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
The existence of the ICLD is doubtful.

But there’s no doubt that you and other NSTA members could save even more with a special discount on GEICO car insurance!

geico.com/edu/nsta | 1-800-368-2734
Visit NSTA’s SCIENCE STORE

Exhibit Hall F2, McCormick Place West

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

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

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 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.

Booth #1522
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

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

Natural Resources, Natural Partnerships

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

The Science of Design: Structure and Function

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
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 collect data such as videotapes of instruction, copies of student work, and their own written reflections. Then they try to make sense out of what they see in the data and use this knowledge to improve their teaching. 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.

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

Ticketed Event: $15 Advance; $20 on-site
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.

Sponsored by
Texas Instruments
NSTA National Science Teachers Association
Conference Program • Special Programs

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.

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
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.
## Saturday, March 14

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
</table>
| 8:00 AM    | **Featured Presentation** 3:30–4:30 PM  
W190a, McCormick Place  
Speaker: Samuel Dyson  
sponsored by Shell |
| 11:00 AM   | **Paul F-Brandwein Lecture** 11:00 AM–12 Noon  
W190a, McCormick Place  
Speaker: Curt Meine  
sponsored by Brandwein Institute |
| 2:00 PM    | **NSTA/ASE Honors Lecture** 2:00–3:00 PM  
W192a, McCormick Place  
Speaker: Chris Harrison |
| 5:00 PM    | **Teacher Researcher Day** 8:30 AM–3:30 PM  
Regency A/B, Hyatt Regency McCormick Place |
| 8:00 PM    | **Pi Day Celebration for Preservice/New Teachers and First-Time Conference Attendees**  
4:00–6:00 PM  
W196b, McCormick Place  
Ticket Required (M-6) |
| 8:00–10:00 PM | **Celebrate Einstein’s Birthday ...with a Salute to the Blues Brothers**  
8:00–10:00 PM  
Regency Ballroom, Hyatt Regency McCormick Place |
| 10:00 PM   | **Celebrate Einstein's Birthday ...with a Salute to the Blues Brothers**  
8:00–10:00 PM  
Regency Ballroom, Hyatt Regency McCormick Place |
7:00–9:00 AM  Meeting
APAST Breakfast Meeting
(By Invitation Only)  Adler A/B, Hyatt
Catch up with those friends with whom you shared your PA experience. Stop by and see the exciting things happening at APAST! Current PA’s only.

7:30–8:15 AM  Meeting
NSTA Past Presidents’ Breakfast
(By Invitation Only)  Regency C, Hyatt

8:00–8:30 AM  Presentations
Using Blue Mussels to Measure Contamination in a New England Harbor
(Grades 9–College)  Grant Park A, Hyatt
Science Focus: ESS
Mari Butler, Endicott College, Beverly, MA
This session should not be shucked. Join us and hear how we collected mussels from a dirty harbor to use as a bioindicator of harbor contaminants in this student-driven project.

NGSS and Research-based STEM Lesson for the High School Biology Classroom
(Grades 9–12)  S402a, McCormick Place
Rachel Beattie, Lincoln-Way East High School, Frankfort, IL
Join us as we share an NGSS- and research-based lesson designed to confront high school student misconceptions about the relationships among heritable phenotypes, protein, DNA, and chromosomes.

Using an Intertextual Approach for Teaching Disciplinary Core Ideas in Science
(Grades 5–8)  W175c, McCormick Place
Science Focus: GEN, SEP1, SEP2, SEP4, SEP7, SEP8
Carol Manocchi-Verrino (manocchi@fordham.edu) and John Craven (jcraven@fordham.edu), Fordham University, Bronx, NY
Attention will be paid to examining the practices of upper elementary/middle school teachers using an intertextual approach to teaching disciplinary core ideas in science.

Most conference sessions are scheduled in McCormick Place and Hyatt (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.

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 in Volume 1 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 6.

- 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
8:00–9:00 AM  Presentations

Bang for Your Buck! Cover New Material and Assess with Accuracy in 50 Minutes!
(Grades 9–12)  
Adler C, Hyatt  
Science Focus: GEN, NGSS  
Nora Ugalde, The School District of Palm Beach County, West Palm Beach, FL  
Speed dating, peer review, and QR code scavenger hunts are fantastic, easy ways of engaging and assessing students. Join our fun session, make life easier!

Goodbye Research Paper! Self-publishing Projects for Creative Students
(Grades 6–12)  
Burnham C, Hyatt  
Science Focus: GEN, SEP8  
David Black (elementsunearthed@gmail.com), Walden School of Liberal Arts, Provo, UT  
By self-publishing using Web 2.0 tools, students can communicate their STEM knowledge while creating educational content for others to use. We’ll explore various student-created projects and how to assess them for student learning.

Differentiating Assessments in the Science Classroom
(Grades P–12)  
Field A/B, Hyatt  
Science Focus: GEN, INF, NGSS  
Sara Aronin (sara.aronin@mail.wvu.edu), West Virginia University, Morgantown  
Kyle Greenleaf (kgreenlewvu@gmail.com), West Preston Middle School, Masontown, WV  
Jennifer George (@MsGeorgeWVU2014; j.george.3@wcps.net), Wendell Middle School, Wendell, NC  
Join us for a demonstration on the development and use of choice boards to differentiate assessments by content, process, and product in the science classroom.

Information Literacy in Biology Education Through Authentic Assessment
(Grade 12—College)  
Grant Park B, Hyatt  
Science Focus: LS, SEP8  
Tricia Gray (tgray5@uwo.ca) and Linda Dunn (@lkunnatwestern; ldunn@uwo.ca), University of Western Ontario, London, Canada  
Experience a blended research tutorial for undergraduate biology students that helps them learn at their own pace, addresses basic search skill variability, and teaches skills that are immediately applicable.

Ready, Set, Go: Optimizing Community and University Resources to Improve Science Communication
(College)  
Grant Park C, Hyatt  
Science Focus: GEN, SEP6, SEP7, SEP8  
Michelle Paulsen (@mlpaulsen; @NU_RSPG; m-paulsen@northwestern.edu), Northwestern University, Evanston, IL  
Effective communication is a key component to successful science. We need to make a specific effort to train our scientists to communicate—especially their research to nontechnical audiences. Hear how we are using the expertise found on our university campus to begin this process.

Connecting to the Community Through Authentic Learning
(Grades K–12)  
Hyde Park B, Hyatt  
Science Focus: ESS, ETS, LS, INF, CCC2, CCC4, CCC7, SEP  
Beth Guzzetta (@bethguzzetta; bguzzetta@allendalecolumbia.org) and Martha Bjorklund (@mrsmcbc; mbjorklund@allendalecolumbia.org), Allendale Columbia School, Rochester, NY  
Julie Thompson (@drjcthomson; julietthompson@gmail.com), Western Governors University, Salt Lake City, UT  
Find out how our K–12 classes have built partnerships with local and distant museums and scientists through authentic learning projects including citizen science.

Science Lab Renovations: Working Strategically with Architects to Create 21st-Century Labs
(Grades 6—College)  
Jackson Park D, Hyatt  
Science Focus: GEN  
Steve Wood (@stevedwood1968; swood@dl25.org), Adlai E. Stevenson High School, Lincolnshire, IL  
Thoughtful lab renovations require collaboration among teachers, administrators, and architects. Join us as we highlight ways to maximize all stakeholders’ expertise and lessons learned.

NSTA Press® Session: Doing Good Science in Middle School
(Grades 5–9)  
S401bc, McCormick Place  
Science Focus: GEN, NGSS  
Vicki Massey (vickimassey@cox.net), NSTA Director, District XIV, Mesa, AZ  
Find out what is in this comprehensive, easy-to-use, must-have resource for middle school teachers. Hints for keeping kids engaged will be shared.
Going Beyond Data Collection: Sharing in a Science Classroom  
(Grades 3–College) S401d, McCormick Place  
Science Focus: ETS, SEP  
**Ben Smith,** Red Lion Area Senior High School, Red Lion, PA  
Find how students can collect and share data and produce a digital report. Bring your own device to participate as a student or come observe all the action.

Managing Your Chemical Inventory  
(Grades 6–12) S403a, McCormick Place  
Science Focus: PS  
**Brian Wazlaw** (briwazlaw@aol.com), Laboratory Safety Consultant, Portsmouth, NH  
Proper chemical management is an essential component for promoting safer science classrooms. We’ll cover purchasing, using, storing, and disposing of chemicals and inventory control.

Vertical Alignment in the STEM Classroom: Implementing NGSS with Diversity in Mind  
(Grades K–12) S501a, McCormick Place  
**Rabieh Hafza** ([@jamalhafza](mailto:jamalhafza@att.net)), Westlake High School, Atlanta, GA  
Attention will be paid to the implementation of the NGSS physical science core ideas as students progress from elementary through high school, focusing on diversity.

Primary STEM Research for High School Students  
(Grades 9–12) S503b, McCormick Place  
Science Focus: LS, PS, SEP  
**JulieAnn Villa** ([julvil@d219.org](mailto:julvil@d219.org)) and **Ruth Gleicher** ([rutgle@d219.org](mailto:rutgle@d219.org)), Niles West High School, Skokie, IL  
Join us as we share our experiences developing a yearlong primary high school STEM research course. Receive access to curriculum resources for guiding students in experimental design and research projects. Learn from our six years of experience with developing this primary STEM research course.

**Connect. Share. Engage.**  
Download our conference app for the NSTA Chicago National Conference on Science Education—a social experience you don’t want to miss.

- Search sessions, exhibitors, and speakers to build a schedule of your favorites  
- Access maps with pinpoint locations  
- Take notes within app  
- Bookmark an interesting speaker

- Share the play-by-play with social media channels  
- Tweet a memorable quote from a session  
- Access conference FAQs

**Download the app to unlock exclusive savings offers**

Available for download on  
- iPhone + iPad  
- Android

Please note that your conference app scheduler will not sync with the Personal Conference Scheduler found on NSTA’s website.

**Powered by:**

---

NSTA Chicago National Conference on Science Education 15
Station Teaching for Diverse Learners  
(Grades 5–8)  
1604bc, McCormick Place  
Science Focus: GEN  
Lucie Davis, St. HOPE Leadership Academy Charter School, New York, NY  
Reach all of your students with different learning needs in a one hour block through station teaching. Handouts and prizes!

INF  
Using Your Local Natural Resource Partners  
(Grades K–8)  
1604d, McCormick Place  
Science Focus: ESS, INF  
Susan Disch, ETHOS Science Center, Elkhart, IN  
Liz Hincks, Little River Wetlands Project, Fort Wayne, IN  
Connecting with local natural resource partners is a win-win for everyone! Discover some of your community’s best treasures and how they can benefit your students.

Student Movie-Making Projects—From Planning to the Premiere  
(Grades 1–8)  
1605a, McCormick Place  
Science Focus: GEN  
Nicholas Bourke (nbourke@aum.edu) and Russ McKinney (@russmac; rmckinn1@aum.edu), Auburn University at Montgomery, AL  
We will share examples of our students’ movie-making projects and our lessons learned to help you use videos as a creative and engaging assessment tool.

Energy 101: Bringing STEM to Life with Real-World Projects  
(Grades 7–College)  
1676b, McCormick Place  
Science Focus: PS  
Dan Whisler (@DanWhisler; whislerd@usd376.com), Sterling High School, Sterling, KS  
Making real-world connections with wind energy and an electric car? Come join us to hear two high school students share what they have learned through this highly integrated project!

Using Remote Online Labs in Your Science Classroom  
(Grades 9–12)  
1677c, McCormick Place  
Science Focus: GEN, SEP3, SEP4, SEP7  
Ashley Walter (@NU_OSEP; ashley.walter@northwestern.edu), Northwestern University, Evanston, IL  
Discover how to incorporate more inquiry-driven science labs into your curriculum using remote online labs! Students analyze real data from experiments they design themselves.

Blue Man Physics  
(Grades 7–12)  
1690a, McCormick Place  
Science Focus: PS  
Rob White (@MrWhiteBBCHS; rwhite@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, IL  
Engage your students in the science of the sound and engineering behind the awe-inspiring music of the Blue Man Group experience. Help your students make the connection between music theory and the science of sound.

Effective Professional Development for Beginning STEM Teachers: Three Noyce Project Exemplars  
(Grades 7–College)  
1696c, McCormick Place  
Science Focus: GEN  
John Tillotson (jwtillot@syr.edu), Syracuse University, Syracuse, NY  
Peter Veronesi (prerones@brockport.edu), The College at Brockport, NY  
Join us as we highlight three research-based approaches to exemplary professional development for beginning STEM teachers developed for the NSF Noyce Scholars Project at each institution.
8:00–9:00 AM  Hands-On Workshops

**ASTC Session: Bridging the Gap—Successful Formal/Informal Partnerships for Advancing STEM Education**  
(Grades 3–12)  
Clark A/B, Hyatt  
Science Focus: ESS, ETS, LS, PS, INF, CCC2, CCC3, CCC4, CCC6, SEP1, SEP2, SEP3, SEP4, SEP6  
**Sandra Ryack-Bell** ([sryackbell@mits.org](mailto:sryackbell@mits.org)), MITS, Inc. (Museum Institute for Teaching Science), Quincy, MA  
**Jason Welch** ([jasonwelch@yahoo.com](mailto:jasonwelch@yahoo.com)), Holbrook Junior and Senior High School, Holbrook, MA  
**Rachel Stronach** ([rstronach@lloydcenter.org](mailto:rstronach@lloydcenter.org)), Lloyd Center for the Environment, Dartmouth, MA  
**David Unger** ([dunger@athm.org](mailto:dunger@athm.org)), American Textile History Museum, Lowell, MA  
Engage in inquiry activities developed by teachers and educators from museums and science education centers during the Museum Institute for Teaching Science (MITS) graduate collaborative professional development institutes. The activities combine science content with science and engineering practices.

**ASTE Session: Experiencing Communication Barriers: Building Teacher Empathy for English Language Learners**  
(Grades 3–8, College)  
Grant Park D, Hyatt  
Science Focus: GEN  
**Katie Brkich**, Georgia Southern University, Statesboro  
We will share a lesson developed for use with preservice teachers teaching the importance of ELL accommodations through affective experience and empathy development.

---

### First-timers, Preservice Teachers and New Teacher Lounge

This lounge is for first-time attendees, preservice 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 experience educators will be on-hand periodically to answer questions about the conference and NSTA resources in general.

**Lounge Hours:**  
**Thursday, March 12—11:00AM–6:00PM**  
**Friday, March 13 – 9:00AM–5:00PM**  
**Saturday, March 14 – 9:00AM–3:00PM**  
McCormick Place West  
(adjacent to NSTA Registration Area)

---

Lounge generously supported by

[NSMTA Science Teachers Association](https://www.nsta.org)
Water Down Your Lawn, Not Your Lessons for English Language Learners
(General)  Hyde Park A, Hyatt
Science Focus: GEN
Troy Dassler, Wisconsin Center for Education Research, Madison
Join us as we share how to ensure that students are still getting high levels of science content and not watering down the curriculum, but scaffolding the academic language needs of the students. In this interactive workshop, we will do experiments that blend NGSS and English language development standards so that you may keep the cognitive demand high.

Performing Pedagogical Alchemy: Transforming Leaden Labs into Golden Opportunities for Student Learning
(Grades 6—College)  Jackson Park A, Hyatt
Science Focus: GEN, SEP3
Chuck Downing (@CRDowningAuthor; chuckdowning4@gmail.com), Retired Science Teacher, San Diego, CA
Find out how to change leaden labs—heavy with cookbook procedures—into golden opportunities for student learning through inquiry and writing. Specific examples and handouts provided.

Picture This!
(Grades K—12)  Jackson Park B, Hyatt
Science Focus: GEN, NGSS
Natalie Macke (nmacke12@yahoo.com), Pascack Hills High School, Montvale, NJ
Using pictures as scientific models can be worth more than a thousand words! Learn how you can use picture models as formative and summative assessment tools.

DuPont Presents: Global Food Security—Can We Sustain?
(Grades 9—12)  Regency E, Hyatt
Science Focus: LS
David Black (@davidabrack77; dblack3@murraystate.edu), Murray State University, Murray, KY
Let us introduce you to an inquiry activity to get students excited about sustainability and their role to feed the nine billion people that will need nourishment by 2050. Experience a fun activity to understand the difference between food insecure and food secure that can keep your students active and thinking. A wonderful activity to include in any level of science class!

NSTA Press® Session: Using Predict, Observe, Explain Sequences in Your Classroom
(Grades 6—12)  S401a, McCormick Place
Science Focus: GEN, SEP3, SEP4, SEP7
Michael Bowen (gmbowen@yahoo.com), Mount Saint Vincent University, Halifax, N.S., Canada
Using examples from the NSTA Press book Predict, Observe, Explain: Activities Enhancing Scientific Understanding, we will demonstrate how to engage middle school and high school students in POE activities to develop their understanding of science concepts. Resources provided.

Scale the Universe
(Grades 6—10)  S404 b/c, McCormick Place
Science Focus: ESS, CCC3
Christine Royce (@caroyce; caroyce@aol.com), Shippensburg University/PSTA, Shippensburg, PA
How big is big? How small is small? Let us “Scale the Universe” as we investigate a variety of different scaling activities.

Explore Earthquakes!
(Grades K—12)  S404a, McCormick Place
Science Focus: ESS, CCC2, SEP2, SEP3, SEP4, SEP8
Davida Buehler (dbuehler@geosociety.org), The Geological Society of America, Boulder, CO
Using several inquiry-based activities, we will explore earthquakes in a way that will allow students to become actively engaged in the learning process. Free resources!

An Inquiry Approach to the Introduction of Minerals and Rocks
(Grades 6—8)  S404d, McCormick Place
Science Focus: ESS2.A, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8
Laura Tinigin (laura.tinigin@wmich.edu) and Laura Robinson (@ljrbios; ljrobinson@gmail.com), Western Michigan University, Kalamazoo
Renee Schwartz (rschwartz@gsu.edu), Georgia State University, Atlanta
Join us for an inquiry approach that introduces a minerals and rock unit with an emphasis on incorporating nature of science objectives and literacy strategies.
Session 1
Date: Friday, Mar 13
Time: 10:00-11:30 AM
Room: W194a
Ignite the NGSS with Today’s Cutting-edge Technology

Session 2
Date: Saturday, Mar 14
Time: 8:00-9:30 AM
Room: W194a
Ride the Wave with Bring Science Alive!

Session 3
Date: Saturday, Mar 14
Time: 10:00-11:30 AM
Room: W194a
Modeling the Earth, Sun, and Other Stars with Bring Science Alive!
Skepticism in the Classroom  
(Grades 7—College) S501bc, McCormick Place
Science Focus: PS
Matthew Lowry, Lake Forest High School, Lake Forest, IL
We will share a variety of lessons appropriate for the physics/science classroom that focus on the skeptical and critical-thinking nature of science.

Rigor and Relevance: Keeping It Real  
(Grades 6—12) S501d, McCormick Place
Science Focus: ESS, ETS, LS, PS, CCC2, CCC3, CCC4, CCC5, SEP
Sarah Radencic (spr67@mst.edu), and Darrel Schmitz (schmitz@geosci.mst.edu), Mississippi State University, Mississippi State, MS
Deborah Pounders (debpounders@hotmail.com), Columbus (MS) Municipal School District
Presider: Sarah Radencic
Engage diverse learners by connecting STEM concepts to their personal experiences through activities focused on exploration and investigations linking current research to subject-specific standards.

Taking Engineering Design All the Way  
(Grades 4—9) S502a, McCormick Place
Science Focus: ETS, INF, SEP1, SEP3, SEP6, SEP8
Cathy Barthelemy (cbarthelemy@fwms.org), Fort Worth Museum of Science and History, Fort Worth, TX
Karen Matsler (@eatincorg; kmatsler@uta.edu), The University of Texas at Arlington
Don’t stop students short! Allow them to model engineering practices through authentic scenarios that demonstrate their understanding of core ideas in science.

Circular Reasoning: Integrating Math, Science, and Engineering by Studying a Wind-up Toy  
(Grades 4—8) S502b, McCormick Place
Science Focus: ETS1, PS2, PS3, CCC1, CCC2, CCC3, CCC6, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7
Gary Benenson (benenson@ccny.cuny.edu), The City College of New York, NY
Emmy Matias-Leonard (emmym68@yahoo.com), The Earth School, New York, NY
Develop physical science core ideas of force, motion, mass, energy, and friction in your classroom via a wind-up toy. Using simple materials, make a wind-up toy that goes in circles and records its own path. Investigate how the design of the toy affects the size of the circle.

STEAMING Along with Da Vinci: Integrating Science and Engineering with the Arts in an Early Childhood Classroom  
(Grades P—4) S503a, McCormick Place
Science Focus: ETS, CCC, SEP
Fred Estes (@FredSci; fester@nuevaschool.org), The Nueva School, Hillsborough, CA
Come experience an elementary science and engineering unit integrated with the visual arts and creativity, inspired by the life and work of Leonardo da Vinci.

NESTA Session: Multimedia Tools and Classroom Resources for Teaching Earth System Science  
(Grades 6—College) Skyline W375e, McCormick Place
Roberta Johnson Killeen (rmjohnson@nestanet.org), National Earth Science Teachers Association, Boulder, CO
Margaret Holzer (mholzer@monmouth.com), Chatham High School, Chatham, NJ
Earth is a dynamic planet that has undergone vast changes over geologic history. This NESTA-HHMI workshop investigates our changing Earth while modeling Earth system science classroom resources.

The Dead Zone  
(Grades 4—7) W175 a/b, McCormick Place
Science Focus: ESS3.C, SEP2, SEP4, SEP6, SEP8
Liz Martinez (@lizrmartnez; emartinez@imsa.edu), Illinois Mathematics and Science Academy, Aurora
Use stream tables, maps, and ocean data to investigate the relationships among erosion, run-off, and dead zones in the Gulf of Mexico.

Engaging Youth (and Partners) Through Engineering: Strategies to Secure Partnerships to Enrich Curriculum  
(Grades 6—8) W176a, McCormick Place
Science Focus: ETS, CCC, SEP
Melissa Dean (@MAEF8020; @DoinThisFrSchl; mdean@maef.net) and Suzan Morris (smorris@maef.net), Mobile Area Education Foundation, Mobile, AL
Learn about successful strategies that were used to engage business and community partners in order to develop integrated STEM lessons.
Engineering Design Journals: Documenting Learning  
(Grades 4–8)  W178b, McCormick Place  
Science Focus: ETS, SEP  
Tina Harris (taharris79@yahoo.com), Marion High School, Marion, IN  
Engage in STEM projects we have used in our classes and find out how students document their projects and thoughts over time to show learning progression.

Operation Rescue: A Project Approach to STEM Education  
(Grades 5–9)  W186c, McCormick Place  
Science Focus: GEN, INF, NGSS  
Greg Vogt, Baylor College of Medicine, Houston, TX  
Student teams organize and conduct a simulated emergency relief supplies rescue mission to the Philippines following the destruction caused by Typhoon Haiyan. The project incorporates science, medicine, payload model construction, mathematics, geography, social studies, and current world events.

