparkfun.com),* **Derek Runberg** *(derek.runberg@sparkfun.com),* and **Brian Huang** *(brian.huang@sparkfun.com),* Sparkfun Electronics, Longmont, Colo.
Scratch is an open-source graphical programming environment developed at MIT to teach young students to program using drag and drop blocks. Students can quickly create interactive animations, games, or presentations. We will uncover a widely overlooked feature of Scratch, integrating sensors and inputs through PicoBoard to investigate areas in science. Learn to build data collection, graphing, and visualization tools with your students in Scratch!

Build Your Chemistry Teaching Skills with Online Continuing Professional Development from the Royal Society of Chemistry
(Grades 7–12) *W193b, McCormick Place*
Science Focus: PS, SEP2
Sponsor: Royal Society of Chemistry
Jenny O'Hare and **Stephanie Musson,** Royal Society of Chemistry, Cambridge, U.K.
Get early, and free, access to our online continuing professional development courses for chemistry teachers. Our courses are great for building skills in quantitative chemistry, using models, and more—plus concepts such as energy and change. You'll help us shape our services for U.S. teachers.

Energy Flow Through an Ecosystem
(Grades 9–12) *W195, McCormick Place*
Science Focus: LS2.B, LS2.C
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
First we will use an interactive card sort of organism cards and ecosystem events to predict the effect of different events on the food web and the ecosystem. Then we will construct an energy pyramid to examine how much energy is stored at each level of a food web.

Cool Tools for Light and Color
(Grades 6–College) *W470a, McCormick Place*
Science Focus: PS, INF
Sponsor: Arbor Scientific
Dwight Putnam *(buzzputnam@gmail.com),* Whitesboro High School, Marcy, N.Y.
Strap in for amazing light and color demos presented by award-winning teacher Buzz Putnam. These classroom-ready activities include mixing colors to cast cyan/magenta shadows, why it's OK to eat a black strawberry, comparing yellow light from a lemon and a smartphone, and the "mirror challenge" question! Learn about great tools that support STEM inquiry. Lesson plans and door prizes.

Access and Analyze LIVE Ocean Data in the Classroom
(Grades 6–College) *W470b, McCormick Place*
Science Focus: ESS2
Sponsor: Ocean Classrooms
Cynthia Long *(cyndi@oceanclassrooms.com)* and **Caine Delacy** *(caine@oceanclassrooms.com),* Ocean Classrooms, Boulder, Colo.
With more than 3,600 floats, the Argo Buoy Project provides an unprecedented amount of data on ocean temperature, salinity, and dissolved oxygen from the surface to depths of 2,000 meters. Explore how Ocean Classrooms' user-friendly data portal, online curriculum, and inquiry-based activities encourage learning about our most precious resource—our ocean.

Weather and Climate
(Grades 6–12) *W471a, McCormick Place*
Science Focus: ESS2.D, ESS3.C, ESS3.D
Sponsor: Simulation Curriculum Corp
Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.
Join us as we use Simulation Curriculum's *Layered Earth Meteorology* to investigate atmosphere, weather, and climate using STEM and *NGSS*-ready lessons. Using an interactive model of Earth and thought-provoking hands-on exercises, students can distinguish between weather and climate and study climate change using real models and simulations.

Bringing the *NGSS* to the Classroom with Discovery Education
(Grades 6–8) *W471b, McCormick Place*
Science Focus: GEN, SEP
Sponsor: Discovery Education
Patti Duncan (*educationpartnerships@discovery.com*), Discovery Education, Silver Spring, MD
One of the most important aspects of a quality *NGSS* curriculum is the opportunities for students to develop science and engineering practices. Skills such as these are not taught directly but must be developed by experience. Learn about how the Discovery Education Science Techbook brings these experiences to the forefront.

Mentis Sciences Educational Toolkit (MSET)
(Grades 9–12) *W475a, McCormick Place*
Science Focus: ETS, PS, CCC2, CCC3, CCC4, SEP2, SEP4, SEP5, SEP8
Sponsor: Mentis Sciences, Inc.
John Dignam *(info@mentissciences.com),* Mentis Sciences Inc., Manchester, N.H.
Mentis Sciences has developed an affordable educational toolkit (MSET) to introduce physics and engineering concepts to students. The MSET is a small-scale portable test apparatus used to quantify physical and material properties using a series of simple experiments designed to be performed on a single platform.

Nasco SciQuest® Kits for Your Classrooms
(Grades 4–8) *W476, McCormick Place*
Science Focus: GEN, NGSS
Sponsor: Nasco
Jordan Nelson *(jnelson@enasco.com),* Nasco, Fort Atkinson, Wis.
Let Nasco take you through hands-on investigations that will enhance your science curriculum. These STEM-based kits will help your students grasp the fundamentals of basic concepts. Join us as we focus on forces, motion, and simple machines.

12:30–12:50 PM Presentation

SCST Session: Peer-Review in the College Science Classroom: Scientific Communication's "Missing Link"
(College) *Clark C, Hyatt*
Science Focus: GEN
Renee Clary *(rclary@geosci.msstate.edu),* Mississippi State University, Mississippi State, Miss.
Hear how college students analyzed unique data, graphed results, and wrote interpretive narratives. Then peer-review was incorporated into their projects to effectively integrate literacy and enhance scientific communication skills.

12:30–1:00 PM Presentations

ASTE Session: Use of Electronic Simulations in Grades 7–12 Science Teaching

(Grades 7–12) *Dusable A, Hyatt*

Science Focus: PS

Karen Irving *(irving.8@osu.edu),* The Ohio State University, Columbus

Hear about a series of lessons that incorporate the use of electronic simulations in order for teachers to better explain science topics and address students' naive concepts. I'll cover states of matter, phase changes, solution formation, waves, and food webs.

Boost Sustainability in Your Science Curriculum Through Community Connections

(Grades 3–12) *Hyde Park A, Hyatt*

Science Focus: GEN

Susan Reyes *(sreyes7@mac.com),* UMass Amherst, Mass.

Catherine Wilkins *(catwil1@gpsk12.org),* Greenfield High School, Greenfield, Mass.

Presider: Denise Harshbarger *(harshbargerd@nefec.org),* NEFEC–The North East Florida Educational Consortium, Palatka

Find out how science teachers and sustainability experts found a venue to build mutually enriching connections through a community science and sustainability expo.

Google Earth, ImageJ, and GIS: Tools to Investigate Environmental Change

(Grades 9–12) *S404 b/c, McCormick Place*

Science Focus: ESS, SEP4, SEP8

Susan M. Kelly, University of Maryland Eastern Shore, Princess Anne

Bhavna Rawal, Northbrook High School, Houston, Tex.

Learn about free software that can support your students' ability to measure environmental change. *NGSS* connections and samples of student investigations will be highlighted.

Develop Science and Literacy Skills Through Investigation and Summative Assessment

(Grades 6–8) *S404d, McCormick Place*

Science Focus: GEN, SEP

Anne Schoeffler *(schoefflera@setoncatholicschool.org),* Seton Catholic School, Hudson, Ohio

Design and adapt classroom activities to target the *CCSS* and *NGSS* practices. Design summative assessments to document mastery. Direct your students to develop metacognitive independence.

Science and Engineering Practices Among Diverse Students' Learning About Environmental Science

(Grades 3–8) *S504 b/c, McCormick Place*

Science Focus: ESS, ETS, INF, CCC5, SEP

Hanna Kim, Northeastern Illinois University, Chicago, Ill.

Tricia Malovey, Passages Charter School, Chicago, Ill.

Review findings from a study of diverse students, including English language learners, exploring the concept of ultraviolet rays using beads that change color in UV light. We will share student science achievement and attitude changes after having these inquiry-based experiences.

Going Beyond 1, 2, 3: Successful Differentiated Grouping Strategies

(Grades 9–12) *W176b, McCormick Place*

Science Focus: INF

Angela Caylor *(angela.caylor@cobbk12.org)* and **Sarah Holcomb,** McEachern High School, Powder Springs, Ga.

Want to form collaborative groups of students that actually function? Here are some differentiated grouping strategies that can be used easily and effectively in any science classroom.

Developing Partnerships: A Model of Outdoor Education

(Grades K–12) *W187a, McCormick Place*

Science Focus: GEN, INF, NGSS

Pamela Christol, Northeastern State University, Broken Arrow Campus, Broken Arrow, Okla.

Join me as I highlight the activities and resources used at a weeklong outdoor education day camp. I'll also share students' perceptions of the experience.

12:30–1:30 PM Featured Presentation

Progress in America's Schools: Where We Are and Where We Are Heading

(General) *Skyline W375 a/b, McCormick Place*

Science Focus: GEN

Arne Duncan (@arneduncan), U.S. Secretary of Education, Washington, D.C.

Presider: Juliana Texley, NSTA President, Boca Raton, Fla.

Introduction of Speaker: Michael Lach, Director of STEM Policy and Strategic Initiatives, University of Chicago Urban Education Institute, Chicago, Ill.

Working toward the Department of Education's mission to promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access is a tall order. Join Arne Duncan, the U.S. Secretary of Education, as he provides an overview of the progress he has seen in American education and his thoughts on what the schools of tomorrow will look like.

Arne Duncan is the ninth U.S. secretary of education and has served in this post since his confirmation by the U.S. Senate on Jan. 20, 2009, following his nomination by President Barack Obama. Among his accomplishments as secretary, he has helped to secure congressional support for President Obama's investments in education, including the American Recovery and Reinvestment Act's $100 billion to fund 325,000 teaching jobs, increases in Pell grants, reform efforts such as Race to the Top and Investing in Innovation, and interventions in low-performing schools.

Before becoming secretary of education, he served as the chief executive officer of the Chicago Public Schools (CPS), a position he held from June 2001 through December 2008. Prior to joining the Chicago Public Schools, from 1992 to 1998, Duncan ran the nonprofit education foundation Ariel Education Initiative, which helped fund a college education for a class of inner-city children under the I Have A Dream program. He was part of a team that later started a new public elementary school built around a financial literacy curriculum, the Ariel Community Academy, which today ranks among the top elementary schools in Chicago.

12:30–1:30 PM Mary C. McCurdy Lecture

***Next Generation Science Standards:* All Standards, All Students**

(General) *W190a, McCormick Place*

Science Focus: GEN, NGSS

Okhee Lee *(olee@nyu.edu),* Professor, Steinhardt School of Culture, Education, and Human Development, New York University, New York, N.Y.

Presider: Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis

The *Next Generation Science Standards* offer a vision of academic rigor by blending the science and engineering practices with disciplinary core ideas and crosscutting concepts across K–12. As these standards are cognitively demanding, teachers need to make instructional shifts to enable all students to be college and career ready. In her talk, Okhee Lee will address what classroom teachers can do to ensure that the *NGSS* are accessible to all students.

Okhee Lee is widely recognized for her contributions to science learning and language development of English language learners. She was a member of the writing team that developed the Next Generation Science Standards *and is a leader for the* NGSS *Diversity and Equity Team through Achieve, Inc.*

Dr. Lee is a professor of Education at the Steinhardt School of Culture, Education, and Human Development at New York University. Her research areas include science education, language and culture, and teacher education. She is a principal investigator of the "Promoting Science among English Language Learners" project that implements instructional interventions to promote inquiry-based science and language development of English language learners in urban elementary schools within the policy context of high-stakes testing and accountability in science through her involvement with the Understanding Language Initiative at Stanford University.

12:30–1:30 PM Presentations

INF **ASTC Session: Formal and Informal Educators Collaborate at the Museum of Science in Boston: Opportunities for Enhanced Synergy and Creativity**
(General) *Burnham A/B, Hyatt*
Science Focus: GEN, INF
Tricia DeGiulio *(pdegiulio@mos.org),* Museum of Science, Boston, Mass.
Michael Kotin, Wayland Middle School, Wayland, Mass.
Teachers and museum educators share what they learned from working together during the summer in the "Teacher-in-Residence" program at the Museum of Science in Boston.

NARST Session: The Relative Influence of the Professional Community on Changes in Science Teaching
(Grades 9–12) *Field C, Hyatt*
Science Focus: GEN
Steven McGee *(mcgee@lponline.net),* Northwestern University, Evanston, Ill.
Hear how an investigation of urban science teacher professional communities revealed that conversations about curricula and student work had the greatest influence on changes in science teaching.

Climate Change Assessment Design in the Context of the *Next Generation Science Standards*
(Grades 5–9, College) *Grant Park A, Hyatt*
Science Focus: ESS, CCC, DCI, SEP
Andrea Drewes *(adrewes@udel.edu),* University of Delaware, Newark
Robert Ferrell *(robert.ferrell@appo.k12.de.us),* Louis L. Redding Middle School, Middletown, Del.
Classroom teachers and researchers designed a 21-item middle school climate change summative assessment. We will present a summary of the process and lessons learned.

Every Drop Counts: How Much Did You Get?
(Grades P–12) *Grant Park C, Hyatt*
Science Focus: ESS2.A, ESS2.C, ESS2.D, ESS3, LS2.B, CCC1, CCC3, SEP1, SEP3, SEP4, SEP5, SEP7
Tim Martin *(tmartin@greensboroday.org),* Greensboro Day School, Greensboro, N.C.
Precipitate new learning in your classroom via CoCoRaHS: Community Collaborative Rain, Hail & Snow Network. Learn how to collect and analyze precipitation data from teachers involved with the program.

Exploring the *NGSS*: Three Teachers' Tales
(Grades 5–12) *Jackson Park D, Hyatt*
Science Focus: GEN, NGSS
Gale O'Keefe, North Smithfield Middle School, North Smithfield, R.I.
Rudolf Kraus *(rkraus@ric.edu),* Rhode Island College, Providence
Rhode Island is the first state in the nation to adopt the new standards. Hear from Rhode Island teachers who tackled the *NGSS* and lived to tell the tale. They will share paths charted and obstacles found as they refocused curricula.

AMSE Session: AIM (Allocate-Initiate-Model) to Lead Diverse Student Populations in the Next Generation
(Grades K–12) *Prairie A, Hyatt*
Science Focus: GEN, NGSS
Sharon Delesbore (@DrSciMama; *sjd.opportunity@yahoo.com),* Fort Bend ISD, Sugarland, Tex.
AIM to establish a successful science program with support of knowledgeable science leadership willing to prepare diverse students for the *Next Generation Science Standards*.

NSTA Press® Session: Thinking Maps and Literacy Strategies to Structure Solving *Everyday Science Mysteries*
(General) *S401 b/c, McCormick Place*
Science Focus: GEN
Richard Konicek-Moran *(rkonicek@gmail.com),* Professor Emeritus, UMass Amherst, Mass.
Andrea Allen (@KCSScience; *andrea.allen@knoxschools.org),* Knox County Schools, Knoxville, Tenn.
This session will use *Everyday Science Mysteries* to reinforce literacy while teaching science concepts. Participants will learn how to use advanced organizers, thinking maps, and literacy strategies to guide their students to solving the science mysteries. These strategies can scaffold for either struggling or gifted readers, showcasing the *NGSS* and *CCSS* in complete harmony.

Assessing the *NGSS* in the High School Biology Classroom
(Grades 9–12) *S402a, McCormick Place*
Science Focus: LS
Jean Lee (@jeantheresalee; *jeantheresalee@gmail.com),* **Jeff Wirch** *(jeffwirch@gmail.com),* and **Susan Akina,** Bradford High School, Kenosha, Wis.
Hear how biology teachers have been working in a professional learning community to design units based on the *NGSS* using the Understanding by Design model as well as formative and summative assessments.

Climate Change, Lessons, and Activities for Teachers
(Grades 6–College) *S403a, McCormick Place*
Science Focus: ESS, INF
William Licopoli *(wlicopol@cbsd.org),*, Central Bucks West High School, Doylestown, Pa.
Add free *NGSS*- based climate change lessons for your science classes from Maury Project, NOAA Climate Stewards, High Adventure Science, and Al Gore's Climate Reality Project.

Design Challenges for Middle School
(Grades 6–8) *S405a, McCormick Place*
Science Focus: ETS, SEP
Philip Sadler, Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.
Let's explore the secrets of conducting engineering contests at the middle school level so that students gain both confidence and an understanding of science concepts.

Implementing Engineering Practices in a Chemistry Classroom
(Grades 9–12) *S501a, McCormick Place*
Science Focus: ETS, PS, SEP
Heather Haines, Community Charter School of Cambridge, Mass.
Presider: Jordan Tidrick, North Cobb High School, Kennesaw, Ga.
Come ready to "engineer-ize" one of your own labs. Knowles Science Teaching Foundation Senior Fellows share vetted projects, materials lists, and rubrics. Join us and enhance your existing chemistry curriculum with content-relevant engineering practices.

Engaging Middle School Latinas in STEM
(Grades 5–9) *S504d, McCormick Place*
Science Focus: GEN
Rita Karl *(rkarl@tpt.org)* and **Alicia Santiago** *(santimiller@mac.com),* Twin Cities Public Television, Saint Paul, Minn.
Discover some of the best practices for engaging Latina middle school girls in STEM, including using role models, embracing cultural diversity, and engaging families.

Strengthening Elementary Science: Increasing Science Literacy, Inquiry, Critical Thinking, and Engagement While Meeting the *CCSS*
(Grades K–6) *S505b, McCormick Place*
Science Focus: GEN, NGSS
Donna Knoell *(dknoell@sbcglobal.net),* Educational Consultant, Overland Park, Kans.
Gain strategies to help elementary students comprehend informational science text, develop their science vocabularies, and meet the *CCSS*. Criteria for selecting resources will be shared, as well as suggestions for engaging in hands-on explorations. Handouts.

CESI Session: Dumbledore's Transfiguration Class: Science and Magic from Hogwart's Academy
(Grades 2–8) *W185 b/c, McCormick Place*
Science Focus: GEN, INF
Alan McCormack *(amccorma@mail.sdsu.edu),* 2010–2011 NSTA President, and San Diego State University, San Diego, Calif.
Magical and scientific events highlight the adventures of Harry Potter in the worldwide children's literature series. Moaning Myrtle, Fawkes the Phoenix, and Hedwig the Owl will be guests! Wands optional.

From the Love Canal to Phytoremediation: What's New in Environmental Engineering?
(Grades 9–12) *W186c, McCormick Place*
Science Focus: GEN, SEP
Michelle Griffin-Wenzel (@MGriffinwenzel; *mtwenzel@att.net),* Germantown (Wis.) School District
Deanna Brunlinger *(deemeister@hotmail.com),* Elkhorn Area High School, Elkhorn, Wis.
Presider: James Hollenbeck *(jehollen@ius.edu),* Indiana University Southeast, New Albany
Explore how research and inquiry-based activities are used to educate students about Superfund sites and the use of phytoremediation as a cleanup method.

Student-created Videos as "Thinking Products"
(General) *W187c, McCormick Place*
Science Focus: GEN, NGSS
Tricia Shelton (@tdishelton; *tdishelton@gmail.com),* Boone County High School, Florence, Ky.
See how student-created videos or "Thinking Products" can be used to construct knowledge and authentically assess the *NGSS*.

National Earth Science Teachers Association Events at 2015 NSTA National Conference in Chicago

All NESTA sessions are in the Hyatt Regency McCormick Place, Skyline W375e unless otherwise indicated

Friday, March 13

- 8:00 – 9:00 am **Earth Science Rocks! Using Earth Science Activities to Engage Students as Scientists**
- 9:30 – 10:30 am **NESTA Geology Share-a-Thon**
- 11:00 am – noon **NESTA Climate, Ocean and Atmosphere Share-a-Thon**
- 12:30 – 1:30 pm **NESTA Earth System Science Share-a-Thon**
- 2:00 – 3:00 pm **Harnessing the Power of Earth System Science for Developing Science Practices and Crosscutting Concepts**
- 2:00 – 3:00 pm **American Geophysical Union Lecture, "*Abrupt Climate Change: Past, Present and Future*" by Dr. Jim White, University of Colorado, *McCormick Place, Skyline W375b***
- 6:30 – 8:00 pm **Friends of Earth Science Reception (see www.nestanet.org for more info)**

Saturday, March 14

- 8:00 – 9:00 am **Multimedia Tools and Classroom Resources for Teaching Earth System Science**
- 9:30 – 10:30 am **Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists**
- 12:30 – 1:30 pm **NESTA Space Science Share-a-Thon**
- 2:00 – 3:00 pm **How Weird Can it Get? Developing Weather and Climate Literacy**
- 3:30 – 4:30 pm **NESTA Rock and Mineral Raffle**
- 5:00 – 6:00 pm **NESTA Annual Membership Meeting**

NESTA gratefully acknowledges co-sponsorship of our events by the following organizations:

AGU

CAROLINA® www.carolina.com

SIP

AMERICAN METEOROLOGICAL SOCIETY 1919

AGI american geosciences institute

HHMI HOWARD HUGHES MEDICAL INSTITUTE

12:30–1:30 PM Hands-On Workshops

Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 101)
(General) *Adler A/B, Hyatt*
Science Focus: GEN, SEP6
LaMoine Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.
So you want new science facilities? Does your curriculum define your science teaching facility? With more that 15 years of conducting visits and presentations of new/renovated school science facilities, the author team for *NSTA Guide to Planning School Science Facilities,* 2nd ed., will present the "basics" of science facility planning for safe, ergonomically designed, and sustainable facilities.

NSELA Session: Back to Basics for Conducting Professional Development
(General) *Field A/B, Hyatt*
Science Focus: GEN, INF, NGSS
Nancy Kellogg *(nancy.kellogg@comcast.net),* Retired Educator, Boulder, Colo.
Interactive strategies and discussion will engage participants about key elements for quality professional development and leadership skills. Leave with strategies you can use in any setting.

Young Scientists at Work: Using Live Materials and the Tools of Investigation
(Grades K–1/College) *Grant Park B, Hyatt*
Science Focus: GEN
Susan Claflin and **John Ellis** *(jellis6@missouriwestern.edu),* Missouri Western State College, St. Joseph
Join us as we show you how young children—using live materials *(Daphnia)* and the tools of scientific investigation—complete an inquiry-based integrated activity.

School Yard Plants as Indicators of Climate Change? Project BudBurst Can Show You How
(Grades 5–College) *Jackson Park A, Hyatt*
Science Focus: ESS
Sandra Henderson (@plantwatcher), NEON, Boulder, Colo.
Get your students involved in a national climate change field campaign by making simple observations of plants in your community. Hands-on activities and handouts provided.

Level Up Your Students' Learning: Introducing Game Elements into the Classroom
(Grades 6–College) *Jackson Park B, Hyatt*
Science Focus: GEN
Jessica Anderson (@TriSciCurious; *jess.k.solberg@gmail.com),* Powell County High School, Deer Lodge, Mont.
Jeffrey King (@commander_king), Camden County Technical Schools–Pennsauken Campus, Merchantville, N.J.
Jessica Henze (@jhenze44; *jess.henze@edgerton.k12.wi.us),* Edgerton Middle School, Edgerton, Wis.
How can immersion in game elements motivate students in STEM? Blast off into the future, join a mysterious guild, and alter humanity's fate in the universe.

Using Games to Support Students in the Practice of "Developing and Using Models"
(Grades 6–College) *Jackson Park C, Hyatt*
Science Focus: LS, CCC4, SEP2
Hillary Lauren (@ProjectNeuron; *hzg.lauren@gmail.com),* **Robert Wallon** (@rwallon), and **Barbara Hug** *(bhug@illinois.edu),* University of Illinois at Urbana–Champaign
Explore role-playing games that engage students in using models by asking questions, making predictions, and collecting and analyzing data.

NSTA Press® Session: K–5 STEM: Engaging Students in the Practices of Science, Engineering, and Mathematics
(Grades K–5) *S401a, McCormick Place*
Science Focus: ETS, PS4, SEP6, SEP7
Eric Brunsell *(brunsele@uwosh.edu),* University of Wisconsin Oshkosh
Model activities related to sound and waves will be used to help develop elementary teachers' understanding of the science and engineering practices in the *NGSS* and build connections to the mathematical practices in the *CCSS*. This session will expand on concepts included in the NSTA Press book, *Introducing the* NGSS *to Teachers and Administrators*.

ANOVA: The Marriage of Experimental Design and Data Analysis
(Grades 9–12) *S401d, McCormick Place*
Science Focus: GEN, SEP4, SEP5
Michael Zito *(mzito59@yahoo.com)* and **Daniel Carroll** *(thedancarroll@hotmail.com),* Yorktown High School, Arlington, Va.
The Analysis of Variance is the statistical test most closely associated with experimental design but is rarely taught in high school science classes. Learn the logic of null hypothesis significance testing using real data, free online resources, and one little trick to understand how to interpret the "p-value."

Using Simulations in Inquiry-based Science
(Grades 5–11) *S402b, McCormick Place*
Science Focus: GEN, NGSS
Carole Johnson *(carole.johnson@vai.org)* and **Randall Schregardus** *(randy.schregardus@vai.org),* Van Andel Education Institute, Grand Rapids, Mich.
Engage in a pollination simulation, generate a rich data base, and then analyze and interpret the collected data. Simulation directions will be distributed.

Long Ago and Far Away
(Grades 4–12) *S404a, McCormick Place*
Science Focus: ESS
Robert Strong *(robert@smartcenter.org)* and **Elizabeth Strong** *(libby@smartcenter.org),* SMART Center, Wheeling, W.Va.
Engage in scale modeling activities that illustrate the long periods of time and large distances involved in the study of fossils, astronomical objects, and Earth processes.

Carbon Cycle by the Numbers: Hands-On Activities from the Exploratorium
(Grades 6–9) *S405b, McCormick Place*
Science Focus: LS2.B
Presenter to be announced
Model the carbon cycle, explore the exchanges between the reservoirs, and use NASA/NOAA data to model the composition of the atmosphere and its changing CO_2 levels.

5Es in 60 Minutes
(Grades 9–12) *S501 b/c, McCormick Place*
Science Focus: PS3.B
Jesse Southwick *(jesse.southwick@gmail.com),* Boston Latin School, Boston, Mass.
Experience the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) learning model using ramps to develop the concept of energy conservation.

Let's Get STEM Going!
(Grades 6–8) *S501d, McCormick Place*
Science Focus: LS2, PS2, SEP2, SEP5, SEP6
Adaliz Gonzalez, New York City (N.Y.) Dept. of Education
Conduct two activities that integrate math and science from participants of the GE Foundation Developing Futures in Education. Take home curriculum units and student packets designed by teachers that are ready to implement and support the *NGSS* and *CCSS*.

The Science of Play Behind Early Childhood STEM Education
(Grades P–1) *S502a, McCormick Place*
Science Focus: GEN, INF
Kelley Williams, The Honey Bee Co. LLC, Evanston, Ill.
Delve into how to implement STEM learning at the early childhood level through the science of play. During this workshop, you will also get some playtime of your own to test out what you've learned!

I See the Light! Be Part of Celebrating the International Year of Light
(Grades 4–8) *S502b, McCormick Place*
Science Focus: PS, INF
Mike McKee *(mckeem1@gmail.com),* University of Central Florida, Orlando
Presider: Kathleen Robinson, *(kathleen@spie.org),* SPIE–The International Society for Optics and Photonics, Bellingham, Wash.
Help us recognize the International Year of Light and increase awareness of how light enables so much of the technology in today's modern world. Join us for simple and fun lessons to teach light-based concepts. Leave with free materials, posters, and DVDs.

Making Models Meaningful
(Grades K–8) *S503b, McCormick Place*
Science Focus: GEN, SEP
Amy McGreal *(ahcostello@cps.edu),* Eugene Field Elementary School, Chicago, Ill.
Models are powerful tools for unlocking student understanding. Discover practical strategies for teaching students to develop and use models in your science classroom.

Weather Activities That Engage and Excite Without Breaking the Bank
(Grades P–3) *S504a, McCormick Place*
Science Focus: ESS
Amy Smith *(smitha@frankfort.k12.in.us)* and **Steven Smith** *(mrsmith@purdue.edu),* Community Schools of Frankfort, West Lafayette, Ind.
Kristen Poindexter (@fuzzlady77; *kpoindexter@msdwt.k12.in.us)* and **Cindy Moore** *(cmoore@msdwt.k12.in.us),* Spring Mill Elementary School, Indianapolis, Ind.
Use a station approach to teach hands-on weather activities. Leave with many low-cost lesson ideas, lesson plans, and resources.

NMEA Session: The Climate Expedition: Exploring Local Impacts of a Global Issue
(Grades 7–12) *Skyline W375e, McCormick Place*
Science Focus: ESS3.D, INF, SEP4
Lyndsey Manzo (@LyndseyManzo; *manzol@wcsoh.org),* The Ohio Sea Grant College Program, Columbus
Make the impacts of climate change regionally relevant by participating in a Climate Walk and practicing lessons from the Great Lakes Climate Change Curriculum.

What's Up, Part 1: Earth, Sun, and Planets
(General) *W183 a/b, McCormick Place*
Science Focus: ESS1.B
Jake Noel-Storr (@InsightSTEM; *drjakens@gmail.com),* InsightSTEM, Inc., Tucson, Ariz.
Join master teachers and astronomy educators from the Association for Astronomy Education to get the latest and greatest ideas for your classroom.

Assessment Matters! Using Formative Assessment Strategies to Improve K–6 Teaching
(Grades K–6) *W190b, McCormick Place*
Science Focus: PS1, CCC2, SEP4
Jennifer Troncale *(jtroncal@jsu.edu),* Jacksonville State University, Jacksonville, Ala.
Collect, record, and share your observations as you describe how different properties of matter are suited to different purposes. Come engage in a grade 2 *NGSS:* Properties of Matter 5E lesson while gaining an understanding of how to integrate formative assessment strategies.

Every Kid an Engineer!
(Grades 9–College) *W192a, McCormick Place*
Science Focus: ETS, SEP2
Elizabeth Dyer *(dyer.elizabeth@kingston.k12.mo.us)m,* Kingston K14 School District, Cadet, Mo.
Mike Logan, Central High School, Park Hills, Mo.
Our high school science students become mentors for younger students as they plan, build, and test their own engineering projects. They practice the cyclical engineering process by designing, creating, and evaluating the most effective ear and the best bouncy ball.

Engage and Excite with Elementary Science Olympiad
(Grades K–6) *W192c, McCormick Place*
Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6
Kelly Price *(kellyrprice@comcast.net),* Forsyth County Schools, Cumming, Ga.
Jennifer Kopach (@SOAlumniNetwork; *jrkopach@soinc.org),* Science Olympiad, Oakbrook Terrace, Ill.
Join us for a fun-filled workshop about the Elementary Science Olympiad program. Science Olympiad can serve as a structure for family science nights, school science days, and after-school clubs—and its'a popular elementary STEM competition.

I'm an Inquiry-based Humerus Alliance Between Language Arts and Science…What Am I?
(Grades 2–10) *W475b, McCormick Place*
Science Focus: LS1, LS2, INF, SEP8
Leslie Bulion (@lesliebulion), Children's Author, Durham, Conn.
Science Riddles enhance critical thinking, reading comprehension, and content fun! Help your students create curriculum-based riddles with NSTA Outstanding Trade Book science poet Leslie Bulion.

12:30–1:30 PM Exhibitor Workshops

Exploring Motion in Middle School Science with Position and Velocity Games—MatchGraph!

(Grades 5–8) *W179b, McCormick Place*

Science Focus: ESS, LS, PS2, SEP

Sponsor: PASCO scientific

Eric Gardner *(egardner@thebenjaminschool.com),* The Benjamin School, Palm Beach Gardens, Fla.

Explore motion with our MatchGraph app in this hands-on workshop to see how technology can be integrated into your classroom. Also, learn how to foster *NGSS* science and engineering practices through sensor-based labs for life, Earth, and physical science with SPARKvue software. One attendee will win a MatchGraph Motion Kit.

Next Generation PET: Preparing Elementary Teachers for the *NGSS*

(Grades K–5) *W194b, McCormick Place*

Science Focus: LS, PS

Sponsor: It's About Time

Julie Andrew, University of Colorado Boulder

Let us introduce you to our suite of college science programs—Physics and Everyday Thinking (PET), Physical Science and Everyday Thinking (PSET), and Learning Physical Science (LPS). These exemplary curricula, designed for general college education courses as well as preservice and inservice elementary/middle school teachers, are being revised to fully support the *NGSS*. We will also introduce the newest program in our college suite—Life Science and Everyday Thinking (LSET).

12:30–2:00 PM Hands-On Workshop

PDI **McREL Pathway Session: Implementing Formative Assessment in the High School Classroom to Realize the Vision of the *NGSS***

(Grades 9–College) *W175 a/b, McCormick Place*

Science Focus: GEN, INF, NGSS

Anne Tweed *(atweed@mcrel.org),* 2004–2005 NSTA President, and McREL International, Denver, Colo.

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

Using a formative assessment process can help you gather evidence of student learning that can inform instruction and help you adapt to the learning needs of your students.

12:30–2:00 PM Exhibitor Workshop

Learn to Play—Play to Learn with Amplify's STEM Games

(Grades 6–8) *W194a, McCormick Place*

Science Focus: GEN

Sponsor: Amplify

Alan Dang (*adang@amplify.com*), Amplify, Brooklyn, NY

Come play along with Amplify game developers. At Amplify, we view games as a voluntary activity for learning in a student's free time. Gain insight into how our STEM games extend student learning with firsthand experience of SIMCell, Habitactics, Twelve a Dozen, and Crafty Cut. The number of devices is limited, so come early.

12:30–2:30 PM Meeting

Informal Science Committee Meeting

Huron, Hyatt

12:30–2:30 PM Hands-On Workshops

CSSS Session: Knowing What Elementary Students Know and Can Do: Hands-On Performance Assessment Tasks Measure Mastery of the *CCSS* and *NGSS*

(Grades 3–6) *Clark A/B, Hyatt*

Science Focus: GEN, NGSS

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

Used as formative assessment tools, hands-on tasks measure mastery of the *CCSS* as well as *NGSS* disciplinary core ideas and practices. Engage in a hands-on task exploring this form of assessment.

Special Pathway Session: Building K–6 Integrative STEM Through Technology, Engineering, Environment, Mathematics, and Science (TEEMS): A Project-based Student-centered Approach

(Grades K–6) *W175c, McCormick Place*

Science Focus: ETS, SEP

Roger Skophammer *(rskophammer@iteea.org)* and **Tanner Huffman** (@tannerhuffman; *huffmat@purdue.edu),* ITEEA, STEM±Center for Teaching and Learning™, Reston, Va.

Starting STEM at the elementary grades builds nontraditional students' interest in technology and engineering. Join us for an overview of how an integrative STEM, project-based approach enhances student learning at the elementary grades.

PDI **AMNH Pathway Session: Using a Tool and the *NGSS* Performance Expectations to Plan for Classroom Assessments**

(Grades 6–12) *W178b, McCormick Place*

Science Focus: GEN, NGSS

Jo Topps, K–12 Alliance/WestEd, San Francisco, Calif.

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

Participants will use a tool to engage in a process that deepens understanding of the *NGSS* performance expectations to consider evidence of learning and plan for classroom assessment.

12:30–3:30 PM Hands-On Workshop

PDI **BSCS Pathway Session: Taking the Lead with the *NGSS***

(General) *W176a, McCormick Place*

Science Focus: GEN

Jody Bintz *(jbintz@bscs.org)* and **Connie Hvidsten** *(chvidsten@bscs.org),* BSCS, Colorado Springs, Colo.

What does it take to lead K–12 teachers to understand and enact the *NGSS?* This session will explore the opportunities and challenges of the *NGSS* for teacher leaders, district leaders, and professional developers. Discover ways to create a supportive environment for rich and critical conversations about teaching and learning, and unpack the significant changes necessary to bring the *NGSS* to life in the classroom.

12:50–1:10 PM Presentation

SCST Session: Is It Working? Assessing the Effects of Study Groups and Tutoring on Science Student Performance

(College) *Clark C, Hyatt*

Science Focus: GEN

Claire Sandler *(csandler@umich.edu),* University of Michigan, Ann Arbor

The University of Michigan Science Learning Center has a long tradition of offering peer-led study groups for chemistry, biology, and physics. In 2013, peer-tutoring programs were added. I'll share some of the challenges we've faced as we grapple with trying to measure the effects of participation on student performance.

1:00–1:30 PM Presentations

Innovative Approaches to Business Engagement

(General) *Hyde Park A, Hyatt*

Science Focus: GEN

Olivia Rice *(onix@rti.org),* RTI International, Durham, N.C.

Interested in making your industry engagement more meaningful? I'll share innovative approaches being taken across the country—such as work-based learning programs and business-led advocacy.

Integrating Field-based Learning into the Geoscience Curriculum

(Grades 7–College) *S403b, McCormick Place*

Science Focus: ESS2, SEP1, SEP3

Malcolm Skinner *(rskinner@byu.edu),* Brigham Young University, Provo, Utah

Field-based learning increases the depth of student understanding of the subjects they investigate as well as student involvement and enthusiasm for the course material.

Using Real Data to Expose Bias in Science

(Grades 9–12) *S404 b/c, McCormick Place*

Science Focus: ESS, SEP4, SEP7, SEP8

Lena Cosentino (@lsdnyc), College of Staten Island High School for International Studies, Staten Island, N.Y.

Use real data about climate change to have students develop positions that can expose bias in data.

The Quest for Classroom Economy: Creating a Seamless School for Science, Literacy, and Math

(Grades 5–8) *S404d, McCormick Place*

Science Focus: GEN, CCC, SEP

Jay Staker, Iowa State University, Ames

Examine the Naperville School District journey to shift professional development using professional learning communities focused on aligning curricula for science, math, and literacy.

INF **Connecting Underserved Students to STEM Career Pathways**

(Grades 5–9) *S504 b/c, McCormick Place*

Science Focus: INF

Stephanie Wortel and **Kristian Breton** (@KristianBreton; *kbreton@nyas.org),* New York Academy of Sciences, New York, N.Y.

The Afterschool STEM Mentoring Program was born out of the diversity of New York City's public schools. Over the past four years, the program has expanded beyond New York City to New York State. Come discuss lessons learned.

Inquiry Adventures in Cook County's Forest Preserves
(Grades 3–9) *S505a, McCormick Place*
Science Focus: INF, SEP1, SEP3, SEP8
Susan Gasper, University of Illinois Extension, Cook County, Chicago
Hear how the University of Illinois Extension and the Forest Preserves of Cook County partnered to bring urban youth on inquiry-based field trips to the forests.

Co-Teaching in Science…It Can Be Better Together!
(Grades 9–12) *W176b, McCormick Place*
Science Focus: GEN, NGSS
Maria Thurmond, Peachtree Ridge High School, Suwanee, Ga.
Effective co-teaching is required if students with disabilities are expected to succeed on the *NGSS*. But what does effective mean? Come learn how the co-teaching model should look and how you can get your special education teacher on board!

A Bird in the Hand
(Grades 2–9) *W187a, McCormick Place*
Science Focus: LS, INF, SEP1, SEP4
Ileana Betancourt (@birdsleuth; *iab27@cornell.edu),* The Cornell Lab of Ornithology, Ithaca, N.Y.
Grab your mobile device and explore tools and apps for bird-related investigations and citizen science in any setting—inside/out or rural/urban!

1:00–2:30 PM Exhibitor Workshop

DNA Detectives: Who Killed Jose?
(Grades 9–College) *W474a, McCormick Place*
Science Focus: LS
Sponsor: Bio-Rad Laboratories
Leigh Brown *(leigh_brown@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
In this hands-on lab, solve a theatrical crime scene using biotechnology skills such as DNA gel electrophoresis, restriction digestion, and pipetting. Learn about the Innocence Project and how the wrongly accused can be exonerated.

1:00–3:00 PM Meetings

Multicultural/Equity in Science Education Committee Meeting
Boardroom 2, Hyatt

Professional Development in Science Education Committee Meeting
Boardroom 3, Hyatt

Preservice Teacher Preparation Committee Meeting
Boardroom 4, Hyatt

Coordination and Supervision of Science Teaching Committee Meeting
Boardroom 5, Hyatt

Preschool–Elementary Science Teaching Committee Meeting
Dusable B, Hyatt

College Science Teaching Committee Meeting
Dusable C, Hyatt

1:00–5:00 PM Short Courses

Using Manipulatives to Teach Science in Special Education and Inclusion Classrooms (SC-1)
(Grades 6–12) *Crystal, Palmer House*
Science Focus: GEN
Tickets Required; $42
Shari Weaver *(sweaver@wpi.edu),* Massachusetts Academy of Math & Science at WPI, Worcester
Jacob Landmesser (*jlandmesser@siskiyoucoe.net*), Happy Camp Elementary School, Happy Camp, Calif.
For description, see page 58.

Engineering a Story: Integrating Literacy with Engineering Practices (SC-2)
(Grades P–8) *Salon 7, Palmer House*
Science Focus: GEN, INF, SEP
Tickets Required; $45
Mia Dubosarsky (*mdubosarsky@wpi.edu*), The STEM Education Center at WPI, Worcester, Mass.
For description, see page 58.

1:10–1:30 PM Presentation

SCST Session: Initial Results from Revamping an Introductory Biology Course—Focusing on Inquiry

(College) *Clark C, Hyatt*

Science Focus: LS

Joseph Trackey *(joseph.l.trackey@lonestar.edu)* and **Helen McDowell** *(helen.e.mcdowell@lonestar.edu),* Lone Star College–Montgomery, Conroe, Tex.

First-year results will be presented describing a change to inquiry-based teaching of a college introductory biology course. We will review effects on student knowledge and attitudes as well as the impact on the laboratory experience.

1:30–3:00 PM Meetings

Technology Advisory Board Meeting

Boardroom 1, Hyatt

Nominations Committee Meeting

Erie, Hyatt

1:30–3:30 PM Meeting

Middle Level Science Teaching Committee Meeting

Adler C, Hyatt

1:30–4:30 PM Short Course

Ocean Plastic Pollution: Issues and Solutions (SC-3)

(Grades 6–8) *Salon 1, Palmer House*

Science Focus: LS2, ESS

Tickets Required; $43

Mary Whaley *(mwhaley@mbayaq.org),* Monterey Bay Aquarium, Monterey, Calif.

For description, see page 58.

2:00–2:20 PM Presentation

SCST Session: Flipping Out Over What We've Learned: Insights into the Implementation of a Flipped Classroom

(Grades 10–College) *Clark C, Hyatt*

Science Focus: GEN

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

Come learn what two years of optimizing and working with other flipped courses on campus has taught us about what works and what does not.

2:00–2:30 PM Presentations

Assessing *NGSS* Science and Engineering Practices in Two Different Chemistry Courses

(Grades 9–College) *Grant Park B, Hyatt*

Science Focus: ESS3.D, LS1.A, PS1.A, PS1.B, PS3.D, INF, CCC1, CCC2, CCC5, CCC6, SEP2, SEP4, SEP6, SEP7

Jeong Choe *(jchoe@imsa.edu),* Illinois Mathematics and Science Academy, Aurora

Discussion centers on how two high school chemistry courses implemented the *NGSS* science and engineering practices, as well as their strategies for designing assessments and the outcomes from these assessments.

Using the NSTA Learning Center to Build Teacher Candidates Confident in Science Content: Best Practices

(Grades K–6) *S504 b/c, McCormick Place*

Science Focus: GEN

Amy Gillan *(agillan@saintmarys.edu),* Saint Mary's College, Notre Dame

Terri Hebert *(thebert@iusb.edu),* Indiana University South Bend, South Bend

Join teacher educators as they share best practices in the pioneering use of NSTA's Learning Center to bolster elementary teacher candidates' content confidence.

2:00–3:00 PM Featured Presentation

The Key to Implementing the *NGSS?* Teachers!

(General) *Skyline W375 a/b, McCormick Place*

Science Focus: GEN, NGSS

Stephen L. Pruitt (@DrSPruitt), Senior Vice President for Content, Research and Development, Achieve, Inc., Washington, D.C.

Presider: David L. Evans, NSTA Executive Director, Arlington, Va.

In his talk, Stephen L. Pruitt will address the critical leadership role teachers need to play to support quality science education for all students. He will also introduce educators to new tools to support them as they implement the *NGSS*. He will allow plenty of time for questions from teachers. Join Stephen for his sometimes humorous perspective on how to help students by making teachers a priority.

Stephen L. Pruitt is senior vice president at Achieve. For the past several years, he has been leading the development of the Next Generation Science Standards. Stephen began his career as a high school chemistry teacher in Georgia, where he taught for 12 years. In 2003, he joined the Georgia Department of Education as program manager for Science. Until 2010, he held various roles in the agency culminating with him being named Chief of Staff to State School Superintendent, coordinating the work of the agency.

In addition to his state-level work, Stephen also served as president of the Council of State Science Supervisors and a member of the writing team for the College Board Standards for College Success *science standards. He also served on the National Academies of Science's Committee on Conceptual Framework for New Science Education Standards, which developed* A Framework for K–12 Science Education.

2:00–3:00 PM Featured Presentation

Measuring What Matters: Challenges and Opportunities in Assessing Science Proficiency

(General) *W190a, McCormick Place*

Science Focus: GEN, SEP

James Pellegrino *(pellegjw@uic.edu),* Liberal Arts & Sciences Distinguished Professor, Distinguished Professor of Education, and Co-Director, Learning Sciences Research Institute, University of Illinois at Chicago

Presider: Dana Birch, Victor J. Andrew High School, Tinley Park, Ill.

Assessments that support the vision of science proficiency embodied in the NRC *Framework* and the *Next Generation Science Standards* are critical components for effective implementation of the *NGSS*. In his talk, Dr. James Pellegrino will consider the implications of *NGSS* for assessment design and use, as well as illustrate principled ways to build the assessment tools needed to support classroom teaching and learning and to monitor progress in attaining the standards. Assessment tools include the types of tasks that can be embedded in classroom instruction, and those for use by states as part of system progress monitoring. Critical to the enterprise is a clear and shared sense of what constitutes evidence of proficiency and its development over time with instruction.

Dr. Pellegrino's research and teaching interests focus on children's and adult's thinking and learning and the implications of cognitive research and theory for assessment and instructional practice. A special concern of his research is the incorporation of effective formative assessment practices, assisted by technology, to maximize student learning and understanding. Increasingly his research and writing has focused on the role of cognitive theory and technology in educational reform and translating results from the educational and psychological research arenas into implications for practitioners and policy makers.

James has been appointed to lead several National Academy of Science/National Research Council study committees, including the NRC/NAS Study Committee on the Foundations of Assessment, which issued the report Knowing What Students Know: The Science and Design of Educational Assessment. *Recently, he served on the Committee on Developing Assessments of Science Proficiency in K–12 that wrote the NRC book* Developing Assessments for the *Next Generation Science Standards.*

2:00–3:00 PM Presentation

ASTC Session: Full STEAM Ahead! STEAM Education for All Learners

(Grades 1–12) *Burnham A/B, Hyatt*

Science Focus: ETS, INF, CCC6, SEP6

Kristina Hilliard Anderson, Perot Museum of Nature and Science, Dallas, Tex.

Explore the STEAM K–12 curriculum that engages diverse learners by incorporating music, engineering, science of sound, and cultural traditions. Take home lessons and implementation tips.

ASTE Session: A Pedagogy of Kindness for the Science Classroom

(Grades K–12) *Dusable A, Hyatt*

Science Focus: GEN, NGSS

Michael Svec *(michael.svec@furman.edu),* Furman University, Greenville, S.C.

Pedagogy of kindness is an essential feature of the science classroom, manifesting itself in curriculum, instruction, and the relationship between student and teacher.

NARST Session: The Strange Case of the Scientific Method: Lessons for the Multiple Communities of Science Education

(General) *Field C, Hyatt*

Science Focus: GEN, SEP

Daniel Meyer *(daniel.meyer@mail.ic.edu),* Illinois College, Jacksonville

Discussion centers on possible explanations for why "the scientific method" maintains its schizophrenic status of both formal fallacy and ubiquitous practice.

Covering It All in a Semester: Experience from an *NGSS*-ESS Course for Preservice Teachers

(Grades 9–College) *Grant Park A, Hyatt*

Science Focus: ESS, CCC, SEP

Nancy Price *(naprice@pdx.edu),* Portland State University, Portland, Ore.

Join me as I share lessons from an Earth and space sciences course for preservice teachers focused on integration of the three dimensions of the *NGSS*.

Rigor for All: An Inclusive Approach to Science Education for Nonmajors

(College) *Grant Park C, Hyatt*

Science Focus: GEN

Heather Minges Wols *(hmingeswols@colum.edu),* **Elizabeth Davis-Berg** (@bethdavisberg;*edavisberg@colum.edu),* **Julie Minbiole** *(jminbiole@colum.edu),* and **Michelle Rafacz** *(mrafacz@colum.edu),* Columbia College Chicago, Ill.

Attention will be paid to bringing major-level courses to a broader nonmajor population. We will discuss how to incorporate various strategies for delivering rigorous content.

Preparing the STEM Classroom

(Grades P–12) *Jackson Park A, Hyatt*

Science Focus: GEN, SEP2, SEP3, SEP6

Lara Arch, Accelerate Learning, Houston, Tex.

Making small changes in the STEM classroom environment can make a big difference. Leave with practical tips and examples on how to prepare your classroom so that it cultivates the *NGSS* practices.

Interactive Word Wall Rubric—Good, Better, Best

(Grades K–12) *Jackson Park C, Hyatt*

Science Focus: GEN

Julie Jackson *(jj32@txstate.edu),* Texas State University, San Marcos

Leave with a rubric outlining the steps needed to transform traditional word walls into powerful interactive teaching tools that involve students, organize content, and support vocabulary instruction.

Creating and Evaluating Resources for Lessons That Fit the *NGSS*

(Grades K–12) *Jackson Park D, Hyatt*

Science Focus: GEN, NGSS

Carolyn Higgins (@mrshigginsri; *carolyn.higgins@warwickschools.org),* Winman Junior High School, Warwick, R.I.

Mary Koga *(mkoga@bousd.us),* Brea Junior High School, Brea, Calif.

Erica Motamed *(emotamed@llcsd.net),* Lake Center Middle School, Santa Fe Springs, Calif.

Karen Mesmer *(kmesmer@baraboo schools.net),* Jack Young Middle School, Baraboo, Wis.

EQuIP stands for Educators Evaluating the Quality of Instructional Products. Join curators of *NGSS* resources for NSTA as they share how to use the EQuIP rubic to determine what shifts are needed in existing lessons to align with the *NGSS*.

AMSE Session: Designing Rubber Band Racers to Ignite the Curiosity of Diverse Learners!
(Grades 3–10) *Prairie A, Hyatt*
Science Focus: ETS, INF, SEP
Pamela Gilchrist, North Carolina State University, Raleigh
Build a rubber band–powered car and learn strategies to engage diverse learners in informal learning settings! This low-cost activity reinforces science content and engineering practices.

NSTA Press® Session: Whole Class Inquiry—Improving Participation, Keeping Students Engaged
(Grades 6–12) *S401 b/c, McCormick Place*
Science Focus: GEN
Dennis Smithenry *(smithenryd@elmhurst.edu),* Elmhurst College, Elmhurst, Ill.
Come hear the results of a classroom research study showing how self-assessment and meaningful feedback affect students' participation and improve Whole Class Inquiry. Video included.

Reaching More of Your Learners Where They Are at with Formative Assessment
(Grades 8–12) *S401d, McCormick Place*
Science Focus: PS1.A
Jeffrey Spencer *(jspence2@gmail.com),* Vista Peak Preparatory, Aurora, Colo.
Tracy Schloemer (@tracyhle; *tracyhle@umich.edu),* STEM School and Academy, Highlands Ranch, Colo.
Use formative assessment to guide differentiation in the high school science classroom. We will analyze student data, develop a working definition of differentiation, and share classroom stories.

Authentic Assessment in Forensic Science
(Grades 10–12) *S402a, McCormick Place*
Science Focus: GEN, NGSS
Jerri Cupero, Arlington Career Center, Arlington, Va.
Using examples from fingerprinting, forensic anthropology, and document analysis, we will explore authentic assessments that can be used when teaching forensic science. Handouts.

Science Is Cool! Looking for Life, and Finding It, in a Subglacial Antarctic Lake
(Grades 6–College) *S403a, McCormick Place*
Science Focus: ESS, CCC2, CCC5, CCC7, SEP
Susan B. Kelly, University of Illinois at Urbana–Champaign
See STEM in action! Meet scientists and educators from the Antarctic WISSARD (Whillans Ice Stream Subglacial Access Research Drilling) project as they share their latest science discoveries!

Promoting Habits of Science, Sustainability, and Service by Unifying Learning Across School, Family, and Community Contexts
(Grades 8–College) *S404 b/c, McCormick Place*
Science Focus: GEN, INF, CCC
Adam Tarnoff *(adamtarnoff@scaffoldeducation.com),* Loyola University Chicago, Ill.
Neil Reimer *(nreimer@noblenetwork.org),* Muchin College Prep, Chicago, Ill.
Bryan Wunar *(bryan.wunar@msichicago.org),* Museum of Science and Industry, Chicago, Ill.
Eleanor Flanagin *(edflanagin@cps.edu),* Nicholas Senn High School, Chicago, Ill.
Brian Hayes *(hayes124@msn.com),* Taft High School, Chicago, Ill.
Hear how FOCUSSS (Families, Organizations, and Communities Understanding Science, Sustainability, and Service) promotes environmentally sustainable behaviors via partnerships among public, charter, and private schools; museums; and universities.

It's a Gas: The Movie—Grades 8–12 Students Producing Virtual Labs
(Grades 8–College) *S501a, McCormick Place*
Science Focus: PS
Deanna Murphy *(dmurphy@bpd3.org),* Beach Park School District #3, Zion, Ill.
Andrew Bean *(apbean@cps.edu),* Dever Elementary School, Chicago, Ill.
Frank Prill *(frankprilljr@gmail.com),* Bolingbrook High School, Bolingbrook, Ill.
Presider: Vito Dipinto *(vdipinto@nl.edu),* National-Louis University, Wheeling, Ill.
Students propose explanatory models and design a virtual lab that explains the formation of a gas in a common chemical reaction *à la* the *NGSS*.

Weaving Science and Literacy into the Middle School Classroom to Meet the *NGSS* and *CCSS ELA*
(Grades 6–8) *S501d, McCormick Place*
Science Focus: GEN, SEP8
Janet MacNeil *(janet_macneil@brookline.k12.ma.us),* Brookline (Mass.) Public Schools
Melissa London *(melissa_london@brookline.k12.ma.us),* Pierce School, Brookline, Mass.
Learn how to integrate talk, writing, and reading seamlessly into rich science learning experiences, assess students' understanding, and meet the *NGSS* and *CCSS ELA*.

Catapults, Trebuchets, and Angry Birds! Combining Literacy, History, Engineering, and Science
(Grades 4–6) *S504d, McCormick Place*
Science Focus: ETS1, PS2, CCC4, SEP1, SEP2, SEP3, SEP4, SEP5
Deana Semenza *(deana.semenza@gmail.com),* Trinity School, New York, N.Y.
Learn about an interdisciplinary simple machines unit that supports science skills through student-developed experiments. By entwining history, fiction, woodworking, and the science of machines, students create their own version of angry birds attack the castle…medieval style!

Immerse Yourself in Science Through Clouds
(Grades 1–8) *S505a, McCormick Place*
Science Focus: ESS
Tina Harte and **Preston Lewis** *(preston.lewis@nasa.gov),* NASA Langley Research Center, Hampton, Va.
Using S'COOL (Students' Cloud Observations On-Line), your students will learn more about the process of science and the clouds around them!

***Next Generation Science Standards:* Lost in the Woods?**
(Grades 4–9) *S505b, McCormick Place*
Science Focus: GEN, NGSS
Christopher Dobson *(dobsonc@gvsu.edu),* Grand Valley State University, Allendale, Mich.
Stephanie Oostdyk, Chandler Woods Charter Academy, Belmont, Mich.
Patricia Radtke, Springview Elementary School, Flushing, Mich.
Provide roots for integrating the *NGSS* dimensions (science and engineering practices, disciplinary core ideas, and crosscutting concepts) in your classroom with an investigation of beech trees. Join us we examine the location of stemflow (water moving down the trunk following a rain) and its effect on moss abundance. Handouts.

NMEA Session: Set Sail with GLEAMS!
(General) *Skyline W375e, McCormick Place*
Science Focus: ESS3.A, ESS3.C, INF
Lyndsey Manzo (@Lyndsseymanzo; *manzol@wcsoh.org),* The Ohio Sea Grant College Program, Columbus
Calling all Great Lakes Educators of Aquatic and Marine Science! Come discuss strategies/plans for building collaborative partnerships that foster ocean and Great Lakes literacy.

The Rise of Science Practices
(Grades 6–9) *W176b, McCormick Place*
Science Focus: GEN, SEP
Matthew Hartman, eCYBERMISSION Content Manager NSTA, Arlington, Va.
Science practices are here and are taking over the science classroom. Do you teach the scientific method in your class? We will discuss what happened to the scientific method and why the term "science practices" is now used. Also, learn about a free online STEM competition called eCYBERMISSION and how you and your students can get involved.

STEM Learning Community: Making STEM Integration a Reality
(Grades 9–12) *W186c, McCormick Place*
Science Focus: GEN, SEP1, SEP6, SEP8
Jeff Rylander *(jrylander@glenbrook225.org),* **Dawn Hall** *(dhall@glenbrook225.org),* **Mike Sinde** (@GBSEngineering; *msinde@glenbrook225.org),* **Tom Henderson** (@physxclassroom; *thenderson@glenbrook225.org),* **Aparna Puppala** *(apuppala@glenbrook225.org),* and **Michael Stancik** *(mstancik@glenbrook225.org),* Glenbrook South High School, Glenview, Ill.
The STEM Learning Community seeks to prepare students with the dispositions and habits of mind necessary for success in future STEM-related careers. Join us as we share our vision and practice in building such a four-year sequence of science, Project Lead the Way pre-engineering, and mathematics coursework that is supported with technology throughout.

Collaborative Conservation Through Birds and Citizen Science
INF
(Grades 2–8) *W187a, McCormick Place*
Science Focus: GEN, INF, NGSS
Jennifer Fee, The Cornell Lab of Ornithology, Ithaca, N.Y.
Pam Evans *(pevans@charleston.k12.il.us),* Jefferson Elementary School, Charleston, Ill.
Through school yard habitat improvements, students discover the characteristics that create good habitat for birds and other wildlife. Discover grants and resources and take a bird feeder back to your school!

The *NGSS* Collaborative
(General) *W187b, McCormick Place*
Science Focus: GEN, NGSS
Wendy Jackson, Chairperson, NSTA Chicago National Conference, and DePaul University, Chicago, Ill.
Liz Lehman *(emlehman@uchicago.edu),* The University of Chicago, Ill.
Rachel Shefner *(rshefne@luc.edu)* and **Stacy Wenzel** *(swenzel@luc.edu),* Loyola University Chicago, Ill.
Chandra James, Chicago (Ill.) Public Schools
Composed of six institutions in Chicago, the *NGSS* Collaborative will present its plans and strategies for helping teachers, schools, and districts transition to the *NGSS*.

Dynamic Modeling Software Tools to Engage Students in Practices and Crosscutting Concepts
(Grades 4–College) *W187c, McCormick Place*
Science Focus: GEN, CCC2, CCC3, CCC4, CCC5, SEP2, SEP4, SEP5
William Dinkelmann (@BDinkelmann; *bill.dinkelmann@vai.org),* Van Andel Education Institute Science Academy, Grand Rapids, Mich.
Free modeling tools are available for you and your students. See dynamic modeling examples applied across subject areas that address the *NGSS* practices and crosscutting concepts.

Lloyd's Toolbox of Engineering Ideas and Activities
(Grades 2–12) *W192a, McCormick Place*
Science Focus: ETS
Lloyd Hilger, Hanover-Horton Middle School, Horton, Mich.
Break down misconceptions about engineering as you engage in hands-on activities such as constructing paper helicopters. Discussion includes sharing your own activities and resources.

CT4ALL: Innovative Curriculum for Tackling *NGSS* and Computing in STEM Classrooms
(Grades 9–12) *W196c, McCormick Place*
Science Focus: GEN, NGSS
Kai Orton, Northwestern University, Evanston, Ill.
Hear how high school STEM teachers are accessing an innovative classroom-ready curricula embedded with computational thinking concepts and authentic 21st-century science practices.

What Do Engineers Really Do? Integrating Engineering and Science
(General) *W475b, McCormick Place*
Science Focus: ETS, SEP
Ann P. McMahon (@annpmcmahon; *annpmcmahon@gmail.com),* Pacific Science Center, Seattle, Wash.
Presented by an engineer who is also a K–12 science educator, discover how engineering and science are interdependent and the effects on classroom instruction.

2:00–3:00 PM Hands-On Workshops

Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 102)
(General) *Adler A/B, Hyatt*
Science Focus: GEN, SEP6
LaMoine Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.
Is your district planning for new science facilities? Are you involved? If not, you need to get involved before it is too late. In an advanced course (an extension of the Science Facilities 101 session) the author team for *NSTA Guide to Planning School Science Facilities,* 2nd ed., will present more detailed information and examples of safe, ergonomically correct, and functional science facililities for STEM-based science. Budgeting, working with architects, technology, and special adjacencies will be addressed. Handouts.

NSELA Session: In the Heat of the Argument: Using Argument-driven Inquiry to Promote Scientific Literacy
(Grades 6–12) *Field A/B, Hyatt*
Science Focus: GEN, INF, SEP3, SEP7
Mindy Pearson (@ScienceMindy; *mindy.pearson@sdhc.k12.fl.us),* **Nicole Jacquay** *(nicole.jacquay@sdhc.k12.fl.us),* and **Michele Detwiler** (@MicheleDetwiler), Hillsborough County Public Schools, Tampa, Fla.
Explore how the use of science inquiry and the Claim, Evidence, Justification tool in the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) instructional model can enhance scientific literacy for middle school students.

The St. Louis Box Turtle Project: Scaffolding Partnerships to Reach All Students
(General) *Hyde Park A, Hyatt*
Science Focus: GEN
Jamie Palmer *(jpalmer@stlzoo.org),* Saint Louis Zoo, St. Louis, Mo.
Christina Hwande *(chrishwande@claytonschools.net),* School District of Clayton, Mo.
Come hear how movement ecology researchers, informal science educators, and science teachers have built a partnership to bring authentic science to K–12 students.

Learning English Through Science: ELLs and *NGSS*
(General) *Hyde Park B, Hyatt*
Science Focus: GEN, SEP1, SEP2
Troy Dassler *(tmdassler@wisc.edu),* University of Wisconsin–Madison
Let's examine the practices that are part of the *NGSS* and see what opportunities they offer in teaching English language learners in your classroom.

Assessing the Assessment: The Test Item Checklist
(Grades 3–College) *Jackson Park B, Hyatt*
Science Focus: GEN
Whitney Dove (@wdove530; *wdove@acceleratelearning.com),* Accelerate Learning, Houston, Tex.
If you consistently encounter multiple-choice test items that are ineffective and want a method to improve them, we have a tool for you!

NSTA Press® Session: *Next Time You See…*
(Grades P–5) *S401a, McCormick Place*
Science Focus: GEN, INF, NGSS
Emily Morgan (@EmilyMorganNTYS; *emily@pictureperfectscience.com),* Picture-Perfect Science, West Chester, Ohio
Author of the award-winning "*Next Time You See*" picture books from NSTA Kids will share books and classroom activities that inspire a sense of wonder about the natural world.

Speak Up! Incorporating Discourse into Your Life Science Classroom Instruction
(Grades 6–12) *S402b, McCormick Place*
Science Focus: LS, SEP7, SEP8
Robby Cramer, Michigan Science Teachers Association, Ann Arbor
Cheryl Hach *(cherylhach@hotmail.com),* Kalamazoo Area Math and Science Center, Kalamazoo, Mich.
Discourse enables formative and summative assessment of student scientific thinking. Experience strategies that build confidence, deepen student partnerships, and foster risk taking through scientific argumentation from evidence.