Watering the Grassroots of Change: Integrated Outdoor Science and Community-based Water Resource Education  
(Grades 8–College)  W187a, McCormick Place  
Science Focus: ESS, INF, CCC5, SEP1, SEP4, SEP6, SEP7  
Jamie Esler (jesler@cdaschools.org), Lake City High School, Coeur d’Alene, ID  
Rusti Kreider (rkreider@sd41.org), St. Maries High School, St. Maries, ID  
Cindy Rust (crust@sd273.com), Post Falls High School, Post Falls, ID  
Through partnerships between environmental nonprofits, universities, government/professional agencies, and local high schools, The Confluence Project immerses students in freshwater resource issues facing their community.

**ATTENTION ILLINOIS TEACHERS:**

**GET PD HOURS FOR THE NSTA CHICAGO NATIONAL CONFERENCE!**

Visit the Illinois Science Teachers Association Booth near Registration in Exhibit Hall F2 or go to [www.ista-il.org](http://www.ista-il.org) to learn about the ONLY way to get Illinois State Board of Education–approved professional development credit through ISTA.

Walk away from NSTA Chicago with your PD clock hour credits!
Which Plants Make Good Acid/Base Indicators?  
(Grades 2–8, College)  
W187b, McCormick Place  
Science Focus: PS  
Rebecca Dyasi, Long Island University, Brooklyn, NY  
Learn how prospective teachers engage in and use experiences with plant-based indicators to enable urban children to develop science practices and understandings, along with communication and self-assessment skills.

Formative Assessment with Developing and Using Models  
(Grades K–5)  
W190b, McCormick Place  
Science Focus: PS, SEP  
Rita Januszyk (ritajanuszyk@gmail.com), Retired Educator, Hinsdale, IL  
Join a member of the NGSS writing team as she guides elementary teachers through the power of the science and engineering practice: “Developing and Using Models” for assessment. Participants will engage in the practice of developing a conceptual model using a light box to explain illumination. Formative assessment opportunities in developing and using models will be explored.

Nanotechnology in the Classroom: Synthesis of Graphene  
(Grades 7–College)  
W192a, McCormick Place  
Science Focus: PS, INF, CCC, SEP  
Benjamin Taylor (@UWMRSEC; bltaylor2@wisc.edu) and Anne Lynn Gillian-Daniel (@UWMRSEC; agillian@wisc.edu), University of Wisconsin–Madison  
In this hands-on workshop, learn about nanotechnology and synthesize graphene (called a “21st-century wonder discovery” by Scientific American), which can be used to create the next generation of solar cells.

CESI Session: Family Science Events: Logistics, Engaging Science, and Parent Involvement  
(Grades P–8)  
W192c, McCormick Place  
Science Focus: GEN  
Jim McDonald (@jimscienceguy; jim.mcdonald@cmich.edu), Central Michigan University, Mount Pleasant  
Find out how to set up Family Science events at your school or site. We’ll cover the process and logistics, parental involvement, and demonstrate activities.

Family Science for the Whole Family  
(Grades 5–10)  
W196a, McCormick Place  
Science Focus: INF  
Jake Noel-Storr (@noelstoj; drjakens@gmail.com), Insight-STEM, Inc., Tucson, AZ  
Learn strategies to engage the WHOLE family in STEM activities—obliterate parents sitting at the back of the room drinking coffee!

Mudslides: Connecting Science and Engineering Practices in Classrooms  
(Grades 5–12)  
W475b, McCormick Place  
Science Focus: ETS, SEP  
Yaozhen Pan and Norman Lederman (ledermann@iit.edu), Illinois Institute of Technology, Chicago  
Join us for a simulation of mudslides for students to connect real-life events with science and engineering content! Lesson plans and activities provided.

8:00–9:00 AM Exhibitor Workshop  
Off to the Races with K’NEX Education’s Forces, Energy, and Motion Set!  
(Grades 5–9)  
W471b, McCormick Place  
Science Focus: PS  
Sponsor: K’NEX Education  
Robert Jesberg, Science Consultant, Hatfield, PA  
Start your engines! Join the K’NEX® building experience as you build gravity, rubber band, and spring power racers to test physical science concepts. Build models just like your students and investigate, experiment, collect data, graph, and analyze results. We will explore potential and kinetic energy, average speed, and much more.
8:00–9:30 AM  Exhibitor Workshops
Implementing Inquiry: Strategies and Tools for Elementary Students
(Grades P–3) W179b, McCormick Place
Science Focus: GEN, SEP1
Sponsor: Zula International
Laurie Michnal (laurie@zula.com), Zula International, Burbank, CA
Join us for a fun hands-on workshop that can help you integrate STEM for elementary students. Learn to implement engaging, inquiry-based, cross-curricular science activities that stimulate critical thinking and support the NGSS. Take away hands-on activities that you can use in the classroom.

Marine Science Education—Awareness, Understanding, and Action
(Grades K–12) W184a, McCormick Place
Science Focus: ESS3
Sponsor: Ocean Classrooms
Cynthia Long (cyndi@oceanclassrooms.com) and Caine Delacy (caine@oceanclassrooms.com), Ocean Classrooms, Boulder, CO
Awareness begins with understanding the ocean, its inhabitants, and how we are connected. Human activity across the globe has altered ocean ecosystems. Learn how to develop ocean advocates in your classroom by incorporating marine science content understanding, identifying human impact on the ocean, and designing actions we can take.

“Don’t simply retire from something; have something to retire to.” —Harry Emerson Fosdick

The NSTA Retired Advisory Board invites you to a vibrant and useful information sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

Before and After Retirement—Practicalities and Possibilities
Saturday, March 14
9:30–10:30 AM
McCormick Place, W176b

For more information on the Retired Members Advisory Board, contact Joyce Gleason, chair, at joycegle@earthlink.net.
Climate Change Series 1: Climate Stewards Roundtable Presentations  
(Grades 3–College)  W184bc, McCormick Place  
Science Focus: ESS  
Sponsor: NOAA’s National Ocean Service  
Bruce Moravchik, Molly Harrison, and Peg Steffen, NOAA National Ocean Service, Silver Spring, MD  
Bringing climate science into education settings can be challenging. Come learn from educators in NOAA’s Climate Stewards who will showcase strategies, activities, and resources to use with your audiences. Information about NOAA Climate Steward Education Program will also be presented.

Leading Students to Exciting Careers in Emerging Technology Fields  
(Grades 8–College)  W184d, McCormick Place  
Science Focus: GEN  
Sponsor: Nano-Link: Center for Nanotechnology Education  
Deb Newberry, Dakota County Technical College, Rosemount, MN  
Educators are gaining the ability to include emerging technology concepts in their classes. They may, however, lack the knowledge of how these technologies can lead to a diverse set of career pathways. Participants will walk away with a set of career possibilities (and handouts) for the fields of nanoscience, biotechnology, and photonics.

Biology with Vernier  
(Grades 9–College)  W185a, McCormick Place  
Science Focus: LS, SEP3, SEP4  
Sponsor: Vernier Software & Technology  
Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, OR  
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!

Integrate Chromebook and BYOD with Vernier Technology  
(Grades 3–College)  W185d, McCormick Place  
Science Focus: GEN, SEP4  
Sponsor: Vernier Software & Technology  
Matthew Anthes-Washburn (info@vernier.com), Vernier Software & Technology, Beaverton, OR  
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!

Go Virtual! Enhancing Instruction with Technology in Geography, Physical Geology, and Environmental Science  
(Grades 9–12)  W186a, McCormick Place  
Science Focus: ESS  
Sponsor: National Geographic Learning  
Tom Hinojosa, National Geographic Learning, Littleton, CO  
Enhance learning with virtual resources available for teaching environmental science, physical geology, and geography. We’ll access an interactive map tool to investigate multiple environmental parameters for anywhere in the world. See virtual field trips featuring national parks as stunning examples of geologic processes and concepts for physical geology and environmental science.

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.

Who’s Killing Crystal Creek? Solve an Environmental Science Mystery  
(Grades 9–12)  W192b, McCormick Place  
Science Focus: ESS  
Sponsor: Ward’s Science  
Liam Casey, VWR Education, Rochester, NY  
Uncover the source of pollution affecting a local creek using our hands-on materials and newly updated NGSS-aligned activity guides. Connect real-world environmental issues and science practices. After solving the case, head to the Ward’s Science booth to track down the pollution offender and collect your bounty!
Physics and Open-Source Robotics: The Opera of Math and Science
(Grades 9—College) W193a, McCormick Place
Science Focus: PS2, PS3.B, INF, CCC1, CCC2, CCC3, CCC4, CCC5, CCC6, SEP1, SEP2, SEP4, SEP5, SEP6, SEP7, 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, CO

Position, velocity, acceleration, torque, and rotation—these are all key concepts in both physics and robotics. Why not integrate these things together? We use arduino, a simple robotics platform, and a little math to introduce students to kinematics concepts in physics. Integrate STEM and engineering into your physics class!

Going Viral—From Proteins to Pandemics
(Grades 9—College) W193b, McCormick Place
Science Focus: LS
Sponsor: MSOE Center for BioMolecular Modeling
Tim Herman (herman@msoe.edu) and Margaret Franzen (franzen@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, WI

This workshop will review the molecular structure of viruses and the mechanisms they use to infect our cells. We will then consider how the approaches we have developed to protect ourselves from influenza virus and HIV are now being applied to develop vaccines and treatments for the Ebola virus.
Ride the Wave with Bring Science Alive!
(Grades K–8)  
*W194a, McCormick Place*
Science Focus: PS
Sponsor: TCI
Nathan Wellborne (nwellborne@teachtci.com), TCI, Rancho Cordova, CA
Unveiling the NGSS has left K–5 teachers wondering how their lessons should change. In this workshop, we’ll use a powerful online learning system to develop a model of waves to describe patterns in terms of amplitude and wavelength. Participants will experience learning from a student’s perspective.

Investigating Chemical Changes
(Grades 9–12)  
*W195, McCormick Place*
Science Focus: PS1.B
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, NY
How can we write a chemical reaction that explains what happens during a chemical change? During this workshop, explore three different types of chemical reactions. After completing the experiments, we will practice writing chemical reactions using one or two examples of each reaction type. Join us for this activity from The Natural Approach to Chemistry program.

Woodles! Vocabulary Development for Scientific Literacy!
(General)  
*W470a, McCormick Place*
Science Focus: GEN
Sponsor: Accelerate Learning
Sharry Whitney (swhitney@acceleratelearning.com), Accelerate Learning, Houston, TX
Scientific literacy is grounded in understanding the specific scientific terms that are at the heart of a strong STEM program. Experience the exhilaration of successfully passing an assessment about Woodles by just having the experience of interacting with them. Build the capacity in your students for literacy success.

Genes in Space: Design a DNA Analysis Experiment for the International Space Station
(Grades 7–12)  
*W470b, McCormick Place*
Sponsor: miniPCR
Sebastian Kraves (seb@minipcr.com) and Ezequiel Alvareddy Saavedra (zeke@minipcr.com), miniPCR, Cambridge, MA
Space exploration poses intriguing questions about life beyond Earth. To answer them, the first student-designed DNA amplification experiment will soon be conducted aboard the International Space Station using a miniPCR machine. This national competition is the first to invite students to propose a PCR experiment to occur in space orbit.

Hands-On Wave-Particle Duality
(Grades 9–College)  
*W471a, McCormick Place*
Science Focus: PS, CCC, SEP
Sponsor: Perimeter Institute
Damian Pope and Kevin Donkers, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada
The wave-particle duality is one of the deepest mysteries of quantum mechanics. Come explore hands-on activities that introduce students to this vitally important concept in the quantum world. The Challenge of Quantum Reality multimedia educational resource was designed by experienced educators in collaboration with Perimeter Institute researchers.

Science, Fashion, and Fun! Genes in a Bottle™ Kit
(Grades 6–College)  
*W474a, McCormick Place*
Science Focus: LS
Sponsor: Bio-Rad Laboratories
Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, CA
Isolate your own DNA and capture your unique essence in our stylish new helix-shaped necklaces! From cell structure to genetics to the chemistry of life, this workshop is perfect for all education levels, integrating multiple life science standards in a single lesson.
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
Saturday, 8:00–10:00 AM

8:00–10:00 AM  Hands-On Workshop
CSSS Session: Aligning Classroom Instruction and Formative Assessment to Support the NGSS Performance Expectations  
(Grades K–12) Regency D, Hyatt  
Science Focus: GEN, INF, CCC, SEP  
Brett Moulding (mouldingb@ogdensd.org) and Nicole Paulson (nicole.paulson@nebo.edu), Partnership for Effective Science Teaching and Learning, Ogden, UT  
Engage in modifying and aligning existing instructional activities and embedded formative assessment items to support the NGSS performance expectations. Specific attention will be placed on how to use the crosscutting concepts to scaffold student reasoning about science phenomena.

8:00 AM–12 Noon  Short Courses

8:00 AM–10:00 AM  Hands-On Workshop
CSSS Session: Aligning Classroom Instruction and Formative Assessment to Support the NGSS Performance Expectations  
(Grades K–12) Regency D, Hyatt  
Science Focus: GEN, INF, CCC, SEP  
Brett Moulding (mouldingb@ogdensd.org) and Nicole Paulson (nicole.paulson@nebo.edu), Partnership for Effective Science Teaching and Learning, Ogden, UT  
Engage in modifying and aligning existing instructional activities and embedded formative assessment items to support the NGSS performance expectations. Specific attention will be placed on how to use the crosscutting concepts to scaffold student reasoning about science phenomena.

8:00 AM–12 Noon  Short Courses

Authentic Performance Assessments: Creating a Common Lab Report Rubric (SC-11)  
(Grades 9–12) Salon 2, Palmer House  
Science Focus: GEN, SEP  
Tickets Required; $42  
Paul Fraser (pfraser1011@gmail.com) and Lee Ann Hallambakis (leeanne1680@gmail.com), Rolling Meadows High School, Rolling Meadows, IL  
For description, see Volume 1, page 60.

Explore Local Biodiversity with Encyclopedia of Life and OBIS (SC-12)  
(Grades 4–10) Salon 3, Palmer House  
Science Focus: LS, INF, SEP  
Tickets Required; $27  
Joanna Snyder (joanna_snyder@berkeley.edu), and Erica Beck Spencer (ebspencer@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley  
For description, see Volume 1, page 61.

STEM for All: Practices and Methods That Promote Equal Access to STEM (SC-10)  
(Grades 5–College) Salon 7, Palmer House  
Science Focus: GEN, INF, SEP  
Tickets Required; $42  
Mia Dubosarsky (mdubosarsky@wpi.edu), The STEM Education Center at WPI, Worcester, MA  
For description, see Volume 1, page 60.

8:00 AM–5:00 PM  Short Course
Modeling Key Mechanisms of Evolution and Population Biology (SC-13)  
(Grades 9–12) Salon 1, Palmer House  
Science Focus: LS  
Tickets Required; $94  
Michael Novak (mnovak@gmail.com) and Corey Brady (cbrady@northwestern.edu), Northwestern University, Evanston, IL  
Katahdin Cook Whitt (kate.cook@wright.edu), The Dayton Regional STEM School, Kettering, OH  
For description, see Volume 1, page 61.

8:15–9:15 AM  Meeting
Past Presidents Advisory Board Meeting  
Regency C, Hyatt

8:30–9:00 AM  Presentations
Argumentation? When They Think They Can’t, But You Know THEY CAN!  
(Grades 9–12) Dusable C, Hyatt  
Science Focus: GEN, SEP6, SEP7, SEP8  
Jai David-Valentine (jai.david@aspirepublicschools.org), Aspire California College Preparatory Academy, Berkeley  
Leave with multiple strategies to that will ensure articulate, intelligent, and evidence-based responses as students share their argument/opinion.

Original Laboratory Research in a High School STEM Curriculum  
(Grades 9–12) S402a, McCormick Place  
Science Focus: LS, SEP  
Katrina Brandis, Mary Institute and Saint Louis Country Day School, St. Louis, Mo.  
Hear about our first year conducting molecular and cellular biology experiments in our high school’s research lab for students interested in pursuing original laboratory research projects.

The Impact of an Inquiry-based Science Instructional Method on Student Achievement and Teacher Instruction  
(Grades 1–8) W175c, McCormick Place  
Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8  
Todd Zoblotsky (t.zoblotsky@memphis.edu), The University of Memphis, TN  
Review third-year outcomes from a five-year Investing in Innovation study of a kit-based inquiry science instructional method and its impact on student learning and attitudes toward science.
## NSTA Conferences on Science Education

### Save the Dates 2015

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>Topics</th>
</tr>
</thead>
</table>
| RENO, Nevada   | October 22–24 | - Bundling the NGSS and CCSS  
- NGSS: Connecting Standards to Practice  
- Creatively Engineering Future Resources |
| Philadelphia, Pennsylvania | November 12–14 | - Revolutionizing Engineering for the Future  
- Integrating Literacy Strategies to Revolutionize PreK–12 Science Instruction  
- Technology: Teaching Revolutionary Science in the Digital Age |
| Kansas City, Missouri | December 3–5 | - The Art and Craftsmanship of Teaching  
- Combining Science with Agriculture  
- Achieving Success with the NGSS |

**Professional Development Strands**

- 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](http://www.nsta.org/conferences)
Saturday, 8:30–9:30 AM

8:30–9:30 AM  Presentation
Teacher Researcher Day Session: Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching
(General)  Regency A/B, Hyatt
Science Focus: GEN
Deborah Roberts-Harris, The University of New Mexico, Albuquerque
Find out what questions teachers and teacher educators are asking and how they are exploring these in their own classrooms.

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

9:00 AM–3:00 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.

9:00 AM–3:00 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.

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

9:30–10:00 AM  Presentations
Infusing Literacy into High School Science
(Grades 9–12)  Dusable C, Hyatt
Science Focus: GEN, SEP
Susan Gleason (sglea@udel.edu) and Kathryn Scantlebury (kscantle@udel.edu), University of Delaware, Newark
Recent standards emphasize the need for students to read and interpret informational text. Discussion centers on how high school science teachers can incorporate literacy strategies into their science teaching.

Engaging Biology Students with Interactive Case Studies to Address the NGSS Science Practices
(Grades 9–12)  S402a, McCormick Place
Science Focus: LS, SEP
Georgia Hodges, The University of Georgia, Athens
Experience a novel use of technology that enables you to formatively assess students in real time during an interactive case study experience. Leave with the tools needed to deploy the software.

Interactive Science Notebooks, Formative Assessment, and the NGSS: A Match Made in Heaven
(Grades 6–8)  S404d, McCormick Place
Science Focus: GEN, NGSS
Jennifer White (whiteje@champaignschools.org) and Jackie Baxter (baxterja@champaignschools.org), Jefferson Middle School, Champaign, IL
Make interactive science notebooks an integral part of your classroom routine. Join us as we identify ways to use science notebooks for teachers and students to monitor growth in terms of mastering content and scientific practices.

Meta-Sticks: A Novel Way to Promote Negotiation in the Classroom
(Grades K–8)  S505b, McCormick Place
Science Focus: GEN, INF, NGSS
Mason Kuhn, Shell Rock Elementary School, Shell Rock, IA
Students engaging in negotiation is considered a central motivation for recent policy recommendations. In this session, we will discuss how Meta-Sticks encourage classroom negotiation. What’s a Meta-Stick? Come find out.
Engaging in Oral and Written Argumentation Through Technology
(Grades 4–College) W196c, McCormick Place
Science Focus: GEN, SEP
Fatemeh HossainMardi, University of Missouri–St. Louis
Join us for a four-step cycle for argumentation based on evidence using Google tools to deepen content understanding. We will explore collaborative/individual and oral/written aspects for learners of different abilities.

9:30–10:30 AM Presentations

Show Us the Answer!
(Grades 5–12) Adler C, Hyatt
Science Focus: GEN, CCC, SEP
Natalie Macke (@nmacke12), Pascack Hills High School, Montvale, NJ
Aarti Mallya, Pascack Valley Regional High School District, Montvale, NJ
Team up and come work with your colleagues to develop a performance assessment that supports the performance expectations in the NGSS.

ASTC Session: Science Center Partnerships That Support Science Learning
(Grades P–8, College) Burnham A/B, Hyatt
Science Focus: GEN
Traci Wierman (twierman@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
Explore how one public science center’s regional and national partnership models with formal and informal educators to highlight the NGSS and support the needs of local communities.

Features and Models of Quality Performance Assessment for the NGSS/Three-Dimensional Learning
(Grades K–12) Field A/B, Hyatt
Science Focus: GEN, NGSS
Karen Whisler, Measured Progress, Dover, NH
Learn how to develop models of performance tasks that integrate the NGSS practices, core ideas, and crosscutting concepts to evaluate student learning.

Evaluating and Designing Local Sustainable Solutions
(Grades 9–12) Field C, Hyatt
Science Focus: ESS, SEP6
Erin Layde (elayde@ecasd.k12.wi.us), Memorial High School, Eau Claire, WI
Discover how to help your students use the framework of sustainable development to evaluate local issues and proposals, design sustainable solutions, and work with community members to affect change!

Exemplar Inclusive STEM High Schools: How Do They Work?
(Grades 9–College) Grant Park A, Hyatt
Science Focus: GEN
Erin Peters-Burton (epeters1@gmu.edu), George Mason University, Fairfax, VA
Nancy Spillane (@nks1300; nks1300@gmail.com), The George Washington University, Washington, DC
Are you interested in building a STEM school? Join us in exploring the critical components of schools successfully increasing the STEM participation of underrepresented students.

Concise Lab Reports to Demonstrate Conceptual Understanding
(Grades 9–College) Grant Park C, Hyatt
Science Focus: GEN, SEP
Don Dosch (ddosch@imsa.edu), Illinois Mathematics and Science Academy, Aurora
Join us as we share examples of a concise lab report format with instructions to students so that they communicate understanding of major concepts.
周六，9:30–10:30 AM

探索全球地区和资源的探索
（年级 K–12） Hyatt
科学焦点：GEN, INF
Jessica Metz-Bugg (jessicametz-bugg@partner.nps.gov)，芝加哥，NC
寻求在自然中的路径，Cherokee, NC
Thomas Szymanski (tszymanski@cps.edu)，Walt Disney Magnet School, Chicago, IL
Cristina Veresan (@cveresan; cveresan@gmail.com)，Star of the Sea School, Honolulu, HI

想要探索北极、南极或探索与国家地理/林德布拉德探险队的合作吗？现任的合作伙伴们分享他们的经验、见解和课程资源。

他们如何知道他们知道什么？
（年级6—大学） Hyatt
科学焦点：GEN
Chuck Downing (@CRDowningAuthor; chuckdowning4@gmail.com)，退休科学教师，San Diego, CA

评估在探究课堂上是一个棘手的主题。参与策略，了解学生在探究和其它活动后的评估。提供手稿和链接。

达到并教授每一个学生：具有所有能力的独特的物理和化学课程
（年级9–12） Hyatt
科学焦点：ETS, PS, SEP
Kevin Fleming，Old Saybrook Senior High School, Old Saybrook, CT

我们将分享一个专门为各种学习者设计的课程，这些学习者面临着广泛的学科学习挑战，这些挑战为物理和化学奠定了基础。留下指导性的策略和活动，展示了如何满足所有学习者的需要。

NSTA新闻®会议：将户外科学带进来
（年级K–8） McCormick Place
科学焦点：GEN, INF, SEP
Steve Rich (@bflyguy; bflywriter@comcast.net)，West GYSTC, Carrollton, GA

将它带出去或将户外科学带进来，探索校园资源，用于跨学科的概念，并探讨如何通过STEM。

冒险在标准基础上得分
（年级10–12） McCormick Place
科学焦点：GEN
Kameron Pence (kpence73@yahoo.com)，Collins Hill High School, Suwanee, GA

标准基础上的评分是一种非常“不拘一格”的评分方法。了解如何将SGB改为我的分数。学习如何制定单元目标并把那些目标转化为评估，以确定掌握程度。通过你的反馈，学生可以确定需要展示他们真正掌握了内容的领域。

水可持续性：化学、工程和视频PSA项目
（年级6–12） McCormick Place
Andrea Swenson and Joseph Vincente (joseph.vincente@gmail.com)，East Side Community High School, New York, NY

了解那篇旧“特殊化学性质的水”作文是如何发展成一个有意义的水可持续性单元的！分享的资源包括水处理实验室，废水工程挑战，以及水可持续性视频PSA项目。

课后科学：可能的合作伙伴
（年级K–12） McCormick Place
科学焦点：INF
Bryan Wunar (bryan.wunar@msichicago.org)，博物馆科学和工业，Chicago, IL
Michael Kennedy (m-kennedy@northwestern.edu)，Northwestern University, Evanston, IL
Melissa Ballard (@afterschool4all; mbhallard@after-schoolalliance.org)，Afterschool Alliance, Washington, DC

创新的课外课程分享他们如何为青少年提供STEM学习体验。加入我们，了解课外课程和潜在合作伙伴机会，围绕NGSS。
Cars: A Fun and Relevant Way to Teach Physical Science  
(Grades 9–12) S504bc, McCormick Place  
Science Focus: PS  
Debbie Goodwin (nywin@hotmail.com), Retired High School Science Teacher, Chillicothe, MO  
Generate student interest and understanding of STEM with labs and demonstrations that relate automobiles to physical science (chemistry) concepts. Correlations to the CCSS included. Take home CD with materials.