MiQuakes: Earthquakes in the Classroom: Loose Sediments to Hard Core
(Grades 7–12) *S403b, McCormick Place*
Science Focus: ESS2.A, ESS3.B, PS4.A, SEP
Michele Svoboda *(msvoboda@cppschools.com),* Mill Creek Middle School, Comstock Park, Mich.
Cris DeWolf *(dewolf.cris@gmail.com),* Chippewa Hills High School, Remus, Mich.
Learn about the MiQuakes Program and IRIS Seismographs in Schools as you explore interdisciplinary and societal connections and engage in hands-on activities to use with grades 7–12 students.

NSTA Press® Session: *It's Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12*
(Grades K–12) *S404a, McCormick Place*
Science Focus: GEN, NGSS
Dana Zeidler *(zeidler@usf.edu),* University of South Florida, Tampa
Sami Kahn, Collegiate School, New York, N.Y.
During this interactive workshop, participants will model the use of controversial societal issues related to science to develop their students' scientific literacy.

Electrify Your Teaching Using the Simple Circuit Board
(Grades 4–10) *McCormick Place, S405a*
Science Focus: PS
Michael Suckley *(dr.suckley@sciencescene.com),* Professor Emeritus, Macomb Community College, Fenton, Mich.
Using STEM principles, magnets, paperclips, and holiday light bulbs, build your own inexpensive circuit board. Construct series, parallel, and combined circuits. Collect qualitative and quantitative data and use your circuit board to learn about conductors, insulators, fuses, and diodes—and their everyday applications.

Marsbound
(Grades 6–8) *S405b, McCormick Place*
Science Focus: ETS1, SEP3, SEP6
Lynda Sanders *(lyndas@coos-bay.k12.or.us),* Marshfield High School, Coos Bay, Ore.
Pat Gram *(pat.gram38@gmail.com),* Retired Educator, Aurora, Ohio
Rurik Johnson *(rurik_johnson@rdale.org),* Plymouth Middle School, Plymouth, Minn.
Using a NASA-derived approach, students experience the engineering design process to develop a mission that meets engineering constraints and criteria. Join us and design a mission to Mars.

Inquiry on a Budget
(Grades 9–12) *S501 b/c, McCormick Place*
Science Focus: PS, SEP2, SEP3, SEP4, SEP5, SEP8
CANCELED
Eric Schwartz, Grace King High School, Metairie, La.
Engage your students with low-cost inquiry labs where students collect and analyze data to construct mathematical and graphical models in physics and physical science!

Science for Young Children: Taking Children Outside to Reinforce Science Practices
(Grades P–2) *S502a, McCormick Place*
Science Focus: GEN, INF, SEP
Jim McDonald (@jimscienceguy; *jim.mcdonald@cmich.edu)* and **Lynn Dominguez** *(domin1la@cmich.edu),* Central Michigan University, Mount Pleasant
Explore how to develop sound foundational practices for children ages 3–7 that develop observation, sensory skills, classifying, and using evidence to reach conclusions.

Engaging Students in Science and Mathematical Practices
(Grades K–8) *S502b, McCormick Place*
Science Focus: GEN, CCC, SEP
Brett Moulding *(mouldingb@ogdensd.org),* Partnership for Effective Science Teaching and Learning, Ogden, Utah
Engage in a hands-on science task that integrates science and mathematical practices consistent with both the *NGSS* and *CCSS Mathematics*.

Story Starts to Science: Using Children's Literature to Enhance Your Science Curriculum Science Content
(Grades P–6) *S503a, McCormick Place*
Science Focus: PS
Jennifer Williams (@ScienceJennifer; *jenniferwilliams@newmanschool.org),* Isidore Newman School, New Orleans, La.
Promote your students' enthusiasm and understanding of physical science concepts by integrating children's literature into inquiry-based hands-on experiments and activities. This workshop will demonstrate the seamless blend of "story time" and science as you engage in many activities. Leave with a bibliography of suggested titles.

Citizen Science: A Project to Engage Students in Authentic Science Research
(Grades 5–8) *S503b, McCormick Place*
Science Focus: GEN, SEP1, SEP4, SEP8
Sarah Carter *(scarter@tpt.org)* and **Rita Karl** *(rkarl@tpt.org),* Twin Cities Public Television, St. Paul, Minn.
Explore a few of the many citizen science projects that can engage your students in authentic science data collection and investigation.

Hitting the Right Note: Teaching Science Through Rock 'n' Roll
(Grades 3–6) *S504a, McCormick Place*
Science Focus: GEN, CCC
Sarah Jane Kemp *(sarah-jane.kemp@ousd.k12.ca.us),* Peralta Elementary School, Oakland, Calif.
Tap into the power of music with an innovative unit that combines science, engineering, and rock 'n' roll. Engage your students while promoting reasoning and creativity!

What's Up, Part 2: Beyond the Solar System
(General) *W183 a/b, McCormick Place*
Science Focus: ESS1.A
Jake Noel-Storr, InsightSTEM, Inc., Tucson, Ariz.
Join master teachers and astronomy educators from the Association for Astronomy Education to get the latest and greatest ideas for your classroom.

Beyond Engineering: Assessment for Learning
(Grades K–8) *W190b, McCormick Place*
Science Focus: GEN
Mijana Lockard (@1757AD; *mijana.lockard@polk-fl.net),* Lincoln Avenue Academy, Lakeland, Fla.
Emphasis will be placed on developing formative assessments and proficiency rubrics to assess students' mastery of academic standards during performance tasks. Topics include embedded and common assessments and data-driven differentiation.

Involving Students in Fair Test Design (Without Them Even Knowing It!)
(Grades 2–6) *W192c, McCormick Place*
Science Focus: GEN, SEP3
Emily Gibson *(emgibs@gmail.com),* California Academy of Sciences, San Francisco
Explore pedagogical strategies that support student engagement and collaboration in designing a fair test in the elementary science classroom.

Bullet Holes: Using STEM-based Forensic Ballistic Trajectory Analysis to Reconstruct a Crime!
(Grades 9–12) *W196a, McCormick Place*
Science Focus: PS2.A, CCC2
Michael Lazaroff *(mjvlazaroff@gmail.com),* Staples High School, Westport, Conn.
In this workshop, participants will perform a forensic reconstruction of a crime scene based on the trajectory of multiple bullets.

2:00–3:00 PM Exhibitor Workshop

Project-based Activities for Gas Laws and Stoichiometry Chemistry Standards
(Grades 9–12) *W179b, McCormick Place*
Science Focus: PS1.B, CCC1, CCC3, SEP1, SEP3, SEP4
Sponsor: PASCO scientific
Amanda Zullo *(zulloama@slcs.org),* Saranac Lake High School, Saranac Lake, N.Y.
Incorporate science and engineering practices as students develop an understanding of gases and stoichiometric calculations with PASCO's SPARKvue software and Advanced Chemistry Sensor. The project-based STEM activities integrate chemistry concepts that can aid in the design, testing, and evaluation of student-built airbags. One attendee will win an Advanced Chemistry Sensor!

2:00–3:30 PM Exhibitor Workshops

The Harnessed Atom: New Ideas, Tools, and Resources: Nuclear Science and Energy

(Grades 5–9) *W178a, McCormick Place*

Science Focus: PS3, PS4, SEP

Sponsor: U.S. Dept. of Energy, Office of Nuclear Energy

Marie Westfall *(marie.westfall@orau.org),* Oak Ridge Associated Universities, Oak Ridge, Tenn.

Pete Xiques *(peter.j.xiques@leidos.com),* Leidos, Oak Ridge, Tenn.

Walk away with free STEM materials on energy sciences and nuclear energy. Harnessed Atom includes lesson plans, projects, interactive games, hands-on activities, student collaboration, and teacher resources.

Economical, Efficient, and Effective STEM Inquiry in Chemistry

(Grades 9–12) *W179a, McCormick Place*

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 inquiry activities that are safe, simple, easy to use, material conserving, time efficient, and effective. Safety and differentiation are built in. Teach core content while fostering problem solving, creativity, and invention. Students design original experiments not possible with traditional methods.

Flinn Scientific Resources Prepare Students for AP Chemistry Success

(Grades 9–College) *W180, McCormick Place*

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Marvel *(mmarvel@flinnsci.com)* and **Jillian Saddler** *(jsaddler@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.

Join Flinn Scientific as we share resources and strategies to help students succeed on the AP Chemistry exam. Discover the benefits of preparing students for the first day of class with FlinnPREP™, a new online review of foundational chemistry concepts. You'll also learn how easy it is to teach the integrated learning objectives and applied science skills students need using Flinn's AP Chemistry Kits. Your students will also appreciate the advantage of practicing Flinn's free-response questions before the exam. Free handouts!

Hands-On Science with Classroom Critters

(Grades K–12) *W181a, McCormick Place*

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 you can use in your labs with pill/sow bugs, termites, bess bugs, and butterflies. Learn about care and handling, as well as easy ways to introduce inquiry. Free product samples and literature.

Science Notebooks to Address the *NGSS* and *CCSS*

(Grades K–5) *W181b, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Engage in innovative ideas for teaching with science notebooks. Experience the power of inquiry-based instruction and the *Common Core State Standards*. Learn about these essential *CCSS* components: essential questioning, writing, speaking, vocabulary, and listening through science notebooking.

Engineer Excitement in Your Classroom with a Carolina STEM Challenge®

(Grades 6–12) *W181c, McCormick Place*

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Catapult, float, and race your way into hands-on activities that will engage your middle school and high school students while fostering both critical thinking and creative problem-solving skills! Join us and experience how Carolina makes it easy to incorporate STEM into your classroom. Free handouts and door prizes.

***Your Inner Fish* in the Classroom**

(Grades 9–College) *W183c, McCormick Place*

Science Focus: LS3, LS4

Sponsor: HHMI BioInteractive

Satoshi Amagai, HHMI BioInteractive, Chevy Chase, Md.

Cindy Gay, Steamboat Springs High School, Steamboat Springs, Colo.

Mark Eberhard, St. Clair High School, St Clair, Mich.

Use the award-winning series *Your Inner Fish*, starring Neil Shubin, to teach about our evolutionary past going all the way back to our fishy ancestors. Participants will be introduced to free resources from HHMI's BioInteractive to help incorporate *Your Inner Fish* into the classroom, including interactives, short films, and activities.

What's Going on in There? *NGSS* and STEM for Administrators, Teacher Trainers, and University Faculty

(General) *W184a, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: Delta Education/School Specialty Science

John Cafarella, Consultant, Canadensis, Pa.

Get tips on going into a classroom to observe a science lesson and how to support and evaluate a STEM-based science lesson/program through a lens of the *Next Generation of Science Standards*, FOSS (3rd ed.), and DSM, too. We'll look at inquiry skills embedded in the science and engineering practices along with…a bit of humor, too.

Genetics: Crazy Traits and CPO's Link™ Learning Module

(Grades 6–12) *W184bc, McCormick Place*

Science Focus: LS

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Cory Ort,** CPO Science/School Specialty Science, Nashua, N.H.

CPO's new Crazy Traits Link learning module uses STEM- and *NGSS*-based strategies in a real-time tablet-based learning environment to learn genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity will come alive as you create crazy creatures with a unique kit, and study probability, dominance, and recession.

Asteroid! Will Earth Be Hit Again? FOSS Planetary Science for Middle School
(Grades 6–8) *W184d, McCormick Place*
Science Focus: ESS
Sponsor: Delta Education/School Specialty Science–FOSS
Jessica Penchos, Virginia Reid, and **Laurence Malone,** The Lawrence Hall of Science, University of California, Berkeley
Earth has been hit in the past, but what lies ahead? Using data from the Moon, we will calculate frequency of impacts and consider implications for Earth. We'll discuss how these questions guide students' exploration, and overview strategies, content, materials, and *NGSS* connections in the revised FOSS Planetary Science Course.

Wireless Sensor Exploration with Vernier
(Grades 3–College) *W185a, McCormick Place*
Science Focus: GEN, SEP4
Sponsor: Vernier Software & Technology
Matthew Anthes-Washburn *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Get hands-on experience using wireless sensors, including Vernier Go Wireless Temp, Vernier Go Wireless pH, and Variable's NODE wireless sensor platform using our Graphical Analysis app for mobile devices. See how Vernier has been incorporating principles of the *NGSS* science and engineering practices for 34 years!

Advanced Physics with Vernier
(Grades 9–College) *W185d, McCormick Place*
Science Focus: ETS1.A, ETS1.B, PS, SEP3, SEP4, SEP5
Sponsor: Vernier Software & Technology
Fran Poodry *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Already experienced using Vernier's basic physics sensors? This hands-on workshop will introduce additional Vernier sensors and lab equipment that can enhance your AP, IB, or college physics laboratory in mechanics and beyond. Plus, you will learn to employ advanced data-analysis techniques to explore quantitative relationships.

The Drunken Worms: Exploring Gene Function with *C. elegans*
(Grades 8–College) *W186a, McCormick Place*
Science Focus: LS, INF
Sponsor: Edvotek, Inc.
Brian Ell *(info@edvotek.com)* and **Maria Dayton** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Model organisms allow us to study fundamental questions in biology that are difficult to study in humans. Learn how to culture the nematode *C. elegans* in your classroom. Explore how mutations affect alcohol metabolism using a simple locomotion assay. Data are collected and analyzed using statistics. Free flash drive/T-shirt drawing entry.

Exploring How Machines Work with the LEGO® Education Simple and Motorized Mechanisms Set
(Grades 5–8) *W186b, McCormick Place*
Science Focus: ETS
Sponsor: LEGO Education
Laura Jackson, Retired Teacher/LEGO Education Trainer, Greenwood, Mo.
Cindy Howard, Retired Teacher/LEGO Education Trainer, Kansas City, Mo.
With the LEGO Education Simple and Motorized Mechanisms Set, your upper elementary students gain an in-depth understanding of the mechanical principles built into everyday machines. Through building, designing, and testing solutions, learners work as scientists and engineers, all while honing design technology, science, and math skills.

Meet *NGSS* Environmental Science Disciplinary Core Ideas with *Daphnia*
(Grades 9–12) *W192b, McCormick Place*
Science Focus: ESS3, PS1
Sponsor: Ward's Science
Liam Casey, VWR Education, Rochester, N.Y.
Conduct a bioassay demonstrating the toxic effects of copper sulfate (a common algicide) on a population of *Daphnia* using our newly updated Ward's *NGSS* Activity kit. Employ fundamental *NGSS* disciplinary core ideas of Matter and Interactions (PS1) and Earth and Human Activity (ESS3). Receive our environmental science activity guide for free!

Dive In with Magnetic Water Molecules
(Grades 5–College) *W193a, McCormick Place*
Science Focus: LS1.A, LS2.B, PS1.A, PS1.B, PS2.A, PS2.B, INF, CCC1, CCC2, CCC3, CCC4, CCC5, CCC6, SEP1, SEP2
Sponsor: 3D Molecular Designs
Gina Vogt *(vogt@msoe.edu)* and **Diane Munzenmaier** *(munzenmaier@msoe.edu),* MSOE Center for BioMolecular Modeling, Milwaukee, Wis.
Engaging water molecules enables you to use an inquiry approach to explore why water is essential for life. Discover the physical and chemical properties of water, states of matter, evaporation, condensation, transpiration, erosion, and more, using interactive water molecules with embedded magnets that mimic the polar interactions in real water.

Building Your Body in Clay: One System at a Time
(Grades 8–College) *W193b, McCormick Place*
Science Focus: LS
Sponsor: ANATOMY IN CLAY® Learning System
Presenter to be announced
Come join us as we use our hands-on, interactive approach to learning your body systems. Students who sculpt body systems in clay develop a better understanding of anatomy. Come to this hands-on workshop and build with us!

The Cell Cycle
(Grades 9–12) *W195, McCormick Place*
Science Focus: LS1.B
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Explore the role of the cell cycle in the growth and development of various normal tissues, the factors that regulate the cycle, and the disruptions that lead to cancer. This activity and approaches presented are from the "Cell Biology: World Health" unit of SEPUP's Science and Global Issues.

Building the Skills of Argumentation and Collaboration in STEM

(Grades 4–College) *W470a, McCormick Place*

Science Focus: GEN, SEP7

Sponsor: Accelerate Learning

Heather Wilde *(wilde@acceleratelearning.com),* Accelerate Learning, Houston, Tex.

Skillful argumentation and discourse are practices that provide a pathway for success in the future workforce. During this fun and interactive workshop, participants will determine the solution to a problem through collaboration among team members. Clear explanations are needed to solve the problem and to reach a consensus about their solution.

Building Science Vocabulary One Fold at a Time via Notebook Foldables®

(General) *W470b, McCormick Place*

Sponsor: Dinah-Might Adventures

Nancy Wisker, Dinah Zike Academy, San Antonio, Tex.

Science Focus: GEN

Cut, fold, and more in this hands-on workshop as you construct Notebook Foldables that are specifically designed to target science vocabulary. Use basic classroom materials and depart with a mini-composition book made on-site that is filled with immediately usable ideas.

Plate Tectonics: Continents on the Move
(Grades 6–12) *W471a, McCormick Place*
Science Focus: ESS2.B
Sponsor: Simulation Curriculum Corp
Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.
Join us as we use Simulation Curriculum's *Layered Earth Geology* to investigate continental drift and the theory of plate tectonics. Classroom-ready STEM lessons engage students with interactive simulations and learning activities, thought-provoking exercises, and historical links while displaying a contextual and interactive model of Earth.

Discovering the Science of Everyday Life
(Grades K–12) *W471b, McCormick Place*
Science Focus: GEN
Sponsor: Discovery Education
Kyle Schutt *(educationpartnersrhips@discovery.com),* Discovery Education, Silver Spring, Md.
Join us and get hands on as we experiment with the FREE resources, custom curriculum, and interactive activities that 3M and Discovery Education created to bring science and innovation to life in your classroom. Find out how to connect students to a 3M scientist mentor and meet former Young Scientist Challenge finalists. Walk away with ideas and free classroom SWAG!

How to Use Pop Culture Science in Your Classes
(Grades 9–College) *W474b, McCormick Place*
Science Focus: GEN, NGSS
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Use popular science to engage high school and college students and increase integrated science literacy in your classroom. See how three popular movies connect to real-world discoveries and issues. Then learn how to use a fun hands-on lab to increase student involvement and understanding.

Digital Microscopes 101: Teachers Share Classroom Experiences
(Grades 4–12) *W475a, McCormick Place*
Science Focus: ETS2.A, CCC3
Sponsor: Celestron
David Eicher, Celestron, Torrance, Calif.
David Eicher, editor-in-chief of *Astronomy* magazine, interviews a panel of teachers from across the country about their real-world experiences using Celestron digital microscopes in grades 4–12 classrooms. He will also share tips for using digital microscopes to study gems and minerals.

Molecular Evolution: What Can Dogs Teach Us?
(Grades 9–College) *W476, McCormick Place*
Science Focus: LS3, LS4.A, SEP4
Sponsor: FOTODYNE Incorporated
Theresa Dlugi *(t.dlugi@fotodyne.com),* FOTODYNE Incorporated, Hartland, Wis.
FOTODYNE Incorporated makes it possible to demonstrate the principles of evolution by looking at the DNA. Count the number of DNA differences of seven modern dog breeds and the gray wolf, their wild ancestor, using gel electrophoresis and then build a phylogenetic tree to depict their relatedness.

Visit NSTA's SCIENCE STORE

Exhibit Hall F2,
McCormick Place West

STORE HOURS

Wednesday	5:00 PM–8:00 PM
Thursday	7:00 AM–6:00 PM
Friday	7:00 AM–5:00 PM
Saturday	7:00 AM–5:00 PM
Sunday	7:30 AM–12 Noon

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

- Fun NSTA-branded gear—unique hats, shirts, mugs, collectible pins, and more
- Everyone enjoys member pricing: **20%** off all NSTA Press® titles

Check in often 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

2:00–3:45 PM Exhibitor Workshop

Learn About an Innovative Middle School *NGSS*-focused Project-based Program in an Interactive Setting

(Grades 6–8) *W194b, McCormick Place*

Science Focus: GEN, NGSS

Sponsor: It's About Time

Mary Starr, Michigan Mathematics and Science Centers Network, Plymouth

Christopher Harris, SRI International, Menlo Park, Calif.

Sharon Hushek, Ben Franklin Elementary School, Franklin, Wis.

Jan Aschim and **Tina Saporti,** Rockford Environmental Science Academy, Rockford, Ill.

Elizabeth Gorak, Forest Park Middle School, Franklin, Wis.

Cary Sneider, Portland State University, Portland, Ore.

George Chipain, Albino Robles, and **Megan Kupinski,** O.A. Thorp Scholastic Academy, Chicago, Ill.

LaKeesha Harris, West Middle School, Rockford, Ill.

Katherine Pfeiffer and **Rebeca Meindorf,** St. Francis of Assisi Catholic School, Ann Arbor, Mich.

Do you have questions about the implementation of Project Based Learning and *NGSS*—how it plays out in the classroom, assessment, ELA connections, professional development, or program evaluation? If so, this session is for you. You will move from table to table engaging with stakeholders who are actively involved in the implementation of *Project-Based Inquiry Science*™ (PBIS), a curriculum that a newly released study has demonstrated significantly increases student performance. At each table, a facilitator—either a classroom teacher, administrator, or researcher—will provide examples from PBIS, discuss the structure and implementation of this research-based curriculum, share the successes and real data about this exemplary middle school curriculum, as well as answer questions. At the end of the session, you will have time for networking with colleagues. Arrive early for the best opportunity to interact with these experts.

2:20–2:40 PM Presentation

SCST Session: Flip or Flop—Does Flipping the Classroom in Introductory Biology Result in Better Student Success in a Two-Year College?

(College) *Clark C, Hyatt*

Science Focus: LS

Betsy Morgan *(elizabeth.r.morgan@lonestar.edu)* and **Heather Scherr** *(heather.m.scherr@lonestar.edu),* Lone Star College–Kingwood, Tex.

Review findings comparing student success in introductory biology classes for majors that were flipped versus those taught in a traditional method.

2:30–3:00 PM Presentation

The STEM House Project: Middle School Students Living the Engineering Design Process

(Grades 6–8) *S404d, McCormick Place*

Science Focus: ETS, SEP2

Craig Richard *(cjr882000@yahoo.com),* North Andover (Mass.) Public Schools

Challenge your middle school students to live the engineering design process for the entire school year as they apply their knowledge to create a scale model "dream home."

2:40–3:00 PM Presentation

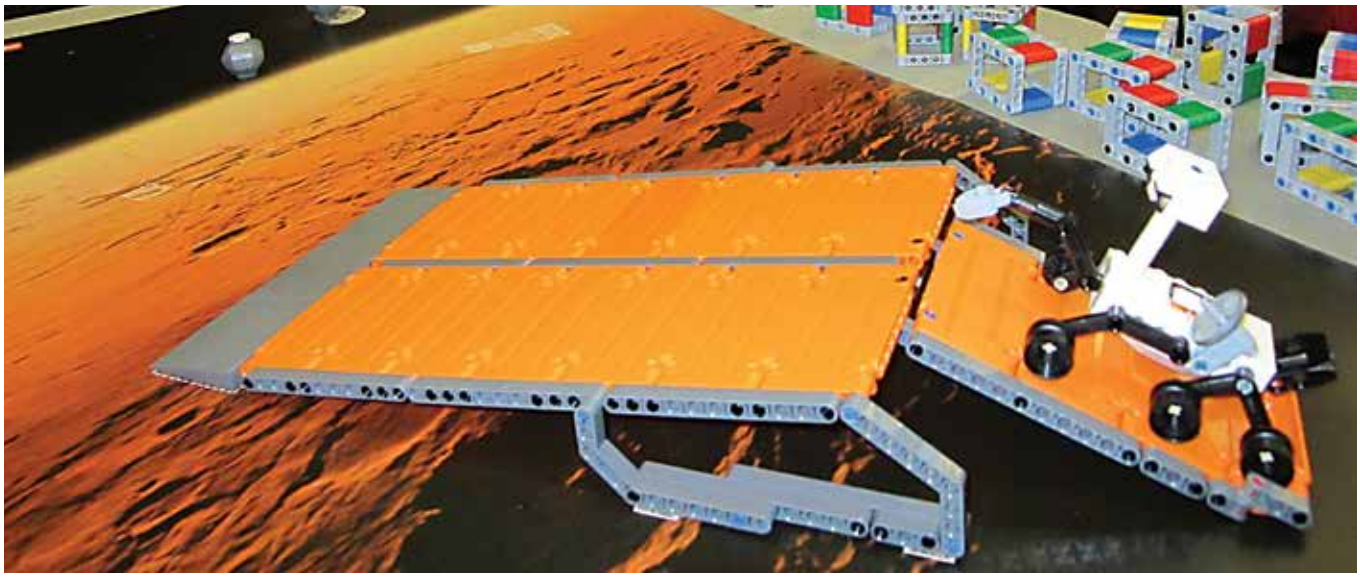
SCST Session: Creating Creative Memories: Teaching Students to Use What They Know to Learn What They Don't

(Grades 10–College) *Clark C, Hyatt*

Science Focus: GEN

Thayne Sweeten *(thayne.sweeten@usu.edu),* Utah State University Brigham City

I'll introduce creative memory association techniques used by memory masters and student's alike. These simple techniques can make learning both fun and easy.



3:00–4:30 PM Exhibitor Workshop

Experience Amplify Science: Immerse Students into the World of Scientists and Engineers with the Newest Curriculum from The Lawrence Hall of Science

(Grades 6–8) *W194a, McCormick Place*

Science Focus: ETS

Sponsor: Amplify

Traci Wierman (@seedsroots) and **Rebecca Abbott** (@seedsroots), The Lawrence Hall of Science, University of California, Berkeley

Experience how you can engage students in rich argumentation involving hands-on investigations, immersive digital simulations, engaging text and media, and unique engineering internships. Join us to learn how this complete program—created in collaboration by The Lawrence Hall of Science and Amplify—provides comprehensive instruction for both *CCSS ELA* and the *NGSS*.

3:00–6:00 PM Meeting

Council for Elementary Science International Board Meeting

(By Invitation Only) *Huron, Hyatt*

3:30–4:00 PM Presentations

SCST Session: Science Literacy for All: A Necessity in Today's World

(General) *Clark C, Hyatt*

Science Focus: GEN, INF

Vicky McKinley, Roosevelt University, Chicago, Ill.

Fostering reading and writing skills in the context of science courses improves performance in both science and language/literacy from the elementary grades through college and post-graduate work. Reading the scientific literature requires practice and guideposts along the way.

Engaging Underrepresented Students in Urban Forest Stewardship

(Grades 5–11) *Hyde Park A, Hyatt*

Science Focus: GEN

Joan Chadde, Michigan Technological University, Houghton

We will share how a diverse partnership is delivering a three-year program for 60 teachers, 29 schools, and 1,380 students to increase urban forest stewardship capacity among underserved students and create pathways to natural resource careers.

Take the UG Out of BUG and Show What You Truly Learned

(Grades K–5) *E505b, McCormick Place*

CANCELED

Science Focus: GEN

Lisa Ann Schoenbrun *(lisa.schoenbrun@gmail.com),* Western Hills Elementary School, El Paso, Tex.

Hear how grade 2 students demonstrated what they knew after a semester investigation of insects and bugs. Students created their own insect and then explained and identified the movement, habitat, and contribution of their insect.

3:30–4:30 PM Featured Presentation

Next Generation Science Standards and English Language Learners: The Development of Deep and Generative Practices

(General) *W190a, McCormick Place*

Science Focus: GEN

Speaker sponsored by Shell

Aída Walqui *(awalqui@wested.org),* Director, Teacher Professional Development, WestEd, San Francisco, Calif.

Presider: Chandra James, Chicago (Ill.) Public Schools

Aída Walqui will address the major theoretical and pedagogical shifts that science teachers need to engage in as they address the development of their students' deep and generative understandings, skills, and language. Instead of a fragmented approach, Aída promotes integration in ever encompassing and ambitious spiraling progressions of analytical practices and language uses. Video clips that illustrate some of these shifts will be shared. Join Aída as she calls on all educators to assume the intellectual role called forth by a renewed and deeper understanding of the educational profession.

As director of the Teacher Professional Development Program at WestEd, Aída Walqui is responsible for The Strategic Literacy Initiative and the Quality Teaching for English Learners, both are committed to supporting teacher learning throughout their careers, from recruitment and preservice to induction and life-long learning.

A former high school teacher, Aída was an assistant professor in the Division of Education at the University of California, Santa Cruz, and in the School of Education at Stanford University. She has also taught in other universities in Perú, México, and England.

Currently, she is co-authoring the book English Language Learners and the New Standards Developing Language, Content Knowledge, and Analytic Practices in the Classroom, *which is expected to be published in March.*

3:30–4:30 PM Presentations

A Key Reading Skill for Understanding Science Texts: Multisyllabic Word Identification

(Grades 4–12) *Adler A/B, Hyatt*

Science Focus: GEN

Linda Gutlohn *(lgutlohn@mcn.org),* Gutlohn Consulting, Gualala, Calif.

One chief characteristic of science texts is the prevalence of multisyllabic words. Accurate identification of these words is vital, as they provide much of the new information. Learn about research-based instructional practices to strengthen students' multisyllabic word identification skills.

NARST Session: Creationism *vs.* Evolution: A Study of the Opinions of Georgia Biology Teachers

(Grades 8–College) *Field C, Hyatt*

Science Focus: LS

William Nye, Gwinnett County Public Schools, Norcross, Ga.

Emphasis will be placed on analysis of a historical and exploratory study of Georgia public high school biology teachers' opinions regarding the teaching of creationism and/or evolution. Do standards matter?

Bringing Primary Scientific Literature into the Classroom

(Grades 9–College) *Grant Park A, Hyatt*

Science Focus: GEN

Melissa McCartney, Science/AAAS, Washington, D.C.

Hear about *Science in the Classroom*, a collection of annotated science papers designed to help high school to undergraduate students understand the structure and workings of scientific research.

Lessons Learned from Practicum-based PD on Argumentation

(General) *Grant Park B, Hyatt*

Science Focus: GEN, SEP7

Emily Weiss *(weisse@berkeley.edu)* and **Craig Strang** (@CraigStrang2; *cstrang@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley

Review early findings from a unique NSF-funded elementary professional learning project focused on supporting teachers' development of skills to facilitate science argumentation. Appropriate for PD designers, providers, and researchers.

Developing and Nurturing Elementary Science Teacher Efficacy: Implications for Teacher Educators
(College) *Grant Park C, Hyatt*
Science Focus: ESS, ETS, LS, PS
Elizabeth Ward, Texas Wesleyan University, Fort Worth
Measure short- and long-term gains in teacher confidence and competence to teach elementary science. Based on revisions to the STEBI (Science Teaching Efficacy Belief Instrument), preservice and inservice teacher efficacy to teach elementary science can be measured in the four disciplinary core ideas as outlined by the *NGSS*.

Opportunities and Challenges: Instructional Strategies for ELLs' Acquisition in Scientific Practices and Discourse
(Grades 6–College) *Hyde Park B, Hyatt*
Science Focus: GEN, NGSS
Tanya Warren *(tanya.warren@fwisd.org),* International Newcomer Academy, Fort Worth, Tex.
Jingjing Ma *(winsuncoco@gmail.com),* Texas Christian University, Fort Worth
This study investigates instructional strategies that foster beginning ELLs into rigorous, grade-level scientific inquiry and literary in an urban public secondary school located in North Texas.

Flipping the Science Classroom to Make Time Count!
(Grades 6–College) *Jackson Park C, Hyatt*
Science Focus: GEN
Brittney Mays, Caprock High School, Amarillo, Tex.
Come see how flipping our science classrooms has made more time to explore in-depth activities and labs.

Professional Development for the Revised AP Science Courses
(Grades 9–College) *Jackson Park D, Hyatt*
Science Focus: GEN, INF, SEP
Arthur Eisenkraft *(eisenkraft@att.net),* 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.
Research on professional development can help us choose the professional development that is most effective at increasing student achievement. Discussion centers on our study of choices that teachers make when faced with major curriculum changes such as the AP Redesign.

AMSE Session: Critical Civic Inquiry in Science Contexts: Lessons from Teachers Engaging in Consciousness Raising and YPAR
(Grades P–12) *Prairie A, Hyatt*
Science Focus: GEN
Deb Morrison (@educatordeb; *educator.deb@gmail.com),* TREE Educational Services, Boulder, Colo.
Let's explore teachers' challenges and successes with enactments of youth participatory action research (YPAR) projects in their classrooms.

NSTA Press® Session: Citizen Science: Diverse Projects That Bring Biology to Life
(Grades 6–12) *S401 b/c, McCormick Place*
Science Focus: LS, INF
Jennifer Fee and **Nancy Trautmann** *(nancy.trautmann@cornell.edu),* The Cornell Lab of Ornithology, Ithaca, N.Y.
Motivate your students with real data! Meeting standards goes hand-in-hand with student investigations and contributing data to citizen science. No matter the season, budget, or amount of time and technology you have, we'll show you how to engage your students with citizen science.

Forensic Pathology: An Introduction for Educators
(Grades 10–12) *S402a, McCormick Place*
Science Focus: LS
Brian Bollone (@ForensicSciNerd; *bbollone@nvps.net),* Northview High School, Grand Rapids, Mich.
Explore forensic pathology and get introduced to a wide range of "tools" used to determine cause, manner, and time of death.

Building a Symbiotic Relationship Between Schools and Community Science Partners
(General) *S403a, McCormick Place*
Science Focus: GEN, NGSS
Char Shryock, Bay Village (Ohio) City School District
Darci Sanders *(darci@lensc.org),* Lake Erie Nature & Science Center, Bay Village, Ohio
Find out how to build partnerships within your local science community to give students access to authentic data, blended learning courses, informational text, and science expertise.

Science in a Bottle: Learning Science with Habitats
(General) *S403b, McCormick Place*
Science Focus: ETS1, LS2, PS1.B, PS3.B, PS3.D, CCC4, CCC6, CCC7, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6
Carolyn Lowe, Northern Michigan University, Marquette
Building pop-bottle habitats is fun, but are the students really learning science? This presentation will share specific ways teachers can facilitate higher-level science learning.

Mission to Mars: Going Digital with *NGSS*
(Grades 6–8) *S405a, McCormick Place*
Science Focus: INF, SEP2, SEP7, SEP8
DeDee Ludwig-Palit *(dedee.ludwig-palit@msichicago.org),* Museum of Science and Industry, Chicago, Ill.
Susan Evens *(mrsevens@yahoo.com),* Challenger Learning Center at Heartland Community College, Normal, Ill.
Cheryl Cox, Challenger Learning Center for Science & Technology, Woodstock, Ill.
Find out how the Museum of Science and Industry, Challenger Learning Center partners, and NASA Centers moved from paper to digital activities, and how these digital activities support the *NGSS*.

Oobleck in the Secondary Education Classroom: Implementing the *NGSS* and *CCSS* with an Oldie But Goodie
(Grades 8–College) *S501a, McCormick Place*
Science Focus: GEN, NGSS
Andrew Bean *(apbean@cps.edu),* Dever Elementary School, Chicago, Ill.
Frank Prill (*frankprilljr@gmail.com),* Bolingbrook High School, Bolingbrook, Ill.
Deanna Murphy *(dmurphy@bpd3.org),* Beach Park School District #3, Zion, Ill.
Presider: Vito Dipinto *(vdipinto@nl.edu),* National-Louis University, Wheeling, IL
Is it possible to teach science with Oobleck? Absolutely! This investigation with a non-Newtonian fluid engages students to implement the practices of scientists and engineers.

Connecting Inquiry and Informational Text Through Triad Summarizing
(Grades 6–8) *S501d, McCormick Place*
Science Focus: GEN
Susan Gran, Lafayette (Ind.) School Corporation
Need a new way to help students engage with and make sense of text, or a strategy for incorporating the text with your labs? Then this is for you!

Thinking, Acting, and Writing like Scientists: First-Grade Investigators Explore the Causes and Effects of Sounds and Vibrations
(Grade 1) *S504 b/c, McCormick Place*
Science Focus: PS
Robby Cramer, Michigan Science Teachers Association, Ann Arbor
Hear how student researchers explore their world of sound and vibrations occurring when they play and sing! Science and writing standards are seamlessly bundled throughout 14 investigations.

Teaching Elementary Science Content Using *CCSS ELA*
(Grades K–5) *S504d, McCormick Place*
Science Focus: GEN, INF, SEP
Dora Kravitz *(dkravitz@amnh.org),* American Museum of Natural History, New York, N.Y.
Explore how reading and writing strategies can be differentiated in elementary school classrooms specifically to support the *CCSS* and *NGSS*.

STEM It Up! Using PBL as a Vehicle to Integrate STEM in the Elementary Classroom
(Grades K–6) *S505a, McCormick Place*
Science Focus: GEN, NGSS
Ryan Linton, Smithridge STEM Academy, Reno, Nev.
Learn to plan and implement Project Based Learning units and use them to incorporate STEM disciplines. Receive a PBL planning guide and ideas for implementation.

Linking Science Writing and Research Through The DuPont Challenge©
(Grades 6–12) *W176b, McCormick Place*
Science Focus: GEN, SEP8
Ty Butler *(tbutler@nsta.org),* Assistant Manager, Science Education Competitions, NSTA, Arlington, Va.
Barbara Pietrucha, Earth/Environmental Science Educator, Point Pleasant Beach, N.J.
Kris Thorson, Northwest Junior High School, Coralville, Iowa
Julio Abreu *(julio@aplus-media.com),* A+ Media, Northbrook, Ill.
Join us to learn a natural way of integrating research and writing into your curriculum that encourages developmental skills necessary for success in STEM and meets local, state, and national standards.

iPad Science Solution Share-a-Thon! Join the Discussion!
(Grades 6–12) *W183 a/b, McCormick Place*
Science Focus: GEN, SEP
Martin Horejsi *(martin.horejsi@umontana.edu),* The University of Montana, Missoula
Endless iPad apps have resulted in app-creation specialists. Learn and share creative iPad uses, solutions, and discoveries. Be inspired and amazed through this rapid fire share-a-thon.

Understanding Car Crashes: Engineering Truly Impactful STEM Lessons
(Grades 6–12) *W186c, McCormick Place*
Science Focus: ETS
Griff Jones *(gjones@coe.ufl.edu),* University of Florida, Gainesville
Use free web-based crash-testing videos, classroom STEM activities, and behind-the-scenes tours of a crash research center to integrate STEM practices and promote career awareness.

Sharing the Night Sky with Your Students
(Grades 3–College) *W187a, McCormick Place*
Science Focus: ESS1.A, PS4.B, INF, CCC1, CCC3
Nicole Gugliucci, Southern Illinois University Edwardsville
Jake Noel-Storr (@noelstoj; *drjakens@gmail.com),* Insight-STEM, Inc., Tucson, Ariz.
Ever want to share the night sky with your students? We'll show you how with the right technology, local partnerships, and tips.

Connect Students of Poverty to Their Community
(Grades K–8) *W187b, McCormick Place*
Science Focus: GEN, NGSS
Tricia McCloskey *(triciamccloskey@yahoo.com),* Sodt Elementary School, Monroe, Mich.
Explore how forming partnerships with area businesses during design and engineering projects is a strategy that can help students of poverty, and all students, understand their role in the community.

The NSTA Learning Center: A Tool to Develop Preservice Teachers
(College) *W187c, McCormick Place*
Science Focus: GEN
Flavio Mendez *(flavio_m@nsta.org),* Senior Director, Learning Center/SciLinks, NSTA, Arlington, Va.
Come learn about a new online system to assist professors in creating customized e-textbooks using the Learning Center's interactive and e-print resources for their preservice teachers.

Teach Engineering Principles on the Cheap with Concrete
(Grades 9–12) *W196c, McCormick Place*
Science Focus: GEN
Debbie Goodwin *(nywin@hotmail.com),* Retired High School Science Teacher, Chillicothe, Mo.
Teach STEM using concrete and other construction materials. Discover inexpensive STEM projects that engage students using the #1 building material in the world.

3:30–4:30 PM Hands-On Workshops

NSELA Session: Close Reading in Science—Applying the *CCSS ELA*
(Grades 2–12) *Field A/B, Hyatt*
Science Focus: GEN
David Vernot *(dvernot@gmail.com),* Butler County Educational Service Center, Hamilton, Ohio
Experience Close Reading strategies that help students dissect passages from a variety of complex texts. Emphasis is placed on reading like a detective, identifying tiered vocabulary, and using text-dependent questions.

Getting Your Hands "Dirty" in a STEM Classroom
(Grades 4–College) *Jackson Park A, Hyatt*
Science Focus: ESS2.A, ESS2.C, ESS2.E, ESS3.A, ESS3.C, LS2.B, LS2.C, CCC4, CCC5, CCC6, CCC7, SEP1, SEP2, SEP3, SEP6
Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
David Lindbo (@DavidLindbo; *david_lindbo@ncsu.edu),* North Carolina State University, Raleigh
Julia Lieberman *(jalieberman@gmail.com),* South Middle School, Morgantown, W.Va.
Soils are the backbone of our society and the foundation of our natural and engineered landscapes. Join us and dig into why soil science is a topic for all STEM classrooms.

Using News Media in the Science Classroom: Issues and Approaches
(Grades 6–College) *Jackson Park B, Hyatt*
Science Focus: GEN
Michael Bowen *(gmbowen@yahoo.com),* Mount Saint Vincent University, Halifax, N.S., Canada
Anthony Bartley *(abartley@lakeheadu.ca),* Lakehead University, Thunder Bay, Ont., Canada
The NRC *Framework* calls for increased use of news media. We will examine some issues that arise from this and provide some solutions.

NSTA Press® Session: Get the FACTs! A Strategy Harvest of Formative Assessment Classroom Techniques
(General) *S401a, McCormick Place*
Science Focus: GEN, SEP
Page Keeley (@CTSKeeley; *pagekeeley@gmail.com),* 2008–2009 NSTA President, Fort Myers, Fla.
Joyce Tugel *(jtugel@gmail.com),* Maine Mathematics and Science Alliance, Augusta
Strategies from the collection of 138 FACTs will be shared, modeled, or experienced, including FACTs that can be used with the *Uncovering Student Ideas* probes. Walk away with at least a dozen FACTs you can use with students or teachers.

"Urine Trouble!" and Other Examples of Learning Body Systems Through Game Design
(Grades 7–12) *S402b, McCormick Place*
Science Focus: LS1, CCC4, CCC6
Adam Colestock, Francis W. Parker School, Chicago, Ill.
Step up your game! Use a collaborative game design project focusing on game mechanics thats align game strategies with body system functions to enhance learning.

Population Activities for AP Environmental Science
(Grades 9–12) *S404a, McCormick Place*
Science Focus: ESS3.A, ESS3.C, ESS3.D, LS2.A, LS2.C, LS4.D, CCC1, CCC2, CCC3, CCC4, CCC7, SEP
Pamela Wasserman, Population Connection, Washington, D.C.
Discover fun, thought-provoking ways to teach about carrying capacity, human population dynamics, and environmental impacts in this hands-on workshop. Take home CD with activities.

Incorporating *NGSS* Science and Engineering Practices Seamlessly into Your Science Classroom

(Grades 6–8) *S404d, McCormick Place*

Science Focus: GEN, SEP

Alyssa Gullixon *(gullixona@mjsd.k12.wi.us)* and **Cheryl Myers** *(myersc@mjsd.k12.wi.us),* Maplewood Middle School, Menasha, Wis.

Learn how you can incorporate engineering design and have your science curriculum support the *NGSS* science and engineering practices using hands-on, project-based inquiry science lessons. Handouts.

Using a Web-based Graphing Tool to Analyze and Interpret Ecology Data

(Grades 6–8) *S405b, McCormick Place*

Science Focus: ESS, INF

Hudson Roditi *(hroditi@amnh.org)* and **Jay Holmes** *(jholmes@amnh.org),* American Museum of Natural History, New York, N.Y.

Explore new understandings in the science of ecology, ecosystems, and biological invasions. Use an online graphing and analysis tool to investigate biotic and abiotic data sets charting the zebra mussel invasion of the Hudson River over 20 years.

Implementing Engineering Practices in a Physics Classroom

(Grades 9–12) *S501 b/c, McCormick Place*

Science Focus: PS, SEP

Katherine Shirey (@kateyshirey; *katherineshirey@gmail.com),* University of Maryland Graduate Student, College Park

Lindsay Wells *(lindsay.wells@kstf.org),* Madison (Wis.) Metropolitan School District

Jordan Pasqualin (@jpasqualin; *jpasqualin@gmail.com),* Jones College Prep, Chicago, N.J.

Come ready to "engineer-ize" one of your own labs. Knowles Science Teaching Foundation Senior Fellows share vetted engineering classroom strategies, sample projects, and rubrics. Join us and enhance your existing physics curriculum with content-relevant engineering practices.

Ticket #
M-6

Ticketed Event: $15 Advance; $20 on-site

PI DAY CELEBRATION

for Preservice/New Teachers and First-Time Conference Attendees

NSTA President Juliana Texley is extending a special invitation to Preservice/New Teachers and/or First-Time Conference attendees to join her and other members of NSTA in a special pizza and beverage reception in honor of Pi Day. To highlight the festivities, Jeffrey Lukens, a high school science educator with over 30 years of experience and 20 years of professional development leadership, will share some humorous stories and sage advice for educators new to the science classroom.

Ticket includes pizza and beverages (beer, soda, or water).

Attendance is limited to the first 200 registrants.

Saturday, March 14, 4:00-6:00PM

McCormick Place, W196b

Sponsored by

Texas Instruments

NSTA National Science Teachers Association

The Lab-O-Matic: Meet Your Classroom's New Best Friend
(Grades 6–12) *S502a, McCormick Place*
Science Focus: ETS1.C, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8
Eric Hall *(eric.hall@dmschools.org)* and **Maureen Griffin** *(maureen.griffin@dmschools.org),* Hoover High School, Des Moines, Iowa
Sit, stay, and roll with the Lab-O-Matic. This tool helps organize students when evaluating and designing experiments. You will leave begging for more!

Science Practices Across the Spectrum: Nature-based Art and Science Inquiry
(Grades P–8) *S502b, McCormick Place*
Science Focus: GEN, INF, CCC
Jennifer Hope *(jmghope@gmail.com),* McKendree University, Lebanon, IL
Glenda McCarty (@Glenda_Plexus; *mccargl@quincy.edu),* Quincy University, Quincy, IL
Through exploration of the color spectrum in the world around us, skills of observation and questioning can be sharpened. Let's put the "A" in STEAM!

Elastic Power: Wind Up Your Engines and Explore
(Grades 4–7) *S503a, McCormick Place*
Science Focus: GEN, NGSS
Norman Barstow *(barstow@hartford.edu),* K–6 Science Coordinator, Hartford, Conn.
Test-drive concepts of energy transfer and force and motion using an elastic-powered wooden car. Continued exploration focuses on mass, friction, inertia, and momentum.

Your State Has Adopted *NGSS,* Now What? How to Begin Implementing *NGSS* for K–8 on a Shoestring Budget
(Grades K–8) *S504a, McCormick Place*
Science Focus: GEN, NGSS
Danielle Schneider-Maldonado *(sciencewithmaldo@gmail.com),* Golf Middle School, Morton Grove, Ill.
Leave with a basic framework to help your school/district begin the gradual K–8 transition to *NGSS* using in-house staff—without the costly addition of curriculum coordinators. Handouts!

Formative Assessment and Argumentation: Supporting Practice Over Time
(Grades 6–8) *W190b, McCormick Place*
Science Focus: GEN, SEP
Eric Greenwald *(eric.greenwald@berkeley.edu),* The Lawrence Hall of Science, University of California, Berkeley
Become familiar with formative rubrics that can be used to provide students with feedback about written arguments. Consider criteria for creating opportunities in your program that support student growth with the practice of argumentation.

Investigating and Building Models to Understand How the Environment Influences Genes
(Grades 9–College) *W192a, McCormick Place*
Science Focus: ETS, LS1.A, LS1.D, LS2.A, LS2.B, LS3.A, LS3.B, CCC, SEP
Claudia Ludwig (@SystemsEd; *cludwig@systemsbiology.org),* Institute for Systems Biology, Seattle, Wash.
Dexter Chapin *(dchapin@seattleacademy.org),* Seattle Academy of Arts and Sciences, Seattle, Wash.
Get an introduction to lessons involving gene/protein networks, multi-level data analysis, microbiology, biotechnology, and systems biology. Students act as collaborative STEM professionals and design their own experiment. Free starter cultures provided.

Engineering: Build a Better Kaleidoscope!
(Grades 3–8) *W192c, McCormick Place*
Science Focus: ETS, CCC, SEP
Karen Ostlund (@karen_ostlund; *klostlund@utexas.edu),* 2012–2013 NSTA President, and The University of Texas at Austin
Build a better kaleidoscope by using an engineering design process integrating the *NGSS* three Ds: science and engineering practices, disciplinary core ideas, and crosscutting concepts.

Assessing the Engineering-ness of Your Science Lessons
(General) *W475b, McCormick Place*
Science Focus: ETS
Shelly Rodriguez *(shelly.rodriguez@austin.utexas.edu)* and **Cheryl Farmer** (@UTeachEngineer; *cheryl.farmer@mail.utexas.edu),* The University of Texas at Austin
Discover ways to integrate engineering practices into your course. Attention will be paid to a rubric to assist in analyzing and redesigning lessons through an engineering lens.

Buckle Your Seat Belt and Prepare to Observe and Solve a Problem
(General) *W475b, McCormick Place*
Science Focus: GEN
John Staver, Purdue University, West Lafayette, Ind.
Via a YouTube video, participants drive a Formula 1 race car and construct a model of a racetrack.

3:30–4:30 PM Exhibitor Workshop

The Physics of Sound Waves
(Grades 9–12) *W179b, McCormick Place*
Science Focus: ETS1, ETS2.A, PS4.A, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8
Sponsor: PASCO scientific
Eric Gardner *(egardner@thebenjaminschool.com),* The Benjamin School, Palm Beach Gardens, Fla.
Connect the science of sound waves to music to explain the concepts of wavelength, frequency, and amplitude. Incorporate science and engineering practices as you explore sound with our resonance air column and PASCO sensors and Capstone software. You'll also make-and-take your own speaker to explore further wave mechanics.

3:30–5:00 PM Meetings

Science Matters Advisory Board Meeting
Boardroom 3, Hyatt

***The Science Teacher* Advisory Board Meeting**
Boardroom 4, Hyatt

***Journal of College Science Teaching* Advisory Board Meeting**
Dusable C, Hyatt

3:30–5:00 PM Presentation

Special Pathway Session: Disciplinary Literacy in the STEM Classroom

(Grades 6–8) *W175c, McCormick Place*

Science Focus: GEN, SEP6, SEP7, SEP8

Susanne Teague (@S2TEMCentersSC; *teagues@winthrop.edu),* S2TEM Centers SC, Spartanburg, S.C.

Thomas Peters *(tpeters@clemson.edu),* S2TEM Centers SC, Clemson, S.C.

Purposeful reading, meaningful writing, and productive dialogue enhance STEM instruction by promoting understanding and retention of content. Experience classroom-tested strategies for making the *CCSS* and *NGSS* a reality in your classroom. Student work and classroom video will be shared.

3:30–5:00 PM Hands-On Workshop

PDI **McREL Pathway Session: Implementing Formative Assessment in the Elementary Classroom to Realize the Vision of *NGSS***

(Grades K–6) *W175 a/b, McCormick Place*

Science Focus: GEN, INF, NGSS

Whitney Cobb *(wcobb@mcrel.org),* McREL International, Denver, Colo.

Anne Tweed *(atweed@mcrel.org),* 2004–2005 NSTA President, and McREL International, Denver, Colo.

Using a formative assessment process can help you gather evidence of elementary student learning that can inform instruction and help you adapt to the learning needs of your students. Learn about a feedback process and formative assessment strategies that can close the learning gap of your students. Handouts.

3:30–5:00 PM Exhibitor Workshop

Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, 4)

(Grades 9–College) *W474a, McCormick Place*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

In this hands-on workshop, you will generate protein profiles from distant and closely related species of fish using protein gel electrophoresis. Test the hypothesis that protein profiles are indicators of evolutionary relatedness and construct cladograms from your own gel results. Learn about proteomics and explore the central mantra of biology: DNA>RNA>Protein>Trait.

3:30–5:30 PM The Planetary Society Lecture

Setting Sail to the Stars, the Search for Life on Other Worlds, and the Next Great Generation

(General) *Skyline W375 a/b, McCormick Place*

Science Focus: ESS

Speaker sponsored by The Planetary Society

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

A new generation of explorers and critical thinkers is emerging in our classrooms. Bill Nye now heads The Planetary Society, where he and his team are about to fulfill Carl Sagan's vision of a spacecraft sailing ship propelled by photons of sunlight. The launch is set for May 6. By advancing space science, Bill believes we can create the next great generation of scientists and engineers, the people who will change the world.

Scientist, engineer, comedian, author, and inventor, Bill Nye is a man with a mission: to help foster a scientifically literate society and to help people everywhere understand and appreciate the science that makes our world work. Making science entertaining and accessible is something Bill has been doing most of his life.

Bill is currently CEO of The Planetary Society. Well known for his Emmy Award-winning show Bill Nye the Science Guy®*, he is also host of the series* The 100 Greatest Discoveries *and his latest project* Solving for X, *a DVD series where he shows how to do algebra along with the P, B, &J (passion, beauty, and joy) of math.*

In between creating shows, he has written several books about science, including Undeniable—Evolution and the Science of Creation. *Currently, Bill is working on his next general audience book on the subjects of energy and climate change as well as a children's book about space exploration.*

Bill, the inventor, has a few unusual patents–an improved toe shoe for ballerinas, a device to help people learn to throw a baseball better, a magnifier made of water, and an abacus that does arithmetic like a computer—with only binary numbers.

Book signing to follow in Skyline W375 a/b from 5:30 to 7:00 PM.

3:30–5:30 PM Presentation

INF **ASTC/NARST Session: Informal Science for the Next Generation—Bridging Research and Practice**

(General) *Burnham A/B, Hyatt*

Science Focus: GEN, INF, NGSS

Margaret Glass, ASTC, Washington, D.C.

Presider: Deborah Hanuscin *(hanuscind@missouri.edu),* University of Missouri, Columbia

Join researchers and practitioners to explore the gaps and connections between research and practice in informal science settings and identify implications for the next generation of students and citizens.

3:30–5:30 PM Hands-On Workshop

PDI **AMNH Pathway Session: Learning about the BSCS 5E Instructional Model to Design *NGSS* Learning Sequences**

(Grades 6–12) *W178b, McCormick Place*

Science Focus: GEN, NGSS

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

Dora Kravitz *(dkravitz@amnh.org),* American Museum of Natural History, New York, N.Y.

Compare classroom scenarios to learn the different phases of the BSCS 5E (Engage, Explore, Explain, Elaborate, and Evaluate) instructional model to plan for *NGSS* learning sequences.

4:00–4:30 PM Presentations

SCST Session: How to Make a Campus-wide Initiative Educational and Fun for Students

(College) *Clark C, Hyatt*

Science Focus: LS

Colleen Conway *(conwayc@mtmary.edu),* Mount Mary University, Milwaukee, Wis.

Join me as I share a creative technique involving biological collecting that was used with students studying abroad in Costa Rica.

Energize Your Environmental Club with Community Projects

(Grades 3–12) *Hyde Park A, Hyatt*

Science Focus: GEN

Susan Tate (@susantate22; *susantate@whitehallschools.net),* Whitehall Middle School, Whitehall, Mich.

Tired of just recycling paper? Give your club a new sense of purpose by connecting with local organizations to meet the needs of your community.

Using Models to Support Elementary Students' Learning About Water

(Grades K–6) *S505b, McCormick Place*

Science Focus: ESS2, CCC2, CCC4, SEP2

Cory Forbes *(cforbes3@unl.edu)* and **Tina Vo** *(ms.tinavo@gmail.com),* University of Nebraska–Lincoln

Christina Schwarz *(cschwarz@msu.edu),* Michigan State University, East Lansing

Experience a framework that uses models to teach elementary students about the water cycle. Join us as we share insights from our project research and discuss associated teaching strategies.

4:00–4:30 PM Exhibitor Workshop

Welcome to the Neighborhood—Overview of the Solar System

(Grades 5–8) *Booth #1267, Exhibit Hall*

Science Focus: ESS

Sponsor: Science First®/STARLAB®

Helmut Albrecht, Science First/STARLAB, Yulee, Fla.

In this in-dome workshop, you will learn how to use one of the scripted lessons of the *Starry Night Small Dome* software to teach about the solar system.

4:00–5:30 PM Exhibitor Workshops

e-Textbooks *vs.* Printed Textbooks
(Grades 9–College) *W178a, McCormick Place*
Science Focus: GEN
Sponsor: Late Nite Labs
JW Marshall, Sapling Learning, Austin, Tex.
Come learn about the latest advances in e-textbooks and digital learning tools that engage today's digital natives and how these compare to traditional printed textbooks. Learn about what to look for in digital technologies and how to use a mix of print and online resources to make the digital transition over time.

Teaching Evolution in a Climate of Controversy: Even with *NGSS,* the Battles Continue
(Grades 6–12) *W179a, McCormick Place*
Science Focus: GEN, NGSS
Sponsor: Pearson
Kenneth Miller, Brown University, Providence, R.I.
Recent struggles over the content of science textbooks in Texas highlight the fact that 89 years after the Scopes Trial, evolution remains a controversial topic. Discussion centers on how educators can deal with it successfully, as well as identifying a series of resources to respond to challenges faced when teaching evolution.

Flinn Scientific Presents "How to Design a Safe and Efficient Science Laboratory"
(Grades 5–College) *W180, McCormick Place*
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'll learn what features to include in your laboratories and what common mistakes to avoid.

Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens
(Grades 9–12) *W181a, McCormick Place*
Science Focus: LS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Explore animal diversity by comparing and contrasting anatomical adaptations of the pig, rat, dogfish, and frog. Participants use hands-on dissection to identify characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring our very best Carolina's Perfect Solution specimens. Free dissection supplies and great door prizes.

Making Waves in Middle School
(Grades 6–8) *W181b, McCormick Place*
Science Focus: GEN, NGSS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Focus on getting started with STEM education while effectively teaching the *Next Generation Science Standards* through inquiry-based practices. Experience lessons that demonstrate the learning progression.

Using a Blended Learning Model in Leander ISD
(Grades K–5) *W181c, McCormick Place*
Science Focus: ESS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
In this interactive workshop, Leander Independent School District educators model a blended lesson that uses videos and hands-on inquiry. They'll share how they use the model in their fourth-grade curriculum to teach weathering, erosion, and deposition. You'll leave the session ready to blend technology and inquiry to create an engaging student-centered classroom.

Cancer as a Genetic Disease
(Grades 9–College) *W183c, McCormick Place*
Sponsor: HHMI BioInteractive
Science Focus: LS1, LS3
Laura Bonetta, HHMI BioInteractive, Chevy Chase, Md.
Melissa Csikari, Colonial Forge High School, Stafford, Va.
Karen Lucci, Hopewell Valley Central High School, Pennington, N.J.
Explore the genetic and cellular mechanisms that lead to cancer using free classroom resources from BioInteractive. You will be introduced to new hands-on activities, video clips, and interactive tutorials focusing on the mutated genes that cause cancer, and how they normally function to regulate cell growth and division.

STEM Projects, Science Fair, and Student Performances
(Grades 1–6) *W184a, McCormick Place*
Science Focus: GEN
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Having trouble helping students conceptualize Science Fair projects, STEM performances, and other completions? Learn an effective method for teaching students to design experiments from simple investigations. The same process can help students crystallize engineering design ideas into products. Join us as we share Delta products and resources.

Building an Electric Motor the STEM Way with CPO's Link™ Learning Module
(Grades 6–12) *W184bc, McCormick Place*
Science Focus: ETS
Sponsor: CPO Science/School Specialty Science
Erik Benton and **Cory Ort,**, CPO Science/School Specialty Science, Nashua, N.H.
CPO's new Link™ Electric Motor learning module is a STEM- and *NGSS*-based learning approach to electromagnets, permanent magnets, commutators, and induction in a real-time tablet-based learning environment using hands-on equipment. The engineering cycle, observation, measurement, and experimentation are used to design and build electric motors with student-based activities.

Evidence for Plate Movement with FOSS Earth History for Middle School
(Grades 6–8) *W184d, McCormick Place*
Science Focus: ESS, SEP
Sponsor: Delta Education/School Specialty Science–FOSS
Virginia Reid and **Jessica Penchos,** The Lawrence Hall of Science, University of California, Berkeley
What evidence from rocks informs us about the history of our planet? Explore Earth history concepts with hands-on activities and multimedia, and identify connections to the *NGSS* science and engineering practices. Experience the recently released FOSS Earth History Course, 2nd ed., focusing on new features, strategies, content, and materials.

Chemistry with Vernier
(Grades 9–College) *W185a, McCormick Place*
Science Focus: PS, SEP3, SEP4
Sponsor: Vernier Software & Technology
Elaine Nam *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Use Vernier sensors to conduct a variety of chemistry experiments from our popular lab books in this engaging, hands-on workshop. Experience data collection using LabQuest 2, Logger *Pro* computer software, and mobile devices. See how Vernier has been incorporating principles of the *NGSS* science and engineering practices for 34 years!

Physics with Vernier
(Grades 9–College) *W185d, McCormick Place*
Sponsor: Vernier Software & Technology
David Carter *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Science Focus: PS, SEP3, SEP4
Use Vernier sensors to conduct a variety of physics experiments from our popular lab books in this engaging, hands-on workshop. Experience data collection using LabQuest 2, Logger *Pro* computer software, and mobile devices. See how Vernier has been incorporating principles of the *NGSS* science and engineering practices for 34 years!

Teaching STEM Using Agarose Gel Electrophoresis
(Grades 8–College) *W186a, McCormick Place*
Science Focus: LS, INF
Sponsor: Edvotek, Inc.
Brian Ell *(info@edvotek.com)* and **Maria Dayton** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Explore four hot topics in biotechnology using gel electrophoresis: DNA fingerprinting, paternity testing, medical diagnostics, and GM organisms. Brightly colored dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving valuable classroom time! Results are analyzed using a semi-logarithmic plot, which fosters critical-thinking skills and STEM learning techniques. Free flash drive/T-shirt drawing entry.

Exploring Forces, Motion, and Engineering Design with LEGO® Education Simple Machines
(Grades 1–3) *W186b, McCormick Place*
Science Focus: ETS
Sponsor: LEGO Education
Laura Jackson, Retired Teacher/LEGO Education Trainer, Greenwood, Mo.
Cindy Howard, Retired Teacher/LEGO Education Trainer, Kansas City, Mo.
Develop first- through third-graders' understanding of science, engineering, and mathematics concepts, using the LEGO Education Simple Machines Set. In this hands-on workshop, you will learn how to meet elementary engineering design standards with LEGO-based activities that encourage exploration of forces and motion, development of 21st-century skills, and more.

Ward's AP Chemistry Investigation 4: Titrations—How Acidic Are the Beverages We Drink?
(Grades 9–12) *W192b, McCormick Place*
Science Focus: PS
Sponsor: Ward's Science
Lisabeth Hoffman, VWR Education, Rochester, N.Y.
Save time in your AP chemistry lab and meet new science practices with Ward's AP Chemistry Investigation 4: Titrations—How Acidic Are the Beverages We Drink? Explore acid-base reactions using analytical titration methods. Investigate different indicators and determine the amount of acid that is present in common drink solutions. Special raffle giveaway!

The Many Jobs of Proteins: Modeling Proteins and Enzymes
(Grades 8–College) *W193a, McCormick Place*
Science Focus: LS1.A, PS1.A, PS1.B, CCC1, CCC2, CCC3, CCC4, CCC6, SEP1, SEP2
Sponsor: MSOE Center for BioMolecular Modeling
Gina Vogt *(vogt@msoe.edu),* MSOE Center for BioMolecular Modeling, Milwaukee, Wis.
By folding their own proteins following basic principles of chemistry with the engaging Amino Acid Starter Kit, your students will understand the core structure-function concept. Then they will be ready to explore enzymes with the new Enzymes in Action Kit, leading to a new appreciation of the biomolecular world.