Model-Eliciting Activities in the Elementary Classroom  
(Grades 1–5) S504d, McCormick Place  
Science Focus: ETS, SEP  
Melissa Parks, Stetson University, Deland, FL  
Model-Eliciting Activities (MEAs) are simulated real-world problems that integrate engineering, mathematical, and scientific thinking as students find solutions for specific real-world scenarios. Join me as I share the good, the bad, and the ugly with using them in your elementary classroom as a STEM teaching tool.

Meeting the Needs of All Science Students  
(Grades 2–5) S505a, McCormick Place  
Science Focus: GEN  
Brenda Turgeon, Purdue University Calumet, Hammond, IN  
Hear how a well-designed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) learning cycle differentiates instruction. Discussion centers on how to strategically plan lessons and embed effective strategies to meet the needs of all learners.

High School Science and Engineering Share-a-Thon  
(Grades 9–12) Vista/S406a, McCormick Place  
Science Focus: GEN, SEP  
Bev DeVore-Wedding (@bdevore; bdevorewedding@gmail.com), Meeker High School, Meeker, CO  
Sample a variety of lessons, activities, and content demonstrating the science and engineering practices that can easily and immediately be incorporated into your classroom.
Middle School Motivation and Meaning at the Active Intersection of the NGSS and CCSS Mathematics (Grades 6–9)  
Mark Roddy (mroddy@seattleu.edu), Seattle University, Seattle, WA  
Middle school students can find meaning and motivation when they see science and mathematics as tools to make sense of music, coffee, sunshine, and more. Handouts.

Before and After Retirement: Practicalities and Possibilities (General)  
Joyce Gleason (joycegle@earthlink.net), Educational Consultant, Punta Gorda, FL  
Teshia Birts, Senior Director of Membership Development and Chapter Relations, NSTA, Arlington, VA  
The NSTA Retired Advisory Board invites you to a vibrant and useful information sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

NSTA Chicago National Conference on Science Education

NGSS@NSTA Share-a-Thon (Grades K–12)  
Science Focus: GEN, NGSS  
Presenters to be announced  
Do you wonder how other teachers are grappling with three-dimensional instruction in their classrooms? Would you like some tips and tools to help you implement the NGSS in your school? Join 30 presenters—including NSTA’s NGSS Curators, the National Academies, NGSS writers, and other education experts—as they share resources to help teachers implement the Next Generation Science Standards.

From the News to the Classroom (Grades 9–12)  
Science Focus: GEN, SEP4, SEP8  
Kristin Hennessy-McDonald, St. Benedict at Auburndale High School, Cordova, TN  
When a scientific finding is in a news report, the science tends to get lost. Discussion centers on using flawed news reports to assess understanding.

Raspberry Pi and Arduino for Enhanced Science and Engineering (Grades 5–College)  
Science Focus: ETS, SEP  
Michael Davis, Wilbur Wright College, Chicago, IL  
Join the maker movement. Low-cost electronics like the Raspberry Pi and Arduino make it possible for classes to build their own instruments for use in experiments.

9:30–10:30 AM Hands-On Workshops  
On the EdGE of Science and Play (Grades 7–12)  
Erin Bardar (@Edge_at_TERC), EdGE at TERC, Cambridge, MA  
Teon Edwards (@EDGE_at_TERC), TERC, Cambridge, MA  
George Papayannis (george@doyouaskwhy.com), Boston Arts Academy, Boston, MA  
EdGE stands for the Educational Gaming Environments group at TERC. Come play with us! Bring a laptop, smartphone, or tablet and join us for gameplay and discussion of how games can support your STEM teaching.

ASTE Session: Let’s Hear It for Sound! (Grades 2–4)  
Jill Shambach (jrshambach@esc.k12.in.us), Woodland Elementary School, Lafayette, IN  
By observing, planning, constructing, and analyzing results, participants actively investigate the science of sound using the engineering design process.
NSTA is your complete source for credible and timely publications on Next Generation Science Standards. Check out our must-have resources from NSTA Press®.

To order or learn more, visit www.nsta.org/store
Integrated Literacy Strategies to Enhance Higher Order Thinking for All Learners in Your Science Classroom
(Grades 6–College)  
Jackson Park B, Hyatt

Science Focus: GEN, NGSS

Leslie Gregory (lgregory@rsu20.org), and Dawn Staples-Knox (dstaplesknox@gmail.com), Searsmont District Middle School and High School, Searsmont, ME

Are you frustrated that your students can’t articulate what they’re learning in your classroom? Join us as we introduce integrated literacy strategies that can help them develop critical thinking and writing skills while having some fun, too!

Inquiring Minds Want to Know
(Grades 6–12)  
Jackson Park C, Hyatt

Science Focus: ESS, LS, PS

Cathy Northcutt (cathy.k.northcutt@wmich.edu), Western Michigan University, Kalamazoo, MI

Create Inquiry investigations from the everyday recipe-like labs. Practice strategies and take home inquiry labs for biology, chemistry, physics, and geosciences.

DuPont Presents: Photosynthesis and Respiration—It’s a Plant’s Life!
(Grades 7–12)  
Regency E, Hyatt

Science Focus: LS

Anita Boggs, Milan High School, Milan, IN

John Hadenfeldt (@hadie121), Centura High School, Cairo, NE

Help your students sprout and grow with a different approach to teaching photosynthesis and cellular respiration. Learn how to captivate students through inquiry activities that can challenge and excite them. Easily implement activities into your current biology or plant science class.

Genetic “Face Lab” Variations
(Grades 3–College)  
S402b, McCormick Place

Science Focus: LS

Candace Smithson (csmithson@cowan.k12.in.us), Cowan Junior/Senior High School, Muncie, IN

Mary Gobbett (mgobbett@uindy.edu), University of Indianapolis, Indianapolis, IN

Engage in a “face lab” activity and discover variations to teaching genetic concepts to a variety of age groups.

But I Teach High School Science…Not English Language
(Grades 7–12)  
S501d, McCormick Place

Science Focus: GEN, SEP1, SEP3, SEP6, SEP7, SEP8

Susan Hartley (susan.mumford.hartley@hotmail.com), Hinkley High School, Aurora, CO

Presider: Laurie Hayes (lhayes@cart.org), The Center for Advanced Research and Technology, Clovis, CA

Engage in a “cool” lesson and learn easy ways to incorporate writing and speaking practice into your science content lessons—painlessly—so that your English language learners become more proficient in English and science.

Understanding Plate Tectonics Using Actual Earthquake Data in NGSS-based Lessons
(Grades 5–College)  
S404a, McCormick Place

Science Focus: ESS2.B, INF, CCC1, CCC4, SEP4, SEP7

Patrick McQuillan (mcquillan@iris.edu), IRIS, Washington, DC

IRIS stands for Incorporated Research Institutions for Seismology. Explore the IRIS earthquake database using software, lessons, 3-D views, and live map displays.

Expedition Earth and Beyond: Using Earth for Planetary Comparisons
(Grades 4–12)  
S403b, McCormick Place


Timothy McCollum (mccollum@eiu.edu), Eastern Illinois University, Charleston, IL

Work with images of Earth and other planets to learn about and understand geologic processes that have sculpted the surface of Earth and other worlds.

NSTA Press® Session: An Introduction to Scientific Argumentation in the Classroom
(Grades 6–College)  
S401a, McCormick Place

Science Focus: GEN, NGSS

Ellen Granger, Florida State University, Tallahassee

Teachers will need to develop science-proficient students while meeting the demands of the NGSS. Argumentation activities provide an instructional model that incorporates the practices of science from the NGSS. Experience a model for scientific argumentation activities that are supported by a new book series from NSTA Press.
Climate Is Elementary
(Grades 3–6) S502a, McCormick Place
Science Focus: ESS2.D
Lisa Gardiner (@lisgard2; @UCARSciEd), UCAR Center for Science Education, Boulder, CO
Try activities that help upper elementary learners explore the difference between weather and climate. Understanding climate is the first step toward understanding the science of climate change.

Using 3-D Graphic Organizers to Develop Writing and Increase Science Literacy
(Grades 3–6) S502b, McCormick Place
Science Focus: GEN
Jennifer Trochez, Gates Street Elementary School, Los Angeles, CA
Paper, scissors, and glue transform into 3-D graphic organizers that facilitate student creativity, increase learning, develop writing, and provide an alternate form of assessment.

Conservation of Matter—What Happens to All Our STUFF?
(Grades 4–5) S503b, McCormick Place
Science Focus: PS
Kristin Camp (campkr@champaignschools.org), Jefferson Middle School, Champaign, IL
Designed around a grade 5 unit, participants will create and dig up a “mini-landfill,” collect data, make a claim about which items are biodegradable using evidence from their data, and provide an explanation based on evidence and their knowledge of conservation of matter.

Girls and STEM—a Natural Match!
(Grades 4–8) S504a, McCormick Place
Science Focus: GEN, INF, NGSS
Susan Evens (susan.evens@heartland.edu), Challenger Learning Center at Heartland Community College, Normal, IL
Do a hands-on project and walk away with ideas and handouts for engineering and science-based activities that will engage girls in STEM/STEAM!

Celebrate Einstein’s Birthday ...
with a Tribute to the Blues Brothers!
Saturday, March 14, 8:00–10:00 PM
Regency Ballroom, Hyatt Regency McCormick Place
President Juliana Texley is inviting you to join her for an evening of dancing and celebration on Saturday, March 14, from 8:00 to 10:00 PM.
Professor Einstein will be joining us in celebration of his birthday. Additional evening entertainment will include a tribute to the Blues Brothers!
Cash bar. No registration or cost required.

www.nsta.org/chicago
NESTA Session: Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists
(Grades 6–12) Skyline W375e, McCormick Place
Science Focus: ESS, CCC, SEP
Roberta Johnson Killeen (rmjohnsn@nestanet.org), National Earth Science Teachers Association, Boulder, CO
Margaret Holzer (mholzer@monmouth.com), Chatham High School, Chatham, NJ
Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, NJ
This NESTA-ESIP hands-on workshop highlights freely available lessons and strategies integrating data acquisition, analysis, and interpretation into the classroom, engaging students in the scientific process.

Cloudy with a Chance of Science: Teaching STEM Through a Classic Children’s Tale
(Grades 2–6) W175 a/b, McCormick Place
Science Focus: GEN, SEP1, SEP5
Laura Saxton (lsaxton@jhu.edu), The Johns Hopkins Center for Talented Youth, Baltimore, MD
Getting elementary students engaged in STEM is often as easy as helping them to see connections to things they already know and love. Bring STEM to life using Cloudy with a Chance of Meatballs as the text.

Under Pressure? Join Us!
(Grades 6–8) W176a, McCormick Place
Science Focus: PS
Modesto Tamez, Exploratorium, San Francisco, CA
We will share guided inquiry-based activities leading you to understand the fundamentals of air pressure. Fun, cheap, and profound!

Neon Art and the Atom
(Grades 10–12) W178b, McCormick Place
Science Focus: PS1, PS4, CCC5, SEP2, SEP6, SEP7
Amber Szmyczyn, Rice University, Houston, TX
Incorporate art into your chemistry or physics classroom! Come see how Bruce Nauman’s neon artwork reveals the hidden mysteries of light and atomic structure. Using spectrometers, gas emission tubes, and a plasma ball, participants will look closer and investigate neon questions.

Integrating Art, STEM, and ELA by Creating a Mechanism that Animates a Story
(Grades 1–4) W186c, McCormick Place
Science Focus: ETS1, PS2, CCC1, CCC2, CCC3, CCC6, SEP1, SEP6, SEP7
Lesia Wilder (lesiassings@gmail.com), New York City (NY) Dept. of Education
Travis Sloane (tsloane@schools.nyc.gov), East Side Elementary PS267, Bronx, NY
Angula Bumbury Camacho (angula99@hotmail.com), P.S. 5, Brooklyn, NY
Create a MechAnimation, a cardboard mechanism that makes a story come to life!

A New Movement: Thinking on Your Feet
(Grades K–8) W187b, McCormick Place
Science Focus: GEN
Carolyn Mohr, Dominican University, River Forest, IL
Ann Kennedy, Robert Crown School, Wauconda, IL
Don’t just sit there—use your body to activate your mind! Through movements, transform science concepts into memorable connections that will engage and inspire all.

Power Learning: Success Strategies for Meaningful Understanding in the Middle School Science Classroom
(Grades 6–9) W190b, McCormick Place
Science Focus: GEN, SEP
Janel Reed (jreed@culver.k12.or.us), Culver (OR) School District #4
Empower your students to take charge of their learning through learning targets, self-reflection, and formative assessments that are easily integrated into science classrooms while keeping students actively engaged in learning.

Teaching the Properties of Waves Through Real-World Application
(Grades 7–12) W192a, McCormick Place
Science Focus: PS, INF, CCC, SEP
Benjamin Taylor (@UWMRSEC; bltaylor2@wisc.edu) and Anne Lynn Gillian-Daniel (@UWMRSEC; agillian@wisc.edu), University of Wisconsin–Madison
Calculate wave velocity and direction with this activity that is ideal for middle and high school classrooms. Join us and measure the properties of waves using water, mirrors, and lasers in order to build a better antenna.
CESI Session: Integrating Elementary Science and Social Studies  
(Grades K–8)  
W192c, McCormick Place  
Science Focus: GEN  
Jim McDonald (@jimscienceguy; jim.mcdonald@cmich.edu), Central Michigan University, Mount Pleasant, MI  
We will examine opportunities to integrate science and social studies together by proposing a format for an integrated unit and providing examples.

Out of the Classroom and into the Sky with Civil Air Patrol  
(Grades K–12)  
W196a, McCormick Place  
Science Focus: PS2.A, CCC, SEP3, SEP4  
Kathy Biernat (kbiernat@stmaryeg.org), St. Mary’s Visitation School, Franklin, WI  
Build and fly foam rockets, demonstrate Bernoulli’s principle, and send some airplanes flying. Join us for a sampling of some of CAP’s free STEM materials and programs.

9:30–10:30 AM  
Exhibitor Workshop  
Forensic DNA Activities and More with K’NEX Education’s DNA, Replication, and Transcription Set  
(Grades 7–12)  
W471b, McCormick Place  
Science Focus: GEN  
Sponsor: K’NEX Education  
Robert Jesberg, Science Consultant, Hatfield, PA  
CSI has heightened students’ interest in forensics and DNA fingerprinting. Let’s build on that interest to strengthen their understanding of DNA concepts and processes. You will build actual K’NEX Education DNA models to examine a DNA ladder, structure, the double helix, and more. Also, explore mRNA, replication, transcription, and translation.

9:30–11:15 AM  
Exhibitor Workshop  
Climate Change Series 2: Antarctic Team Showcases Ice Cores  
(Grades 6–12)  
W184bc, McCormick Place  
Science Focus: ESS  
Sponsor: NOAA’s National Ocean Service  
Linda M. Morris, T. J. Fudge, and Kristina Slawny, Ice Drilling Program Office, Thayer School of Engineering at Dartmouth, Hanover, NH  
How do scientists know what they know about climate? What clues are hidden in the ice? Meet a scientist and an engineer engaged in research at the South Pole. Get up close with an ancient ice core! Hands-on activities and a movie will bring this home to your classroom.

10:00–10:30 AM  
Presentations  
What Are You Reading?  
(Grades 9–12)  
Dusable C, Hyatt  
Science Focus: GEN  
Colleen Buzby (@buzbyrocks; colleen.buzby@gmail.com) and Elizabeth Potter-Nelson (@mrspotternelson; epotter@gmail.com), Antioch Community High School, Antioch, IL  
You’re probably already reading in class, but what can you do to make it more meaningful for all students? This is one department’s look at how reading was used throughout their curriculum.

The American Astronomical Society and You: How the AAS Supports Educators, Students, and Families  
(Grades 6–College)  
Hyde Park A, Hyatt  
Science Focus: ESS, INF  
Gina Brissenden (@AstroGinaB), American Astronomical Society, Washington, DC  
Join the American Astronomical Society as they share events they offer for local educators, students, and their families in conjunction with AAS national meetings.
21st-Century Hands-On Biology for ALL Students
(Grades 9–12) S402a, McCormick Place
Science Focus: LS, SEP
Emily Ferrin (@BCoE_LMSA; emily.ferrin@northwestern.edu), Northwestern University, Evanston, IL
Mirror the advances of the real world with advanced hands-on labs developed for biology students at all levels and modeled after the research laboratory of 2015.

Hands-Off Instruction: Allowing Students to Guide Instructional Outcomes Through Formative Assessment
(Grades 6–8) S404d, McCormick Place
Science Focus: GEN, INF, SEP
Candyce Johnson, Brooklyn Botanic Garden, Brooklyn, NY
Explore a variety of effective informal assessment strategies that help put students in the driver’s seat while learning about the science practices.

A Culture of Science Discourse to Uncover Student Thinking
(Grades P–8) S505b, McCormick Place
Science Focus: GEN, SEP6, SEP7, SEP8
Erika Allison (@RISECtr; erika.allison@maine.edu), Center for Research in STEM Education, Orono, ME
Lauree Gott (lgott@veaziecs.org), Veazie Community School, Veazie, ME
Come discover how a culture of rich classroom discussion helps elementary students share their ideas and helps teachers develop a better understanding of what students know.

Illinois Smart Grid for Schools Program
(Grades K–12) W196c, McCormick Place
Science Focus: ETS, PS3, CCC4, CCC5, CCC6, SEP4, SEP6
Matt Aldeman and Brad Christensen (bachris@ilstu.edu), Illinois State University, Normal
The Smart Grid for Schools program provides educators with knowledge about the Smart Grid, plus lesson plans, activities, and Smart Grid simulators for classroom use.

10:00–11:30 AM Hands-On Workshop
NSTA Aerospace Share-a-Thon
(General) Vista/S406b, McCormick Place
Science Focus: ESS, INF
Coordinated by members of the NSTA Aerospace Programs Advisory Board
From airplanes to asteroids—join teachers and representatives from industry and organizations to discover innovative ways to connect students to STEM through aerospace! Drawing for two one-year NSTA memberships (must be present to win).
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
10:00–11:30 AM  Exhibitor Workshops

3-2-1 Blast Off!!  
(Grades 2–8)  
W178a, McCormick Place
Science Focus: PS1.A, PS1.B  
Sponsor: Educational Innovations, Inc.
Tami O’Connor, Educational Innovations, Inc., Bethel, CT
What student doesn’t like a burst of energy?! Join us for things that go bump in the day! Perfect for elementary or middle school educators teaching energy or Newton’s laws. Make your own rockets; explore elastic, potential, and kinetic energy; and more! Lesson ideas, giveaways, and door prizes!

Use Science to Teach Reading; Use Reading to Teach Science  
(Grades K–6)  
W179b, McCormick Place
Science Focus: GEN, NGSS  
Sponsor: Learning A–Z
Jane King and Lori Smith, Learning A–Z, Tucson, AZ
Many elementary teachers are reluctant to teach science, or feel there’s never enough time. Join us to experience fun, easy, and affordable ways to teach science and reading simultaneously. Use informational texts to foster reading comprehension and develop vocabulary, while also having students write, think, and behave like scientists.

Dynamic Demonstrations from Flinn Scientific  
(Grades 9–College)  
W180, McCormick Place
Science Focus: PS  
Sponsor: Flinn Scientific, Inc.
Irene Cesa (irene.cesa@flinnsci.com) and Mike Frazier (mfrazier@flinnsci.com), Flinn Scientific, Inc., Batavia, IL
Seeing is believing! Flinn Scientific presents a variety of easy-to-perform and exciting chemistry and physical science demonstrations. Come see Flinn’s new demonstrations and some of your old favorites—all guaranteed to make your science classroom come alive. Handouts for all demonstrations.

Hands-On Activities to Model Habitat Preference and Population Sampling  
(Grades K–12)  
W181a, McCormick Place
Science Focus: LS  
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Watch and learn! Create a terrestrial model to observe how pill bugs respond to habitat change. Use inquiry to develop experiments to observe the habitat preference of bess beetles and millipedes. Then investigate the advantages and disadvantages of different sampling methods to estimate population size in habitats. Door prizes provided.

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.

Marine Science Education—Awareness, Understanding, and Action  
(Grades K–12)  
W184a, McCormick Place
Science Focus: ESS3  
Sponsor: Ocean Classrooms
Cynthia Long (cyndi@oceanclassrooms.com) and Caine Delacy (caine@oceanclassrooms.com), Ocean Classrooms, Boulder, CO
Awareness begins with understanding the ocean, its inhabitants, and how we are connected. Human activity across the globe has altered ocean ecosystems. Learn how to develop ocean advocates in your classroom by incorporating marine science content understanding, identifying human impact on the ocean, and designing actions we can take.

Using Science Magazines to Connect the NGSS with CCSS, ELA  
(Grades 3–10)  
W184d, McCormick Place
Science Focus: GEN, NGSS  
Sponsor: Scholastic Inc.
Patricia Janes and Mara Grunbaum, Scholastic Inc., New York, NY
Science magazines are a fun and engaging way to connect the NGSS with the CCSS, ELA. Join Scholastic classroom magazine editors and teachers as they show how to meet reading and writing standards while teaching science and engineering principles—and introducing exciting discoveries too new for textbooks. Find out how to tailor them to meet your classroom’s needs.
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!
Saturday, 10:00–11:30 AM

**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, OR

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!

**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, OR

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.

**Free Chemistry Resources and Tools to Support BYOD, from the Royal Society of Chemistry**  
*(Grades 7–College) W186a, McCormick Place*  
Science Focus: PS, SEP1, SEP3, SEP4  
Sponsor: Royal Society of Chemistry  
Jenny O’Hare and Stephanie Musson, Royal Society of Chemistry, Cambridge, U.K.