Teaching Science Using Innovative Technology: *Mannahatta2409.org*
(Grades 6–12) *W193b, McCormick Place*
Science Focus: ESS, LS
Sponsor: Wildlife Conservation Society
Amanda Lindell *(alindell@wcs.org)* and **David Johnston** *(djohnston@wcs.org),* Wildlife Conservation Society, Bronx, N.Y.
Join the Wildlife Conservation Society for a hands-on workshop that will walk you through using *Mannahatta2409.org* to explore how urban ecosystems, lifestyles, and climate affect carbon and water cycles, biodiversity, and human population. We will also discuss concrete ideas for successful implementation in the classroom. Personal laptops recommended but not required.

Gene Expression
(Grades 9–12) *W195, McCormick Place*
Science Focus: LS3
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Students often have trouble conceptualizing how selective gene expression works. In this workshop, we will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the Science and Global Issues: Biology program from SEPUP and LAB-AIDS.

STEM Strategies and Actions for Student Achievement Gains
(Grades P–12) *W470a, McCormick Place*
Science Focus: GEN
Sponsor: Accelerate Learning
Terry Talley, Accelerate Learning, Houston, Tex.
Transformational STEM teaching is leveraged by the instructional strategies used by the teacher as well as the planned-for actions of the students. When STEM coaches/education leaders observe for the use of effective instructional strategies, student engagement, and student actions, the data collected provide rich opportunities for achievement-changing feedback!

Plotly and Vernier: Collaborative Tools for an Interactive Classroom
(Grades 7–College) *W470b, McCormick Place*
Science Focus: GEN
Sponsor: Plotly and Vernier Software & Technology
Fran Poodry, Vernier Software & Technology, Beaverton, Ore.
Matthew Sundquist *(matt@plot.ly),* Plotly, San Francisco, Calif.
Vernier produces world-class hardware bringing science to life in classrooms across the world. Plotly is a collaborative scientific graphing and data analysis website, free for public use. We'll teach you to combine Plotly's powerful graphing and analytics with Vernier's state-of-the-art interfaces, sensors, and experiments.

Cosmic Mysteries: Big Bang and the Expanding Universe

(Grades 7–College) *W471a, McCormick Place*

Science Focus: ESS, CCC, SEP

Sponsor: Perimeter Institute

Kelly Foyle and **Kevin Donkers,** Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

In this workshop, we will explore the evidence for the expanding universe, the age of the universe, and the possible outcomes for the universe. We will also discuss ideas regarding how these amazing ideas can be taught effectively through hands-on activities in your classroom.

20 Creative Ways to Using Discovery Education Streaming in the Science Classroom

(Grades K–12) *W471b, McCormick Place*

Science Focus: GEN

Sponsor: Discovery Education

Mike Bryant (*educationpartnerships@discovery.com*), Discovery Education, Silver Spring, Md.

So you love Discovery Education Streaming, but like most teachers you spend most of the time with videos. You know there is more to use, but time just doesn't permit you to explore. Come experience 20 instructional activities that you never knew were so easy to incorporate into your science lessons.

***Living by Chemistry:* Create a Table**
(Grades 9–12) *W475a, McCormick Place*
Science Focus: PS
Sponsor: Bedford, Freeman, & Worth Publishing Group
Jeffrey Dowling *(science@bfwpub.com),* Bedford, Freeman & Worth Publishing Group, San Francisco, Calif.
Angelica Stacy, University of California, Berkeley
Teach rigorous chemistry with guided inquiry! Let's explore activities that introduce the periodic table and other core chemistry concepts through an historical context. Take home free sample materials from the *Living by Chemistry* curriculum.

A Revolution in STEM Robotics
(Grades 5–12) *W476, McCormick Place*
Science Focus: ETS, INF, SEP
Sponsor: Pitsco Education
Alan Kirby, Pitsco Education, Pittsburg, Kans.
Transform STEM robotics in the classroom with TETRIX® PRIME, a revolutionary new robotics building system without the construction complexities inherent to other building systems. It is designed to teach a variety of STEM concepts through Project Based Learning that meet the *CCSS* and *NGSS*.

4:00–5:00 PM Meeting

Outstanding Science Trade Books Committee Meeting
(By Invitation Only) *Erie, Hyatt*

4:00–6:00 PM Meeting

International Advisory Board Meeting
Boardroom 5, Hyatt

4:30–6:00 PM Networking Opportunity

NSTA Board/Council Meet and Greet
(By Invitation Only) *Regency C, Hyatt*

4:30–6:30 PM Meeting

APAST Board of Directors Meeting
(By Invitation Only) *Ontario, Hyatt*
Visit *www.apast.org* for more information.

5:00–5:20 PM Presentation

SCST Session: Preparing to Teach Chemical Transformation Pathways—Identifying the Chemistry Biology Students Have to Know to Understand Cellular Respiration
(College) *Clark C, Hyatt*
Science Focus: LS, PS
Lance Forshee and **Donald French** *(dfrench@okstate.edu),* Oklahoma State University, Stillwater
Come listen to our progress in the creation of an assessment to identify naive chemistry conceptions in general biology students, and results from faculty interviews.

5:00–5:30 PM Presentations

The Science of Creative Community Partnerships
(Grades P–6/College) *Grant Park C, Hyatt*
Science Focus: GEN, INF
Catherine Pangan (@drpangansclass; *cpangan@butler.edu),* Butler University, Indianapolis, Ind.
What do you get when you collaborate with a university, third-graders, a zoo, and a children's museum? Explore endless possibilities for learning for all.

Pigeon Watches to Deer Cams: Environmental Science in the City and Country!
(Grades 6–12) *S401 b/c, McCormick Place*
Science Focus: GEN, NGSS
Diana Lennon *(dsoehl2@yahoo.com)* and **Sephali Thakkar** (@SephaliRay; *sephali@gmail.com),* Columbia Secondary School for Math, Science and Engineering, New York, N.Y.
We will present field-based projects used in environmental science to engage students in learning about the wonderful environment that surrounds them—whether it's urban or rural!

FAST: Formative Assessment for Science Teachers
(Grades 7–12) *S404d, McCormick Place*
Science Focus: GEN, NGSS
Steve Bennett *(benne455@msu.edu),* Michigan State University, East Lansing
I'll discuss and provide video examples of formative assessment tools and strategies for teachers to scaffold student learning of core disciplinary ideas and science practices.

Should America Enforce a Fat Tax?
(Grades 6–8) *S405a, McCormick Place*
Science Focus: GEN
Kristin Cook *(kcook@bellarmine.edu),* Bellarmine University, Louisville, Ky.
Have your students weigh in on the potential affordances and hindrances to imposing a national levy on foods deemed unhealthy or excessively fattening. This inquiry-based unit engages middle school students in considering the role of government in America's increasingly alarming obesity rates.

Engaging Girls in Engineering Through Community Service
(Grades 9–12) *W186c, McCormick Place*
Science Focus: ETS, SEP
Janet Mambrino *(jmambrino@xcp.org),* Xavier College Preparatory, Phoenix, Ariz.
Service learning can provide opportunities to engage students in STEM fields, having a significant impact on the interest of female students in pursuing engineering careers.

5:00–6:00 PM Presentations

Embracing Diversity in Your Online Science Classroom
(Grades 12–College) *Grant Park A, Hyatt*
Science Focus: GEN, SEP1, SEP3, SEP4, SEP5, SEP8
Apryl Nenortas *(apryl.nenortas@clovis.edu),* Clovis Community College, Clovis, N.Mex.
Join me for details and lessons learned from a two-year pilot program offering online undergraduate and dual-credit courses in biology and chemistry at a rural community college with a diverse student population.

Improve Student Performance in Middle/Secondary Science Classrooms: Keys to Effective Learning
(Grades 6–College) *Grant Park B, Hyatt*
Science Focus: GEN, NGSS
Jeff Marshall *(marsha9@clemson.edu)* and **Daniel Alston** *(nosamd@gmail.com),* Clemson University, Clemson, S.C.
Learn specific teacher behaviors that are linked to improved achievement. Make learning come alive for all students by improving your curriculum, instruction, discourse, and assessments.

Using Crosscutting Concepts to Create Vertically Aligned, Multidiscipline Professional Development
(Grades P–12) *Hyde Park B, Hyatt*
Science Focus: GEN, CCC
Erika Allison (@RISECtr; *erika.allison@maine.edu),* Center for Research in STEM Education, Orono, Maine
Lauree Gott (@Gott2tri; @LaureeGott; *lgott@veaziecs.org),* Veazie Community School, Veazie, Maine
The crosscutting concepts create the perfect foundation on which to build science professional development that brings teachers together across grade bands and subject areas. Join us for a model of preK–5 science professional development that strengthens vertical alignment and breaks down silos.

Dynamic Topics in Genetics: Reproductive Technologies and Genes and Aggression
(Grades 8–College) *Jackson Park B, Hyatt*
Science Focus: LS
Terry Maksymowych *(tmaksymowych@ndapa.org),* Academy of Notre Dame de Namur, Villanova, Pa.
Learn about recent research related to topics that can engage students and prompt discussion about real-world ethical and social issues related to genetics.

AMSE Session: Using Games and Challenges to Formatively Assess Students' Conceptual Understanding in Science
(General) *Prairie A, Hyatt*
Science Focus: GEN, NGSS
Errol Larkins *(errol.larkins@aliefisd.net),* Killough Middle School, Houston, Tex.
Karen Jacobs (@jacobskarend; *karen.d.jacobs@aliefisd.net),* Alief ISD, Houston, Tex.
Bring fun and excitement to your classroom by playing games and challenging your students to think at an entirely new level! This session will keep your students coming back for more!

Standards-based Grading in the Science Classroom
(Grades 6–12) *S401d, McCormick Place*
Science Focus: GEN, NGSS
Steven Rick, Woodstock North High School, Woodstock, Ill.
Matthew Senese (@MrSenese; *msenese@d155.org),* Prairie Ridge High School, Crystal Lake, Ill.
Leave with standards-based assessment strategies to effectively evaluate student learning and improve instruction.

Engineering in the Biology Classroom: Climate Change of Another Type

(Grades 9–12) *S402a, McCormick Place*

Science Focus: ETS, LS, SEP

Kathy Kennedy *(kkenned3@stevens.edu),* Stevens Institute of Technology, Hoboken, N.J.

How can biology teachers incorporate engineering design that supports students' learning of science concepts? I'll share teachers' experiences implementing a freely available engineering-infused curriculum module.

Aquaponics, Hydroponics, and the Greenhouse Project

(Grades 5–12) *S403a, McCormick Place*

Science Focus: GEN, NGSS

Gregory Reiva, Streamwood High School, Woodstock, Ill.

Aquaponic, hydroponic, and greenhouse projects are inquiry-based approaches to learn science. These projects develop needed 21st-century abilities to think critically and solve problems.

SAGES: An Engaging Environmental Pathway Through *NGSS* and STEM

(Grades K–12) *S404 b/c, McCormick Place*

Science Focus: ESS, SEP

Juan-Carlos Aguilar *(jaguilar@doe.k12.ga.us),* Georgia Dept. of Education, Atlanta

Karan Wood *(karanswood@gmail.com*), Captain Planet Foundation, Atlanta, Ga.

Put your sunglasses on, step outside, and look at the *NGSS* through an environmental lens. Transform science education by teaching *NGSS* core ideas from an environmental perspective and engaging students in science and engineering practices outdoors.

Do the Wave!

(Grades 7–12) *S501a, McCormick Place*

Science Focus: PS4

Meera Chandrasekhar *(meerac@missouri.edu)* and **Dorina Kosztin** *(kosztind@missouri.edu),* University of Missouri, Columbia

Use Slinkys® and snakeys to teach students how fast waves travel, how they reflect or transmit across boundaries, and how they interact when two waves meet. Handouts!

"Practice" What You Teach: Aligning Your Activities to Support the *NGSS*

(Grades 5–9) *S501d, McCormick Place*

Science Focus: GEN, NGSS

Susan Camasta *(scamasta@dupage.k12.il.us)* and **Nancy Nega** *(nnega@dupage.k12.il.us),* DuPage County Regional Office of Education, Wheaton, Ill.

After reviewing *NGSS* practices and crosscutting concepts, STEM consultants from DuPage Regional Office of Education will present four middle level activities and discuss the practices, crosscutting concepts, and core ideas they support.

Promoting Science Literacy Among Bilingual Learners

(Grades 1–2) *S504 b/c, McCormick Place*

Science Focus: GEN, SEP1, SEP3, SEP4, SEP8

Sandra Osorio *(sosorio@ilstu.edu),* Illinois State University, Normal

We will share how science notebooks were used in a bilingual classroom to promote academic language development. Join us as we focus on strategies that will help you implement science notebooks into your classrooms. Handouts.

NMEA Session: Ocean 180 Video Challenge: Bringing Ocean Scientists to a Classroom Near You

(Grades 6–8) *Skyline W375e, McCormick Place*

Science Focus: ESS

Laura Diederick, Smithsonian Marine Station, Fort Pierce, Fla.

The Ocean 180 Video Challenge brings scientists' research into middle school classrooms around the world, empowering tens of thousands of student judges to provide feedback on the ability of scientists to communicate their work.

Relating Forensic Science to the *NGSS:* Science Practices Galore!

(Grades 7–12) *W176b, McCormick Place*

Science Focus: GEN, SEP

Kathy Mirakovits (@kmirakovits; *kmirakovits@portageps.org),* Portage Northern High School, Portage, Mich.

Forensic science is a perfect model of the *NGSS* practices in action. Hear how the processes of crime scene investigation model the science and engineering practices.

Student Choice, Student Voice: Empowering the Next Generation of Environmental Stewards
(Grades 3–12) *W187a, McCormick Place*
Science Focus: ESS, SEP
Susan Tate (@susantate22; *susantate@whitehallschools.net),* Whitehall Middle School, Whitehall, Mich.
Erica Johnson (@wmglsi; *ejohnson@muskegonisd.org),* Muskegon Area Intermediate School, Muskegon, Mich.
Find out how our students worked with community partners to develop authentic stewardship projects, including adoption of a state park and hosting an environmental film festival.

INF
Girls Engaged in Math and Science (GEMS): Using Culturally Responsive Engineering Design Challenges to Promote STEM
(Grades 3–5) *W187b, McCormick Place*
Science Focus: ETS, INF, SEP
Kelly Bodner *(kelly.bodner@cobbk12.org),* Russell Elementary School, Smyrna, Ga.
Find out how culturally responsive strategies were incorporated into engineering design challenges to promote STEM during a robotics summer camp for grade 5 girls.

Creative STEM Projects with MINDSTORMS® EV3 and NXT Robotics
(Grades 5–12) *W187c, McCormick Place*
Science Focus: ETS
Barbara Bratzel *(barbara.bratzel@shs.org),* Shady Hill School, Cambridge, Mass.
Use LEGO® MINDSTORMS for open-ended STEM projects—spirographing robots, cocoa coolers, musical instruments, and household helpers. Structure projects to foster creativity, not chaos. Videos and handouts.

UTeachEngineering: Broadening Participation in a Computationally Rigorous High School Engineering Program
(Grades 9–12) *W196c, McCormick Place*
Science Focus: ETS1, ETS2.A, CCC, SEP
Cheryl Farmer (@UTeachEngineer; *cheryl.farmer@mail.utexas.edu),* The University of Texas at Austin
Learn about a research-based, computationally rigorous high school engineering program with a focus on broadening participation, especially among young women.

For Teachers…By Teachers: A State's Approach to STEM Unit Development
(Grades K–12) *W475b, McCormick Place*
Science Focus: GEN, CCC, SEP4, SEP8
Yeni Violeta Garcia (@DrVioletaGarcia; *y.violeta.garcia@gmail.com),* STEM Learning by Design, Denver, Colo.
A grassroots request led to the development of curriculum samples for 10 content areas and several STEM-integrated samples. Learn how to use and customize STEM-integrated templates to your local context and needs.

5:00–6:00 PM Hands-On Workshops

NSELA Session: Knowing What Students Know and Can Do: Using Hands-On Performance Tasks as Formative Assessment Tools
(Grades 4–9) *Field A/B, Hyatt*
Science Focus: GEN, NGSS
Deborah Tucker *(deborahlt@aol.com),* Independent Science Education Consultant, Napa, Calif.
Hands-on performance assessment measures mastery of *NGSS* disciplinary core ideas and practices. Engage in a hands-on performance task and explore the advantages of this form of assessment.

Student-driven Animal Behavior Investigations: A San Francisco Zoo and Sacred Heart Cathedral Preparatory Partnership
(Grades 4–College) *Hyde Park A, Hyatt*
Science Focus: LS
Kirstin Weihl *(kaweihl@gmail.com),* Sacred Heart Cathedral Preparatory, San Francisco, Calif.
Engage your students in real-life data collection and analysis. Students design and perform animal behavior investigations of their local animals using the free Learn to Observe app developed by the Lincoln Park Zoo.

Iron Teacher Edition from Southern Illinois University Edwardsville
(General) *Jackson Park C, Hyatt*
Science Focus: ESS, ETS, LS, PS, CCC2, CCC3, CCC4, CCC5, CCC6, CCC7, SEP1, SEP2, SEP3, SEP6, SEP8
Allycia Drummond *(aldrummo@gmail.com),* Mascoutah Middle School, Mascoutah, Ill.
Elisabeth Knierim, Belleville West High School, Belleville, Ill.
We challenge you to design an inquiry lesson. Leave with three winning lesson plans from regional competitions as well as receive an e-mail with an electronic version of the lesson plans developed during this workshop.

The Body Biology Project: Implement Authentic, Rigorous, Project-Based, Interdisciplinary Learning in Your Science Classroom
(Grades 8–10) *S402b, McCormick Place*
Science Focus: LS1, CCC2, CCC4, CCC6, SEP1, SEP3, SEP4, SEP5, SEP7, SEP8
Elizabeth Novak *(enovak@cclcs.info),* **Paul Niles** (*paulmniles@comcast.net),* and **Joseph Scichilone** *(mr.shick21@gmail.com),* Cape Cod Lighthouse Charter School, East Harwich, Mass.
Enliven your classroom as you learn how to implement the Body Biology Project, an interdisciplinary capstone project in which students design and execute a scientific study involving their own body systems. Handouts.

Putting the "M" in STEM with Ocean Data
(Grades 6–12) *S403b, McCormick Place*
Science Focus: ESS2, ETS2, LS2, PS1, PS3, CCC1, CCC3, CCC4, CCC7, SEP
Patricia Harcourt *(pharcourt@gmail.com),* MADE CLEAR, Annapolis, Md.
Add easy-to-use data sets and exercises to your ocean-based life, Earth, and physical science lessons that can help your students apply math.

What Lives Where and Why? Understanding Biodiversity Through Geospatial Exploration
(Grades 6–College) *S404a, McCormick Place*
Science Focus: LS4.D
Nancy Trautmann *(nancy.trautmann@cornell.edu),* The Cornell Lab of Ornithology, Ithaca, N.Y.
Jim MaKinster *(makinster@hws.edu),* Hobart and William Smith Colleges, Geneva, N.Y.
Join us and BYOD to explore two interactive web-based maps that enable students to compare bird diversity across ecoregions and as they address the *NGSS*.

Seismic Safe Structures
(Grades 7–8) *S405b, McCormick Place*
Science Focus: ESS, ETS
Paige Jarrell *(pjarrell@cinci.rr.com)* and **Paul Schember,** Norwood Middle School, Cincinnati, Ohio
Design and test structures on a shake table to learn how to connect middle school science plate tectonics to a structural engineering challenge.

Using Modeling Activities in the High School Chemistry Class
(Grades 9–12) *S501 b/c, McCormick Place*
Science Focus: PS1, PS2, PS3, CCC4, SEP2, SEP6
Michael Mury *(m_mury@acs.org),* American Chemical Society, Washington, D.C.
Visualization is difficult for many students. Join me as I discuss and demonstrate several modeling activities you can use in your chemistry class.

Was Newton Wrong?
(Grades 4–9) *S502a, McCormick Place*
Science Focus: GEN, SEP2, SEP3, SEP6
Karen Matsler (@KJMatsler; *kmatsler@uta.edu),* The University of Texas at Arlington
Katya Denisova, Baltimore (Md.) City Public Schools
Cathy Barthelemy *(cbarthelemy@fwmsh.org),* Fort Worth Museum of Science and History, Fort Worth, Tex.
Newton's laws are fundamental but are often misunderstood and taught incorrectly. Emphasis will be placed on applications of Newton's laws and engineering design.

Tangible Teaching: Counting Atoms with Pennies
(Grades 5–9) *S502b, McCormick Place*
Science Focus: PS1, INF, SEP5
Erick Moffett, The University of Southern Mississippi, Hattiesburg
Bridgette Davis (@DavisBridgetteL; *bridgettedavis@lsu.edu),* Louisiana State University, Baton Rouge
Reinforce the fundamental concept of counting atoms to prepare your students for balancing chemical reactions and stoichiometry with this cheap and engaging learning activity.

Integrating STEM with Literacy and Social Studies to Design a Capstone Project in the Elementary Classroom

(Grades 3–5) *S503a, McCormick Place*

Science Focus: GEN

Marianne Dunne and **Meaghan Miller,** Cambridge (Mass.) Public Schools

Join us as we demonstrate how to integrate science and math with a nonfiction reading and writing unit to design and build a community capstone project. Handouts.

Engineering: Robots, Rockets, and Rock 'n' Roll

(Grades 8–College) *S503b, McCormick Place*

Science Focus: ETS1.B, ETS1.C, ETS2, PS3.A, PS3.C, PS4.C, INF, CCC4, CCC6, SEP2, SEP4, SEP5, SEP6, SEP8

Gigi Nevils *(gkn1@rice.edu)* and **Matthew Cushing** *(mpc3@rice.edu),* Rice University, Houston, Tex.

Presider: Linda Scott, Rice University, Houston, Tex.

Engage in the engineering design process using single-board microcontrollers and investigate applications in education, engineering, and art, including interactive visual art, digital music, rocket launchers, and autonomous vehicles.

They May Learn Differently, But They Can Learn, Can't They?

(Grades 5–12) *S504a, McCormick Place*

Science Focus: ESS

Barry Fried *(bfriedfab4@optonline.net),* Retired Principal and STEM Advisor, East Meadow, N.Y.

Find out how to create an enriched, real/rigorous, all-inclusive classroom environment using Earth and space science as a unifying theme. Promote problem-solving and communication in your classroom by using multidisciplinary models and literacy tools that build research skills and authentic science learning experiences.

Mars Rover Models in the Classroom: Student-designed Spacecraft

(Grades 3–8) *W192c, McCormick Place*

Science Focus: ESS1.B, ESS2.C, ESS2.D, ETS1.A, ETS2.A, PS2.A, PS3.C, PS4, CCC4, SEP1, SEP2, SEP3

Andrew Kapral (@MarsRoverUH; *ajkapral@gmail.com),* University of Houston, Tex.

Get introduced to the Mars Rover Model Celebration, a curriculum that emphasizes student-led inquiry and investigation design. Engage in two hands-on activities from the module.

5:20–5:40 PM Presentation

SCST Session: The First Application of the Measurement of Attitudes Toward Evolution (MATE) Survey Across Two Regionally Distinct Colleges

(College) *Clark C, Hyatt*

Science Focus: LS

Presenter to be announced

The Measurement of Attitudes Toward Evolution (MATE) measures acceptance of evolution. In all past cases, this survey was limited to one college. We are the first to apply this survey across colleges and measure the impact of instruction in introductory biology to evolution.

5:30–6:00 PM Presentations

Formative Assessment: A Menu of Options

(Grades 6–12) *S404d, McCormick Place*

Science Focus: GEN, INF, SEP2

Nikelle Miller *(nikelle73@yahoo.com)* and **Lynn Wiedelman** *(lwiedel2@gmail.com),* Centennial High School, Champaign, Ill.

Revisit the importance of formative assessment in the classroom. Increase your repertoire of formative assessment strategies to improve student engagement in the learning process. Take home handouts and resources.

Anything but Standard: Using Young Adult Literature and *NGSS*-based Lessons to Meet the *CCSS*

(Grades 5–8) *S504d, McCormick Place*

Science Focus: GEN, NGSS

Amy Gillan *(agillan@saintmarys.edu)* and **Terri Suico** (@terrisuico), Saint Mary's College, Notre Dame, Ind.

Pair young adult literature selections with 5E (Engage, Explore, Explain, Elaborate, and Evaluate) science lessons, addressing both the *NGSS* and *CCSS* by comparing and contrasting textual readings and student lab results.

West Tennessee STEM Hub Challenge Competition

(Grades 6–College) *W186c, McCormick Place*

Science Focus: GEN, INF, SEP1, SEP6, SEP8

Alfred Hall II *(alhall1@memphis.edu),* The University of Memphis, Tenn.

Hear how the West Tennessee STEM Hub Challenge Competitions engage teams of high school students around real-world STEM problems and opportunities in their local community.

5:30–7:00 PM Networking Opportunity

NSTA Student/Student Chapter Showcase and Reception

Regency A, Hyatt

No ticket required; open to all preservice teachers and those who work with them. If your institution has an NSTA Student Chapter, then bring examples of the work of your chapter, best practices, and stories to share with students at institutions that don't yet have an NSTA Student Chapter! If your school does not yet have an NSTA Student Chapter, then come to hear your future colleagues' best practices and learn about starting and running a successful chapter at your school! Refreshments and hors d'oeuvres will be served as you network with your peers.

5:30–7:30 PM Exhibitor Workshop

An Evening of STEM, Energy, and Hip-Hop Presented by Master Scientist Grand Hank

(Grades K–12) *W185 b/c, McCormick Place*

Science Focus: GEN, INF

Sponsor: Grand Hank Productions, Inc.

Tyraine Ragsdale aka Grand Hank *(grandhank@grandhank.com),* Grand Hank Productions, Inc., Philadelphia, Pa.

Globally known for engaging multimedia productions, master scientist/rap educator Grand Hank presents this high-energy interactive session with tools and strategies for using exciting STEM and energy demonstrations combined with the superpower of hip-hop music to pique the interest of hard-to-reach and even harder-to-interest students. This creative out-of-box approach shows how to use music and movement to turn students on to STEM and energy.

5:40–6:00 PM Presentation

SCST Session: Faculty and Student Perceptions of a Multisection Inquiry-based Introductory Biology Course with Common Assessments

(College) *Clark C, Hyatt*

Science Focus: LS

Tarren Shaw, The University of Oklahoma, Norman

Emphasis will be placed on the effects of different instructor styles and student perceptions of instruction on students' attitude, exam performance, and course evaluations in a multisection introductory biology course.

6:00–7:30 PM Networking Opportunity

Howard Hughes Medical Institute Movie Night

Skyline W375d, McCormick Place

Sponsored by HHMI BioInteractive

Charles Darwin predicted that buried deep in Earth would be evidence of species with features that were intermediate between those of ancestral and modern groups. Since Darwin's time, many transitional fossils have been discovered, and they provide crucial insights into the origin of key structures and the creatures that possess them. Join HHMI BioInteractive for the premiere of two short films featuring *Great Transitions* in the evolutionary history of life on Earth.

A Q&A with vertebrate paleontologist Julia Clarke and evolutionary biologist Sean B. Carroll will follow the films, and refreshments will be served.

6:00–8:00 PM Networking Opportunity

Teach for America Networking Reception

Regency B, Hyatt

Visit *bit.ly/1DLS7Ee* for more information.

3D Molecular Designs (Booth #1833)

Thursday, March 12	2:00–3:30 PM	W193a, McCormick Place	Dive in with Magnetic Water Molecules (p. 144)

Accelerate Learning (Booth #1056)

Thursday, March 12	2:00–3:30 PM	W470a, McCormick Place	Building the Skills of Argumentation and Collaboration in STEM (p. 145)
Thursday, March 12	4:00–5:30 PM	W470a, McCormick Place	STEM Strategies and Actions for Student Achievement Gains (p. 162)

Amplify (Booth #1140)

Thursday, March 12	8:00–9:30 AM	W194a, McCormick Place	Jump-start Your Transition to *NGSS* and *CCSS, ELA* Through Integration—From The Lawrence Hall of Science (p. 102)
Thursday, March 12	10:30 AM–12 Noon	W194a, McCormick Place	Unpacking *NGSS*: Guiding Students to Become Evidence-based Thinkers, Speakers, Readers, and Writers (p. 112)
Thursday, March 12	12:30–2:00 PM	W194a, McCormick Place	Learn to Play—Play to Learn with Amplify's STEM Games—Grades 6–8 (p. 128)
Thursday, March 12	3:00–4:30 PM	W194a, McCormick Place	Experience Amplify Science: Immerse Students into the World of Scientists and Engineers with the Newest Curriculum from The Lawrence Hall of Science (p. 149)

ANATOMY IN CLAY® Learning System (Booth #653)

Thursday, March 12	2:00–3:30 PM	W193b, McCormick Place	Building Your Body in Clay: One System at a Time (p. 144)

Arbor Scientific (Booth #1754)

Thursday, March 12	10:00–11:30 AM	W470a, McCormick Place	Cool Tools for Force and Motion (p. 111)
Thursday, March 12	12 Noon–1:30 PM	W470a, McCormick Place	Cool Tools for Light and Color (p. 117)

Bedford, Freeman, & Worth Publishing Group (Booth #752)

Thursday, March 12	4:00–5:30 PM	W475a, McCormick Place	*Living by Chemistry*: Create a Table (p. 164)

Bio-Rad Laboratories (Booth #847)

Thursday, March 12	8:30–10:00 AM	W474b, McCormick Place	Struggling with How to Integrate Inquiry into Your AP Biology Course? (AP Big Idea 3) (p. 106)
Thursday, March 12	9:00–11:00 AM	W474a, McCormick Place	The GMO Debate Rages On! (p. 106)
Thursday, March 12	10:30 AM–12 Noon	W474b, McCormick Place	Contagion! Track the Progress of Dangerous Viruses that Are Spreading Throughout the Country (p. 112)
Thursday, March 12	1:00–2:30 PM	W474a, McCormick Place	DNA Detectives: Who Killed Jose? (p. 130)
Thursday, March 12	2:00–3:30 PM	W474b, McCormick Place	How to Use Pop-Culture Science in Your Classes (p. 146)
Thursday, March 12	3:30–5:00 PM	W474a, McCormick Place	Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, 4) (p. 158)

BIOZONE International (Booth #876)

Thursday, March 12	10:00–11:30 AM	W470b, McCormick Place	Engaging Students Effectively: The BIOZONE Solution (Grades 9–12) (p. 111)

Carolina Biological Supply (Booth #1131)

Thursday, March 12	8:00–9:30 AM	W181a, McCormick Place	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 100)
Thursday, March 12	8:00–9:30 AM	W181c, McCormick Place	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 100)
Thursday, March 12	10:00–11:30 AM	W181c, McCormick Place	Flipping Out Over Chemistry! (p. 109)

Carolina Biological Supply, continued

Thursday, March 12	10:00–11:30 AM	W181a, McCormick Place	Introduction to Wisconsin Fast Plants® (p. 109)
Thursday, March 12	10:00–11:30 AM	W181b, McCormick Place	Engineering for K? Yes! (p. 109)
Thursday, March 12	12 Noon–1:30 PM	W181b, McCormick Place	Creating a New Generation of Learners PreK–5 (p. 115)
Thursday, March 12	12 Noon–1:30 PM	W181c, McCormick Place	Bring Visual Science into K–5 Classrooms—It's a Game Changer! (p. 115)
Thursday, March 12	12 Noon–1:30 PM	W181a, McCormick Place	Genetics Brought to Life: Gene-ius Model Organisms (p. 115)
Thursday, March 12	2:00–3:30 PM	W181b, McCormick Place	Science Notebooks to Address the *NGSS* and *CCSS* (p. 142)
Thursday, March 12	2:00–3:30 PM	W181c, McCormick Place	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 142)
Thursday, March 12	2:00–3:30 PM	W181a, McCormick Place	Hands-On Science with Classroom Critters (p. 142)
Thursday, March 12	4:00–5:30 PM	W181b, McCormick Place	Making Waves in Middle School (p. 160)
Thursday, March 12	4:00–5:30 PM	W181c, McCormick Place	Using a Blended Learning Model in Leander ISD (p. 160)
Thursday, March 12	4:00–5:30 PM	W181a, McCormick Place	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 160)

Celestron (Booth #1656)

Thursday, March 12	2:00–3:30 PM	W475a, McCormick Place	Digital Microscopes 101: Teachers Share Classroom Experiences (p. 146)

CPO Science/School Specialty Science (Booth #1030)

Thursday, March 12	8:00–9:30 AM	W184bc, McCormick Place	CPO's Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design (p. 101)
Thursday, March 12	12 Noon–1:30 PM	W184bc, McCormick Place	CPO's Link™ Learning Chemistry Models Module: Fun with Atom Building Games and the Periodic Table (p. 116)
Thursday, March 12	2:00–3:30 PM	W184bc, McCormick Place	Genetics: Crazy Traits and CPO's Link™ Learning Module (p. 142)
Thursday, March 12	4:00–5:30 PM	W184bc, McCormick Place	Building an Electric Motor the STEM Way with CPO's Link™ Learning Module (p. 161)

Delta Education/School Specialty Science (Booth #1031)

Thursday, March 12	8:00–9:30 AM	W184a, McCormick Place	Science, the Literacy Connection, and the *CCSS ELA* (p. 101)
Thursday, March 12	10:00–11:30 AM	W184a, McCormick Place	PEASE in Our Time—Memory Lanes of the Brain (p. 109)
Thursday, March 12	12 Noon–1:30 PM	W184a, McCormick Place	Teaching Argumentation for Our Next Generation (p. 116)
Thursday, March 12	2:00–3:30 PM	W184a, McCormick Place	What's Going on in There? *NGSS* and STEM for Administrators, Teacher Trainers, and University Faculty (p. 142)
Thursday, March 12	4:00–5:30 PM	W184a, McCormick Place	STEM Projects, Science Fair, and Student Performances (p. 161)

Delta Education/School Specialty Science–FOSS (Booth #1031)

Thursday, March 12	8:00–9:30 AM	W184d, McCormick Place	Engineering Design in the FOSS Next Generation Program (p. 101)
Thursday, March 12	10:00–11:30 AM	W184d, McCormick Place	Scientific Practices: What Does Argumentation Look Like in a FOSS Elementary Classroom? (p. 109)
Thursday, March 12	12 Noon–1:30 PM	W184d, McCormick Place	Crosscutting Concepts: What Do They Look Like in a FOSS Elementary Classroom? (p. 116)
Thursday, March 12	2:00–3:30 PM	W184d, McCormick Place	Asteroid! Will Earth Be Hit Again? FOSS Planetary Science for Middle School (p. 143)
Thursday, March 12	4:00–5:30 PM	W184d, McCormick Place	Evidence for Plate Movement with FOSS Earth History for Middle School (p. 161)

Dinah-Might Adventures (Booth #1172)

Thursday, March 12	2:00–3:30 PM	W470b, McCormick Place	Building Science Vocabulary One Fold at a Time via Notebook Foldables® (p. 145)

Discovery Education (Booth #1845)

Thursday, March 12	8:00–9:30 AM	W471b, McCormick Place	STEM: Discover, Collaborate, Innovate (p. 104)
Thursday, March 12	10:00–11:30 AM	W471b, McCormick Place	Read, Write, and Think SCIENCE! (p. 111)
Thursday, March 12	12 Noon–1:30 PM	W471b, McCormick Place	Bringing the *NGSS* to the Classroom with Discovery Education (p. 118)
Thursday, March 12	2:00–3:30 PM	W471b, McCormick Place	Discovering the Science of Everyday Life (p. 146)
Thursday, March 12	4:00–5:30 PM	W471b, McCormick Place	20 Creative Ways to Using Discovery Education Streaming in the Science Classroom (p. 163)

Edvotek, Inc. (Booth #683)

Thursday, March 12	8:00–9:30 AM	W186a, McCormick Place	Case of the Missing Records (p. 102)
Thursday, March 12	10:00–11:30 AM	W186a, McCormick Place	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 110)
Thursday, March 12	12 Noon–1:30 PM	W186a, McCormick Place	Using the Polymerase Chain Reaction to Identify GM Foods (p. 116)
Thursday, March 12	2:00–3:30 PM	W186a, McCormick Place	The Drunken Worms: Exploring Gene Function with *C. elegans* (p. 144)
Thursday, March 12	4:00–5:30 PM	W186a, McCormick Place	Teaching STEM Using Agarose Gel Electrophoresis (p. 161)

Flinn Scientific, Inc. (Booth #631)

Thursday, March 12	10:00–11:30 AM	W180, McCormick Place	Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments (p. 108)
Thursday, March 12	12 Noon–1:30 PM	W180, McCormick Place	Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School (p. 115)
Thursday, March 12	2:00–3:30 PM	W180, McCormick Place	Flinn Scientific Resources Prepare Students for AP Chemistry Success (p. 142)
Thursday, March 12	4:00–5:30 PM	W180, McCormick Place	Flinn Scientific Presents "How to Design a Safe and Efficient Science Laboratory" (p. 160)

FOTODYNE Incorporated (Booth #1747)

Thursday, March 12	2:00–3:30 PM	W476, McCormick Place	Molecular Evolution: What Can Dogs Teach Us? (p. 146)

Frey Scientific/School Specialty Science (Booth #931)

Thursday, March 12	10:00–11:30 AM	W184bc, McCormick Place	Solving the Mystery of STEM Using Forensic Science (p. 109)

Grand Hank Productions Incorporated (Booth #692)

Thursday, March 12	5:30–7:30 PM	W185 b/c, McCormick Place	An Evening of STEM, Energy, and Hip-Hop Presented by Master Scientist Grand Hank (p. 170)

HHMI BioInteractive (Booth #1532)

Thursday, March 12	8:00–9:15 AM	W183c, McCormick Place	Gorongosa: A Case Study in Conservation (p. 100)
Thursday, March 12	12 Noon–1:30 PM	W183c, McCormick Place	Extinctions Past and Present (p. 116)
Thursday, March 12	2:00–3:30 PM	W183c, McCormick Place	*Your Inner Fish* in the Classroom (p. 142)
Thursday, March 12	4:00–5:30 PM	W183c, McCormick Place	Cancer as a Genetic Disease (p. 160)

It's About Time (Booth #1538)

Thursday, March 12	8:00–9:00 AM	W194b, McCormick Place	The EQuIP Rubric: Evaluating Middle School Resources for *NGSS*—Grades 6–8 (p. 99)
Thursday, March 12	9:30–10:30 AM	W194b, McCormick Place	Merging the Three Dimensions of the *NGSS* in *Project-Based Inquiry Science*™ (PBIS) for Middle School (p. 107)

It's About Time, continued

Thursday, March 12	11:00 AM–12 Noon	W194b, McCormick Place	Active Physics: A Leading Project-based High School Physics Program Capturing the Essence of the *NGSS* and STEM Plus New Support Resources (p. 114)
Thursday, March 12	12:30–1:30 PM	W194b, McCormick Place	Next Generation PET: Preparing Elementary Teachers for the *NGSS* (p. 127)
Thursday, March 12	2:00–3:45 PM	W194b, McCormick Place	Learn About an Innovative Middle School *NGSS*-focused Project-based Program in an Interactive Setting (p. 148)

LAB-AIDS®, Inc. (Booth #1629)

Thursday, March 12	8:00–9:30 AM	W195, McCormick Place	Modeling Convection Currents and Plate Motion (p. 104)
Thursday, March 12	10:00–11:30 AM	W195, McCormick Place	A Cell So Small (p. 111)
Thursday, March 12	12 Noon–1:30 PM	W195, McCormick Place	Energy Flow Through an Ecosystem (p. 117)
Thursday, March 12	2:00–3:30 PM	W195, McCormick Place	The Cell Cycle (p. 144)
Thursday, March 12	4:00–5:30 PM	W195, McCormick Place	Gene Expression (p. 162)

Late Nite Labs (Booth #589)

Thursday, March 12	10:00–11:30 AM	W178a, McCormick Place	Student Engagement and Preparedness in High School Science Labs (p. 108)
Thursday, March 12	4:00–5:30 PM	W178a, McCormick Place	e-Textbooks *vs.* Printed Textbooks (p. 160)

LEGO Education (Booth #956)

Thursday, March 12	8:00–9:30 AM	W186b, McCormick Place	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 102)
Thursday, March 12	10:00–11:30 AM	W186b, McCormick Place	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 110)
Thursday, March 12	12 Noon–1:30 PM	W186b, McCormick Place	Multiple Subjects, One Platform: Tackle STEM Learning with LEGO Education WeDo! (p. 117)
Thursday, March 12	2:00–3:30 PM	W186b, McCormick Place	Exploring How Machines Work with the LEGO® Education Simple and Motorized Mechanisms Set (p. 144)
Thursday, March 12	4:00–5:30 PM	W186b, McCormick Place	Exploring Forces, Motion, and Engineering Design with LEGO® Education Simple Machines (p. 161)

Mentis Sciences, Inc. (Booth #1283)

Thursday, March 12	12 Noon–1:30 PM	W475a, McCormick Place	Mentis Sciences Educational Toolkit (MSET) (p. 118)

MSOE Center for BioMolecular Modeling (Booth #1835)

Thursday, March 12	4:00–5:30 PM	W193a, McCormick Place	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 162)

Nasco (Booth #740)

Thursday, March 12	12 Noon–1:30 PM	W476, McCormick Place	Nasco SciQuest® Kits for Your Classrooms (p. 118)

Ocean Classrooms (Booth #1625)

Thursday, March 12	12 Noon–1:30 PM	W470b, McCormick Place	Access and Analyze LIVE Ocean Data in the Classroom (p. 118)

PAEMST (Booth #1281)

Thursday, March 12	10:00–11:30 AM	W193b, McCormick Place	Presidential STEM Teachers: PAEMST Success for K–12 Educators (p. 110)

PASCO scientific (Booth #1522)

Thursday, March 12	8:00–9:00 AM	W179b, McCormick Place	Supporting *NGSS* Requirements for Data Collection on Chromebooks (p. 99)
Thursday, March 12	9:30–10:30 AM	W179b, McCormick Place	Spectrometry: Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics! (p. 107)
Thursday, March 12	11:00 AM–12 Noon	W179b, McCormick Place	Adapting Traditional Biology Labs to Sensor Technology (p. 114)
Thursday, March 12	12:30–1:30 PM	W179b, McCormick Place	Exploring Motion in Middle School Science with Position and Velocity Games—MatchGraph! (p. 127)
Thursday, March 12	2:00–3:00 PM	W179b, McCormick Place	Project-based Activities for Gas Laws and Stoichiometry Chemistry Standards (p. 140)
Thursday, March 12	3:30–4:30 PM	W179b, McCormick Place	The Physics of Sound Waves (p. 157)

Pearson (Booth #630)

Thursday, March 12	8:00–9:30 AM	W179a, McCormick Place	Using Problem-Based Learning to Up Your *NGSS* Game (p. 100)
Thursday, March 12	10:00–11:30 AM	W179a, McCormick Place	Understanding Global Change: Welcome to the Anthropocene! (p. 108)
Thursday, March 12	12 Noon–1:30 PM	W179a, McCormick Place	*NGSS*, STEM, and *Common Core*, Connecting the Pieces to the Puzzle (p. 115)
Thursday, March 12	2:00–3:30 PM	W179a, McCormick Place	Economical, Efficient, and Effective STEM Inquiry in Chemistry (p. 141)
Thursday, March 12	4:00–5:30 PM	W179a, McCormick Place	Teaching Evolution in a Climate of Controversy: Even with *NGSS*, the Battles Continue (p. 160)

Perimeter Institute (Booth #767)

Thursday, March 12	8:00–9:30 AM	W471a, McCormick Place	Spicing Up Classical Physics with Modern Examples (p. 104)
Thursday, March 12	4:00–5:30 PM	W471a, McCormick Place	Cosmic Mysteries: Big Bang and the Expanding Universe (p. 163)

Pitsco Education (Booth #951)

Thursday, March 12	4:00–5:30 PM	W476, McCormick Place	A Revolution in STEM Robotics (p. 164)

Plotly (Booth #1724) and Vernier Software & Technology (Booth #1244)

Thursday, March 12	4:00–5:30 PM	W470b, McCormick Place	Plotly and Vernier: Collaborative Tools for an Interactive Classroom (p. 162)

Royal Society of Chemistry (Booth #548)

Thursday, March 12	12 Noon–1:30 PM	W193b, McCormick Place	Build Your Chemistry Teaching Skills with Online Continuing Professional Development from the Royal Society of Chemistry (p. 117)

Science First®/STARLAB® (Booths #1266/ #1267)

Thursday, March 12	4:00–4:30 PM	Booth #1267, Exhibit Hall	Welcome to the Neighborhood—Overview of the Solar System (p. 159)

Simulation Curriculum Corp (Booth #777)

Thursday, March 12	10:00–11:30 AM	W471a, McCormick Place	Pluto: The Once and Future Planet? (p. 111)
Thursday, March 12	12 Noon–1:30 PM	W471a, McCormick Place	Weather and Climate (p. 118)
Thursday, March 12	2:00–3:30 PM	W471a, McCormick Place	Plate Tectonics: Continents on the Move (p. 146)

Index of Exhibitor Workshops

SparkFun Electronics (Booth #552)

Thursday, March 12	10:00–11:30 AM	W193a, McCormick Place	Program or Programmed: Integrating Electronics and Code in the Science Classroom (p. 110)
Thursday, March 12	12 Noon–1:30 PM	W193a, McCormick Place	Scratch for the Science Classroom: Introducing Coding as a Tool Earlier in Learning (p. 117)

U.S. Dept. of Energy, Office of Nuclear Energy (Booth #584)

Thursday, March 12	2:00–3:30 PM	W178a, McCormick Place	The Harnessed Atom: New Ideas, Tools, and Resources: Nuclear Science and Energy (p. 141)

Vernier Software & Technology (Booth #1244)

Thursday, March 12	8:00–9:30 AM	W185d, McCormick Place	Investigating Wind Energy with Vernier (p. 102)
Thursday, March 12	8:00–9:30 AM	W185a, McCormick Place	Integrate Chromebook and BYOD with Vernier Technology (p. 102)
Thursday, March 12	10:00–11:30 AM	W185a, McCormick Place	Biology with Vernier (p. 109)
Thursday, March 12	10:00–11:30 AM	W185d, McCormick Place	Renewable Energy with KidWind and Vernier (p. 110)
Thursday, March 12	12 Noon–1:30 PM	W185d, McCormick Place	iPad and Wireless Sensors with Vernier (p. 116)
Thursday, March 12	12 Noon–1:30 PM	W185a, McCormick Place	Inquiry-based Biology with Vernier (p. 116)
Thursday, March 12	2:00–3:30 PM	W185a, McCormick Place	Wireless Sensor Exploration with Vernier (p. 143)
Thursday, March 12	2:00–3:30 PM	W185d, McCormick Place	Advanced Physics with Vernier (p. 144)
Thursday, March 12	4:00–5:30 PM	W185d, McCormick Place	Physics with Vernier (p. 161)
Thursday, March 12	4:00–5:30 PM	W185a, McCormick Place	Chemistry with Vernier (p. 161)

Ward's Science (Booth #830)

Thursday, March 12	8:00–9:30 AM	W192b, McCormick Place	Blood Ties: Switched at Birth? (p. 102)
Thursday, March 12	10:00–11:30 AM	W192b, McCormick Place	CTE: Real-life Forensics Brought to the Classroom, Solving the Case (p. 110)
Thursday, March 12	12 Noon–1:30 PM	W192b, McCormick Place	Alternative Energy Gets a Lift from STEM: Wind Turbines (p. 117)
Thursday, March 12	2:00–3:30 PM	W192b, McCormick Place	Meet *NGSS* Environmental Science Disciplinary Core Ideas with *Daphnia* (p. 144)
Thursday, March 12	4:00–5:30 PM	W192b, McCormick Place	Ward's AP Chemistry Investigation 4: Titrations—How Acidic Are the Beverages We Drink? (p. 162)

Wavefunction, Inc (Booth #476)

Thursday, March 12	10:00–11:30 AM	W476, McCormick Place	Molecular Level Visualization and the *NGSS*: Engaging Your Students (p. 111)

WhiteBox Learning (Booth #753)

Thursday, March 12	10:00–11:30 AM	W475a, McCormick Place	The "E" in STEM: 3-D STEM Engineering (p. 111)

Wildlife Conservation Society (Booth #643)

Thursday, March 12	4:00–5:30 PM	W193b, McCormick Place	Teaching Science Using Innovative Technology: *Mannahatta2409.org* (p. 162)

Earth and Space Science

8:00–9:00 AM	1–8	W192c, McCormick Place	Using NASA to Explore Your Universe from Inner to Outer Space (p. 98)
8:00–9:00 AM	7–12	S404a, McCormick Place	Teaching About Severe Weather (p. 96)
8:00–9:00 AM	4–C	S404bc, McCormick Place	Solar System Scale Models in Google Earth (p. 94)
8:00–9:00 AM	4–8	S502a, McCormick Place	Kinetic Science: Models of Understanding (p. 96)
8:00–9:00 AM	3–C	Adler A/B, Hyatt	Adapt Your Teaching to Support the *NGSS* Practices Using PhET Interactive Simulations (p. 91)
8:00–9:00 AM	9–12	S403b, McCormick Place	Using Macroinvertebrates to Measure Water Quality: With or Without Water! (p. 96)
8:00–9:00 AM	G	Skyline W375e, McCormick Place	NMEA Session: Whale-of-a-Tale Share-a-Thon (p. 98)
8:00–9:00 AM	6–12	S402b, McCormick Place	Plant Virus: Biology, Ecology, and Management (p. 96)
8:00–9:15 AM	9–C	W183c, McCormick Place	Gorongosa: A Case Study in Conseration (p. 100)
8:00–9:30 AM	6–8	W195, McCormick Place	Modeling Convection Currents and Plate Motion (p. 104)
8:30–9:00 AM	6–8	W195, McCormick Place	To Look Closely: Science and Literacy in the Natural World (p. 105)
10:00–11:30 AM	6–12	W471a, McCormick Place	Pluto: The Once and Future Planet? (p. 111)
11:00 AM–12 Noon	5–9	Skyline W375e, McCormick Place	NMEA Session: Creatively Engaging Middle School in the Science of Ocean Acidification (p. 113)
12 Noon–1:30 PM	9–12	W183c, McCormick Place	Extinctions Past and Present (p. 116)
12 Noon–1:30 PM	6–C	W470b, McCormick Place	Access and Analyze LIVE Ocean Data in the Classroom (p. 118)
12 Noon–1:30 PM	6–12	W471a, McCormick Place	Weather and Climate (p. 118)
12:30–1:00 PM	9–12	S404bc, McCormick Place	Google Earth, ImageJ, and GIS: Tools to Investigate Environmental Change (p. 119)
12:30–1:00 PM	3–8	S504bc, McCormick Place	Science and Engineering Practices Among Diverse Students' Learning about Environmental Science (p. 119)
12:30–1:30 PM	7–12	Skyline W375e, McCormick Place	NMEA Session: The Climate Expedition: Exploring Local Impacts of a Global Issue (p. 126)
12:30–1:30 PM	P–3	S504a, McCormick Place	Weather Activities That Engage and Excite Without Breaking the Bank (p. 126)
12:30–1:30 PM	5–C	Jackson Park A, Hyatt	School Yard Plants as Indicators of Climate Change? Project BudBurst Can Show You How (p. 124)
12:30–1:30 PM	5-9,C	Grant Park A, Hyatt	Climate Change Assessment Design in the Context of the *Next Generation Science Standards* (p. 121)
12:30–1:30 PM	G	W183ab, McCormick Place	What's Up, Part 1, Earth, Sun, and Planets (p. 126)
12:30–1:30 PM	P–12	Grank Park C, Hyatt	Every Drop Counts: How Much Did You Get? (p. 121)
12:30–1:30 PM	6–C	S403a, McCormick Place	Climate Change, Lessons, and Activities for Teachers (p. 122)
12:30–1:30 PM	5–8	W179b, McCormick Place	Exploring Motion in Middle School Science with Position and Velocity Games—MatchGraph! (p. 127)
12:30–1:30 PM	4–12	S404a, McCormick Place	Long Ago and Far Away (p. 125)
1:00–1:30 PM	7–C	S403b, McCormick Place	Integrating Field-based Learning into the Geoscience Curriculum (p. 129)
1:00–1:30 PM	9–12	S404bc, McCormick Place	Using Real Data to Expose Bias in Science (p. 129)
2:00–2:30 PM	9–C	Grant Park B, Hyatt	Assessing *NGSS* Science and Engineering Practices in Two Different Chemistry Courses (p. 131)
2:00–3:00 PM	G	Skyline W375e, McCormick Place	NMEA Session: Set Sail with GLEAMS! (p. 135)
2:00–3:00 PM	1–8	S505a, McCormick Place	Immerse Yourself in Science Through Clouds (p. 135)
2:00–3:00 PM	3–10	Prairie A, Hyatt	AMSE Session: Designing Rubber Band Racers to Ignite the Curiosity of Diverse Learners! (p. 134)
2:00–3:00 PM	9–C	Grant Park A, Hyatt	Covering It All in a Semester: Experience From an *NGSS*-ESS Course for Preservice Teachers (p. 133)
2:00–3:00 PM	6–C	S403a, McCormick Place	Science Is Cool! Looking for Life, and Finding It, in a Subglacial Antarctic Lake (p. 134)
2:00–3:00 PM	7–12	S403b, McCormick Place	MiQuakes: Earthquakes in the Classroom: Loose Sediments to Hard Core (p. 138)
2:00–3:00 PM	G	W183ab, McCormick Place	What's Up, Part 2, Beyond the Solar System (p. 140)

2:00–3:30 PM	6–8	W184d, McCormick Place	Asteroid! Will Earth Be Hit Again? FOSS Planetary Science for Middle School (p. 143)
2:00–3:30 PM	9–12	W192b, McCormick Place	Meet *NGSS* Environmental Science Disciplinary Core Ideas with *Daphnia* (p. 144)
2:00–3:30 PM	6–12	W471a, McCormick Place	Plate Tectonics: Continents on the Move (p. 146)
3:30–4:30 PM	9–12	S404a, McCormick Place	Population Activities for AP Environmental Science (p. 154)
3:30–4:30 PM	3–C	W187a, McCormick Place	Sharing the Night Sky with Your Students (p. 153)
3:30–4:30 PM	4–C	Jackson Park A, Hyatt	Getting Your Hands "Dirty" in a STEM Classroom (p. 154)
3:30–4:30 PM	C	Grant Park C, Hyatt	Developing and Nurturing Elementary Science Teacher Efficacy: Implications for Teacher Educators (p. 151)
3:30–5:30 PM	G	Skyline W375 a/b, McCormick Place	The Planetary Society Lecture: Setting Sail to the Stars, the Search for Life on Other Worlds, and the Next Great Generation (p. 158)
4:00–4:30 PM	5–8	Booth #1267, Hall F2, MP	Welcome to the Neighborhood—Overview of the Solar System (p. 159)
4:00–4:30 PM	K–6	S505b, McCormick Place	Using Models to Support Elementary Students' Learning About Water (p. 159)
4:00–5:30 PM	6–12	W193b, McCormick Place	Teaching Science Using Innovative Technology: *Mannahatta2409.org* (p. 162)
4:00–5:30 PM	7–C	W471a, McCormick Place	Cosmic Mysteries: Big Bang and the Expanding Universe (p. 163)
4:00–5:30 PM	K–5	W181c, McCormick Place	Using a Blended Learning Model in Leander ISD (p. 160)
4:00–5:30 PM	6–8	W184d, McCormick Place	Evidence for Plate Movement with FOSS Earth History for Middle School (p. 161)
4:00–5:30 PM	7–C	W471a, McCormick Place	Cosmic Mysteries: Big Bang and the Expanding Universe (p. 163)
5:00–6:00 PM	6–12	S403b, McCormick Place	Putting the "M" in STEM with Ocean Data (p. 168)
5:00–6:00 PM	7–8	S405b, McCormick Place	Seismic Safe Structures (p. 168)
5:00–6:00 PM	3–8	W192c, McCormick Place	Mars Rover Models in the Classroom: Student-designed Spacecraft (p. 169)
5:00–6:00 PM	5–12	S504a, McCormick Place	They May Learn Differently, But They Can Learn, Can't They? (p. 169)
5:00–6:00 PM	6–8	Skyline W375e, McCormick Place	NMEA Session: Ocean 180 Video Challenge: Bringing Ocean Scientists to a Classroom Near You (p. 166)
5:00–6:00 PM	3–12	W187a, McCormick Place	Student Choice, Student Voice: Empowering the Next Generation of Environmental Stewards (p. 167)
5:00–6:00 PM	G	Jackson Park C, Hyatt	Iron Teacher Edition from Southern Illinois University Edwardsville (p. 168)
5:00–6:00 PM	K–12	S404bc, McCormick Place	SAGES: An Engaging Environmental Pathway Through *NGSS* and STEM (p. 166)

Engineering, Technology, and the Application of Science

8:00–8:30 AM	6–8	Dusable A, Hyatt	ASTE Session: Summer Camp Science and Engineering: Changing Students' Understanding About Scientific Inquiry (p. 89)
8:00–9:00 AM	K–5	S504a, McCormick Place	Early Childhood Engineering Design with Engineers and Scientists Based on Unique and Diverse Features of the Island of Guam (p. 98)
8:00–9:00 AM	C	Grant Park A, Hyatt	The STEM Challenge: Integrating Engineering into a College Physical Science Course (p. 92)
8:00–9:00 AM	2–12	Hyde Park B, Hyatt	STEM After-School Programming: Engaging All Students Through Engineering and Robotics (p. 92)
8:00–9:00 AM	3–5	Clark A/B, Hyatt	ASTC Session: Building a STEM Foundation for Tomorrow's Leaders (p. 95)
8:00–9:00 AM	4–8	S502a, McCormick Place	Kinetic Science: Models of Understanding (p. 96)
8:00–9:00 AM	6–8	S405a, McCormick Place	Engineering Design Experiments for Middle School Classrooms (p. 96)
8:00–9:30 AM	6–12	W184bc, McCormick Place	CPO's Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design (p. 101)
8:00–9:30 AM	1–5	W184d, McCormick Place	Engineering Design in the FOSS Next Generation Program (p. 101)
8:00–9:30 AM	6–9	W186b, McCormick Place	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 102)
8:30–9:00 AM	6–8	W195, McCormick Place	To Look Closely: Science and Literacy in the Natural World (p. 105)
8:30–9:00 AM	2–C	W475b, McCormick Place	Faculty Preparedness for Engineering Design and *NGSS* (p. 106)

10:00–11:30 AM	8–C	W193a, McCormick Place	Program or Programmed—Integrating Electronics and Code in the Science Classroom (p. 110)
10:00–11:30 AM	6–9	W186b, McCormick Place	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 110)
10:00–11:30 AM	5–C	W475a, McCormick Place	The "E" in STEM: 3-D STEM Engineering (p. 111)
10:00–11:30 AM	P–K	W181b, McCormick Place	Engineering for K? Yes! (p. 109)
12 Noon–1:30 PM	9–12	W475a, McCormick Place	Mentis Sciences Educational Toolkit (MSET) (p. 118)
12 Noon–1:30 PM	6–12	W192b, McCormick Place	Alternative Energy Gets a Lift from STEM: Wind Turbines (p. 117)
12 Noon–1:30 PM	1–5	W186b, McCormick Place	Multiple Subjects, One Platform: Tackle STEM Learning with LEGO Education WeDo! (p. 117)
12:30–1:00 PM	3–8	S504bc, McCormick Place	Science and Engineering Practices Among Diverse Students' Learning about Environmental Science (p. 119)
12:30–1:30 PM	K–5	S401a, McCormick Place	NSTA Press® Session: K–5 STEM: Engaging Students in the Practices of Science, Engineering, and Mathematics (p. 124)
12:30–1:30 PM	6–8	S405a, McCormick Place	Design Challenges for Middle School (p. 122)
12:30–1:30 PM	9–12	S501a, McCormick Place	Implementing Engineering Practices in a Chemistry Classroom (p. 122)
12:30–1:30 PM	9–C	W192a, McCormick Place	Every Kid an Engineer! (p. 122)
12:30–2:30 PM	K–6	W175c, McCormick Place	Special Pathway Session: Building K–6 Integrative STEM Through Technology, Engineering, Environment, Mathematics, and Science (TEEMS): A Project-based Student-centered Approach (p. 128)
2:00–3:00 PM	4–6	S504d, McCormick Place	Catapults, Trebuchets, and Angry Birds! Combining Literacy, History, Engineering, and Science (p. 135)
2:00–3:00 PM	2–12	W192a, McCormick Place	Lloyd's Toolbox of Engineering Ideas and Activities (p. 136)
2:00–3:00 PM	6–8	S405b, McCormick Place	Marsbound (p. 138)
2:00–3:00 PM	G	W475b, McCormick Place	What Do Engineers Really Do? Integrating Engineering and Science (p. 136)
2:00–3:00 PM	1–12	Burnham A/B, Hyatt	ASTC Session: Full STEAM Ahead! STEAM Education for All Learners (p. 133)
2:00–3:30 PM	4–12	W475a, McCormick Place	Digital Microscopes 101: Teachers Share Classroom Experiences (p. 146)
2:00–3:30 PM	5–8	W186b, McCormick Place	Exploring How Machines Work with the LEGO® Education Simple and Motorized Mechanisms Set (p. 144)
2:00–3:30 PM	9–C	W185d, McCormick Place	Advanced Physics with Vernier (p. 144)
2:30–3:00 PM	6–8	S404d, McCormick Place	The STEM House Project: Middle School Students Living the Engineering Design Process (p. 148)
3:00–4:30 PM	6–8	W194a, McCormick Place	Experience Amplify Science: Immerse Students into the World of Scientists and Engineers with the Newest Curriculum from The Lawrence Hall of Science (p. 149)
3:30–4:30 PM	6–12	W186c, McCormick Place	Understanding Car Crashes: Engineering Truly Impactful STEM Lessons (p. 153)
3:30–4:30 PM	9–12	W179b, McCormick Place	The Physics of Sound Waves (p. 157)
3:30–4:30 PM	2–C	S403b, McCormick Place	Science in a Bottle: Learning Science with Habitats (p. 152)
3:30–4:30 PM	3–8	W192c, McCormick Place	Engineering: Build a Better Kaleidoscope! (p. 156)
3:30–4:30 PM	9–C	W192a, McCormick Place	Investigating and Building Models to Understand How the Environment Influences Genes (p. 156)
3:30–4:30 PM	G	W196a, McCormick Place	Assessing the Engineering-ness of Your Science Lessons (p. 156)
3:30–4:30 PM	C	Grant Park C, Hyatt	Developing and Nurturing Elementary Science Teacher Efficacy: Implications for Teacher Educators (p. 151)
4:00–5:30 PM	6–12	W184bc, McCormick Place	Building an Electric Motor the STEM Way with CPO's Link™ Learning Module (p. 161)
4:00–5:30 PM	1–3	W186b, McCormick Place	Exploring Forces, Motion, and Engineering Design with LEGO® Education Simple Machines (p. 161)
4:00–5:30 PM	5–12	W476, McCormick Place	A Revolution in STEM Robotics (p. 164)
5:00–5:30 PM	9–12	W186c, McCormick Place	Engineering for All: Engaging Girls in Engineering Through Community Service (p. 165)
5:00–6:00 PM	3–8	W192c, McCormick Place	Mars Rover Models in the Classroom: Student-designed Spacecraft (p. 169)
5:00–6:00 PM	7–8	S405b, McCormick Place	Seismic Safe Structures (p. 168)