Bring your laptop or tablet to a demonstration of the newest chemistry education tools and online resources from the Royal Society of Chemistry. Try out our problem-solving tutor, aspirin screen experiment, assessment tool, Periodic Table app, magazine e-reader, and more—all designed to be BYOD friendly.

**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.

**Teaching with Technology in the Elementary Classroom**  
*(Grades K–5) W192b, McCormick Place*  
Science Focus: ETS  
Sponsor: Ward’s Science  
Patty Muscatello, VWR Education, Rochester, NY

Introduce elementary students to the world of science and technology using Ward’s Single Probes elementary probe-ware system. Incorporate technology, math, and engineering principles into your standards-aligned science activities. Bring your lesson ideas and we’ll help you incorporate technology into those, too! Participants will be entered to win a Ward’s Single Probes unit.

**Seeing the Sky with High-Altitude Weather Balloons and Data Collection**  
*(Grades 7–College) W193a, McCormick Place*  
Science Focus: ESS2.D, PS, CCC2, CCC3, SEP2, SEP4, 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, CO

Design and build a high-altitude balloon with SparkFun Electronics. This engaging project introduces tools for real-world science and data collection. We will build a balloon, add instrumentation, and launch it (tethered for safety, of course) in Chicago to characterize temperature, humidity, and barometric pressure as a function of altitude.
NSTA NATIONAL CONFERENCE ON SCIENCE EDUCATION

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

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

BE PART OF EDUCATION'S PREMIER EVENT!

(PDIs)
PROFESSIONAL DEVELOPMENT INSTITUTES
GRADUATE CREDIT FOR SESSIONS
MUCH MORE!
New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits (Grades 8–College)  W193b, McCormick Place
Sponsor: 3D Molecular Designs
Tim Herman (herman@msoe.edu) and Mark Hoelzer (hoelzer@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, WI
3D Molecular Designs is releasing two new kits and the Center for BioMolecular Modeling continues to develop new materials such as the Synapse Construction Kit, new gene maps, and molecular stories. Test new kits and learn about Modeling the Molecular World and other professional development opportunities for next year.

Modeling Earth, Sun, and Other Stars with Bring Science Alive! (Grades K–8)  W194a, McCormick Place
Science Focus: ESS
Sponsor: TCI
Nathan Wellborne (nwellborne@teachtci.com), TCI, Rancho Cordova, CA
In this workshop, we’ll use a powerful online learning system to demonstrate a lesson that meets the NGSS—“How Do Stars Seem to Move During the Night and Year?” Participants will experience learning from a student’s perspective.

Chemical Formula and Amino Acids (Grades 9–12)  W195, McCormick Place
Science Focus: PS, SEP2
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, NY
What is the difference between subscripts and coefficients? What does “balancing” a chemical equation mean? Many students have trouble with these concepts. If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for intuitive lessons for all students to master the formula, gaining a deeper understanding of chemistry.

Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (Grades 4–College)  W470a, McCormick Place
Science Focus: LS
Sponsor: Backyard Brains
Timothy Marzullo (tim@backyardbrains.com), Backyard Brains, Inc., Ann Arbor, MI
Want to show your students the real electrical activity of neurons and muscles? Curious how remote control cockroaches work and the physiology of muscles during arm wrestling? Now you can! During our workshop, you will learn via live demos how to bring neuroscience into your classroom.

Biology for NGSS: A New Approach for a New Program (Grades 9–12)  W470b, McCormick Place
Science Focus: LS
Sponsor: BIOZONE International
Richard Allan (richard@biozone.co.nz), BIOZONE International Ltd., Hamilton, New Zealand
Find the tools you need to successfully implement the high school life science component of the NGSS program in BIOZONE’s newest student workbook. This carefully constructed new resource is strongly focused on student inquiry and written from first principles to address all aspects of the NGSS system architecture. Attendees receive free books that support the NGSS.

The Mystery of Dark Matter (Grades 8–College)  W471a, McCormick Place
Science Focus: PS
Sponsor: Perimeter Institute
Damian Pope and Kevin Donkers, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada
Are you looking for ways to connect your students with current physics research? Join us as we explore how uniform circular motion and universal gravitation can be used to Dark Matter. The Mystery of Dark Matter multimedia resource is the product of collaboration between experienced educators and Perimeter Institute researchers.

Living by Chemistry: What Shape Is That Smell? (Grades 9–12)  W474b, McCormick Place
Science Focus: PS
Sponsor: Bedford, Freeman, & Worth Publishing Group
Angelica Stacy, University of California, Berkeley
Jeffrey Dowling (science@bfwpub.com), Bedford, Freeman & Worth Publishing Group, San Francisco, CA
Teach rigorous chemistry with guided inquiry! Let’s explore activities that help students understand molecular structure and other core chemistry concepts using the context of smell. Take home free sample materials from the Living by Chemistry curriculum.
#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, visit www.nsta.org/membership or call 1.800.722.6782
Modeling and Engineering Design—From Ideas to Reality
(Grades 6–9) W475a, McCormick Place
Science Focus: ETS, SEP2
Sponsor: eCYBERMISSION
Matthew Hartman, eCYBERMISSION Content Manager, NSTA, Arlington, VA
Do you struggle with integrating engineering design into your middle school classroom or relaying the importance of models? We will discuss the use of models/prototypes and share ways to implement these ideas and engineering design into your science class. Hear about the free STEM competition, eCYBERMISSION, and how it can help integrate engineering design and models into your classroom.

Biotechnologies: Restriction Digestion in STEM Education
(Grades 9–College) W476, McCormick Place
Science Focus: LS, SEP
Sponsor: G-Biosciences
Ellyn Daugherty (ellyn@bioteched.com), Biotechnology Educator/Author, San Mateo, CA
Simon Holdaway (simonholdaway@vmaxbiotechnology.com), Educator, Windsor, CT
New advances make it possible to do restriction enzyme digestions and gel runs in half to a third of the time. In this workshop, participants use new G-Biosciences lab kits to perform super-fast restriction digestions, run 15-minute DNA/agarose gels, and analyze the restriction fragments to confirm the presence of a new plasmid.
10:30 AM–12 Noon  Exhibitor Workshop

NGSS in the High School Biology Classroom
(Grades 9–College)  W474a, McCormick Place
Science Focus: LS, SEP
Sponsor: Bio-Rad Laboratories

Leigh Brown  (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, CA
Engage with Kirk Brown, master teacher, curriculum expert, California regional science county office lead, as well as lead writer of the revised California science framework, to better understand how you can apply the three dimensions from the NGSS in your high school biology classroom. This interactive learning opportunity includes modeling, explanation and argumentation, and engineering practices.

11:00–11:30 AM  Presentations

Flipped Classrooms and Diverse Learners: How to Meet the Needs of All Students
(Grades 6–8)  Dusable C, Hyatt
Science Focus: GEN, NGSS

Jennifer White  (whiteje@champagneschools.org), Jefferson Middle School, Champaign, IL
Heidi Bjerke  (hbjerke; hbjerke@gmail.com), Champaign Unit 4 Schools, Champaign, IL
Attention will be paid to strategies that teachers can use to ensure that by flipping their classroom they are not marginalizing any of their students.

A Clear Argument: How to Address Literacy Standards in the Science Classroom
(Grades 5–12)  Field A/B, Hyatt
Science Focus: GEN, SEP7

Gary Holliday  (gh30@uakron.edu), The University of Akron, OH
Discover how to integrate the language of argumentation across the content areas. Take away rigorous and creative ideas for teaching writing in the science classroom.

Developing Partnerships: A Model of Outdoor Education
(Grades K–12)  Hyde Park B, Hyatt
Science Focus: GEN, INF, NGSS

Pamela Christol, Northeastern State University, Broken Arrow Campus, Broken Arrow, OK
Join us as we highlight the activities and resources used at a weeklong outdoor education day camp. We will share students’ perceptions. Connections to the NGSS included.

Teacher Researcher Day Session: You Need to Look Really Close
(Grades 8–12)  Regency A/B, Group 1, Hyatt
Science Focus: ESS

Michael Jabot, SUNY Fredonia, NY
Join us as we share a triangulated approach looking at the intersection of water, climate, and energy on forest resources. We will present a place-based strategy for addressing climate change and its impact on natural resources.

Teacher Researcher Day Session: Paving a Path to Conceptual Understanding of the Climate System
(Grades 7–College)  Regency A/B, Group 3, Hyatt
Science Focus: ESS2.D, CCC1, CCC2, CCC3, CCC4, CCC5
Margaret Holzer  (mholzer@monmouth.com), Chatham High School, Chatham, NJ
Modeling, explorations, and reflection can all scaffold students as they grapple with the complexities of our climate system. A conceptual model will be shared.

Understanding Student Learning by Having Students Write Scientific Explanations and Scientific Arguments in Chemistry
(Grade 11)  S501a, McCormick Place
Science Focus: PS1, CCC2, SEP2, SEP6, SEP7

Thomas Shiland  (tshi@nycap.rr.com), Saratoga Springs High School, Saratoga Springs, NY
Discussion centers on students’ scientific explanations and arguments using NGSS chemistry performances. We will share templates and rubrics for both arguments and explanations along with lessons learned.
How to Effectively Conduct a Science Curriculum Review that Meets the NGSS  
(Grades P–8)  
Science Focus: GEN, NGSS  
Rita Weiss (rweiss@schoolofstmary.org), School of St. Mary, Lake Forest, IL  
Hear how a preK–8 school effectively conducts a curriculum review for science so that their curriculum, resources, and instruction support the NGSS.

Grades 4–6 Students’ Reasoning About Competing Tradeoffs and Efficiency When Optimizing Design Solutions  
(Grades 4–8)  
Science Focus: ETS, CCC6, SEP6  
David Crismond, The City College of New York, NY  
Review findings from a mixed methods developmental study involving grades 4–6 students in New York City doing ratio-based optimization thinking when designing model “energy trees.”

Hollywood Game Night and Science  
(Grades 5–9)  
Science Focus: GEN, NGSS  
Ann Wallenmeyer (awallenmeyer@spsmail.org), Springfield (MO) Public Schools  
Students will learn topics in science using games similar to the TV show Hollywood Game Night. Put a new spin on your lessons and encourage collaboration, communication, and critical thinking.

11:00 AM–12 Noon  
Paul F-Brandwein Lecture  
Teaching Tomorrow’s Conservation Leaders: Lessons from Aldo Leopold  
(General)  
W190a, McCormick Place  
Science Focus: ESS  
Speaker sponsored by Brandwein Institute.

Curt Meine (curtmeine@gmail.com),  
Senior Fellow, The Aldo Leopold Foundation, Baraboo, WI  
Presider: Jack Padalino, The Paul F-Brandwein Institute, Port Jervis, NY  
Introduction: Daniel J. Bisaccio, Brown University, Providence, RI  

As a Senior Fellow at The Aldo Leopold Foundation, Curt Meine is dedicated to promoting the global legacy of Aldo Leopold, considered by many as the father of wildlife management and of the United States’ wilderness system. Curt has written extensively about Aldo Leopold and will share the timelessness of Leopold’s work and how it may be used to cultivate environmental leadership for students of the 21st century as we build a land ethic in this new century.

Curt Meine believes we all have a stake and a role in building a healthier relationship between people and land. Noted conservation biologist, historian, and writer, Curt serves as Senior Fellow with the Aldo Leopold Foundation in Baraboo, Wisconsin, and with the Chicago-based Center for Humans and Nature. He is also a research associate with the International Crane Foundation and an adjunct associate professor in the Department of Forest and Wildlife Ecology at the University of Wisconsin—Madison.

11:00 AM–12 Noon  Presentations

**Picture, Post, and Shoot!**
(Grades 7–12)  
Adler C, Hyatt  
Science Focus: GEN  
Stacey Balbach (@StaceyBalbach; stacey.balbach@cubacity.k12.WI.US), Cuba City (WI) School District  
Would you like a new method to make vocabulary more applicable to your students? Aurasma is an augmented reality app for iOS and Android devices that is flexible, interchangeable, engaging, and free. Try Aurasma!

**ASTC Session: Successes and Challenges of Documenting Design with Elementary Students**
(General)  
Burnham A/B, Hyatt  
Science Focus: GEN, SEP3, SEP8  
Tara Chudoba (tchudoba@nysci.org) and Peggy Monahan (pmonahan@nysci.org), New York Hall of Science, Queens  
Thoughtful documentation is required for students participating in design projects. Hear what the New York Hall of Science (NYSCI) has developed to reinforce the NGSS and CCSS.

**Four Pics, One Word?: Vocabulary Games and Activities to Enhance Academic Language Usage**
(Grades 6–12)  
Burnham C, Hyatt  
Science Focus: GEN  
Lauren Rentfro (rentfrola@lewisu.edu), Lewis University, Romeoville, IL  
Leave with more than 25 vocabulary strategies and games to practice the use of academic language.

**AMSE Session: Preparing Preservice Teachers for STEM Project-based Instruction Classrooms**
(Grades 6–College)  
Field C, Hyatt  
Science Focus: GEN, NGSS  
Robert Ferguson and Debbie Jackson (@debbiejkjackson; d.jackson@csuohio.edu), Cleveland State University, Cleveland, OH  
Discussion centers on how we are preparing the next generation of teachers to work in STEM project-based and problem-based environments.

**Preparing Teacher Candidates for the edTPA**
(College)  
Grant Park C, Hyatt  
Science Focus: GEN, SEP  
Jessica Krim (@drjkrim; jkrim@siue.edu), Southern Illinois University Edwardsville  
Join us as we contribute to the collaborative network of teacher educators currently facing curriculum-based questions as they prepare teacher candidates for the edTPA, formerly the Teacher Performance Assessment.

**Science Connections Using Fiction Books**
(Grades 4–12)  
Hyde Park A, Hyatt  
Science Focus: GEN, SEP8  
Kyla Gentry (kgentry@searcyschools.org) and Cristina Farley (cfarley@searcyschools.org), Ahf Junior High School, Searcy, AR  
Challenge students to discover science while reading fiction novels. Incorporate the CCSS by comparing the science in a fiction text to nonfiction texts.

**Empowering Students Toward Independence**
(General)  
Jackson Park A, Hyatt  
Science Focus: GEN, INF, SEP  
Lara Arch, Accelerate Learning, Houston, TX  
Explore some simple and immediately implementable ways that educators can facilitate the growth of 21st-century skills in all learners.

**Teacher Researcher Day Session: Sharing Insights and Experiences in Teaching About Climate Change**
(General)  
Regency A/B, Group 2, Hyatt  
Science Focus: ESS3.D, ESS2.D  
Emily Van Zee (emily.vanzee@science.oregonstate.edu), Oregon State University, Corvallis  
Interested in engaging students in learning about climate change? Join a conversation about insights, concerns, and experiences incorporating aspects of climate change into one’s curriculum.
Teacher Researcher Day Session: Life Science Understanding in the Young Learner  
(Grades P–1)  
Regency A/B, Group 4, Hyatt  
Science Focus: GEN, NGSS  
Mary Hobbs (maryhobbs@utexas.edu), The University of Texas at Austin  
Discussion centers on the outcomes and implications of NSF-funded research looking into what four-year-olds know and can do in the life sciences.

NSTA Press® Session: What Are They Thinking? Supporting Elementary Learning Through Formative Assessment Probes and Strategies  
(Grades K–5, College)  
S401bc, McCormick Place  
Science Focus: GEN, NGSS  
Page Keeley (@CTSKeley; pagekeley@gmail.com), 2008–2009 NSTA President, Fort Myers, FL  
Gather strategies that link instruction, assessment, and children’s science ideas and build teachers’ knowledge of effective K–5 science teaching. See how teachers and schools have been using formative assessment probes and techniques to support science learning while simultaneously strengthening literacy capacities.

Student-managed Portfolios: Performance-based Alternatives to Standardized Tests for the NGSS  
(Grades 9–12)  
S401d, McCormick Place  
Science Focus: SEP  
Chris Ludwig (@chrisludwig; cladwig@lajunta.k12.co.us), La Junta High School, La Junta, CO  
Discussion centers on how standards-based portfolios of students’ science and engineering performances can be used to create a robust assessment system for the NGSS.

Fostering Student Creativity while Teaching Renewable Energy  
(Grades 6–12)  
S403a, McCormick Place  
Science Focus: PS  
Kenneth Harasty, Clarksville, PA  
Your students will have a blast as they learn to build a basic wind turbine to generate an electrical current. This unit teaches important concepts about green renewable energy while fostering student creativity within the structure of an engineering team.

Promoting Success for All Learners in STEM!  
(General)  
S404 b/c, McCormick Place  
Science Focus: GEN, SEP  
Megan Garner, East Carolina University, Greenville, NC  
Explore how the NGSS science and engineering practices support diverse classrooms, while increasing interest and confidence in STEM. Discussion includes constructing and using NGSS-based performance tasks.

STEM, NGSS, and Technology: Implementation for Middle School Classrooms  
(Grades 6–8)  
S404d, McCormick Place  
Beth Newton (@TrekkingNewt; bnewton@cpsk12.org), Oakland Middle School, Columbia, MO  
Jennifer Szydlowski (jszydlow@columbia.k12.mo.us), Jefferson Middle School, Columbia, MO  
Designing solutions, integrating iPads, and implementing the NGSS. Discover engaging classroom strategies, apps, and ideas for STEM integration that support Earth and space science as well as the process of natural selection.

Working Together to Create a Woodland Ecosystem Experience  
(Grades 4–6)  
S504bc, McCormick Place  
Science Focus: ESS, INF  
Kristin Camp (campkr@chaignskschools.org), Jefferson Middle School, Champaign, IL  
Stacey Clementz (sclementz@ccfpd.org), Champaign County Forest Preserve District, Homer, IL  
Hear how Champaign School District designed a woodland/forest ecosystem unit with the assistance of the Champaign County Forest Preserve District. Join us as we share the unit design process, classroom and field trip learning activities, and the benefits for teachers, students, and nonformal educators.
Award-winning Share-a-Thon: Featuring NSTA Distinguished Teachers  
(Grades K-College) Vista/S406a, McCormick Place  
Science Focus: GEN  
Tom Lough (tom.lough@gmail.com), Retired Educator, Round Rock, TX  
James Brown (jmbrown@nycap.rr.com), Forest Park Elementary School, Albany, NY  
Tricia Shelton (@tdishelton; tdishelton@gmail.com), Boone County High School, Florence, KY  
Past winners of the NSTA Distinguished Teaching Award share their reflections, describe their science teaching approaches and experiences, and discuss their favorite projects. Handouts! Demonstrations!  

Mastery: Learning for All  
(Grades 6–8) W175c, McCormick Place  
Science Focus: GEN  
Rebecca Litherland, Parkway School District, St. Louis, MO  
Julia Orr (jorr1@pkwy.k12.mo.us) and Diane Coffey (dcoffey@pkwy.k12.mo.us), Parkway Central Middle School, Chesterfield, MO  
See what happens when learning is the constant and time is the variable. Learn how we transformed our classrooms and increased student achievement using a flipped/mastery model.  

Talking Science with the Hosts of Lab Out Loud  
(Grades 6–12) W176b, McCormick Place  
Science Focus: GEN  
Dale Basler (@basler) and Brian Bartel (@bbartel), Johnston Elementary School, Appleton, WI  
Join the hosts of the Lab Out Loud podcast to explore the benefits of using digital media in science education—helping to engage students and improve teaching practice.  

Molecular-Level Computational Modeling for High School Chemistry: Emergent Properties Methodology  
(Grades 9–12) W192a, McCormick Place  
Science Focus: PS, CCC, SEP  
Julie Ann Villa, Niles West High School, Skokie, IL  
Find out about current computer programs available for molecular level modeling in chemistry. Use emergent properties (computational modeling, macroscopic lab experiences, and symbolic representations) to deepen understanding.  

CESI Session: Outstanding Web Tools and Children’s Literature to Support Science Lessons in the Elementary Classroom  
(Grades K–5) W192c, McCormick Place  
Science Focus: GEN  
Jeff Thomas (jathomas@usi.edu), University of Southern Indiana, Evansville  
We will present recent award-winning children’s literature selections on elementary learning as well as Web 2.0 tools and their connections to science.  

Teacher-friendly Tracking of Student Success on Science and Engineering Practices  
(Grades K–12) W475b, McCormick Place  
Science Focus: SEP  
Doug Damery (@rddamery; ddamery@gmail.com), Madison High School, Adrian, MI  
Hear how one Michigan county used rubrics and the NGSS science and engineering practices to transform how teachers collaborate to ensure student understanding of science practices.
11:00 AM–12 Noon  Hands-On Workshops

Engineering in Action: How Our Students Learn to Develop Sustainable Products and Processes  
(Grades 9–College)  
Grant Park A, Hyatt  
Science Focus: GEN, INF, CCC, SEP  
Theodore Hogan, Northern Illinois University, DeKalb  
Paul Kelter, North Dakota State University, Fargo  
Students can learn to make truly environmentally effective decisions. The key: Learning to evaluate all phases of product development from raw source to reuse.

Talking Cells: Using Inquiry and Modeling to Teach Cellular Communication  
(Grades 9–College)  
Grant Park B, Hyatt  
Science Focus: NGSS  
Tamica Stubbs, Phillip O. Berry Academy of Technology, Charlotte, NC  
Join us as we develop and use an interactive model to explore how cells send, receive, and respond to signals in the human body.

The Science and Engineering of Flight and Aircraft!  
(Grades 3–6)  
Grant Park D, Hyatt  
Science Focus: PS, SEP  
Kazi Shahidullah (kazishahidullah@unr.edu), University of Nevada, Reno, NV  
Presider: David Crowther, University of Nevada, Reno  
Take learning to new heights as we explore the four basic forces involved in making an airplane fly. Participants will create and compete for the best airplane design.

Writing to Learn Together: Formative Assessment as a Process of Scientific Writing and Peer Review  
(Grades 5–College)  
Jackson Park B, Hyatt  
Science Focus: GEN, SEP1, SEP3, SEP4, SEP7, SEP8  
Deb Morrison (@educatordeb; educator.deb@gmail.com), TREE Educational Services, Boulder, CO  
Discover formative assessment practices that support students in refining their scientific ideas through writing and peer review throughout inquiry activities. We’ll cover short constructed response, quick writes, and journaling.

Argumentation in the Science Classroom  
(Grades 7–12)  
Jackson Park C, Hyatt  
Science Focus: GEN, SEP  
Matt Edstrom, dlai E. Stevenson High School, Lincolnshire, IL  
Learn the basics of teaching students about engaging in argument from evidence, including introducing students to argumentation and methods of scaffolding.

DuPont Presents: The Wicked Web They Weave  
(Grades 6–12)  
Regency E, Hyatt  
Science Focus: ESS  
Jessica Grundy, Wayne High School, Bicknell, UT  
Understanding the complex web of relationships within ecosystems is essential to understanding their sustainability. Come experience an inquiry activity that can reinforce your students’ understanding of food webs and how they contribute to sustainability.

Genes, the Environment, and Me: Glucose Balance and Type 2 Diabetes  
(Grades 7–12)  
S402b, McCormick Place  
Science Focus: LS1.A, LS3.A, CCC2, CCC4, CCC6, SEP2, SEP4, SEP6  
Joan Griswold (jgriz@uw.edu), and Maureen Munn (mmunn@uw.edu), University of Washington, Seattle  
Type 2 diabetes provides a context for learning concepts like homeostasis and gene/environment interactions. Explore physiological, behavioral, and social factors that affect glucose balance and diabetes risk.

Using Neighborhood Models to Explore an Electrical System  
(Grades 5–12)  
S404a, McCormick Place  
Science Focus: PS  
Samantha Lindgren, University of Illinois at Urbana–Champaign  
Plug into learning about the power grid by lighting a model neighborhood using renewable and conventional power sources. Vary electrical loads and design circuits in classroom-ready, NGSS-based activities.
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:
Science Explorations with Deaf and Hard-of-Hearing Students
(Grades 6–12)  S501d, McCormick Place
Science Focus: GEN
Jake Noel-Storr, InsightSTEM, Inc., Tucson, AZ
Explore ways to engage deaf and hard of hearing students in science explorations, and engage all students using American Sign Language.

May the Magnetic Force Be with You
(Grades K–4)  S502a, McCormick Place
Science Focus: PS2.B
Jesse Wilcox (jwilcox.23@gmail.com), Iowa State University, Polk City
Jerrid Kruse (@jerridkruse; jerridkruse@gmail.com), Drake University, Des Moines, IA
Experience how to use concrete activities to confront students’ misconceptions on magnetism in the primary grades. We will demonstrate how numerous activities can be used to scaffold students from their previous ideas to accurate understandings of magnetism. Handouts.

Language Demands and Opportunities of the Science and Engineering Practices for ELLs
(Grades 4–8)  S502b, McCormick Place
Science Focus: ESS2.C, PS1.A, CCC2, CCC4, SEP2, SEP4, SEP6, SEP7, SEP8
Diana Velez (dvelez@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
Claudio Vargas (claudio.vargas@ousd.k12.ca.us), Oakland (CA) Unified School District
Join us as we model an approach to accelerate learning with a heated debate on temperature and density. Explore best practices that include all students in academic discussions, support meaning-making, and promote reasoning.

Integrating Science, Engineering, and Mathematics Through Sailboat Design
(Grades 3–6)  S503a, McCormick Place
Science Focus: ETS1, CC1, CCC2, CCC3, CCC4, CCC6, SEP
Heidi Wiebke, Indiana University Bloomington
Embark on a journey integrating science, engineering, and mathematical practices. We challenge you to build the swiftest and most stable sailboat in the fleet.

Teacher, How Do the Birds Know Where the Worms Are? K–2 Argument-based Inquiry
(Grades Preschool-2)  S503b, McCormick Place
Science Focus: GEN, SEP
Jay Staker (@iastatejay; jstaker@iastate.edu), Iowa State University, Ames
Lori Norton-Meier (@LoriNortonMiller; lanort02@louisville.edu), University of Louisville, KY
Harness the wonder of children to explore by linking science to literacy. The Science Writing Heuristic approach brings science, literacy, and math together with argument-based inquiry.

Get Energized: Science + Engineering + Problem-Based Learning = Success
(Grades 3–8)  S504a, McCormick Place
Science Focus: ETS, CCC5, CCC6
Elizabeth Edmondson (evedmonson@vcu.edu) and Suzanne Kirk (svkirk@vcu.edu), Virginia Commonwealth University, Richmond
Anne Mannarino (amannarino@wm.edu), College of William & Mary, Williamsburg, VA
Plug into science and engineering tasks focusing on energy use and conservation embedded within a Problem-Based Learning (PBL) unit.

What Constitutes High-quality Discussion in a Science Classroom?
(Grades 2–6)  W175 a/b, McCormick Place
Science Focus: GEN, SEP6, SEP7
Emily Weiss (weisse@berkeley.edu) and Craig Strang (@Craig-Strang2; cstrang@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
Watch and analyze several video examples to understand what constitutes high-quality discussion in the science classroom for students in grades 3–5. Appropriate for teacher leaders, administrators, and PD designers/providers.

Exciting Engineering Endeavors
(Grades K–5)  W176a, McCormick Place
Science Focus: ETS, CCC, SEP
Terri George (terrigeorge1@gmail.com), Metro RESA, Smyrna, GA
Come explore easy and exciting engineering experiences for the elementary level. In this hands-on workshop, participants will be engaged in engineering designs that support the science and engineering practices of the NGSS.
Making the Invisible Visible  
(Grades 4–9) W178b, McCormick Place  
Science Focus: ESS, SEP  
**Melissa Sleeper** ([onewhosleeps3@aol.com](mailto:onewhosleeps3@aol.com)), Sebastian River Middle School, Sebastian, FL  
**Cris DeWolf** ([dewolf.cris@gmail.com](mailto:dewolf.cris@gmail.com)), Chippewa Hills High School, Remus, MI  
**Cara Germann**, Munster High School, Munster, IN  
**Beverly Pierson** ([bpierson@ecasd.k12.wi.us](mailto:bpierson@ecasd.k12.wi.us)), Memorial High School, Eau Claire, WI  
Add an out-of-this-world twist to your classroom learning. Join us for activities focused on projects relating to the exploration and analysis of Mars and its atmosphere.

Color Your World: Learn How LEDs Can Mix and Match Colors, and Use Them to Design a Scene  
(Grades 4–8) W186c, McCormick Place  
Science Focus: ETS, PS, CCC1, CCC2, CCC6, SEP1, SEP2, SEP6  
**Cherubim Cannon**, P.S. 005 Dr. Ronald McNair, Brooklyn, NY  
Mix colors with LEDs and create colored shadows. Then use these techniques to design a miniature stage set that conveys an idea.

Mixed Media Journaling in the Diverse Science Classroom  
(Grades K–6) W187b, McCormick Place  
Science Focus: PS1, CCC6, SEP3, SEP4  
**Andrea Guillaume** ([aguillaume@fullerton.edu](mailto:aguillaume@fullerton.edu)) and **Ruth Yopp** ([ryopp@fullerton.edu](mailto:ryopp@fullerton.edu)), California State University, Fullerton  
Experience mixed media journaling that honors what each student brings to the science classroom. See how journaling assists all students in making and communicating meaning.

Using Technology to Prepare for the Next Generation of Science Assessments  
(Grades 4–12) W190b, McCormick Place  
Science Focus: GEN, CCC, SEP  
**Jennifer Arnswald** ([@jenarnswald](mailto:@jenarnswald); [jenniferarnswald@kentisd.org](mailto:jenniferarnswald@kentisd.org)), Kent ISD, Grand Rapids, MI  
Add online assessments incorporating 21st-century skills related to the NGSS to your educational toolkit. Bring an internet ready device to session.

Eco-Tech: Tools and Resources for Integrating Technology in Outdoor Learning  
(Grades K–12) W196a, McCormick Place  
Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8  
**Tom Brown**, Cobb County Schools, Marietta, GA  
**Karan Wood** ([karan@captainplanetfdn.org](mailto:karan@captainplanetfdn.org)), Captain Planet Foundation, Atlanta, GA  
Explore exciting opportunities at the intersection of the “Maker” movement, STEM, and environmental education. Discover how student enthusiasm for technology can be channeled into engaging standards-based learning.
11:00 AM–12 Noon  Exhibitor Workshop
Introduction to Simple Machines with K’NEX Education Models and Lessons for the Elementary Classroom
(Grades 3–6)  W471b, McCormick Place
Science Focus: PS
Sponsor: K’NEX Education
Robert Jesberg, Science Consultant, Hatfield, PA
Let’s excite elementary students about physical science. Build, explore, and redesign K’NEX® simple machine models to investigate the concept “simple machines make work easier.” Discover how simple machines multiply force, multiply distance, or change direction by working hands on with fully functioning models—standards-based STEM at its best in the classroom.

11:00 AM–12:30 PM  Hands-On Workshop
NSTA Press® Session: Planning for Hard-to-Teach Biology Concepts Included in the NGSS
(Grades 9–College)  S401a, McCormick Place
Science Focus: LS1, CCC4, SEP2
Susan Koba (skoba@cox.net), Science Education Consultant, Omaha, NE
Anne Tweed (atweed@mcrel.org), 2004–2005 NSTA President, and McREL International, Denver, CO
Participate with the authors in a model lesson that exemplifies the framework and tools in Hard-to-Teach Biology Concepts: A Framework to Deepen Student Understanding.

11:20 AM–12:20 PM  Exhibitor Workshop
Climate Change Series 3: Teaching Climate? Learn How to Use the Climate.gov 2014 National Climate Assessment Resources for Educators
(Grades 3–12)  W184bc, McCormick Place
Science Focus: ESS
Sponsor: NOAA’s National Ocean Service
Frank Niepold, NOAA Climate Program Office, Silver Spring, MD
Explore a series of guides for educators focusing on the regional chapters of the National Climate Assessment Report and high-quality online educational resources. This session will provide examples of how and where climate concepts can be integrated with the NGSS and provide resources for the classroom.

11:30 AM–12 Noon  Presentations
First and Foremost: Engage!
(Grades 6–12)  Dusable C, Hyatt
Science Focus: GEN
Mary Eskridge-Lincoln (mary.eskridge@jefferson.kyschools.us), Jefferson County Public School, Louisville, KY
When time is crunched or running out, how do teachers keep the engagement piece in their lessons—and why should they?

Inquiry Labs for High School Chemistry
(Grades 9–12)  S501a, McCormick Place
Science Focus: PS, SEP
Mark Prosise, Vernon Hills High School, Vernon Hills, IL
Empower your lessons with problem-based and inquiry-driven labs and projects for the high school chemistry classroom.

Teaming Up to Teach NGSS: A Learning Team and Administration Perspective
(Grades K–9)  S504d, McCormick Place
Science Focus: GEN, NGSS
Micheline Cosentino (mcosentino@northbrook28.net) and Kathy Horvath (khorvath@northbrook28.net), Northbrook School District 28, Mundelein, IL
Shannon Zajac (@ShannonZajac; szajac@northbrook28.net), Northbrook Junior High School, Northbrook, IL
Two teachers and administrators share their process of unpacking the NGSS, developing learning targets, and incorporating rigorous and interactive student-centered activities.

Using GLOBE Activities for Threading the NGSS Vertically Through Grades K–8
(Grades K–8)  S505a, McCormick Place
Peter Garik (garik@bu.edu), Boston University, Boston, MA
Join us as we present materials that demonstrate using GLOBE as a mainstay component of a curriculum designed to maximize the vertical integration of science concepts.
Game-themed Instruction on a Budget
(Grades 4–9) S505b, McCormick Place
Science Focus: GEN, INF
Leslie Phlipot (leslie.phlipot@sidneycityschools.org), Sidney Middle School, Sidney, OH
Join us for interactive hands-on games that are quick formative assessments. Inexpensive and requiring little technology, the games encourage students to be responsible for their own learning.

Developing STEM Education in Your District
(Grades 6–12) W196c, McCormick Place
Science Focus: INF, SEP1, SEP2, SEP3, SEP4, SEP6, SEP8
Terry Stroh (@terrystrohjr; terry.stroh@d300.org), Jacobs High School, Algonquin, IL
Emphasis will be placed on developing and implementing NGSS-focused STEM classes within school districts. Leave with guidelines for designing, implementing, and assessing STEM education programs for grades 6–12 within your district.

12 Noon–12:30 PM Presentation
Teacher Researcher Day Session: Brown Bag Lunch Conversation with Teacher Researchers
(General) Regency A/B, Hyatt
Science Focus: GEN
Emily Van Zee (emily.vanzee@science.oregonstate.edu), Oregon State University, Corvallis
Are you curious about what a teacher research is? Interested in some mentoring? Have data you would like to share and discuss? Come join the conversation!

12 Noon–1:30 PM NSTA/SCST College Luncheon
Active Learning in Large Lecture Courses
(Ticket Required: $65) M-4 Prairie A, Hyatt
Science Focus: PS
Marcy Towns, Professor of Chemistry, Purdue University, West Lafayette, IN
At Purdue, the Chemistry Department has been in the process of reforming their large lecture general chemistry courses, including both lecture and laboratory components. The general chemistry program has moved forward through implementation of learning objectives which all professors “buy into” as well as jointly developed curriculum and assessments aligned with learning objectives. Dr. Marcy Towns will discuss this pedagogical approach that uses scaffolded problem-solving facilitated by graduate teaching assistants and how laboratories have been reformed to be more relevant and include opportunities for authentic assessment of student laboratory techniques.

Trained as a physical chemist, Marcy Towns has had a long-standing interest in physical chemistry. Her research includes developing methods for analyzing online group work in physical chemistry, evaluating the efficacy of physical chemistry modules, and engaging in collaborative projects with mathematics education researchers to document student understanding of physical chemistry (especially the mathematics associated with physical chemistry).

From 1995 to 2006, Dr. Towns was on the faculty of Ball State University, and then joined the faculty at Purdue University in 2006 as part of the largest division of chemistry education in the U.S. In 2013, she received Purdue’s most prestigious honor for teaching, the Murphy Award, as well as the chemistry department’s the Arthur B. Kelly Award. She has taught general chemistry, physical chemistry, and instrumental analysis. In addition to being a professor of Chemistry, she is associate department head and director of General Chemistry at Purdue University. She is also a Fellow of the American Association for the Advancement (AAAS) 2009 and a Fellow of the American Chemical Society (ACS) 2012. In 2015, she will be awarded the Society for College Science Teachers Outstanding Undergraduate Science Teacher Award.

Tickets, if still available, must be purchased at the Registration Area before 3:00 PM on Friday.
Saturday, 12 Noon–1:30 PM

12 Noon–1:30 PM  Exhibitor Workshops

Monitor, Guide, and Control Student Activity While Delivering STEM/STEAM Applications with the Intelligent Laptop Cart
(Grades K–12) W179b, McCormick Place
Science Focus: GEN, INF
Sponsor: A+ Mobile Solutions, Inc.
Bill Waibel (bwaibel@aplusmobilesolutions.com), A+ Mobile Solutions, Inc., Bay Shore, NY
With configurations ranging from 10 to 35 devices, the A+ Mobile Intelligent Laptop Cart is ready to roll into any classroom with technology you would find in any state-of-the-art interactive classroom; proprietary tools to distribute and collect data; as well as classroom management software to monitor, guide, and control student activity.

Flinn Activities to Integrate STEM Education
(Grades 7–12) W180, McCormick Place
Science Focus: GEN
Sponsor: Flinn Scientific, Inc.
Janet Hoekenga (jhoekenga@flinnsci.com), Flinn Scientific, Inc., Batavia, IL
This hands-on workshop will help you integrate STEM inquiry and design principles into your science curriculum. Join Flinn Scientific in a “build-it-yourself” lab project that can actively engage your students and increase their understanding of concepts that cut across scientific disciplines. Interactive demonstrations highlight inquiry skills and reasoning based on the evidence. Handouts for all activities!

Strawberry Milkshakes: DNA and Lactose
(Grades 5–8) W181a, McCormick Place
Science Focus: LS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Introduce middle school students to the fascinating world of molecular biology through age-appropriate hands-on activities. These activities are designed to make challenging abstract concepts (including DNA, genes, and enzymes) more concrete—and to make biology fun. Presented in partnership with the DNA Learning Center. Free materials and door prizes.

Picking Apart the Owl Pellet
(Grades K–6) W181b, McCormick Place
Science Focus: LS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
“Whooo” isn’t fascinated by owl pellets? Use this simple product to teach students about food chains, mammalian anatomy, ecology, and more! Join us for this engaging hands-on workshop as we dissect owl pellets, explore Carolina’s Owl Pellet app, and share ways to incorporate this extremely popular product into your lessons.

Bring Visual Science into Grades 6–8 Classrooms—It’s a Game Changer!
(Grades 6–8) 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 Twig online video-based learning program!

Interesting Demonstrations for the Chemistry Classroom
(Grades 6–College) W184a, McCormick Place
Science Focus: PS, SEP7, SEP6, NGSS
Sponsor: South Dakota State University
Matthew Miller (matt.miller@sdstate.edu), South Dakota State University, Brookings
The Department of Chemistry and Biochemistry at South Dakota State University offers an online MS in Chemistry for teachers. We will show and discuss a variety of safe demonstrations that engage students in the classroom. These discussions will demonstrate similar activities that occur in the MS program.

HOWTOONS! Engaging Kids with DIY STEM Projects via Comic Books
(Grades 4–8) W184d, McCormick Place
Sponsor: Publisher Spotlight
Saul Griffith and Nick Dragotta (info@howtoons.com), Otherlab, San Francisco, CA
Join Howtoons creators Dr. Saul Griffith and artist Nick Dragotta of the award-winning STEM comic that teaches kids how to make things using everyday household goods, like origami robots, marshmallow shooters, stomp rockets, zoetropes, and more. STEM topics covered include robotics to force, gravity, air resistance, persistence of vision, and more in this fun merging of art and science.
Inquiry-based Chemistry with Vernier
(Grades 9–College)  W185a, McCormick Place
Science Focus: PS, SEP1, SEP3, SEP4
Sponsor: Vernier Software & Technology
Jack Randall (info@vernier.com), Vernier Software & Technology, Beaverton, OR
Involving your students in inquiry-based chemistry can be easy and fun. Many investigations have already been designed and tested in our lab book, *Investigating Chemistry through Inquiry*. In this engaging hands-on workshop, you will conduct an inquiry-based chemistry investigation using Vernier sensors with a LabQuest 2 and Logger Pro software.

Middle School Science with Vernier
(Grades 3–8)  W185d, McCormick Place
Science Focus: GEN, SEP4
Sponsor: Vernier Software & Technology
David Carter (info@vernier.com), Vernier Software & Technology, Beaverton, OR
Use Vernier sensors, including our Go Wireless sensors, to conduct a variety of age-appropriate experiments 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!

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.

AP Biology Investigation 4: The Ins and Outs of Diffusion and Osmosis
(Grades 9–12)  W192b, McCormick Place
Science Focus: LS
Sponsor: Ward’s Science
Michelle Pagani, VWR Education, Rochester, NY
Learn how to save time in AP Biology labs and meet science practices with Ward’s AP Biology Investigation 4. Get hands on with state-of-the-art prepared agar cubes and all items needed to demonstrate movement of materials across a semi-permeable membrane by diffusion and osmosis. Take home activity guide and agar cube.

Circuit Scribe: Joining Art and Science with Conductive Gel Pens
(Grades 1–12)  W193a, McCormick Place
Science Focus: PS
Sponsor: SparkFun Electronics
Jeff Branson (jeff.branson@sparkfun.com), Brian Huang (brian.huang@sparkfun.com), and Angela Sheehan (angela.Sheehan@Sparkfun.com), Sparkfun Electronics, Longmont, CO
Circuit Scribe is a conductive gel pen that saw a huge reception on Kickstarter. We see Circuit Scribe as an easy way to integrate electronics and art into the science classroom. With a pen, paper, and some basic components, students can start exploring the magic of electricity and, at the same time, create beautifully creative pieces of art.

Leadership Pathways for Exemplary K–12 STEM Teachers
(Grades K–12)  W193b, McCormick Place
Science Focus: GEN
Sponsor: PAEMST
Marilyn Suiter, National Science Foundation, Arlington, VA
K–12 teachers are invited to join us as we discuss and explore the National Science Foundation (NSF)’s teacher leadership programs, which include the Presidential Awards for Excellence in Science and Mathematics Teaching (PAEMST), Master Teaching Fellowships Track of the Robert Noyce Teacher Scholarship Program, and STEM-C Partnerships Program.
Gliding Flight and the Engineering Design Experience  
(Grades 6–8)  W194a, McCormick Place  
Science Focus: PS, SEP  
Sponsor: SAE International–A World In Motion  
Claudia Lee (clee@sae.org), SAE International, Warrendale, PA  
Engage in the science behind gliding flight through SAE International’s A World In Motion program. Explore the relationship between force and motion and the effects of weight and lift on a glider. Join us and build a glider as you manipulate variables to optimize flight.

Evolving Curiosity in the Animal Kingdom  
(Grades 5–10)  W470b, McCormick Place  
Science Focus: LS  
Sponsor: Shape of Life  
Denise Ryan, Ryan+forest Hayes, Soquel, CA  
Natasha Fraley, Sea Studios Foundation, Monterey, CA  
Kevin Goff, Virginia Institute of Marine Science, Gloucester Point  
Join Nancy Burnett, Shape of Life and Monterey Bay Aquarium founder, on an exploration of how the animal kingdom evolved on planet Earth through exquisite FREE classroom media. Nancy will feature real classroom applications and lesson plans that adapt to your teaching environment.

Telling the Story of Neuroscience  
(Grades 5–College)  W471a, McCormick Place  
Science Focus: INF, SEP8  
Sponsor: Society for Neuroscience  
Jennifer Yates (jryates@owu.edu), Ohio Wesleyan University, Delaware  
Engage your students in science with storytelling! Learn the neuroscience behind spinal cord injury and repair in the context of a story, and participate in a hands-on storytelling workshop. Having students visualize, simplify, and re-state scientific concepts as stories increases their understanding, enjoyment, and retention of the material.

Electrophoresis in a Flash: Complete a Lab in a Single Class Period  
(Grades 7–College)  W474b, McCormick Place  
Science Focus: LS, INF  
Sponsor: The MiniOne Electrophoresis  
Pauline Cheng (info@theminione.com), Embi Tec, San Diego, CA  
Richard Chan (info@theminione.com), The MiniOne Electrophoresis, San Diego, CA  
Engage students in a fully interactive lab environment. They will love the opportunity to make their own gels, load them, and watch their DNA samples migrate in through gel. Students receive instant results for a better understanding of the lecture. Encourage students to develop hypotheses, test their results, and draw a conclusion based on their discoveries.

Finding Your Way to a Curriculum That Supports NGSS and CCSS  
(Grades K–8)  W475a, McCormick Place  
Science Focus: GEN, NGSS  
Sponsor: Battle Creek Area Mathematics and Science Center  
Nancy Karre (nancy@bcamsc.org) and Mary Lindow, Battle Creek Area Math and Science Center, Battle Creek, MI  
Meet a team of curricula developers, teachers, and writers and investigate how the Cereal City Science units (K–MS) address NGSS and CCSS. Explore activities, inquiry, reading, writing, and engineering, and evaluate the experience using the EQuIP rubric.

Biotechnology...the New Field of Converged Science  
(Grades 9–College)  W476, McCormick Place  
Science Focus: ESS3, ETS, LS, PS1.A, PS1.B, PS2, INF, CCC, SEP  
Sponsor: Energy Concepts Inc.  
Merrill Rudes, Energy Concepts, Inc., Mundelein, IL  
Thomas Chinske, Vernon Hills High School, Vernon Hills, IL  
Explore the field of biotechnology through demonstrations that pull in the integration of biology and microbiology, chemistry, bioprocessing, genetic engineering, biochemistry, and investigating forensics. Enjoy experiments that captivate students at all levels of scientific understanding while expanding their critical-thinking skills and providing exposure to new career opportunities.
12 Noon–2:00 PM  CESI/NSTA Elementary Science Luncheon

Integrating Argumentation in Support of Science and Literacy Development
(Ticket Required: $65)  M-5  Regency C, Hyatt
Science Focus: INF, GEN

Traci Wierman (@seeds-roots), Curriculum Implementation Network Director, The Learning Design Group, The Lawrence Hall of Science, University of California, Berkeley

Rebecca Abbott (@seeds-roots), Professional Development Specialist, The Learning Design Group, The Lawrence Hall of Science, University of California, Berkeley

The Learning Design Group at The Lawrence Hall of Science has developed a broadly applicable instructional sequence that supports students’ skills with scientific argumentation by providing explicit instruction in aspects of argumentation. Join Traci and Rebecca as they offer new ideas and strategies designed for supporting students in constructing new understanding of science content through argumentation experiences, providing the deep thinking and engagement that are essential for meaningful content learning.