5:00–6:00 PM	9–12	S402a, McCormick Place	Engineering in the Biology Classroom: Climate Change of Another Type (p. 166)
5:00–6:00 PM	6–12	S403b, McCormick Place	Putting the "M" in STEM with Ocean Data (p. 168)
5:00–6:00 PM	3–5	W187b, McCormick Place	Girls Engaged in Math and Science (GEMS): Using Culturally Responsive Engineering Design Challenges to Promote STEM (p. 167)
5:00–6:00 PM	G	Jackson Park C, Hyatt	Iron Teacher Edition from Southern Illinois University Edwardsville (p. 168)
5:00–6:00 PM	9–12	W196c, McCormick Place	UTeachEngineering: Broadening Participation in a Computationally Rigorous High School Engineering Program (p. 167)
5:00–6:00 PM	8–C	S503b, McCormick Place	Engineering: Robots, Rockets, and Rock 'n' Roll (p. 169)
5:00–6:00 PM	5–12	W187c, McCormick Place	Creative STEM Projects with MINDSTORMS® EV3 and NXT Robotics (p. 167)

Life Science

8:00–8:30 AM	K–5	S504bc, McCormick Place	Connecting the Universal Wonder of Science and Story for ALL Learners (p. 90)
8:00–8:30 AM	11–C	Clark C, Hyatt	SCST Session: Distilling "Best Practices" for Teaching and Learning in Anatomy and Physiology (p. 89)
8:00–8:30 AM	G	W187a, McCormick Place	The Biodiversity Project (p. 90)
8:00–9:00 AM	6–12	S402b, McCormick Place	Plant Virus: Biology, Ecology, and Management (p. 96)
8:00–9:00 AM	10–C	Grant Park B, Hyatt	Teaching Statistical Analysis Using Spreadsheets Simulation Models and Resampling in AP Biology (p. 95)
8:00–9:00 AM	K–5	S504a, McCormick Place	Early Childhood Engineering Design with Engineers and Scientists Based on Unique and Diverse Features of the Island of Guam (p. 98)
8:00–9:00 AM	9–C	W190b, McCormick Place	What Do Students Think They Know? Improving Assessment Through Student Choice and Self-Reflection (p. 98)
8:00–9:00 AM	9–12	S402a, McCormick Place	Does That Life Science Resource Really Meet the *NGSS*? (p. 92)
8:00–9:00 AM	6–12	S401d, McCormick Place	Assessment for Learning—Assessment Practices That Lead to Content Mastery in Biology (p. 92)
8:00–9:00 AM	4–8	S502a, McCormick Place	Kinetic Science: Models of Understanding (p. 96)
8:00–9:00 AM	6–12	S502b, McCormick Place	Which Way Did the DNA Go? Fun with Electrophoresis! (p. 96)
8:00–9:15 AM	9–C	W183c, McCormick Place	Gorongosa: A Case Study in Conseration (p. 100)
8:00–9:30 AM	9–12	W181a, McCormick Place	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 100)
8:00–9:30 AM	6–12	W192b, McCormick Place	Blood Ties: Switched at Birth? (p. 102)
8:00–9:30 AM	8–C	W186a, McCormick Place	Case of the Missing Records (p. 102)
8:30– 9:00 AM	C	Clark C, Hyatt	SCST Session: A Sustainable Professional Development Model for Inquiry Teaching in Introductory College Biology Courses (p. 105)
8:30–9:00 AM	6–8	W195, McCormick Place	To Look Closely: Science and Literacy in the Natural World (p. 105)
8:30–10:00 AM	9–C	W474b, McCormick Place	Struggling with How to Integrate Inquiry into Your AP Biology Course? (AP Big Idea 3) (p. 106)
9:15–10:30 AM	G	Skyline W375 a/b, McCormick Place	General Session: Your Inner Fish (p. 107)
10:00–11:30 AM	6–8	W195, McCormick Place	A Cell So Small (p. 111)
10:00–11:30 AM	K–12	W181a, McCormick Place	Introduction to Wisconsin Fast Plants® (p. 109)
10:00–11:30 AM	8–C	W186a, McCormick Place	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 110)
10:00–11:30 AM	9–C	W185a, McCormick Place	Biology with Vernier (p. 109)
10:30 AM–12 Noon	9–C	W474b, McCormick Place	Contagion! Track the Progress of Dangerous Viruses That Are Spreading Throughout the Country (p. 112)
11:00 AM–12 Noon	9–12	W179b, McCormick Place	Adapting Traditional Biology Labs to Sensor Technology (p. 114)
12 Noon–1:30 PM	9–C	W185a, McCormick Place	Energy Flow Through an Ecosystem (p. 117)
12 Noon–1:30 PM	9–12	W183c, McCormick Place	Extinctions Past and Present (p. 116)
12 Noon–1:30 PM	8–C	W186a, McCormick Place	Using the Polymerase Chain Reaction to Identify GM Foods (p. 116)
12 Noon–1:30 PM	9–C	W185a, McCormick Place	Inquiry-based Biology with Vernier (p. 116)

12 Noon–1:30 PM	6–12	W181a, McCormick Place	Genetics Brought to Life: Gene-ius Model Organisms (p. 115)
12:30–1:30 PM	2–10	W475b, McCormick Place	I'm an Inquiry-based Humerus Alliance Between Language Arts and Science: What Am I? (p. 126)
12:30–1:30 PM	6–9	S405b, McCormick Place	Carbon Cycle by the Numbers: Hands-On Activities from the Exploratorium (p. 125)
12:30–1:30 PM	P–12	Grank Park C, Hyatt	Every Drop Counts: How Much Did You Get? (p. 121)
12:30–1:30 PM	9–12	S402a, McCormick Place	Assessing the *NGSS* in the High School Biology Classroom (p. 121)
12:30–1:30 PM	5–8	W179b, McCormick Place	Exploring Motion in Middle School Science with Position and Velocity Games—MatchGraph! (p. 127)
12:30–1:30 PM	K–5	W194b, McCormick Place	Next Generation PET: Preparing Elementary Teachers for the *NGSS* (p. 127)
12:30–1:30 PM	6–C	Jackson Park C, Hyatt	Using Games to Support Students in the Practice of "Developing and Using Models" (p. 124)
1:00–1:30 PM	2–9	W187a, McCormick Place	A Bird in the Hand (p. 130)
1:00–2:30 PM	9–C	W474a, McCormick Place	DNA Detectives: Who Killed Jose? (p. 130)
1:10–1:30 PM	C	Clark C, Hyatt	SCST Session: Initial Results from Revamping an Introductory Biology Course: Focusing on Inquiry (p. 131)
2:00–3:00 PM	6–12	S402b, McCormick Place	"Speak Up!" Incorporating Discourse into Your Life Science Classroom Instruction (p. 138)
2:00–3:30 PM	9–C	W183c, McCormick Place	*Your Inner Fish* in the Classroom (p. 142)
2:00–3:30 PM	5–C	W193a, McCormick Place	Dive In with Magnetic Water Molecules (p. 144)
2:00–3:30 PM	9–12	W195, McCormick Place	The Cell Cycle (p. 144)
2:00–3:30 PM	9–C	W476, McCormick Place	Molecular Evolution: What Can Dogs Teach Us? (p. 146)
2:00–3:30 PM	K–12	W181a, McCormick Place	Hands-On Science with Classroom Critters (p. 142)
2:00–3:30 PM	6–12	W184bc, McCormick Place	Genetics: Crazy Traits and CPO's Link™ Learning Module (p. 142)
2:00–3:30 PM	8–C	W186a, McCormick Place	The Drunken Worms: Exploring Gene Function with *C. elegans* (p. 144)
2:00–3:30 PM	8–C	W193b, McCormick Place	Building Your Body in Clay: One System at a Time (p. 144)
2:20–2:40 PM	C	Clark C, Hyatt	SCST Session: Flip or Flop—Does Flipping the Classroom in Introductory Biology Result in Better Student Success in a Two-Year College? (p. 148)
3:30–4:30 PM	4–C	Jackson Park A, Hyatt	Getting Your Hands "Dirty" in a STEM Classroom (p. 154)
3:30–4:30 PM	9–12	S404a, McCormick Place	Population Activities for AP Environmental Science (p. 154)
3:30–4:30 PM	2–C	S403b, McCormick Place	Science in a Bottle: Learning Science with Habitats (p. 152)
3:30–4:30 PM	10–12	S402a, McCormick Place	Forensic Pathology: An Introduction for Educators (p. 151)
3:30–4:30 PM	8–C	Field C, Hyatt	NARST Session: Creationism *vs.* Evolution: A Study of the Opinions of Georgia Biology Teachers (p. 150)
3:30–4:30 PM	6–C	S401bc, McCormick Place	NSTA Press® Session: Citizen Science: Diverse Projects that Bring Biology to Life (p. 151)
3:30–4:30 PM	7–12	S402a, McCormick Place	"Urine Trouble!" and Other Examples of Learning Body Systems Through Game Design (p. 154)
3:30–4:30 PM	9–C	W192a, McCormick Place	Investigating and Building Models to Understand How the Environment Influences Genes (p. 156)
3:30–4:30 PM	C	Grant Park C, Hyatt	Developing and Nurturing Elementary Science Teacher Efficacy: Implications for Teacher Educators (p. 151)
3:30–5:00 PM	9–C	W474a, McCormick Place	Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, 4) (p. 158)
4:00–4:30 PM	C	Clark C, Hyatt	SCST Session: How to Make a Campus-wide Initiative Educational and Fun for Students (p. 159)
4:00–5:30 PM	9–C	W183c, McCormick Place	Cancer as a Genetic Disease (p. 160)
4:00–5:30 PM	9–12	W195, McCormick Place	Gene Expression (p. 162)
4:00–5:30 PM	6–12	W193b, McCormick Place	Teaching Science Using Innovative Technology: *Mannahatta2409.org* (p. 162)
4:00–5:30 PM	8–C	W193a, McCormick Place	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 162)
4:00–5:30 PM	8–C	W186a, McCormick Place	Teaching STEM Using Agarose Gel Electrophoresis (p. 161)
4:00–5:30 PM	9–12	W181a, McCormick Place	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 160)

5:00–5:20 PM	C	Clark C, Hyatt	SCST Session: Preparing to Teach Chemical Transformation Pathways—Identifying the Chemistry Biology Students Have to Know to Understand Cellular Respiration (p. 164)
5:00–6:00 PM	6–C	S404a, McCormick Place	What Lives Where and Why? Understanding Biodiversity Through Geospatial Exploration (p. 168)
5:00–6:00 PM	6–12	S403b, McCormick Place	Putting the "M" in STEM with Ocean Data (p. 168)
5:00–6:00 PM	8–10	S402b, McCormick Place	The Body Biology Project: Implement Authentic, Rigoruos, Project-based, Interdisciplinary Learning in Your Science Classroom (p. 168)
5:00–6:00 PM	4–C	Hyde Park A, Hyatt	Student-driven Animal Behavior Investigations: A San Francisco Zoo and Sacred Heart Cathedral Preparatory Partnership (p. 167)
5:00–6:00 PM	G	Jackson Park C, Hyatt	Iron Teacher Edition from Southern Illinois University Edwardsville (p. 168)
5:00–6:00 PM	9–12	S402a, McCormick Place	Engineering in the Biology Classroom: Climate Change of Another Type (p. 166)
5:20–5:40 PM	C	Clark C, Hyatt	SCST Session: The First Application of the Measurement of Attitudes Toward Evolution (MATE) Survey Across Two Regionally Distinct Colleges (p. 169)
5:40–6:00 PM	C	Clark C, Hyatt	SCST Session: Faculty and Student Perceptions of a Multisection Inquiry-based Introductory Biology Course with Common Assessments (p. 170)

Physical Science

8:00–9:00 AM	K–12	W179b, McCormick Place	Supporting *NGSS* Requirements for Data Collection on Chromebooks (p. 99)
8:00–9:00 AM	3–C	W192a, McCormick Place	Drivers Start Your Glue Guns! Engineering by Design (p. 98)
8:00–9:00 AM	9–C	W190b, McCormick Place	What Do Students Think They Know? Improving Assessment Through Student Choice and Self-Reflection (p. 98)
8:00–9:00 AM	9–12	S501bc, McCormick Place	Using the *Next Generation Science Standards* in Chemistry Classes (p. 96)
8:00–9:00 AM	6–12	S501a, McCormick Place	Increasing Science Literacy for All While Differentiating Content Through Pedagogical Strategies (p. 94)
8:00–9:00 AM	3–C	Adler A/B, Hyatt	Adapt Your Teaching to Support the *NGSS* Practices Using PhET Interactive Simulations (p. 91)
8:00–9:00 AM	4–8	S502a, McCormick Place	Kinetic Science: Models of Understanding (p. 96)
8:00–9:00 AM	6–8	S501d, McCormick Place	Eureka! Causal Thinking about Molecules and Matter (p. 96)
8:00–9:30 AM	9–12	W181c, McCormick Place	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 100)
8:00–9:30 AM	3–8	W185d, McCormick Place	Investigating Wind Energy with Vernier (p. 102)
8:00–9:30 AM	7–C	W471a, McCormick Place	Spicing Up Classical Physics with Modern Examples (p. 104)
8:30–9:00 AM	6–8	W195, McCormick Place	To Look Closely: Science and Literacy in the Natural World (p. 105)
9:00–11:00 AM	9–C	W474a, McCormick Place	The GMO Debate Rages On! (p. 106)
9:30–10:30 AM	9–12	W179b, McCormick Place	Spectrometry: Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics! (p. 107)
10:00–11:30 AM	7–C	W185d, McCormick Place	Renewable Energy with KidWind and Vernier (p. 110)
10:00–11:30 AM	6–C	W470a, McCormick Place	Cool Tools for Force and Motion (p. 111)
10:00–11:30 AM	7–C	W476, McCormick Place	Molecular-Level Visualization and the *NGSS*: Engaging Your Students (p. 111)
10:00–11:30 AM	9–12	W180, McCormick Place	Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments (p. 108)
10:00–11:30 AM	9–12	W181c, McCormick Place	Flipping Out Over Chemistry! (p. 109)
10:00–11:30 AM	9–12	W192b, McCormick Place	CTE: Real-Life Forensics Brought to the Classroom, Solving the Case (p. 110)
11:00 AM–12 Noon	9–12	W194b, McCormick Place	Active Physics: A Leading Project-based High School Physics Program Capturing the Essence of the *NGSS* and STEM Plus New Support Resources (p. 114)
12 Noon–1:30 PM	9–12	W475a, McCormick Place	Mentis Sciences Educational Toolkit (MSET) (p. 118)
12 Noon–1:30 PM	6–C	W470a, McCormick Place	Cool Tools for Light and Color (p. 117)

12 Noon–1:30 PM	7–12	W193b, McCormick Place	Build Your Chemistry Teaching Skills with Online Continuing Professional Development from the Royal Society of Chemistry (p. 117)
12 Noon–1:30 PM	6–12	W192b, McCormick Place	Alternative Energy Gets a Lift from STEM: Wind Turbines (p. 117)
12 Noon–1:30 PM	6–12	W184bc, McCormick Place	CPO's Link™ Learning Chemistry Models Module: Fun with Atom Building Games and the Periodic Table (p. 116)
12:30–1:00 PM	7–12	Dusable A, Hyatt	ASTE Session: Use of Electronic Simulations in Grades 7–12 Science Teaching (p. 119)
12:30–1:30 PM	5–8	W179b, McCormick Place	Exploring Motion in Middle School Science with Position and Velocity Games—MatchGraph! (p. 127)
12:30–1:30 PM	4–8	S502b, McCormick Place	I See the Light! Be Part of Celebrating the International Year of Light (p. 125)
12:30–1:30 PM	9–12	S501bc, McCormick Place	5E's in 60 Minutes (p. 125)
12:30–1:30 PM	6–8	S501d, McCormick Place	Let's Get STEM Going! (p. 125)
12:30–1:30 PM	K–5	W194b, McCormick Place	Next Generation PET: Preparing Elementary Teachers for the *NGSS* (p. 127)
12:30–1:30 PM	9–12	S501a, McCormick Place	Implementing Engineering Practices in a Chemistry Classroom (p. 122)
12:30–1:30 PM	K–6	W190b, McCormick Place	Assessment Matters! Using Formative Assessment Strategies to Improve K–6 Teaching (p. 126)
2:00–2:30 PM	9–C	Grant Park B, Hyatt	Assessing *NGSS* Science and Engineering Practices in Two Different Chemistry Courses (p. 131)
2:00–3:00 PM	9–12	W196a, McCormick Place	Bullet Holes: Using STEM-based Forensic Ballistic Trajectory Analysis to Reconstruct a Crime! (p. 140)
2:00–3:00 PM	9–12	W179b, McCormick Place	Project-based Activities for Gas Laws and Stoichiometry Chemistry Standards (p. 140)
2:00–3:00 PM	7–12	S403b, McCormick Place	MiQuakes: Earthquakes in the Classroom: Loose Sediments to Hard Core (p. 138)
2:00–3:00 PM	8–12	S401d, McCormick Place	Reaching More of Your Learners Where They Are at with Formative Assessment (p. 134)
2:00–3:00 PM	4–6	S504d, McCormick Place	Catapults, Trebuchets, and Angry Birds! Combining Literacy, History, Engineering, and Science (p. 135)
2:00–3:00 PM	4–10	S405c, McCormick Place	Electrify Your Teaching Using the Simple Circuit Board (p. 138)
2:00–3:00 PM	P–6	S503a, McCormick Place	Story Starts to Science: Using Children's Literature to Enhance Your Science Curriculum Science Content (p. 139)
2:00–3:00 PM	8–C	S501a, McCormick Place	It's a Gas: the Movie: Grades 8–12 Students Producing Virtual Labs (p. 134)
2:00–3:30 PM	5–C	W193a, McCormick Place	Dive In with Magnetic Water Molecules (p. 144)
2:00–3:30 PM	9–12	W192b, McCormick Place	Meet *NGSS* Environmental Science Disciplinary Core Ideas with *Daphnia* (p. 144)
2:00–3:30 PM	5–9	W178a, McCormick Place	The Harnessed Atom: New Ideas, Tools, and Resources: Nuclear Science and Energy (p. 141)
2:00–3:30 PM	9–C	W180, McCormick Place	Flinn Scientific Resources Prepare Students for AP Chemistry Success (p. 142)
2:00–3:30 PM	9–C	W185d, McCormick Place	Advanced Physics with Vernier (p. 144)
2:00–3:30 PM	9–12	W179a, McCormick Place	Economical, Efficient, and Effective STEM Inquiry in Chemistry (p. 141)
3:30–4:30 PM	3–C	W187a, McCormick Place	Sharing the Night Sky with Your Students (p. 153)
3:30–4:30 PM	9–12	W179b, McCormick Place	The Physics of Sound Waves (p. 157)
3:30–4:30 PM	2–C	S403b, McCormick Place	Science in a Bottle: Learning Science with Habitats (p. 152)
3:30–4:30 PM	9–12	S501bc, McCormick Place	Implementing Engineering Practices in a Physics Classroom (p. 155)
3:30–4:30 PM	1	S504bc, McCormick Place	Thinking, Acting, and Writing like Scientists: First-Grade Investigators Explore the Causes and Effects of Sounds and Vibrations (p. 152)
3:30–4:30 PM	C	Grant Park C, Hyatt	Developing and Nurturing Elementary Science Teacher Efficacy: Implications for Teacher Educators (p. 151)
4:00–5:30 PM	8–C	W193a, McCormick Place	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 162)
4:00–5:30 PM	9–12	W192b, McCormick Place	Ward's AP Chemistry Investigation 4: Titrations—How Acidic Are the Beverages We Drink? (p. 162)
4:00–5:30 PM	9–C	W185a, McCormick Place	Chemistry with Vernier (p. 161)
4:00–5:30 PM	9–C	W185d, McCormick Place	Physics with Vernier (p. 161)

4:00–5:30 PM	9–12	W475a, McCormick Place	*Living by Chemistry*: Create a Table (p. 164)
5:00–5:20 PM	C	Clark C, Hyatt	SCST Session: Preparing to Teach Chemical Transformation Pathways—Identifying the Chemistry Biology Students Have to Know to Understand Cellular Respiration (p. 164)
5:00–6:00 PM	3–8	W192c, McCormick Place	Mars Rover Models in the Classroom: Student-designed Spacecraft (p. 169)
5:00–6:00 PM	7–12	S501a, McCormick Place	Do the Wave (p. 166)
5:00–6:00 PM	6–12	S403b, McCormick Place	Putting the "M" in STEM with Ocean Data (p. 168)
5:00–6:00 PM	G	Jackson Park C, Hyatt	Iron Teacher Edition from Southern Illinois University Edwardsville (p. 168)
5:00–6:00 PM	9–12	S501bc, McCormick Place	Using Modeling Activities in the High School Chemistry Class (p. 168)
5:00–6:00 PM	5–9	S502b, McCormick Place	Tangible Teaching: Counting Atoms with Pennies (p. 168)
5:00–6:00 PM	8–C	S503b, McCormick Place	Engineering: Robots, Rockets, and Rock 'n' Roll (p. 169)

General Science Education

8:00–8:30 AM	2–5	S504d, McCormick Place	Consumers or Producers? Teaching Science to English Language Learners (p. 90)
8:00–8:30 AM	G	Jackson Park D, Hyatt	AMS DataStreme Project and the *NGSS* (p. 89)
8:00–9:00 AM	G	W183a/b, McCormick Place	First-Timers, Preservice Teachers, and New Teachers Breakfast (p. 90)
8:00–9:00 AM	5–12	W187c, McCormick Place	iPad Invasion in the Middle School Science Classroom (p. 94)
8:00–9:00 AM	12	W196c, McCormick Place	All Students Can Be STEM Students: Opening the Doors to the Unconverted (p. 94)
8:00–9:00 AM	4–12	Jackson Park C, Hyatt	What's a Scientific Model? (p. 95)
8:00–9:00 AM	P–6	S503b, McCormick Place	Culturally Relevant Pedagogy: How to Handle Diversity in the Elementary Classroom (p. 98)
8:00–9:00 AM	6–8	S404d, McCormick Place	RIPD 3-D: Rigorous Inquiry-based Professional Development (p. 94)
8:00–9:00 AM	5–12	S403a, McCormick Place	Arctic Dinosaurs and Climate Change (p. 92)
8:00–9:00 AM	4–C	Jackson Park B, Hyatt	Tricks of the Trade: Reading (p. 95)
8:00–9:00 AM	2–6	S505b, McCormick Place	Investigations in Transportation: Partnering Industry Professionals and Elementary Teachers in a STEM Unit of Study (p. 94)
8:00–9:00 AM	5–12	Hyde Park A, Hyatt	Students to Stewards: Shaping Science Education Through Community Partnerships (p. 92)
8:00–9:00 AM	3–12	W187b, McCormick Place	Zombie Apocalypse! Scaffolding Claims, Evidence, and Reasoning (p. 94)
8:00–9:00 AM	C	Burnham A/B, Hyatt	NARST Session: Implementing Project Based Learning in an Inclusive STEM-focused Secondary School (p. 91)
8:00–9:00 AM	G	W176a, McCormick Place	BSCS Pathway Session: Designing Effective Professional Development for the *NGSS* (p. 98)
8:00–9:00 AM	6–8	W194b, McCormick Place	The EQuIP Rubric: Evaluating Middle School Resources for *NGSS* (p. 99)
8:00–9:00 AM	G	Jackson Park A, Hyatt	Using Research to Support Your Teaching (p. 92)
8:00–9:00 AM	G	Prairie A, Hyatt	AMSE Session: What Else I Learned in Science Class (Besides Science) (p. 92)
8:00–9:00 AM	6–12	W186c, McCormick Place	Teaching Science and Engineering Practices Using Energy-Efficient Buildings with an Open-Access Smart CAD Program (p. 94)
8:00–9:30 AM	4–C	W175 a/b, McCormick Place	McREL Pathway Session: Discourse in the Classroom: Supporting Science and Engineering Practices (p. 100)
8:00–9:30 AM	7–C	W175c, McCormick Place	Special Pathway Session: CDC: The Why, What, and How of Teaching Epidemiology and Public Health Science in Middle and High School (p. 100)
8:00–9:30 AM	K–12	W179a, McCormick Place	Using Problem-Based Learning to Up Your *NGSS* Game (p. 100)
8:00–9:30 AM	K–5	W194a, McCormick Place	Jump-start Your Transition to *NGSS* and *CCSS, ELA* Through Integration—From The Lawrence Hall of Science (p. 102)
8:00–9:30 AM	K–6	W184a, McCormick Place	Science, the Literacy Connection, and the *CCSS ELA* (p. 101)
8:00–9:30 AM	3–C	W185a, McCormick Place	Integrate Chromebook and BYOD with Vernier Technology (p. 102)
8:00–9:30 AM	K–11	W471b, McCormick Place	STEM—Discover, Collaborate, Innovate (p. 104)
8:00–11:00 AM	6–12	W178b, McCormick Place	AMNH Pathway Session: Using a Tool and the *NGSS* to Plan a Unit of Instruction (p. 104)

8:00–11:00 AM	K–5	Field A/B, Hyatt	Implementing *NGSS* in a Fourth-Grade Classroom: Integrating *CCSS ELA* Through Science Notebooks, Scientist Meetings, and NSTA Outstanding Trade Books (p. 104)
8:30–9:00 AM	P–12	W187a, McCormick Place	Creating a Culture of Conservation Using the *NGSS* Practices (p. 106)
8:30–9:00 AM	K–12	Jackson Park D, Hyatt	Arctic and Antarctic E-Books in the Classroom: A New Polar Resource for Educators (p. 105)
9:30–10:30 AM	4–C	Skyline W375e, McCormick Place	NMEA Session: Great Lakes Literacy…Coming Soon to a Classroom Near You (p. 107)
9:30–10:30 AM	6–8	W194b, McCormick Place	Merging the Three Dimensions of the *NGSS* in *Project-Based Inquiry Science*™ (PBIS) for Middle School (p. 107)
9:30–11:30 AM	6–12	W176a, McCormick Place	BSCS Pathway Session: Engaging Students in Making Sense of Phenomena with Data and Models—Practices 2 and 4 (p. 108)
10:00–11:30 AM	6–C	W179a, McCormick Place	Understanding Global Change: Welcome to the Anthropocene! (p. 108)
10:00–11:30 AM	6–12	W184bc, McCormick Place	Solving the Mystery of STEM Using Forensic Science (p. 109)
10:00–11:30 AM	1–5	W184d, McCormick Place	Scientific Practices: What Does Argumentation Look Like in a FOSS Elementary Classroom? (p. 109)
10:00–11:30 AM	P–6	W175 a/b, McCormick Place	McREL Pathway Session: Green STEM in Elementary Classrooms (p. 108)
10:00–11:30 AM	9–12	W180, McCormick Place	Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments (p. 108)
10:00–11:30 AM	K–6	W184a, McCormick Place	PEASE in Our Time—Memory Lanes of the Brain (p. 109)
10:00–11:30 AM	K–12	W193b, McCormick Place	Presidential STEM Teachers: PAEMST Success for K–12 Educators (p. 110)
10:00–11:30 AM	K–12	W471b, McCormick Place	Read, Write, and Think SCIENCE! (p. 111)
10:00–11:30 AM	9–12	W470b, McCormick Place	Engaging Students Effectively: The BIOZONE Solution (p. 111)
10:00–11:30 AM	9–12	W178a, McCormick Place	Student Engagement and Preparedness in High School Science Labs (p. 108)
10:00 AM–12 Noon	1–12	W175c, McCormick Place	Special Pathway Session: *NGSS* Base Camp: An Introduction to the *Next Generation Science Standards* (p. 112)
10:30 AM–12 Noon	K–8	W194a, McCormick Place	Unpacking *NGSS*: Guiding Students to Become Evidence-based Thinkers, Speakers, Readers, and Writers (p. 112)
11:00–11:20 AM	C	Clark C, Hyatt	SCST Session: OSU National Lab Day: Introducing High School Students to STEM Research and Careers (p. 113)
11:05–11:30 AM	G	Exhibit Hall Entrance, MP	"Meet and Greet" the Presidents and Board/Council (p. 114)
11:20–11:40 AM	C	Clark C, Hyatt	SCST Session: The Merit Model and Recruitment/Retention of STEM Majors: How It Works and How We Know (p. 114)
11:40 AM–12 Noon	10–C	Clark C, Hyatt	SCST Session: Enhancing an Undergraduate Research Experience: NSF-style Review Board (p. 115)
12 Noon–1:30 PM	3–C	W185d, McCormick Place	iPad and Wireless Sensors with Vernier (p. 116)
12 Noon–1:30 PM	3–8	W193a, McCormick Place	Scratch for the Science Classroom: Introducing Coding as a Tool Earlier in Learning (p. 117)
12 Noon–1:30 PM	6–8	W471b, McCormick Place	Bringing the *NGSS* to the Classroom with Discovery Education (p. 118)
12 Noon–1:30 PM	8–C	W186a, McCormick Place	Using the Polymerase Chain Reaction to Identify GM Foods (p. 116)
12 Noon–1:30 PM	4–8	W476, McCormick Place	Nasco SciQuest® Kits for Your Classrooms (p. 118)
12 Noon–1:30 PM	K–5	W181c, McCormick Place	Bring Visual Science into K–5 Classrooms—It's a Game Changer! (p. 115)
12 Noon–1:30 PM	P–5	W181b, McCormick Place	Creating a New Generation of Learners PreK–5 (p. 115)
12 Noon–1:30 PM	5–8	W180, McCormick Place	Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School (p. 115)
12 Noon–1:30 PM	K–12	W179a, McCormick Place	*NGSS*, STEM, and *Common Core*…Connecting the Pieces to the Puzzle (p. 115)
12 Noon–1:30 PM	1–6	W184a, McCormick Place	Teaching Argumentation for Our Next Generation (p. 116)
12 Noon–1:30 PM	1–5	W184d, McCormick Place	Crosscutting Concepts: What Do They Look Like in a FOSS Elementary Classroom? (p. 116)
12:30–12:50 PM	C	Clark C, Hyatt	SCST Session: Peer-Review in the College Science Classroom: Scientific Communication's "Missing Link" (p. 118)
12:30–1:00 PM	3–12	Hyde Park A, Hyatt	Boost Sustainability in Your Science Curriculum Through Community Connections (p. 119)
12:30–1:00 PM	K–12	W187a, McCormick Place	Developing Partnerships: A Model of Outdoor Education (p. 119)