Traci Wierman is the Curriculum Implementation Network Director for the Learning Design Group at The Lawrence Hall of Science, supporting more than 100 partner organizations across the country and around the world in their effective delivery of Hall curricular programs. Previously, Traci worked for 17 years in the Enterprise School District in California, serving in a variety of capacities including self-contained elementary, middle school, and charter school math and science coordination and delivery of the districtwide gifted and talented program, as well as leadership for the district Title I math programs. She also spent nine years working to create and deliver interdisciplinary programs for Turtle Bay Exploration Park, an interdisciplinary 200-acre park and museum complex.

Rebecca Abbott is a literacy specialist on the Learning Design Group professional development team. She taught in elementary schools in the San Francisco Bay Area for 12 years and was an English language learner and literacy instructional coach for five years before joining the team at The Lawrence Hall of Science.

Tickets, if still available, must be purchased at the Registration Area before 3:00 PM on Friday.
Making Physics Labs Fun with EPICS  
(Grades 10–11) S501a, McCormick Place  
Science Focus: PS  
Jianlan Wang, Indiana University Bloomington  
EPICS stands for Engineering Projects in Community Service. Join us for a demonstration of this problem-based sequence for designing physics labs with two successful examples of simple machines and specific heat.

Making Time for Science  
(Grades K–5) S504bc, McCormick Place  
Science Focus: GEN, NGSS  
Erin Eckholt (@eck200; eckholt@cbcsd.org), College View Elementary School, Council Bluffs, IA  
In the current push for CCSS, many teachers are finding that they are left with less time to teach content. We will provide ways to integrate the NGSS with CCSS in the areas of literacy and mathematics.

Science Buddies: Genius at Work  
(Grades 1–6) W192c, McCormick Place  
Science Focus: GEN, SEP1, SEP3, SEP6, SEP8  
Kimber Hershberger (khm12@scasd.org) and Melissa Gleason (mag28@scasd.org), Radio Park Elementary School, State College, PA  
Hear how grade 3 and grade 5 students share “Genius Hour” sessions around student-chosen science topics to increase passion and as authentic assessment of the NGSS science and engineering practices.

12:30–1:30 PM Presentations

Facilitating Long-Term Student Inquiry: Integrating PBL, NGSS, and Real-World Applications  
(Grades 8–12) Adler C, Hyatt  
Tracy Schloemer (@tracyhile; tracyhile@umich.edu), STEM School and Academy, Highlands Ranch, CO  
Nikki Dobos (nikki.dobos@stemhigh.org), STEM High School, Highlands Ranch, CO  
Have an idea for a real-world, Problem-Based Learning application your students could do, but not sure how to do it? Analyze samples with a STEM focus for biology/chemistry high school students, experience part of a project from a student perspective, and gather ideas to get students from point A to point B.

ASTC Session: Energize NM: How Informal Learning Institutions Are Supporting the Crosscutting Concepts  
(Grades 3–5) Burnham A/B, Hyatt  
Science Focus: GEN, CCC  
Deb Novak (debra.novak@state.nm.us), New Mexico Museum of Natural History and Science, Albuquerque  
Selena Connealy (selena.connealy93@gmail.com), New Mexico EPSCoR, Albuquerque  
Marcia Barton (marcia.barton@state.nm.us), New Mexico Public Education Department, Santa Fe  
Join us for lessons learned from the New Mexico Informal Science Education Network’s implementation of weeklong Energy Institutes for teachers of grades 3–5.

Teaching Middle School and High School Science Content Using CCSS, ELA  
(Grades 6–12) Burnham C, Hyatt  
Science Focus: GEN, INF, SEP  
Dora Kravitz (dkravitz@amnh.org), American Museum of Natural History, New York, NY  
Join us as we explore how reading and writing strategies can be differentiated for teaching science content to middle school and high school students that supports the CCSS and NGSS.
Three Dimensional Planning, Learning, and Assessment: NGSS in Action
(Grades 9–12) Dusable C, Hyatt
Science Focus: GEN, NGSS
Chad Janowski (@21stSciEd; janowsc@shawanoschools.com), Wendy Esch (wendye@shawanoschools.com), and Matt Brunette (brunetm@shawanoschools.com), Shawano High School, Shawano, WI
From curriculum design to implementation, discover how we are implementing three-dimensional NGSS planning, learning, and assessment for life, physical, and Earth/space science.

Formative Assessment Using Manipulatives
(Grades 8–College) Field A/B, Hyatt
Science Focus: PS1, CCC2, CCC5, CCC6, SEP2, SEP4, SEP6, SEP7, SEP8
Umadevi Garimella, University of Central Arkansas, Conway
Manipulatives are a powerful tool for supporting classroom assessment. In this module, students will use manipulates to demonstrate their understanding of physical and chemical changes.

Teaching Scientific Modeling and Physics Content Using Sources of Alternative Energy
(Grades 9–College) Grant Park A
Science Focus: PS
Rachael Lancor, Edgewood College, Madison, WI
Teach fundamental physics concepts using real-world examples—learn about gravitational potential energy from hydro-power and the electromagnetic spectrum from solar panels.

Flipping the Classroom in Advanced Science 2.0: Reaching ALL Learners by Extending the Classroom
(Grades 8–12) Grant Park B, Hyatt
Science Focus: GEN
Traci Lowes (@LowesChemClass; tlowes@neisd.net), Lee High School, San Antonio, TX
Whether you’re a first-time “flipper” or an expert, come experience new tools and strategies for “Flipping” that can help you reach learners of all abilities.

From College to Classroom—Building Mentor and Student Teacher Partnerships
(Grades 6–8, College) Grant Park C, Hyatt
Science Focus: GEN, NGSS
Laura Wang (laura.cragin.wang@gmail.com), KAPPA International High School, Bronx, NY
Sephali Thakkar (@SephaliRay; sephali@gmail.com), Columbia Secondary School for Math, Science and Engineering, New York, NY
Jennifer Micceri (miccerij@ursulinenewrochelle.org), The Ursuline School, New Rochelle, NY
Build your own Professional Learning Community by using reflective dialogue to co-plan and deliver instruction in a six-week cycle that builds autonomy in aspiring teachers.

The NGSS@NSTA Hub
(General) Jackson Park A, Hyatt
Science Focus: GEN, NGSS
Ted Willard (@Ted_NSTA; twillard@nsta.org), Program Director, COMPASS, NSTA, Arlington, VA
This session will feature a tour of the NGSS@NSTA Hub, a digital destination to support teaching and learning of the Next Generation Science Standards. Hear about the work of 55 NGSS@NSTA curators—a group of educators from all across the U.S. working to identify resources that support the standards.

Research Worth Reading: NSTA Affiliates Selected Research for 2014
(Grades K–12) Jackson Park D, Hyatt
Science Focus: GEN
John Tillotson (@johnwtillotson), jwtillot@syr.edu), Syracuse University, Syracuse, NY
Deborah Hanuscin (hanuscinD@missouri.edu), University of Missouri, Columbia
Each year, the NSTA Research Committee works with NSTA affiliates to identify research that teachers should read. This session will share the identified research of 2014.

Teacher Researcher Day Session: Scientific Explanation Skills Among Nonscience Majors at a Community College
(Grades 9–College) Regency A/B, Group 2, Hyatt
Science Focus: GEN, SEP
Steve Bennett (benn455@msu.edu), Michigan State University, East Lansing
Discussion centers on the challenges students encounter when constructing scientific explanations and providing examples of scaffolds that help students overcome these challenges.
Teacher Researcher Day Session: Relevant Chemistry in Chicago
(Grades 9–12) Regency A/B, Group 4, Hyatt
Science Focus: PS1.A, SEP3, SEP4, SEP7
Daniel Morales-Doyle (dmoralesdoyle@gmail.com), University of Illinois at Chicago
Learn from my efforts to engage urban students in chemistry curriculum that is both relevant to their lives and to the NGSS.

NSTA Press® Session: Teaching Science for Conceptual Understanding—Building a Bridge Between Students’ Ideas and Scientific Concepts
(General) S401bc, McCormick Place
Science Focus: GEN
Page Keeley (@CTSKeeley; pagekeele@gmail.com), 2008–2009 NSTA President, Fort Myers, FL
Richard Konicek-Moran (rkonicek@gmail.com), Professor Emeritus, UMass Amherst, MA
What does it really mean to teach for conceptual understanding? How do students (and teachers) experience conceptual change? Learn how you can use the author’s new book to transform and guide teaching and foster deeper, conceptual learning of science.

Collaborating with Math: Using Statistics to Learn About How We Learn
(Grades 9–12) S402a, McCormick Place
Science Focus: LS, CCC2, SEP3, SEP4, SEP5, SEP8
Julie Smith (@smitly74; jsmith@greenhillschool.org), Ruth Miller (@RM11235813; rmiller@greenhillschool.org), and Amy Ward (@Award315; award@greenhillschool.org), Greenhills School, Ann Arbor, MI
Discussion centers on how biology and math classes can collaborate to teach students how we learn by introducing scientific inquiry, experimental design, graphing, and statistical analysis.

Partnering to Improve Chemical Management and Laboratory Safety in the Era of NGSS
(Grades 6–12) S403a, McCormick Place
Science Focus: PS
Maryann Suero (suero.maryann@epa.gov), U.S. EPA Region 5, Chicago, IL
Karen Frank (kfrank@wps60.org), Waukegan High School, Waukegan, IL
Learn how to safely manage chemicals and redesign existing investigations in an effort to reduce disposal costs, pollution, and safety hazards in the classroom.

Reinforce STEM with Medical Mysteries Web Adventures
(Grades 6–College) S404 b/c, McCormick Place
Science Focus: GEN, INF, NGSS
Lynn Lauterbach (lynnlauterbach@gmail.com), Retired Teacher, Loveland, CO
Kristi Bowling (@RiceCTTL), Rice University Center for Technology in Teaching and Learning, Houston, TX
Promote scientific inquiry, STEM careers, and science literacy in the context of infectious diseases with this free online adventure game. Handouts.

Soil and The Three Little Pigs
(Grades 3–6) S504d, McCormick Place
Science Focus: ESS, SEP
Stephanie Nowak, Rice Elementary School, Mentor, OH
Huff, Puff, but it still stands. Using inquiry skills, students will design a house out of soil that the wolf can’t blow down. Integrating e-Readers, QR codes, google forms, and apps like Haiku Deck—join us as we dig into soil properties and purposes.

Great Adaptations: Teaching Practices That Support Diverse Learners
(Grades K–8) S505a, McCormick Place
Science Focus: GEN
Cheryl Czarnik and Julia Maceri, Davis Junior High School, Sterling Heights, MI
Kathleen Heikkinen (daleheikkinen@att.net), Lincoln Middle School, Warren, MI
Jennifer Wickerson (jkwick1848@gmail.com), Peck Elementary School, Warren, MI
Michelle Kirkland (shellkirkland@comcast.net), Mount Clemons Middle School, Mount Clemens, MI
The power of a learning community builds strong relationships, resulting in adaptations of teaching practices. The outcome is highly engaging science for students with diverse needs.

How Does Vocabulary Fit into PBL for English Language Learners?
(Grades K–5) S505b, McCormick Place
Science Focus: GEN
Sara Holm (sholm@washoeschools.net) and Jean Donley (jdonley@washoeschools.net), Smithridge STEM Academy, Reno, NV
Hear how teachers from an elementary STEM academy integrate focused vocabulary instruction into Project Based Learning.
STEM Share-a-Thon
(Grades 6–12) Vista/S406a, McCormick Place
Science Focus: GEN, SEP
Brandy Whitney (whitneybrandy@yahoo.com), Ottoson Middle School, Arlington, MA
Doug Baltz (db06bps@birmingham.k12.mi.us), Seaholm High School, Birmingham, MI
Ian Fogarty (@ifoggs; ifoggi@gmail.com), Riverview High School, Riverview, NB, Canada
Come learn about the latest STEM classroom initiatives by the PASCO STEM Educator award-winners! Teachers will present their winning ideas at the elementary, middle school, and high school levels.

Size Matters: Analyzing Experimental Data with Large Variation: How Sample Size Can Actually Change “Conclusions”
(Grades 6–8) W175c, McCormick Place
Mona McNamara (mmcnamara@nybg.org), The New York Botanical Garden, Bronx
Matthew Mirabello (mmmirabello@amnh.org), American Museum of Natural History, New York, NY
“Are three trials enough?” Explore how sample size affects conclusions and learn to estimate appropriate numbers of repeated trials. Connections to NGSS and CCSS Mathematics.

Edible Lunar Vehicle: Making the World Smaller Through Technology That Supports Student Learning of Engineering Design
(Grades K–6, College) W176b, McCormick Place
Science Focus: ETS1, INF
Kate Baird (@7350goldendreams; kabaird@iupuc.edu), Indiana University–Purdue University Columbus
Stephanie Coy (sscoy@iupuc.edu), Discovery School of Tulsa, OK
Join us as we share how elementary children across the world can practice engineering design and crosscutting concepts through the design of an ELV: a working model for space flight made from common food.

Make Thinking More Visible with Free Web-based Technology
(Grades 5–College) W187c, McCormick Place
Science Focus: GEN
Kathryn Lubker, The Penn-Harris-Madison School Corp., Osceola, IN
Explore a variety of free web technologies, revealing how to assess a student’s level of understanding of a given concept.

Flipped Class 201: Implementation and Beyond
(Grades K–12) W190a, McCormick Place
Science Focus: GEN
Rob White (@MrWhiteBBCHS; rwhite@bbchs.org) and Bill Sadler (@MrSadlerBBCHS; bsadler@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, IL
So, you want to flip your classroom? After you film a podcast, what’s next? Come to our session and learn from our experiences.

The Memphis Virtual STEM Academy (VSA) at East High School
(Grades 7–College) W196c, McCormick Place
Science Focus: GEN, SEP
Alfred Hall II (alhall1@memphis.edu), The University of Memphis, TN
The Memphis VSA implements a pre-engineering STEM curriculum with virtual self-paced modules, face-to-face laboratory projects, and field experiences designed to help students understand and apply engineering concepts and principles.
Saturday, 12:30–1:30 PM

12:30 PM–1:30 PM Hands-On Workshops

Designing, Making, and Marketing Shower Gel: A Cross-curricular Activity
(Grades 3–8) Grant Park D, Hyatt
Science Focus: ETS, PS, CCC3, SEP1, SEP3, SEP4, SEP5, SEP8
Joe Muskin (jmuskin@illinois.edu), University of Illinois at Urbana–Champaign
Integrate math, language arts, science, and art in this activity in which students are chemical engineers making shower gel to sell for the holidays.

Fields of Fuel: A Video Game to Support Student Reasoning About Sustainability
(Grades 5–College) Hyde Park B, Hyatt
Leith Nye (lanye@glbrc.wisc.edu), University of Wisconsin–Madison
Play a free online game designed by university scientists and classroom educators to engage students in reasoning about sustainability, resource management, and biofuel production.

Adding the R’s to Increase the Rigor in Claims, Evidence, and Reasoning
(Grades 3–College) Jackson Park B, Hyatt
Science Focus: GEN, SEP4, SEP7
Susanne Hokkanen (susanne.hokkanen@gmail.com), Colin Powell Middle School, Matteson, IL
Caryn Meirs (caryn.meirs@gmail.com), Half Hollow Hills Central School District, Dix Hills, NY
Add Rebuttal and Revisions to increase the rigor of Claims, Evidence, and Reasoning technique of scientific writing. We’ll cover the gallery walk strategy of formative assessment.

Integrating Science and Math Practice Standards
(Grades 6–12) Jackson Park C, Hyatt
Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP5, SEP8
Cory Cloud, Florida High School, Tallahassee
Engage in hands-on science and mathematical modeling activities and discuss how to best implement these practices into your classroom.

Separating Academic Content Knowledge from 21st-Century Skills
(Grades 7–12) S401d, McCormick Place
Science Focus: GEN
Sarah Sallade (@mrssallade), Sanborn Regional High School, Kingston, NH
What does competency/standard-based grading look like in a science classroom? As teachers, we must communicate to students, parents, other teachers, colleges, and employers what each student knows and is able to do. Discussion centers on how to measure and provide feedback on science content separately from 21st-century skills.

Engaging Astronomy
(Grades 5–12) S403b, McCormick Place
Science Focus: ESS1.A, CCC3, CCC4
Daniall Poulsen (dpoulson@portageps.org), Portage Northern High School, Portage, MI
Presider: Charles Fulco (saros61@gmail.com), Port Chester (NY) Public Schools
Make the abstract realm of astronomy EASY for your students to understand by having THEM become part of the demo! Engaging activities, labs, and demos included! Think-Act-Draw!

Connecting Students and Nature, in the Classroom and Garden
(Grades 4–12) S404a, McCormick Place
Science Focus: ESS
Angela Brisson and Britta Culbertson, The Nature Conservancy, Washington Field Office, Arlington, VA
Get your hands dirty in this interactive workshop! The Nature Works Everywhere Gardens program teaches conservation science with project-based, NGSS-based lesson plans.

Captivate Students’ Interests Beyond the Classroom with Chemistry
(Grades 8–12) S501bc, McCormick Place
Science Focus: PS, INF
Karen Kaleuati (@ACSChemClubs; k_kaleuati@acs.org), American Chemical Society, Washington, DC
The American Chemical Society ChemClub is a high school chemistry club that provides students with a unique opportunity to experience chemistry beyond the classroom. Join us to learn about the free, fun resources as well as experience a meeting. Handouts.
ELL Success in an AP Classroom  
(Grades 7–12)  S501d, McCormick Place  
Science Focus: GEN, SEP1, SEP3, SEP4, SEP7, SEP8  
Drew Bueno-Potts, Ocean View High School, Huntington Beach, CA  
Come participate in this interactive workshop focusing on strategies, activities, techniques, projects, and methods that promote success for English language learners in an AP Science classroom.

Scientists for Tomorrow: A STEM Out-of-School-Time Program in Community Centers  
(Grades 5–9)  S502a, McCormick Place  
Science Focus: ETS, INF, CCC4, CCC5, CCC6, SEP  
Marcelo Caplan (@sftinitiative; mcaplan@colum.edu), Columbia College Chicago, IL  
Join us for an introduction to the National Science Foundation—Informal Science Education (NSF-ISE) Scientists for Tomorrow program. Engage in hands-on activities from the module “Physics of Sound and Mathematics of Music.”

Forward or Backward? Making a Mechanism That Controls a Motor  
(Grades 4–8)  S502b, McCormick Place  
Science Focus: ETS1, PS2, PS3, CCC2, CCC4, CCC5, CCC6  
Gary Benenson (benenson@ccny.cuny.edu), The City College of New York, NY  
Cherubim Cannon, P.S. 005 Dr. Ronald McNair, Brooklyn, NY  
Switch up learning in your classroom by creating a mechanical linkage that reverses the direction of a motor from a single input. Join us for this rich introduction to integrating mechanisms and circuits.

Assessing Three-Dimensional Learning in the Next Generation Science Standards  
(Grades 5–9)  S503a, McCormick Place  
Science Focus: LS2.A, CCC2, SEP4  
John Howarth (john_howarth@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley  
Engage in a fun activity that models the effects of competition on a population of clams and assesses the three NGSS dimensions in the context of a middle school life science performance expectation.

Energy in Action: Students Impacting Energy Issues  
(Grades 4–7)  S503b, McCormick Place  
Science Focus: GEN, NGSS  
Joyce Tugel (jtugel@gmail.com), Maine Mathematics and Science Alliance, Augusta  
How can “STEM Service-Learning” integrate core ideas and practices of science while developing authentic youth voice? Come see an example and receive a step-by-step guide!

Integrating STEM into the Multi-Age Classroom  
(Grades K–4)  S504a, McCormick Place  
Science Focus: ETS, LS  
Kelly Smith and Christine Jeffery (cjeffery@pccharter-school.org), Prairie Crossing Charter School, Grayslake, IL  
Explore ways to integrate STEM into the elementary multi-age classroom through the use of hands-on materials and Problem-Based Learning techniques.
Synergizing Math and Reading Scientifically
(Grades 2–6) W175 a/b, McCormick Place
Science Focus: GEN, SEP
Carol Annette Huett (@huett_annette; annettehuett@moore.school.com), Kelley Elementary School, Moore, OK
Catapult new learning in your classroom by building one. Merge your reading and math into a science lesson through this STEM activity. Show your students how cause and effect, inferring, and sequencing can be applied in your science lessons. Engage your students in math by showing them how graphs, division, measurement, and estimating are used in science class. This session may also convince your administration why teaching science at an elementary level is important.

Ready, Set, Read…Integrating Reading into Your Science Classroom
(Grades 6–8) W176a, McCormick Place
Science Focus: GEN, SEP7, SEP8
Veronica Betancourt (veronica.betancourt@harlandale.net), Harlandale ISD, San Antonio, TX
Julie Dyess Archer (juliedyess@gmail.com), League City Intermediate School, League City, TX
Gina Gattavara Peterson (ggatta@neisd.net), Nimitz Middle School, San Antonio, TX
Engage in a variety of activities designed for deeper contextual understanding in non-textbook science reading.

Stimulate Student Learning with Food!
(Grades 7–12) W178b, McCormick Place
Science Focus: GEN
Susan Hartley, Hinkley High School, Aurora, CO
Laurie Hayes (lhayes@cart.org), The Center for Advanced Research and Technology, Clovis, CA
Join us in a hands-on learning experience, using food to teach science standards and integrate the CCSS. Handouts and door prizes included!

Novel Engineering: Integrating Engineering and Literacy to Engage Students in Engineering Design Challenges
(Grades 1–8) W186c, McCormick Place
Science Focus: ETS
Elissa Milto, Tufts University, Medford, MA
Engage in a hands-on engineering challenge based on a children’s book. Join presenters as they also share examples of literacy-based engineering challenges and leave with approaches to integrate engineering into classroom literacy tasks.

Birds and Buds: Citizen Science in Your School Yard
(Grades 5–College) W187a, McCormick Place
Science Focus: ESS
Sandra Henderson (@plantwatcher), NEON, Boulder, CO
Have your students engage in authentic ecological research as citizen scientists in two nationally acclaimed citizen science programs—BirdSleuth and Project BudBurst.
Implementing the 3-E Instructional Model to Enhance Science Learning Experiences for Students with Special Needs
(Grades P–5)
NSTA Chicago National Conference on Science Education
Gregory Borman, The City College of New York, NY
Derek Ramdass, P.S. K004, Brooklyn, NY
Utilizing the Engagement, Exploration, and Evaluation phases of the 5-E model has enhanced the learning of science among children with autism and other developmental issues.

Authentic Assessment and the NGSS
(Grades 4–10)
NSTA Chicago National Conference on Science Education
Carla Magoon (cmagoon@rsu20.org), RSU 20, Belfast, ME
Elizabeth Haynes (bhaynes@rsu20.org), Troy Howard Middle School, Belfast, ME
Engage in authentic assessments and examine how they can be used to see if students are meeting the NGSS.

Digging Deep with Climate Proxies
(Grades 7–12)
NSTA Chicago National Conference on Science Education
Mark Goldner, Heath School, Brookline, MA
By partnering with climate scientists and creating audio podcasts, grade 8 students learned and taught others about current climate science research. Literacy skills (reading, summarizing, listening, and talking) were strengthened throughout.