12:30–1:00 PM	6–8	S404d, McCormick Place	Develop Science and Literacy Skills Through Investigation and Summative Assessment (p. 119)
12:30–1:30 PM	G	Skyline W375ab, McCormick Place	Progress in America's Schools: Where We Are and Where We Are Heading (p. 120)
12:30–1:30 PM	G	W190a, McCormick Place	Mary C. McCurdy Lecture: *Next Generation Science Standards*: All Standards, All Students (p. 120)
12:30–1:30 PM	6–8	S501d, McCormick Place	AMSE Session: AIM (Allocate-Initiate-Model) to Lead Diverse Student Populations in the Next Generation (p. 121)
12:30–1:30 PM	9–12	W186c, McCormick Place	From the Love Canal to Phytoremediation: What's New in Environmental Engineering? (p. 122)
12:30–1:30 PM	5–9	S504d, McCormick Place	Engaging Middle School Latinas in STEM (p. 122)
12:30–1:30 PM	K–6	S505b, McCormick Place	Strengthening Elementary Science: Increasing Science Literacy, Inquiry, Critical Thinking, and Engagement While Meeting the *CCSS* (p. 122)
12:30–1:30 PM	5–9	S504d, McCormick Place	Student-created Videos as "Thinking Products" (p. 122)
12:30–1:30 PM	P–1	S502a, McCormick Place	The Science of Play Behind Early Childhood STEM Education (p. 125)
12:30–1:30 PM	K–8	S503b, McCormick Place	Making Models Meaningful (p. 125)
12:30–1:30 PM	6–C	Jackson Park B, Hyatt	Level Up Your Students' Learning: Introducing Game Elements into the Classroom (p. 124)
12:30–1:30 PM	5–12	Jackson Park D, Hyatt	Exploring the *NGSS*: Three Teachers' Tales (p. 121)
12:30–1:30 PM	K–1/C	Grant Park B, Hyatt	Young Scientists at Work: Using Live Materials and the Tools of Investigation (p. 124)
12:30–1:30 PM	5–11	S402b, McCormick Place	Using Simulations in Inquiry-based Science (p. 125)
12:30–1:30 PM	G	Field A/B, Hyatt	NSELA Session: Back to Basics for Conducting Professional Development (p. 124)
12:30–1:30 PM	G	Adler A/B, Hyatt	Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 101) (p. 124)
12:30–1:30 PM	9–12	Field C, Hyatt	NARST Session: The Relative Influence of the Professional Community on Changes in Science Teaching (p. 121)
12:30–1:30 PM	2–8	W185 b/c, McCormick Place	CESI Session: Dumbledore's Transfiguration Class: Science and Magic from Hogwart's Academy (p. 122)
12:30–1:30 PM	G	S401bc, McCormick Place	NSTA Press® Session: Thinking Maps and Literacy Strategies to Structure Solving *Everyday Science Mysteries* (p. 121)
12:30–1:30 PM	G	Burnham A/B, Hyatt	ASTC Session: Formal and Informal Educators Collaborate at the Museum of Science in Boston: Opportunities for Enhanced Synergy and Creativity (p. 121)
12:30–1:30 PM	K–6	W192c, McCormick Place	Engage and Excite with Elementary Science Olympiad (p. 126)
12:30–2:00 PM	6–8	W194a, McCormick Place	Learn to Play—Play to Learn with Amplify's STEM Games (p. 128)
12:30–2:00 PM	9–C	W175 a/b, McCormick Place	McREL Pathway Session: Implementing Formative Assessment in the High School Classroom to Realize the Vision of the *NGSS* (p. 128)
12:30–2:30 PM	6–12	W178b, McCormick Place	AMNH Pathway Session: Using a Tool and the *NGSS* Performance Expectations to Plan for Classroom Assessments (p. 128)
12:30–2:30 PM	3–6	Clark A/B, Hyatt	CSSS Session: Knowing What Elementary Students Know and Can Do: Hands-On Performance Assessment Tasks Measure Mastery of the *CCSS* and *NGSS* (p. 128)
12:30–3:30 PM	G	W176a, McCormick Place	BSCS Pathway Session: Taking the Lead with the *NGSS* (p. 129)
12:50–1:10 PM	C	Clark C, Hyatt	SCST Session: Is It Working? Assessing the Effects of Study Groups and Tutoring on Science Student Performance (p. 129)
1:00–1:30 PM	7–C	S403b, McCormick Place	Integrating Field-based Learning into the Geoscience Curriculum (p. 129)
1:00–1:30 PM	9–12	W176b, McCormick Place	Co-Teaching in Science…It Can Be Better Together! (p. 130)
1:00–1:30 PM	5–8	S404d, McCormick Place	The Quest for Classroom Economy: Creating a Seamless School for Science, Literacy, and Math (p. 129)
1:00–1:30 PM	G	Hyde Park A, Hyatt	Innovative Approaches to Business Engagement (p. 129)
2:00–2:20 PM	10–C	Clark C, Hyatt	SCST Session: Flipping Out Over What We've Learned: Insights into the Implementation of a Flipped Classroom (p. 131)

2:00–2:30 PM	K–6	S504bc, McCormick Place	Using the NSTA Learning Center to Build Teacher Candidates Confident in Science Content: Best Practices (p. 131)
2:00–3:00 PM	K–12	Jackson Park C, Hyatt	Interactive Word Wall Rubric: Good, Better, Best (p. 133)
2:00–3:00 PM	K–12	Jackson Park D, Hyatt	Creating and Evaluating Resources for Lessons that Fit the *NGSS* (p. 133)
2:00–3:00 PM	4–C	W187c, McCormick Place	Dynamic Modeling Software Tools to Engage Students in Practices and Crosscutting Concepts (p. 136)
2:00–3:00 PM	3–6	S504a, McCormick Place	Hitting the Right Note: Teaching Science Through Rock 'n' Roll (p. 139)
2:00–3:00 PM	9–12	W196c, McCormick Place	CT4ALL: Innovative Curriculum for Tackling *NGSS* and Computing in STEM Classrooms (p. 136)
2:00–3:00 PM	8–C	S404bc, McCormick Place	Promoting Habits of Science, Sustainability, and Service by Unifying Learning Across School, Family, and Community Contexts (p. 134)
2:00–3:00 PM	4–9	S505b, McCormick Place	*Next Generation Science Standards*: Lost in the Woods? (p. 135)
2:00–3:00 PM	K–8	S502b, McCormick Place	Engaging Students in Science and Mathematical Practices (p. 138)
2:00–3:00 PM	P–12	Jackson Park A, Hyatt	Preparing the STEM Classroom (p. 133)
2:00–3:00 PM	3–C	Jackson Park B, Hyatt	Assessing the Assessment: The Test Item Checklist (p. 137)
2:00–3:00 PM	6–12	Field A/B, Hyatt	NSELA Session: In the Heat of the Argument: Using Argument-driven Inquiry to Promote Scientific Literacy (p. 136)
2:00–3:00 PM	P–2	S502a, McCormick Place	Science for Young Children: Taking Children Outside to Reinforce Science Practices (p. 138)
2:00–3:00 PM	5–8	S503b, McCormick Place	Citizen Science: Project to Engage Students in Authentic Science Research (p. 139)
2:00–3:00 PM	2–6	W192c, McCormick Place	Involving Students in Fair Test Design (Without Them Even Knowing It!) (p. 140)
2:00–3:00 PM	6–8	S501d, McCormick Place	Weaving Science and Literacy into the Middle School Classroom to Meet the *NGSS* and *CCSS ELA* (p. 135)
2:00–3:00 PM	P–5	S401a, McCormick Place	NSTA Press® Session: *Next Time You See* (p. 137)
2:00–3:00 PM	2–8	W187a, McCormick Place	Collaborative Conservation Through Birds and Citizen Science (p. 135)
2:00–3:00 PM	G	Field C, Hyatt	NARST Session: The Strange Case of the Scientific Method: Lessons for the Multiple Communities of Science Education (p. 133)
2:00–3:00 PM	K–12	S404a, McCormick Place	NSTA Press® Session: *It's Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12* (p. 138)
2:00–3:00 PM	K–12	Dusable A, Hyatt	ASTE Session: A Pedagogy of Kindness for the Science Classroom (p. 133)
2:00–3:00 PM	9–12	W186c, McCormick Place	STEM Learning Community: Making STEM Integration a Reality (p. 135)
2:00–3:00 PM	10–12	S402a, McCormick Place	Authentic Assessment in Forensic Science (p. 134)
2:00–3:00 PM	G	Adler A/B, Hyatt	Planning and Designing Safe and Sustainable Science Facilities that Meet the *NGSS* (Science Facilities 102) (p. 136)
2:00–3:00 PM	G	W187b, McCormick Place	The *NGSS* Collaborative (p. 136)
2:00–3:00 PM	C	Grant Park C, Hyatt	Rigor for All: An Inclusive Approach to Science Education for Nonmajors (p. 133)
2:00–3:00 PM	K–8	W190b, McCormick Place	Beyond Engineering: Assessment for Learning (p. 140)
2:00–3:00 PM	6–12	S401bc, McCormick Place	NSTA Press® Session: Whole Class Inquiry—Improving Participation, Keeping Students Engaged (p. 134)
2:00–3:00 PM	6–9	W176b, McCormick Place	The Rise of Science Practices (p. 135)
2:00–3:00 PM	G	Hyde Park B, Hyatt	Learning English Through Science: ELLs and *NGSS* (p. 137)
2:00–3:00 PM	G	Hyde Park A, Hyatt	The St. Louis Box Turtle Project: Scaffolding Partnerships to Reach All Students (p. 137)
2:00–3:00 PM	G	Skyline W375 a/b, MP	Featured Presentation: The Key to Implementing the *NGSS*? Teachers! (p. 132)
2:00–3:00 PM	G	W190a, McCormick Place	Featured Presentation: Measuring What Matters: Challenges and Opportunities in Assessing Science Proficiency (p. 132)
2:00–3:30 PM	6–12	W181c, McCormick Place	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 142)
2:00–3:30 PM	K–5	W181b, McCormick Place	Science Notebooks to Address the *NGSS* and *CCSS* (p. 142)
2:00–3:30 PM	G	W184a, McCormick Place	What's Going on in There? *NGSS* and STEM for Administrators, Teacher Trainers, and University Faculty (p. 142)

2:00–3:30 PM	G	W470b, McCormick Place	Building Science Vocabulary One Fold at a Time via Notebook Foldables® (p. 145)
2:00–3:30 PM	3–C	W185a, McCormick Place	Wireless Sensor Exploration with Vernier (p. 143)
2:00–3:30 PM	4–C	W470a, McCormick Place	Building the Skills of Argumentation and Collaboration in STEM (p. 145)
2:00–3:30 PM	K–12	W471b, McCormick Place	Discovering the Science of Everyday Life (p. 146)
2:00–3:30 PM	9–C	W474b, McCormick Place	How to Use Pop Culture Science in Your Classes (p. 146)
2:00–3:45 PM	6–8	W194b, McCormick Place	Learn About an Innovative Middle School *NGSS*-focused Project-based Program in an Interactive Setting (p. 148)
3:30–3:50 PM	G	Clark C, Hyatt	SCST Session: Science Literacy for All: A Necessity in Today's World (p. 148)
3:30–4:00 PM	5–11	Hyde Park A, Hyatt	Engaging Underrepresented Students in Urban Forest Stewardship (p. 149)
3:30–4:00 PM	K–5	S505b, McCormick Place	Take the UG Out of BUG and Show What You Truly Learned (p. 149)
3:30–4:30 PM	G	W190a, McCormick Place	Featured Presentation: *Next Generation Science Standards* and English Language Learners: The Development of Deep and Generative Practices (p. 150)
3:30–4:30 PM	G	S403a, McCormick Place	Building a Symbiotic Relationship Between Schools and Community Science Partners (p. 151)
3:30–4:30 PM	G	W475b, McCormick Place	Buckle Your Seat Belt and Prepare to Observe and Solve a Problem (p. 157)
3:30–4:30 PM	6–8	S405b, McCormick Place	Using a Web-based Graphing Tool to Analyze and Interpret Ecology Data (p. 155)
3:30–4:30 PM	6–8	S501d, McCormick Place	Connecting Inquiry and Informational Text Through Triad Summarizing (p. 152)
3:30–4:30 PM	6–8	S404d, McCormick Place	Incorporating *NGSS* Science and Engineering Practices Seamlessly into Your Science Classroom (p. 155)
3:30–4:30 PM	K–5	S504d, McCormick Place	Teaching Elementary Science Content Using *CCSS ELA* (p. 152)
3:30–4:30 PM	K–6	S505a, McCormick Place	STEM It Up! Using PBL as a Vehicle to Integrate STEM in the Elementary Classroom (p. 152)
3:30–4:30 PM	P–8	S502b, McCormick Place	Science Practices Across the Spectrum: Nature-based Art and Science Inquiry (p. 156)
3:30–4:30 PM	K–8	S504a, McCormick Place	Your State Has Adopted *NGSS*, Now What? How to Begin Implementing *NGSS* for K–8 on a Shoestring Budget (p. 156)
3:30–4:30 PM	9–12	W196c, McCormick Place	Teach Engineering Principles on the Cheap with Concrete (p. 154)
3:30–4:30 PM	6–C	Jackson Park C, Hyatt	Flipping the Science Classroom to Make Time Count! (p. 151)
3:30–4:30 PM	6–C	Jackson Park B, Hyatt	Using News Media in the Science Classroom: Issues and Approaches (p. 154)
3:30–4:30 PM	4–12	Adler A/B, Hyatt	A Key Reading Skill for Understanding Science Texts: Multisyllabic Word Identification (p. 150)
3:30–4:30 PM	6–C	Hyde Park B, Hyatt	Opportunities and Challenges: Instructional Strategies for ELLs' Acquisition in Scientific Practices and Discourse (p. 151)
3:30–4:30 PM	C	W187c, McCormick Place	The NSTA Learning Center: A Tool to Develop Preservice Teachers (p. 154)
3:30–4:30 PM	P–12	Prairie A, Hyatt	AMSE Session: Critical Civic Inquiry In Science Contexts: Lessons from Teachers Engaging in Consciousness Raising and YPAR (p. 151)
3:30–4:30 PM	G	S401a, McCormick Place	NSTA Press® Session: Get the FACTs! A Strategy Harvest of Formative Assessment Classroom Techniques (p. 154)
3:30–4:30 PM	6–12	W176b, McCormick Place	Linking Science Writing and Research Through The DuPont Challenge (p. 152)
3:30–4:30 PM	9–C	Grant Park A, Hyatt	Bringing Primary Scientific Literature into the Classroom (p. 150)
3:30–4:30 PM	6–8	W190b, McCormick Place	Formative Assessment and Argumentation: Supporting Practice Over Time (p. 156)
3:30–4:30 PM	6–12	S502a, McCormick Place	The Lab-O-Matic: Meet Your Classroom's New Best Friend (p. 156)
3:30–4:30 PM	4–7	S503a, McCormick Place	Elastic Power: Wind Up Your Engines and Explore (p. 156)
3:30–4:30 PM	9–C	Jackson Park D, Hyatt	Professional Development for the Revised AP Science Courses (p. 151)
3:30–4:30 PM	G	Grant Park B, Hyatt	Lessons Learned from Practicum-based PD on Argumentation (p. 150)
3:30–4:30 PM	8–C	S501a, McCormick Place	Oobleck in the Secondary Education Classroom: Implementing the *NGSS* and *CCSS* with an Oldie But Goodie (p. 152)
3:30–4:30 PM	6–12	W183a/b, McCormick Place	iPad Science Solution Share-a-Thon! Join the Discussion! (p. 153)

3:30–4:30 PM	2–12	Field A/B, Hyatt	NSELA Session: Close Reading in Science—Applying the *CCSS ELA* (p. 154)
3:30–4:30 PM	K–8	W187b, McCormick Place	Connect Students of Poverty to Their Community (p. 153)
3:30–5:00 PM	6–8	W175c, McCormick Place	Special Pathway Session: Disciplinary Literacy in the STEM Classroom (p. 158)
3:30–5:00 PM	K–6	W175 a/b, McCormick Place	McREL Pathway Session: Implementing Formative Assessment in the Elementary Classroom to Realize the Vision of *NGSS* (p. 158)
3:30–5:30 PM	6–12	W178b, McCormick Place	AMNH Pathway Session: Learning about the BSCS 5E Instructional Model to Design *NGSS* Learning Sequences (p. 159)
3:30–5:30 PM	G	Burnham A/B, Hyatt	ASTC/NARST Session: Informal Science for the Next Generation—Bridging Research and Practice (p. 159)
4:00–4:30 PM	3–12	Hyde Park A, Hyatt	Energize Your Environmental Club with Community Projects (p. 159)
4:00–5:30 PM	6–8	W181b, McCormick Place	Making Waves in Middle School (p. 160)
4:00–5:30 PM	P–12	W470a, McCormick Place	STEM Strategies and Actions for Student Achievement Gains (p. 162)
4:00–5:30 PM	5–C	W180, McCormick Place	Flinn Scientific Presents "How to Design a Safe and Efficient Science Laboratory" (p. 160)
4:00–5:30 PM	1–6	W184a, McCormick Place	STEM Projects, Science Fair, and Student Performances (p. 161)
4:00–5:30 PM	6–12	W179a, McCormick Place	Teaching Evolution in a Climate of Controversy: Even with *NGSS*, the Battles Continue (p. 160)
4:00–5:30 PM	7–C	W470b, McCormick Place	Plotly and Vernier: Collaborative Tools for an Interactive Classroom (p. 162)
4:00–5:30 PM	K–12	W471b, McCormick Place	20 Creative Ways to Using Discovery Education Streaming in the Science Classroom (p. 163)
4:00–5:30 PM	9–C	W178a, McCormick Place	e-Textbooks *vs.* Printed Textbooks (p. 160)
5:00–5:30 PM	P–6/C	Grant Park C, Hyatt	The Science of Creative Community Partnerships (p. 164)
5:00–5:30 PM	6–8	S405a, McCormick Place	Should America Enforce a Fat Tax? (p. 165)
5:00–5:30 PM	7–12	S404d, McCormick Place	FAST: Formative Assessment for Science Teachers (p. 164)
5:00–5:30 PM	6–12	S401bc, McCormick Place	Pigeon Watches to Deer Cams: Environmental Science in the City and Country! (p. 164)
5:00–6:00 PM	G	Prairie A, Hyatt	AMSE Session: Using Games and Challenges to Formatively Assess Students' Conceptual Understanding in Science (p. 165)
5:00–6:00 PM	5–12	S403a, McCormick Place	Aquaponics, Hydroponics, and the Greenhouse Project (p. 166)
5:00–6:00 PM	5–9	S501d, McCormick Place	"Practice" What You Teach: Aligning Your Activities to Support the *NGSS* (p. 166)
5:00–6:00 PM	K–12	W475b, McCormick Place	For Teachers By Teachers: A State's Approach for STEM Unit Development (p. 167)
5:00–6:00 PM	6–12	S401d, McCormick Place	Standards-based Grading in the Science Classroom (p. 165)
5:00–6:00 PM	4–9	S502a, McCormick Place	Was Newton Wrong? (p. 168)
5:00–6:00 PM	3–5	S503a, McCormick Place	Integrating STEM with Literacy and Social Studies to Design a Capstone Project in the Elementary Classroom (p. 169)
5:00–6:00 PM	1–2	S504bc, McCormick Place	Promoting Science Literacy Among Bilingual Learners (p. 166)
5:00–6:00 PM	2–C	Grant Park A, Hyatt	Embracing Diversity in Your Online Science Classroom (p. 165)
5:00–6:00 PM	7–12	W176b, McCormick Place	Relating Forensic Science to the *NGSS*: Science Practices Galore! (p. 166)
5:00–6:00 PM	4–9	Field A/B, Hyatt	NSELA Session: Knowing What Students Know and Can Do: Using Hands-On Performance Tasks as Formative Assessment Tools (p. 167)
5:00–6:00 PM	6–C	Grant Park B, Hyatt	Improve Student Performance in Middle/Secondary Science Classrooms: Keys to Effective Learning (p. 165)
5:00–6:00 PM	P–12	Hyde Park B, Hyatt	Using Crosscutting Concepts to Create Vertically-Aligned, Multidisciplinary Professional Development (p. 165)
5:00–6:00 PM	8–C	Jackson Park B, Hyatt	Dynamic Topics in Genetics: Reproductive Technologies and Genes and Aggression (p. 165)
5:30–6:00 PM	6–C	W186c, McCormick Place	West Tennessee STEM Hub Challenge Competition (p. 169)
5:30–6:00 PM	5–8	S504d, McCormick Place	Anything but Standard: Using Young Adult Literature and *NGSS*-based Lessons to Meet the *CCSS* (p. 169)
5:30–6:00 PM	6–12	S404d, McCormick Place	Formative Assessment: A Menu of Options (p. 169)
5:30–7:30 PM	K–12	W185 b/c, McCormick Place	An Evening of STEM, Energy, and Hip-Hop Presented by Master Scientist Grand Hank (p. 170)

Informal Science Education

8:00–8:30 AM	G	W187a, McCormick Place	The Biodiversity Project (p. 90)
8:00–9:00 AM	6–12	S502b, McCormick Place	Which Way Did the DNA Go? Fun with Electrophoresis! (p. 96)
8:00–9:00 AM	2–6	S505b, McCormick Place	Investigations in Transportation: Partnering Industry Professionals and Elementary Teachers in a STEM Unit of Study (p. 94)
8:00–9:00 AM	G	Skyline W375e, McCormick Place	NMEA Session: Whale-of-a-Tale Share-a-Thon (p. 98)
8:00–9:00 AM	2–12	Hyde Park B, Hyatt	STEM After-School Programming: Engaging All Students Through Engineering and Robotics (p. 92)
8:00–9:00 AM	6–8	S404d, McCormick Place	RIPD 3-D: Rigorous Inquiry-based Professional Development (p. 94)
8:00–9:00 AM	4–C	S404bc, McCormick Place	Solar System Scale Models in Google Earth (p. 94)
8:00–9:00 AM	6–12	S502b, McCormick Place	Which Way Did the DNA Go? Fun with Electrophoresis! (p. 96)
8:00–9:30 AM	4–C	W175 a/b, McCormick Place	McREL Pathway Session: Discourse in the Classroom: Supporting Science and Engineering Practices (p. 100)
8:00–9:30 AM	8–C	W186a, McCormick Place	Case of the Missing Records (p. 102)
8:30–9:00 AM	P–12	W187a, McCormick Place	Creating a Culture of Conservation Using the *NGSS* Practices (p. 106)
8:30–9:00 AM	K–12	Jackson Park D, Hyatt	Arctic and Antarctic E-Books in the Classroom: A New Polar Resource for Educators (p. 105)
9:30–10:30 AM	4–C	Skyline W375e, McCormick Place	NMEA Session: Great Lakes Literacy…Coming Soon to a Classroom Near You (p. 107)
10:00–11:30 AM	8–C	W186a, McCormick Place	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 110)
10:00–11:30 AM	6–C	W470a, McCormick Place	Cool Tools for Force and Motion (p. 111)
10:00–11:30 AM	P–6	W175 a/b, McCormick Place	McREL Pathway Session: Green STEM in Elementary Classrooms (p. 108)
11:00 AM–12 Noon	5–9	Skyline W375e, McCormick Place	NMEA Session: Creatively Engaging Middle School in the Science of Ocean Acidification (p. 113)
12 Noon–1:30 PM	6–C	W470a, McCormick Place	Cool Tools for Light and Color (p. 117)
12 Noon–1:30 PM	8–C	W186a, McCormick Place	Using the Polymerase Chain Reaction to Identify GM Foods (p. 116)
12:30–1:00 PM	K–12	W187a, McCormick Place	Developing Partnerships: A Model of Outdoor Education (p. 119)
12:30–1:00 PM	9–12	W176b, McCormick Place	Going Beyond 1, 2, 3: Successful Differentiated Grouping Strategies (p. 119)
12:30–1:00 PM	3–8	S504bc, McCormick Place	Science and Engineering Practices Among Diverse Students' Learning about Environmental Science (p. 119)
12:30–1:30 PM	4–8	S502b, McCormick Place	I See the Light! Be Part of Celebrating the International Year of Light (p. 125)
12:30–1:30 PM	P–1	S502a, McCormick Place	The Science of Play Behind Early Childhood STEM Education (p. 125)
12:30–1:30 PM	6–C	S403a, McCormick Place	Climate Change, Lessons, and Activities for Teachers (p. 122)
12:30–1:30 PM	2–10	W475b, McCormick Place	I'm an Inquiry-based Humerus Alliance Between Language Arts and Science: What Am I? (p. 126)
12:30–1:30 PM	G	Field A/B, Hyatt	NSELA Session: Back to Basics for Conducting Professional Development (p. 124)
12:30–1:30 PM	7–12	Skyline W375e, McCormick Place	NMEA Session: The Climate Expedition: Exploring Local Impacts of a Global Issue (p. 126)
12:30–1:30 PM	G	Burnham A/B, Hyatt	ASTC Session: Formal and Informal Educators Collaborate at the Museum of Science in Boston: Opportunities for Enhanced Synergy and Creativity (p. 121)
12:30–1:30 PM	2–8	W185 b/c, McCormick Place	CESI Session: Dumbledore's Transfiguration Class: Science and Magic from Hogwart's Academy (p. 122)
12:30–2:00 PM	9–C	W175 a/b, McCormick Place	McREL Pathway Session: Implementing Formative Assessment in the High School Classroom to Realize the Vision of the *NGSS* (p. 128)
1:00–1:30 PM	2–9	W187a, McCormick Place	A Bird in the Hand (p. 130)
1:00–1:30 PM	5–9	S504bc, McCormick Place	Connecting Underserved Students to STEM Career Pathways (p. 129)
1:00–1:30 PM	3–9	S505a, McCormick Place	Inquiry Adventures in Cook County's Forest Preserves (p. 130)
2:00–2:30 PM	9–C	Grant Park B, Hyatt	Assessing *NGSS* Science and Engineering Practices in Two Different Chemistry Courses (p. 131)
2:00–3:00 PM	3–10	Prairie A, Hyatt	AMSE Session: Designing Rubber Band Racers to Ignite the Curiosity of Diverse Learners! (p. 134)

2:00–3:00 PM	8–C	S404bc, McCormick Place	Promoting Habits of Science, Sustainability, and Service by Unifying Learning Across School, Family, and Community Contexts (p. 134)
2:00–3:00 PM	6–12	Field A/B, Hyatt	NSELA Session: In the Heat of the Argument: Using Argument-driven Inquiry to Promote Scientific Literacy (p. 136)
2:00–3:00 PM	P–2	S502a, McCormick Place	Science for Young Children: Taking Children Outside to Reinforce Science Practices (p. 138)
2:00–3:00 PM	2–8	W187a, McCormick Place	Collaborative Conservation Through Birds and Citizen Science (p. 135)
2:00–3:00 PM	1–12	Burnham A/B, Hyatt	ASTC Session: Full STEAM Ahead! STEAM Education for All Learners (p. 133)
2:00–3:00 PM	P–5	S401a, McCormick Place	NSTA Press® Session: *Next Time You See* (p. 137)
2:00–3:00 PM	G	Skyline W375e, McCormick Place	NMEA Session: Set Sail with GLEAMS! (p. 135)
2:00–3:30 PM	5–C	W193a, McCormick Place	Dive In with Magnetic Water Molecules (p. 144)
2:00–3:30 PM	8–C	W186a, McCormick Place	The Drunken Worms: Exploring Gene Function with *C. elegans* (p. 144)
3:30–4:30 PM	6–C	S401bc, McCormick Place	NSTA Press® Session: Citizen Science: Diverse Projects that Bring Biology to Life (p. 151)
3:30–3:50 PM	G	Clark C, Hyatt	SCST Session: Science Literacy for All: A Necessity in Today's World (p. 149)
3:30–4:30 PM	3–C	W187a, McCormick Place	Sharing the Night Sky with Your Students (p. 153)
3:30–4:30 PM	9–C	Jackson Park D, Hyatt	Professional Development for the Revised AP Science Courses (p. 151)
3:30–4:30 PM	P–8	S502b, McCormick Place	Science Practices Across the Spectrum: Nature-based Art and Science Inquiry (p. 156)
3:30–4:30 PM	K–5	S504d, McCormick Place	Teaching Elementary Science Content Using *CCSS ELA* (p. 152)
3:30–4:30 PM	6–8	S405a, McCormick Place	Mission to Mars: Going Digital with *NGSS* (p. 152)
3:30–4:30 PM	6–8	S405b, McCormick Place	Using a Web-based Graphing Tool to Analyze and Interpret Ecology Data (p. 155)
3:30–5:00 PM	K–6	W175 a/b, McCormick Place	McREL Pathway Session: Implementing Formative Assessment in the Elementary Classroom to Realize the Vision of *NGSS* (p. 158)
3:30–5:30 PM	G	Burnham A/B, Hyatt	ASTC/NARST Session: Informal Science for the Next Generation—Bridging Research and Practice (p. 159)
4:00–5:30 PM	5–12	W476, McCormick Place	A Revolution in STEM Robotics (p. 164)
4:00–5:30 PM	8–C	W186a, McCormick Place	Teaching STEM Using Agarose Gel Electrophoresis (p. 161)
5:00–5:30 PM	P–6/C	Grant Park C, Hyatt	The Science of Creative Community Partnerships (p. 164)
5:00–6:00 PM	8–C	S503b, McCormick Place	Engineering: Robots, Rockets, and Rock 'n' Roll (p. 169)
5:00–6:00 PM	5–9	S502b, McCormick Place	Tangible Teaching: Counting Atoms with Pennies (p. 168)
5:30–6:00 PM	6–12	S404d, McCormick Place	Formative Assessment: A Menu of Options (p. 169)
5:30–6:00 PM	6–C	W186c, McCormick Place	West Tennessee STEM Hub Challenge Competition (p. 169)
5:30–7:30 PM	K–12	W185 b/c, McCormick Place	An Evening of STEM, Energy, and Hip-Hop Presented by Master Scientist Grand Hank (p. 170)

Index of Participants

Notes

Notes

Advertisers

NSTA Ads

FREE Workshops

DATA-COLLECTION TECHNOLOGY

WORKSHOP ROOM W185a – THURSDAY, MARCH 12		
8:00-9:30	HANDS-ON	Integrate Chromebook and BYOD with Vernier Technology
10:00-11:30	HANDS-ON	Biology with Vernier
12:00-1:30	HANDS-ON	Inquiry-Based Biology with Vernier
2:00-3:30	HANDS-ON	Wireless Sensor Exploration with Vernier
4:00-5:30	HANDS-ON	Chemistry with Vernier
WORKSHOP ROOM W185d – THURSDAY, MARCH 12		
8:00-9:30	HANDS-ON	Investigating Wind Energy with Vernier
10:00-11:30	HANDS-ON	Renewable Energy with KidWind and Vernier
12:00-1:30	HANDS-ON, BYOD	iPad and Wireless Sensors with Vernier
2:00-3:30	HANDS-ON	Advanced Physics with Vernier
4:00-5:30	HANDS-ON	Physics with Vernier
WORKSHOP ROOM W185a – FRIDAY, MARCH 13		
8:00-9:30	HANDS-ON	Chemistry with Vernier
10:00-11:30	HANDS-ON	Environmental Science with Vernier
12:00-1:30	HANDS-ON	Water Quality with Vernier
2:00-3:30	HANDS-ON	Spectroscopy with Vernier
4:00-5:30	HANDS-ON	Biology with Vernier
WORKSHOP ROOM W185d – FRIDAY, MARCH 13		
8:00-9:30	HANDS-ON	Physics with Vernier
10:00-11:30	HANDS-ON	Explore Motion with Vernier Video Physics for iOS
12:00-1:30	HANDS-ON	Advanced Physics with Vernier
2:00-3:30	HANDS-ON, BYOD	iPad and Wireless Sensors with Vernier
4:00-5:30	HANDS-ON	STEM/Engineering Activities using Vernier Sensors with Arduino
WORKSHOP ROOM W185a – SATURDAY, MARCH 14		
8:00-9:30	HANDS-ON	Biology with Vernier
10:00-11:30	HANDS-ON	Chemistry with Vernier
12:00-1:30	HANDS-ON	Inquiry-Based Chemistry with Vernier
2:00-3:30	HANDS-ON	Human Physiology with Vernier
WORKSHOP ROOM W185d – SATURDAY, MARCH 14		
8:00-9:30	HANDS-ON, BYOD	Integrate Chromebook and BYOD with Vernier Technology
10:00-11:30	HANDS-ON	Renewable Energy with KidWind and Vernier
12:00-1:30	HANDS-ON	Middle School Science with Vernier
2:00-3:30	HANDS-ON	Introductory Engineering-Design Projects with Vernier

NO PRE-REGISTRATION! NO FEE!

OHAUS®

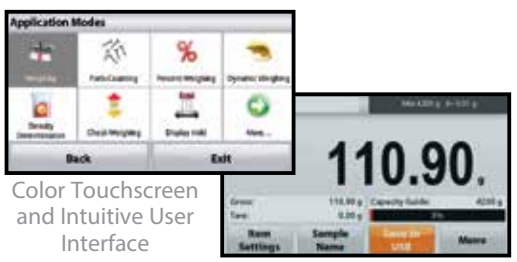
Adventurer®

Analytical and Precision Balances

It's about the journey—and the destination: your lab.

The all-new Adventurer® was carefully designed to meet your needs, perfect for Advanced Placement and post-secondary science education.

- **Superior weighing performance with amazing accuracy and fast stabilization time for prompt results**
- **Large 4.3" color touchscreen is easy to read and navigate through balance menus and settings**
- **Versatile connectivity with standard RS232 and two USB ports**
- **New space-saving draftshield designed to maximize workspace**



Color Touchscreen and Intuitive User Interface

Learn more online at www.ohaus.com/adventurer

ohaus.com
facebook.com/ohauscorp
youtube.com/ohauschannel
twitter.com/ohaus_corp

Ingeniously Practical