Working with Students’ Ideas about the Nature of STEM
(Grades 6–12)
NSTA Chicago National Conference on Science Education
Jerrid Kruse (@jerridkruse; jerridkruse@gmail.com), Drake University, Des Moines, IA
We researched students’ ideas about the nature of STEM. Come experience instructional strategies to confront misconceptions and help students’ make connections.

Linking Engineering and Scientific Models in an NGSS Context
(Grades 4–10)
NSTA Chicago National Conference on Science Education
Kevin Anderson (@WisDPscience; mkja@yahoo.com), CESA #2, Middleton, WI
Explore and learn about the NGSS modeling practice by collaboratively developing an engineering model and then connecting it to a scientific model through a hands-on activity.

12:30–2:00 PM Hands-On Workshop Multicultural/Equity in Science Education Share-a-Thon
(General)
NSTA Chicago National Conference on Science Education
Jerry Valadez (@samacademymaker; jdscience@yahoo.com) and Jean Pennycook (jean.pennycook@gmail.com), SAM Academy, Sanger, CA
Cherry Brewton (cbrewton@georgiasouthern.edu), Science Education Consultant, Statesboro, GA
Lyla Mae Crawford (ljlac@uvu.edu), DO-IT, Spokane, WA
Deena Gould (DNAmartin@cox.net), Sara Tolbert, Edward Lyon, Jorge Solis, and Trish Stoddart, Arizona State University, Tempe
S. Maxwell Hines (hinessm@wssu.edu), Winston-Salem State University, Winston Salem, NC
Deb Morrison (educator.deb@gmail.com), TREE Educational Services, Boulder, CO
Antoinette “Toni” Schlobohm (toni@schlobohms.org), Ardenwood School, Fremont, CA
Vanessa Tucker, Hanford West High School, Hanford, CA
Laura Walls (laura.walls@fresnounified.org), Duncan Polytechnical High School, Fresno, CA
Come to the Multicultural/Equity in Science Education Share-a-Thon! Visit our numerous exhibits of effective strategies, exemplary programs, and successful practices get re-energized and renewed.

12:45–1:45 PM Exhibitor Workshop Climate Change Series 4: Bring Climate Change Closer to Home: U.S. Forest Service Climate Change Education Resources
(Grades 3–12)
NSTA Chicago National Conference on Science Education
Victoria Arthur, U.S. Forest Service, Washington, DC
Explore Forest Service climate change education resources. Collect and enter tree data to quantify and value services trees provide. Learn about computer modeling and potential effects of different emissions scenarios on birds and trees. Bring climate change closer to home; helping to answer, “What does climate change mean to me?”
1:00–1:30 PM  Presentation  
Science for Everyone! Engaging Science Instruction for Students with Profound Disabilities  
(Grades K–12)  
Hyde Park A, Hyatt  
Science Focus: INF, NGSS  
Michele Hodson (vmhodson@mdeca.org), Valley View Junior High School, Farmersville, OH  
Discuss the unique science needs of students with profound disabilities. Leave with materials that can be used as soon as you return to your school!

Sister Schools: Breaking Racial and Socioeconomic Barriers Using Authentic Science Fieldwork  
(Grades 6–8)  
S404d, McCormick Place  
Rebekah Fuerst (@FuerstScience; rebekah.fuerst@ucps.k12.nc.us), Parkwood Middle School, Monroe, NC  
Ashley Lagas (@MissLagas; lagasa@holliston.k12.ma.us), Robert H. Adams Middle School, Holliston, MA  
In a yearlong project, students from two different states and vastly different backgrounds connect through science. We will share the students’ science fieldwork, friendships through letters, and their joint website.

Elementary Teachers’ and Students’ Understandings of Science Explanations  
(Grades K–5)  
S504bc, McCormick Place  
Science Focus: GEN, SEP4, SEP6, SEP7, SEP8  
Presenters to be announced  
Join us as we share how we introduced claims, evidence, and reasoning across our school and how we scaffolded thinking and writing of scientific explanations.

1:00–2:00 PM  Exhibitor Workshop  
Off to the Races with K'NEX Education’s Forces, Energy, and Motion Set!  
(Grades 5–9)  
W471b, McCormick Place  
Science Focus: PS  
Sponsor: K’NEX Education  
Robert Jesberg, Science Consultant, Hatfield, PA  
Start your engines! Join the K’NEX® building experience as you build gravity, rubber band, and spring power racers to test physical science concepts. Build models just like your students and investigate, experiment, collect data, graph, and analyze results. We will explore potential and kinetic energy, average speed, and much more.

1:30–4:30 PM  Short Course  
Using Science Phenomena to Assess Student Understanding of NGSS Performance Expectations (SC-14)  
(Grades K–8)  
Salon 3, Palmer House  
Science Focus: GEN, CCC, SEP  
Tickets Required; $62  
Brett Moulding (mouldingb@ogdensd.org), Partnership for Effective Science Teaching and Learning, Ogden, UT  
For description, see Volume 1, page 61.

1:50–2:50 PM  Exhibitor Workshop  
Climate Change Series 5: Climate Science in Action  
(Grades 3–College)  
W184bc, McCormick Place  
Science Focus: ESS  
Sponsor: NOAA’s National Ocean Service  
Peg Steffen, NOAA National Ocean Service, Silver Spring, MD  
Get up-to-date information about the current state of climate science and research from a nationally recognized climate expert. Learn about climate impacts, adaptation, and mitigation on large and local scales and take home resources for your classroom.
2:00–2:30 PM  Presentations

Place-based Climate Change Education
(Grades 3–College)  
Hyde Park B, Hyatt

Kristen Poppleton (willstegerfound; kristen@willstegerfoundation.org), WILL Steger Foundation, Minneapolis, MN
Climate change is a relatively abstract concept to understand and making a concept local and relevant is an important tool for STEM educators. We will highlight successful place-based collaborative partnerships in climate change education, lessons learned, and resources for implementing climate change education in your place.

Teacher Researcher Day Session: It’s Pretty Simple…Yeah Right!!
(Grades 8–12)  
Regency A/B, Group 3, Hyatt
Science Focus: PS

Michael Jabot, SUNY Fredonia, NY
Join us as we share the implementation of a design-based unit investigating energy and energy conservation. The premise of this unit is to challenge student understanding of energy and energy use and the impact that efficiency and energy conservation could play in the total energy picture. Handouts.

Illinois Renewable Energy for Schools (REFS) Program
(Grades 6–12)  
S403a, McCormick Place
Science Focus: ETS, PS2, PS3, CCC5, CCC6, SEP4, SEP6

Matt Aldeman, Illinois State University, Normal
Jolene Willis (willis_jolene; js-willis@wiu.edu), Western Illinois University, Macomb
The Illinois Renewable Energy for Schools (REFS) program covers a broad spectrum of renewable technologies, including wind, solar, biomass/biofuels, energy storage, and energy efficiency/Smart Grid. Handouts.

Understanding Computer Programming with Latina and Latino Middle School Students
(Grades 6–8)  
S404d, McCormick Place
Science Focus: GEN, SEP1, SEP3, SEP5

Carlos LopezLeiva, The University of New Mexico, Albuquerque
Join us as we describe our experiences and results obtained through the facilitation of a computer-programming curriculum with Latina and Latino middle school students.

3-D Printing Engineering Design in SMART STEM Classrooms
(Grades 6–9)  
W176b, McCormick Place
Science Focus: ETS, SEP

David Effron, Starling STEM PreK-8, Columbus, OH
We will show student solutions to design challenges using a SMARTBoard™, SMART Notebook™, 3-D software, and 3-D printers in a student-centered STEM classroom.
2:00–3:00 PM NSTA/ASE Honors Exchange Lecture
Exploring Classroom Assessment in Science—From Research to Classroom Practice
(General) W192a, McCormick Place
Science Focus: GEN

Chris Harrison (@ASEChairChris; christine.harrison@kcl.ac.uk), Senior Lecturer in Science Education, Dept. of Education and Professional Studies, King’s College London, U.K.


Balancing the need to assess to inform learning against assessment to measure performance at key points in a child’s life is a tricky problem for science teachers. Join Dr. Chris Harrison for an exploration on the dilemmas that teachers face on a daily basis and how many British teachers have responded to this challenge. Emphasis will be placed on the research principles and how these play out in classroom practice.

Chris Harrison has worked in secondary schools for 13 years before joining King’s College London to run the Biology Education section. Her teaching and research have centered on assessment, science education, cognitive acceleration, and the use of text and TV in classrooms.

In 1998 following her PhD, she began work on the King’s-Medway-Oxfordshire-Formative Assessment Project (KMOFAP), where she developed action research work with science and mathematics teachers to help them focus on and improve their formative practice. This work has led to numerous other assessment projects in a variety of countries and a range of publications for researchers, teachers, and advisors.

Chris is known for the way she blends research ideas with classroom practice. Much of her work focuses on the role and beliefs that teachers have in classrooms as they undertake assessment practices.

2:00–3:00 PM Presentations
ASTC Session: STEM Pathways: Informal Science Institutions and a School District United to Improve STEM Engagement and Learning
(Grades 1–8) Burnham A/B, Hyatt
Science Focus: GEN, INF, SEP

Beth Murphy (murphy@thebakken.org) and Steven Walvig (walvig@thebakken.org), The Bakken Museum, Minneapolis, MN

Abby Moore (abby.moore@state.mn.us), Minnesota Zoo, Apple Valley

Kevin Williams (willi002@umn.edu), Bell Museum of Natural History, Minneapolis, MN

Melanie Peters (mpeters@starbasemn.org), STARBASE Minnesota, Saint Paul

Learn about an innovative community partnership to create, implement, and evaluate a coherent and connected STEM pathway for students that supports standards-based learning and inspires interest and engagement.

Collaboration Instead of Compliance: How to Effectively Manage an Interactive Classroom Through Student Decision-making
(Grades 6–12) Burnham C, Hyatt
Science Focus: GEN, SEP4, SEP7

Jesse Wilcox (jwilcox.23@gmail.com), Iowa State University, Polk City

Garrett Hall (@chemichall; hallgt@gmail.com), Southeast Polk High School, Pleasant Hill, IA

In this hands-on presentation, we will model how teachers can create a classroom atmosphere with a great deal of student decision-making while reducing classroom management issues.

Using Literature to Jump-Start Science Education
(Grades 9–12) Dusable C, Hyatt
Science Focus: GEN, NGSS

Anne Artz (@anneartz; aartz@ucsd.edu), The Preuss School UCSD, La Jolla, CA

Discover ways to incorporate fiction and nonfiction literature into your science curriculum to improve science literacy and help students make connections to careers and apply the science learned in the classroom.
Authentic Summative and Formative Assessments with a Greater Purpose
(Grades 6–College)  
Field A/B, Hyatt
Science Focus: GEN, NGSS
Roslynn Stewart (roslynn_stewart@fc.dekalb.k12.ga.us), Salem Middle School, Lithonia, GA
Johni Cruse-Craig (dr.cruse.craig@gmail.com), Delta Research and Educational Foundation, Washington, DC
Empower, inspire, engage, and assess your students through creative writing, comics, and board games with a greater purpose using authentic formative and summative assessment strategies. Come with expectations and leave with inspirations!

Engaging Students in Authentic Science Research
(Grades 9–College)  
Grant Park B, Hyatt
Chuck McWilliams (chuck.mcwilliams@mhrschools.net), Maplewood Richmond Heights High School, Saint Louis, MO
Find out how your students can participate in authentic science research involving the cyanogenesis of clover plants growing in their own backyards. Free materials!

edTPA and Methods for Teaching Science Courses: Ideas for Increasing Teacher Candidate Success: Part 2: Updates and Data
(College)  
Grant Park C, Hyatt
Science Focus: GEN
Lauren Rentfro (rentfrla@lewisu.edu), Lewis University, Romeoville, IL
Revisions to science courses can better prepare preservice teachers for their future classrooms, as well as state licensure assessments. We’ll cover analysis of student learning, critical pedagogy, interdisciplinary teaching and learning, Problem-Based Learning, and the use of academic language.

Five Common Myths of the NGSS—and How to Address Them
(General)  
Jackson Park A, Hyatt
Science Focus: GEN, NGSS
Kenneth Huff (kenneth.huff@roadrunner.com), Williamsville Central School District, Blasdell, NY
Do you find fellow teachers or administrators still have misconceptions about the NGSS? Join Achieve staff and a member of the NGSS writing team to learn how you can help colleagues better understand the NGSS.

Incorporating Bioethical Case Studies into the Science Curriculum
(Grades 6–College)  
Jackson Park D, Hyatt
Science Focus: GEN, NGSS
Terry Maksymowych (tmaxymowych@ndapa.org), Academy of Notre Dame de Namur, Villanova, PA
Practice effective strategies for incorporating bioethics into your curriculum. Examples of case studies will range from relatively non-controversial issues, such as physical enhancement or ecological ethics to the most contentious, such as cloning or stem cell research. When students are actively engaged in real-world problems, they develop an appreciation for the relevance of science in society.

Teacher Researcher Day Session: Learning in Motion About Motion
(General)  
Regency A/B, Group 1, Hyatt
Science Focus: GEN, SEP
Deborah Roberts-Harris, The University of New Mexico, Albuquerque
University faculty, teachers, and students participated in a STEM adventure. Integrating STEM areas led students to new learning through the eight practices of science and engineering.

Teacher Researcher Day Session: Formative Assessment: Lessons from Teachers to Improve Participation in Classroom Conversations for All Students
(General)  
Regency A/B, Group 2, Hyatt
Science Focus: GEN, CCC2, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8
Deb Morrison (@educatordeb; educator.deb@gmail.com), TREE Educational Services, Boulder, CO
Join us as we explore recent research on ways to improve classroom conversations with respect to formative assessment and classroom equity.

Science Olympiad Urban Schools Initiative Kick Starter
(Grades 6–12)  
S401bc, McCormick Place
Science Focus: ESS, ETS, LS, PS, CCC2, CCC3, CCC4, CCC5, CCC6, CCC7, SEP3, SEP4, SEP6
Jennifer Kopach (@SOAlumniNetwork; jrkopach@soinc.org), Science Olympiad, Oakbrook Terrace, IL
Kelly Price (@KPriceGA; kellyprice@comcast.net), Forsyth County Schools, Cumming, GA
Do you wonder how to engage underserved populations/districts with K–12 STEM outreach? Science Olympiad has a solution for you. Attend this session to learn more about the success of the Science Olympiad Urban Schools Initiative.
How Do I Learn: The Adolescent Brain and Learning
(Grades 3–College) S402a, McCormick Place
Science Focus: GEN, INF, NGSS
Timothy O’Mahony (tko2@uw.edu), University of Washington, Seattle
We use an iterative challenge cycle to explore and enhance adolescents’ learning. Discussion focuses on brain-based strategies for engaging learners by uncovering neuroscience areas such as attention, memory, multitasking, and more.

HS Engineering 4.0: Going from One Engineering Class to an Articulated Four-Year Science/CVTE Engineering Program
(Grades 9–12) S404 b/c, McCormick Place
Science Focus: ETS
Amy Winston (amy_winston@newton.k12.ma.us), Newton North High School, Newton, MA
Find out about our homegrown curriculum, program expansion/articulation, and engineering-infused science classes. Develop your own “next steps” for expanding (or starting) engineering offerings at home.

Shell Science Teaching Award: Fueling Success with Students
(Grades K–12) S501a, McCormick Place
Science Focus: GEN
Presenters to be announced
Share your passion and practice by applying for this $10,000 award. Learn from Shell awardees, finalists, and judging panel members. Door prizes—Visa gift cards!

Save Time in the Classroom: Combining Reading and Science Through Picture Books
(Grades P–3) S504bc, McCormick Place
Science Focus: GEN
Donna German, Arbordale Publishing, Mount Pleasant, SC
Save time in the elementary classroom. Get step-by-step ideas for using picture books to supplement science concepts by combining the CCSS and NGSS (or state-specific science standards).

Science Integration at Its Finest!
(Grades K–8) S504d, McCormick Place
Science Focus: GEN
Douglas Hunnings (@ETHOS_Douglas; dhunnings@elkhart.k12.in.us), Riverview Elementary School, Elkhart, IN
Find out how to successfully integrate science within your literacy lessons and use the integration as a way to assess student learning of science.

STEM Buds
(Grades 1–8) S505a, McCormick Place
Science Focus: GEN, NGSS
Dawn Owen and Jason Carroll (jcarroll@stmes.org), St. Mark’s Episcopal School, Houston, TX
Join us as we share how to organize cross-grade-level teams to help your students’ STEM skills “blossom.” We’ll show you how grades 1–8 students “buddy up” to solve STEM challenges and interactively scaffold the NGSS.

Chicks, Man!
(Grades P–2) S505b, McCormick Place
Science Focus: GEN
Jennifer Labash (@mwalbash3; mwilkinson@ecfs.org), Ethical Culture Fieldston School, Bronx, NY
I will share how I built vocabulary and background experiences for my low-income and English language learners through hatching chicks in a kindergarten classroom.

Real Student Science with NASA Scientists
(Grades 4–12) W175 a/b, McCormick Place
Emily Schaller (@nasa_airborne; emily.schaller@nasa.gov), National Suborbital Education and Research Center, Palmdale, CA
Michael Wilkinson (@mwalkinson3; mwilkinson@ecfs.org), Ethical Culture Fieldston School, Bronx, NY
Hear how your students can engage in authentic dialogue with NASA Airborne Science Program missions to motivate, validate, and collaborate in experimental design and research.

NGSS and Backward Design: Our District’s Journey
(Grades 6–8) W175c, McCormick Place
Science Focus: GEN, NGSS
Rebecca Litherland (rlith5000@gmail.com), Parkway School District, St. Louis, MO
Hear how we have moved forward in development of a district curriculum that meets the NGSS using Understanding by Design®. We will share our process, a sample unit, and lessons.
Use Fun, Interactive Online Games to Teach STEM in the Context of Substance Abuse
(Grades 6–8) W187c, McCormick Place
Science Focus: GEN, INF, NGSS
Lynn Lauterbach (lynnlauterbach@gmail.com), Retired Teacher, Loveland, CO
Kristi Bowling (@RiceCTTL), Rice University Center for Technology in Teaching and Learning, Houston, TX
Learn about free online games that provide simulations and visualizations to teach standards-based science in a problem-based scenario involving the science behind substance abuse and body system.

2:00–3:00 PM Hands-On Workshops
Printing 3-D Objects to Teach Chemistry or Physics (Grades 6–College) Grant Park D, Hyatt
Science Focus: ETS1, PS1.B, PS4.A, CCC5, CCC6, SEP6
Joe Muskin (jmuskin@illinois.edu), University of Illinois at Urbana-Champaign
Rapid prototyping is an important step in engineering design. This hands-on activity prints real 3-D objects using a simple to build 3-D printer.

The Connected Science Teacher (Grades 5–College) Jackson Park C, Hyatt
Science Focus: GEN, INF
Heidi Bjerke (@jbkerlehhjberke@gmail.com), Champaign (IL) Unit 4 Schools
Keep current in your field of science and on current science teaching practices. Please BYOD to fully participate.

NSTA Press® Session: Teaching Science Through Trade Books—Exemplars from the Book and Featured Columns (Grades 2–6) S401a, McCormick Place
Science Focus: GEN
Christine Royce (@caroyce; caroyce@aol.com), Shippensburg University/PSTA, Shippensburg, PA
Emily Morgan (@EmilyMorganNTYS; emily@pictureperfectscience.com) and Karen Ansberry (karen@pictureperfectscience.com), Picture-Perfect Science, West Chester, PA
NSTA Press authors will share exemplar activities from the book Teaching Science Through Trade Books as well as featured columns from Science and Children. This session will engage participants with highlighted activities that feature the integration of quality trade books and content enriching science lessons.

Using a Graphic Organizer for Formative Assessment Opportunities in the Preschool Classroom (Grades P–K, College) W190b, McCormick Place
Science Focus: GEN
Christine Knaggs (cknaggs@lourdes.edu), Lourdes University, Sylvania, OH
Through multiple seasonal science examples and demonstrations, participants will use a graphic organizer to both plan and formatively assess STEM lessons in the preschool classroom.

Making Hands-On/Minds-On Games and Activities for Elementary (Grades 1–5) S402b, McCormick Place
Science Focus: GEN
Rodelio Abuan, Sam Houston Math, Science & Technology Center, Houston, TX
Engage elementary students in learning by playing. Learn how to make and use 10 fun games and activities that can be tailor-made to your grade level and subject area, adjusted to fit any class size, and used as practice activities, review stations for state tests, warm-up exercises, and more.

Using Data for Climate Change (Grades 6–12) S403b, McCormick Place
Science Focus: ESS, SEP4, SEP7, SEP8
Melanie Mudarth (mudarth@gmail.com), Evanston/Skokie School District 65, Evanston, IL
Explore climate change through data sets developed from firsthand experiences, data from both poles, and International Polar Year resources.
Family Science Night Partnerships in a Culture of Science  
(Grades 1–12) S404a, McCormick Place  
Science Focus: INF  
Karen Saur (@Karen_Saur; ksaur@nysci.org), New York Hall of Science, Queens  
Jay Holmes (jholmes@amnh.org), American Museum of Natural History, New York, NY  
Student success is improved when parents participate in the learning process. Family science nights allow teachers, students, families, and the whole community to learn together.

Using Stickers and Tape to Prototype and Explore Electrical Circuits  
(Grades 6–12) S501bc, McCormick Place  
Science Focus: PS  
Samantha Lindgren, University of Illinois at Urbana–Champaign  
Forget the alligator clips! Investigate concepts in electricity, including voltage, current, series and parallel circuits, using stickers and copper tape and these classroom-ready NGSS-based activities.

STEM for ALL! Integrated STEM Projects for Diverse Learners  
(Grades 6–12) S501d, McCormick Place  
Science Focus: GEN  
Shari Weaver, Massachusetts Academy of Math & Science at WPI, Worcester  
Take part in hands-on STEM activities that can be used for students with a range of learning disabilities in an inclusion or substantially separate environment. Handouts.

Implementing Inquiry and Engineering Design Using NASA’s Materials on Newton’s Laws  
(Grades P–8) S502a, McCormick Place  
Science Focus: ETS  
Linda Smith (elementary.science.teacher@gmail.com), Retired Educator, Elmer, NJ  
Students use readily available materials to perform inquiry-based activities to develop evidence to complete an engineering design problem. Free NASA poster set to all participants.

Connecting the Practices of Science and Mathematics to Enhance Integrated STEM Instruction  
(Grades 3–8) S502b, McCormick Place  
Science Focus: GEN, NGSS  
Jane Metty, Mercer University, McDonough, GA  
Engage in integrated math and science activities. Analyze of these activities in light of the NGSS science and engineering practices and CCSS Mathematics.

Engineering for Middle-Schoolers After the Bell Rings  
(Grades 5–8) S503a, McCormick Place  
Science Focus: GEN, SEP  
Melissa Higgins (@EiE_org; mhiggins@mos.org), Museum of Science, Boston, MA  
Experience how engaging middle-schoolers in engineering activities after school can bolster their engineering skills and pique their interest in STEM subjects.

Linking Science to Informed Citizenship Through Integrated Environmental Health Curriculum  
(Grades 6–9) S503b, McCormick Place  
Alla Keselman, U.S. National Library of Medicine, Bethesda, MD  
Review an integrated environmental health curriculum and accompanying electronic resources from the National Library of Medicine; engage in some curricular activities. Laptop helpful.

Writing to Learn vs. Learning to Write in Science with Connections to the NGSS Science and Engineering Practices  
(Grades 3–9) S504a, McCormick Place  
Science Focus: GEN, SEP  
Roxane Dupuis (radupuis@comcast.net), Loyola University Chicago, IL  
Frank Panion (fapanion@cps.edu), Inter-American Magnet School, Chicago, IL  
Engage in writing-to-learn activities illustrating how writing is used to initiate discussion, reinforce content, and model the method of inquiry.
NESTA Session: How Weird Can It Get? Developing Weather and Climate Literacy (Grades 1–12) Skyline W375e, McCormick Place
Science Focus: ESS, CCC, SEP
Robert Johnson Killeen (rmjohnson@nestanet.org), National Earth Science Teachers Association, Boulder, CO
Margaret Holzer (mholzer@monmouth.com), Chatham High School, Chatham, NJ
Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, NJ
Explore the scientific foundations of what we know about weather, climate, and climate change through effective hands-on and data-rich classroom activities from NESTA.

Teaching Refraction for Conceptual Understanding (Grades 6–9) W176a, McCormick Place
Science Focus: PS4.B
Scott Ashmann (ashmanns@uwgb.edu), University of Wisconsin–Green Bay
Using real-world examples, ray diagrams, and a learning cycle, join us as we focus on developing students’ conceptual (not mathematical) understanding of refraction.

Stellar Girls: NGSS-based Innovative Hands-On STEM Program (Grades 4–8) W178b, McCormick Place
Science Focus: GEN, NGSS
Karen Lindebrekke (karen.lindebrekke@ibioinstitute.org) and Ann Reed (@ibioeducate; ann.reed@ibioinstitute.org), iBIO Institute, Chicago, IL
Stellar Girls inspires young women to pursue STEM careers by offering them engaging hands-on activities that relate to global challenges requiring 21st-century skills to solve.

Science by Design: Addressing Science Concepts Through Engineering (Grades 4–9) W186c, McCormick Place
Science Focus: ETS
Julie Alexander (juaalexander@cpsk12.org), Columbia (MO) Public Schools
Want to incorporate engineering? Worried about promoting an activity-mania classroom void of scientific content? Come learn ways to meaningfully incorporate engineering in your classroom. Samples of student work and handouts.

On-the-Ground Stewardship + Great Lakes Science = A Five Star Place-based Education Program (Grades 6–12) W187a, McCormick Place
Science Focus: ETS, LS2.A, LS2.B, INF, SEP1, SEP3, SEP4
Katie Larson (klarson@greatlakes.org), Alliance for the Great Lakes, Chicago, IL
Enhance your teaching repertoire with the Great Lakes in My World curriculum, Adopt-a-Beach citizen science, place-based habitat restoration, and the NGSS.

Using Universal Design for Learning (UDL) Principles to Enhance Science Learning Experiences for Students with Special Needs (Grades 6–12) W187b, McCormick Place
Science Focus: GEN, SEP
Gregory Borman, The City College of New York, NY
Experience how incorporating the principles of Universal Design for Learning into teaching and learning leads to deeper understanding of science concepts and processes for students with disabilities.

Data Sets for Climate Education (Grades 6–12) W192c, McCormick Place
Science Focus: ESS2, PS1, PS3, CCC1, CCC4, CCC5, CCC7, SEP
Patricia Harcourt (@HarcourtMC; pharcourt@gmail.com), MADE CLEAR, Annapolis, MD
Climate science provides a great context for introducing data interpretation to students. We will work with several data sets to introduce important climate concepts.

Introduction to the Nanoscale: An Integrated Interactive STEM Curriculum for NGSS Classrooms (Grades 6–12) W196a, McCormick Place
Science Focus: ETS, LS, PS, INF, CCC1, CCC2, CCC3, CCC4, CCC5, CCC6, SEP
Matthew Hsu (mhsu.northwestern@gmail.com), Northwestern University, Evanston, IL
Join us for hands-on activities and interactive content demonstrations that illustrate some of the core nanoscience concepts at the heart of a new NGSS-based STEM curriculum.
2:00–3:30 PM  Exhibitor Workshops

Creating a Science Class for the 21st Century
(Grades 7–12)  W184d, McCormick Place
Science Focus: GEN, INF
Sponsor: Intelitek
Elizabeth Klingseisen and Shannon Richmond (srichmond@intelitek.com), Intelitek, Inc., Manchester, NH
Turn your classroom into a productive environment in which students develop the skills they will need in the workplace and teachers facilitate their learning. Find out ways to integrate technology to promote success in PBL and student projects. Gain practical research-based ideas centered on technology, instruction strategies (like flipped instruction), and classroom management. Leave with great ideas!

Human Physiology with Vernier
(Grades 9–College)  W185a, McCormick Place
Science Focus: LS, SEP4
Sponsor: Vernier Software & Technology
John Melville (info@vernier.com), Vernier Software & Technology, Beaverton, OR
Use Vernier sensors to conduct a variety of human physiology experiments from our popular Human Physiology with Vernier lab book in this engaging hands-on workshop. Experience data collection using LabQuest 2, Logger Pro computer software, and mobile devices.

Introductory Engineering Design Projects with Vernier
(Grades 6–12)  W185d, McCormick Place
Science Focus: ETS, SEP3, SEP4
Sponsor: Vernier Software & Technology
David Vernier (info@vernier.com), Vernier Software & Technology, Beaverton, OR
This engaging hands-on workshop explores ways to use Vernier sensors for introductory engineering design projects. Using our Digital Control Unit and Logger Pro computer software, participants will learn how to apply logic statements to set alarms and to control simple electronic devices based on sensor input values.

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.

Dissection Connections: Using Preserved Specimens to Explore Human Biology, Disease, and Development
(Grades 6–12)  W192b, McCormick Place
Science Focus: LS
Sponsor: Ward’s Science
Jim Collins, VWR Education, Rochester, NY
Everything you need for safer, more accurate dissections. Work with Ward’s fetal pig specimens, odor-neutralizing pads, and newly illustrated dissection guides. Walk through case-based dissection highlighting connections to the NGSS and other state standards. Receive a color copy of our dissection guide and an exclusive discount toward your next preserved materials purchase.
ECO Classroom: Field-based Professional Development for STEM Teachers
(Grades 7–12) W474b, McCormick Place
Sponsor: Conservation International
Danielle Belmont, Miller Middle School, Durango, CO
Peggy Lubchenco, University of California, Santa Barbara and Conservation International, Goleta
Ngoc Hoang, Yerba Buena High School, San Jose, CA
James MacCarthy, Conservation International, Arlington, VA
ECO-Classroom secondary science teachers who participated in a free Northrop Grumman professional development opportunity in Costa Rica will recount how they incorporate newly acquired field skills with teaching NGSS topics like climate change, land use, and ecology. Information about participating in future two-week Costa Rica trips will be available.

Stretch Your Legs for Science!
(Grades K–12) W475a, McCormick Place
Science Focus: LS2
Sponsor: Celestron
Jennifer Fee and Lindsay Glasner, The Cornell Lab of Ornithology, Ithaca, NY
Join us for some post-lunch exercise; explore Chicago via a bird walk! After a tutorial on bird identification, we’ll head outside with Celestron binoculars to experience firsthand how you can meet standards and engage students through bird watching! After the walk, Celestron will raffle binoculars to a few lucky attendees.

Climate Change MADE CLEAR
(Grades 5–10, College) Hyde Park B, Hyatt
Science Focus: ESS, INF, CCC, SEP
Christopher Petrone (@seaPetrone; petrone@udel.edu), Delaware Sea Grant Marine Advisory Service, Lewes
Melissa Rogers (mrogers@umces.edu), University of Maryland Center for Environmental Science, Cambridge
Hear about MADE-CLEAR, an NSF-funded, collaborative partnership seeking to identify effective and sustainable ways to embed meaningful climate change instruction in Maryland and Delaware schools and informal education institutions.
Renewable Energy Science Workshop with STEM Career Focus
(Grades 7–12)  
S403a, McCormick Place
Kathryn Orvis and Matthew Kararo (mkararo@purdue.edu), Purdue University, West Lafayette, IN
Discussion centers on how agricultural concepts around renewable energy can help meet the NGSS and inspire students to choose STEM careers.

Technology and Inclusivity: How Social Network Learning Technology and Environments Shape Student Science Identities
(Grades 6–8)  
S404d, McCormick Place
Science Focus: GEN, NGSS
Vanessa Lujan (vlujan@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
Come hear how teachers can foster development of student science identity by engaging students in classroom discourse via social network learning technology environments.

Applications of Engineering/Applications of Physics
(Grades 9–12)  
W176b, McCormick Place
Jason English (jenglish@d211.org), William Fremd High School, Palatine, IL
Fermilab’s physics research stretches the limits of modern engineering. We challenge our students to apply the physics they’re learning to projects in the classroom.

2:30–3:30 PM  Exhibitor Workshop
Forensic DNA Activities and More with K’NEX Education’s DNA, Replication, and Transcription Set
(Grades 7–12)  
W471b, McCormick Place
Science Focus: LS
Sponsor: K’NEX Education
Robert Jesberg, Science Consultant, Hatfield, PA
CSI has heightened students’ interest in forensics and DNA fingerprinting. Let’s build on that interest to strengthen their understanding of DNA concepts and processes. You will build actual K’NEX Education DNA models to examine a DNA ladder, structure, the double helix, and more. Also, explore mRNA, replication, transcription, and translation.

2:55–3:55 PM  Exhibitor Workshop
Climate Change Series 6: ClimateChangeLIVE Distance Learning Project—Engage Your Students in Climate Change Learning and Being Part of the Solution!
(Grades 5–12)  
W184bc, McCormick Place
Science Focus: ESS
Sponsor: NOAA’s National Ocean Service
Victoria Arthur, U.S. Forest Service, Washington, DC
Discover a treasure chest of climate change education resources to help you educate, inspire, and engage your students! Online resources from 27 federal agency and NGO partners include lesson plans, videos, webinars, and more. Youth from across the country provide ideas about how your class can be part of the climate solution!
3:00–3:30 PM  Presentation
Teacher Researcher Day Session: Becoming a Teacher Researcher Through an Online Graduate Course
(General) Regency A/B, Group 3, Hyatt
Science Focus: GEN, CCC1
Jeremy Ervin (@dr_jeremy_ervin; jervin62@gmail.com), Cedarville University, Cedarville, OH
Learn how an online graduate course educates students to systematically implement research in daily practice to improve pedagogy.

3:00–4:00 PM  Presentations
Teacher Researcher Day Session: An In-depth Look at Our Students Learning and Teacher Evaluation
(General) Regency A/B, Group 1, Hyatt
Science Focus: GEN
Deborah Roberts-Harris, The University of New Mexico, Albuquerque
Providing teachers with opportunities to reflect on learning/teaching in their own classrooms enriches evaluation. Come find out how teacher research and teacher evaluation are linked.

Teacher Researcher Day Session: Woodrow Wilson Fellows—Shaping Teaching Practice Through Field-based Action Research
(Grades 6–12) Regency A/B, Group 2, Hyatt
Science Focus: GEN, NGSS
Gary Holliday (@GaryMHoliday; gh30@uakron.edu) and Nidaa Makki (nmakki@uakron.edu), The University of Akron, OH
The University of Akron’s Woodrow Wilson Fellows will share action research projects conducted during their first year of teaching and will discuss the impact on teaching practice.

Teacher Researcher Day Session: Using Historical Stories to Support Development of Authentic Investigations
(Grades 4–7) Regency A/B, Group 4, Hyatt
Science Focus: GEN
Deb McGregor, Oxford Brookes University, Oxford, U.K.
Hear how stories from scientist’s past lives can be used to inspire and support children developing their own unique investigations.

3:00–5:00 PM  Meeting
Association for Multicultural Science Education (AMSE) Town Hall Meeting
Clark A/B, Hyatt
Robert Ferguson (r.l.ferguson1@csuohio.edu), Cleveland State University, Cleveland, OH
Cherry Brewton (cbrewton@georgiasouthern.edu), Science Education Consultant, Statesboro, GA
Melissa Campanella (melissa.rae.campanella@gmail.com), Noel Community Arts School, Denver, CO
Participate in NGSS 3D lessons and learn how to make NGSS accessible to all students.

3:30–4:00 PM  Presentations
Implementing Connections to the CCSS for Literacy Through Collaborative Writing
(Grades 5–12) Field C, Hyatt
Science Focus: GEN, SEP1, SEP7, SEP8
Jason Artero, Central Michigan University, Mount Pleasant
Explore implementing connections to NGSS Appendix M by using collaborative writing with students to allow them to challenge other students’ ideas about science through writing and discussion.

Involving Preservice Teachers at Your State Conference: Exploratorium Time
(General) Grant Park C, Hyatt
Science Focus: INF
Ray Scolavino (rscalo3@yahoo.com), University of Wisconsin–Milwaukee
Leave with an outline on how you can implement an Exploratorium for your next state conference and let your preservice teachers strut their stuff.

Science Futures: Developing Teacher Leaders for Instructional and School Reform
(General) Jackson Park D, Hyatt
Science Focus: GEN
Chad Janowski (@21stSciEd; janowsc@shawanoschools.com), Shawano High School, Shawano, WI
Hear how Science Futures, a leadership development program for science teachers, has teachers actively involved in reforming their science teaching and their school’s science programs.
Differentiation and Formative Assessment in the Secondary Science Classroom—It Can Be Done!
(Grades 6–12) W475b, McCormick Place
Science Focus: GEN

Amy Alexander (alexandera@trine.edu), Trine University, Angola, IN

Emphasis will be placed on a tiered instruction format that allows for active inquiry, continuous assessment, and promotion of a positive classroom community. The model allows students to choose activities based on learning style, ability level, and interest.

Saturday, 3:30–4:00 PM

3:30–4:30 PM Featured Presentation
Connected Learning: Emerging Contexts for Deeper Engagement
(General) W190a, McCormick Place
Science Focus: ETS, INF

Speaker sponsored by Shell

Samuel Dyson (@samueledyson; sam@mozillafoundation.org), Hive Chicago Learning Network, Chicago, IL

Presider: Krishna Millsapp-Palmore, Mount Carmel High School, Chicago, IL

A learner's ability to make connections remains the hallmark of understanding. Digital technology continues to open new possibilities for empowering teachers and learners alike, but how has the increasingly connected context in which we live created a context for more connected learning? Let's explore the potential of digital media to enable the connections that give more kids an irrepressible desire to keep growing.

A 2007 recipient of the Golden Apple award for excellence in teaching, Samuel Dyson has 10 years of physics teaching experience. His background includes educational administration in both community-based and Chicago Public Schools contexts.

Currently, he is director of the Hive Chicago Learning Network, a MacArthur-supported initiative operated by the Mozilla Foundation to enact connected learning among teens and educators through a community of youth-serving organizations. Hive Chicago engages youth around their personal interests, peer culture, and civic participation focusing on production-centered, hands-on making and skill building. His work explores the power of networks to solve complex challenges inherent in the work of teaching and learning. Samuel has led development of connected learning programs and resources for teens and adults, including Hive Fashion in Chicago and New York City Networks; STEAM Studio, a pop-up makerspace at the Chicago Cultural Center; and Maker Party and showcase events supporting the Chicago City of Learning.
3:30–4:30 PM  Presentations

ASTC Session: STEM Learning Through Partnerships
(Grades K–8) Burnham A/B, Hyatt
Science Focus: GEN, INF
Becky Wolfe (beckyw@childrensmuseum.org), The Children’s Museum of Indianapolis, IN
Coordinated partnerships between schools, museums, and scientists are a strategy for increasing engagement with STEM. Museum staff will discuss ways to develop and maintain partnerships.

Transforming the High School Classroom into an NGSS Classroom
(Grades 6–12) Burnham C, Hyatt
Science Focus: NGSS, GEN
Chris Embry Mohr (chrisembry.mohr@olympia.org), Olympia High School, Stanford, IL
Hear from the NGSS writing team about how they are transforming their classrooms into ones that support the NGSS by building professional learning communities, adjusting curriculum, analyzing resources, and developing lessons and assessments.

Teaching Science from a Global Perspective
(Grades 9–12) Dusable C, Hyatt
Science Focus: GEN, NGSS
Anne Artz (@anneartz; aartz@ucsd.edu), The Preuss School UCSD, La Jolla, CA
Emphasis will be placed on practical ways to incorporate global data into every science lesson. Learn about hands-on lessons that promote global learning and understanding using data bases, technology, and professional development opportunities.

Turning the Performance Expectations of the NGSS into a Working Curriculum
(Grades 9–12) Hyde Park A, Hyatt
Science Focus: GEN, SEP
Angela Codron (codrona@unit5.org), Normal West High School, Normal, IL
Classroom teachers and curriculum leaders will gain practical ideas for district and classroom level implementation of the NGSS, including target writing, formative assessment processes, performance-based assessments, and use of rubrics.

Encouraging Student Thinking and Engagement Through Effective Questioning
(General) Jackson Park A, Hyatt
Science Focus: GEN
Deborah Sachs (dsachs@uindy.edu), University of Indianapolis, IN
Do your questioning strategies need a boost? Learn principles for designing effective questions. Explore strategies and structures that lead to increased student thinking and engagement.

Addressing Misconceptions About Evolution
(Grades 9–12) S402a, McCormick Place
Sarah O’Leary-Driscoll and Don Dosch (ddosch@imsa.edu), Illinois Mathematics and Science Academy, Aurora
Leave with effective ways to identify and address misconceptions about evolution, with a particular focus on supporting explanations with evidence.

Why Does the Earth Quake in the Central U.S.?
(Grades 6–12) S403a, McCormick Place
Science Focus: ESS, CCC1, SEP2
John Taber, IRIS, Washington, DC
Join us for an investigation of intraplate earthquakes for the Earth science classroom. Explore where and why the earth quakes far from plate margins through simple, illustrative, physical models, and the analysis of earthquakes from IRIS’s online data-portal.

Engaging Students in Data-Informed Engineering Design Decisions in Chemistry and Physics
(Grades 9–12) S404 b/c, McCormick Place
Science Focus: ETS, PS, SEP
Bradford Hill (@sciencebradford; bradfordhill@gmail.com), Southridge High School, Beaverton, OR
Heather Haines, Community Charter School of Cambridge, MA
Engage students in both engineering and science practices through embedding physics- or chemistry-driven inquiry to generate data to inform relevant engineering design decisions.
Building an Integrated K–8 Curriculum Based on the NGSS  
(Grades K–8)  
S504bc, McCormick Place  
Science Focus: ESS, ETS, LS, PS, SEP6  
Janet MacNeil (@curiouslearner8; janet_macneil@brookline.k12.ma.us), Brookline (MA) Public Schools  
Come learn about the K–8 science curriculum that we are creating to meet the NGSS—integrating science and engineering practices, disciplinary core ideas, crosscutting concepts, and literacy.

Family Science Day: Do’s and Don’ts for a Successful STEAM Event  
(Grades P–8)  
S504d, McCormick Place  
Science Focus: ETS1.A, ETS1.B, INF, SEP1, SEP3, SEP6  
Sara McCubbins (samcub@ilstu.edu), Illinois State University, Normal  
Hear how a local university, museum, and other informal science groups combined resources and expertise often not available in K–12 schools to create a one-day STEAM event. Leave with strategies to create your own event in your community.

Teaching Science Writing: Reports to Explanations  
(Grades 3–5)  
S505a, McCormick Place  
Science Focus: LS, CCC5, SEP2, SEP6  
Tracy Hodgson-Drysdale (thodgso2@uottawa.ca), University of Ottawa, Ont., Canada  
Holly Rosa (hrosa@bostonpublicschools.org), Boston (MA) Public Schools  
Learn to teach science writing that supports content knowledge and language development while enriching the experiences of all students in multicultural classrooms.

PAEMST Award-Winners: How Do They Get Their Mojo?  
(Grades K–6)  
S505b, McCormick Place  
Science Focus: GEN  
Jim O’Malley (@MrOScience; omalleyj@skokie69.net), Skokie District 69, Morton Grove, IL  
We NEED to develop and nurture great elementary science teachers with “mojo” and my presentation will share my dissertation findings. PAEMST stands for Presidential Awards for Excellence in Mathematics and Science Teaching—find out what sets the award-winners apart.

Deep-Brain Stimulation  
(Grades 7–College)  
W175 a/b, McCormick Place  
Kevin Fleming (kfleming@oldsaybrook.k12.ct.us), Old Saybrook Senior High School, Old Saybrook, CT  
Learn about an event-based science linking biomedical engineering and neuroscience to teach the nervous system. We will share an innovative unit on the nervous system focusing on deep-brain stimulation, a modern technology used to treat movement disorders.

Math Standards in Data Analysis: Going Beyond “Average”  
(Grades 6–8)  
W175c, McCormick Place  
Science Focus: GEN, SEP5  
Mona McNamara (mmcnamara@nybg.org), The New York Botanical Garden, Bronx  
Matthew Mirabello (mmirabello@amnh.org), American Museum of Natural History, New York, NY  
Graph and interpret data using measures of center and spread. Join us as we focus on methods that students can use to represent and analyze experimental data, including mean, median, mode, and box and whisker plots.

STEM Summer Scholars Program  
(Grades 6–8)  
W176b, McCormick Place  
Science Focus: GEN, SEP1, SEP3, SEP6  
Edward McGrath (edward.mcgrath@redclay.k12.de.us), Red Clay Consolidated School District, Wilmington, DE  
Each summer, the Red Clay Consolidated School District holds a three-week camp for rising grades 6–8 students focused entirely on a STEM topic. Join us as we share details about the STEM Summer Scholars program, a middle school summer enrichment program providing a rich STEM experience to all middle school students in a public K–12 school district in Delaware.

Dazzling Deceptions: Discrepant Events That Delight and Mystify!  
(Grades 3–College)  
W185 b/c, McCormick Place  
Science Focus: GEN, INF, NGSS  
Alan McCormack (amccorma@mail.sdsu.edu), 2010–2011 NSTA President, and San Diego State University, San Diego, CA  
Science experiences that seem contrary to “common sense” are great motivators and gateways to science inquiry and concept development.
Scientific Inquiry Minds Want to Know: Creating a School-University-Park Partnership
(Grades 7–College) W187a, McCormick Place
Science Focus: INF, SEP
Susan B. Kelly, University of Illinois at Urbana–Champaign
Join us to learn more about a new partnership recently developed between University of Illinois Urbana-Champaign scientists and educators, Park staff from Wildlife Prairie Park near Peoria, Illinois, and science teachers from three school districts.

Meeting Individualized Instructional Needs in the Secondary Science Inclusion Classroom: A Web-based Approach
(Grades 6–College) W187c, McCormick Place
Science Focus: GEN, INF, NGSS
Laura Barden-Gabbei (lm-barden@wiu.edu), Western Illinois University, Macomb
Get introduced to web-based science resources that can help teachers meet student IEP, 504, and RTI accommodations in science classrooms.

Astronomical Assessments
(Grades 6–8) W190b, McCormick Place
Science Focus: ESS
Charles Juister (cjuister@gmail.com) and Rachel Letizia, Heritage Middle School, Berwyn, IL
Presider: Jen Gutierrez (jengutierrez@cox.net), Arizona Dept. of Education, Phoenix
Explore authentic assessments for demonstrating student understanding of Earth-Moon-Sun patterns and models in the context of the NGSS.

CESI Session: Get Real! STEM Career Awareness Strategies to Enhance Science Learning
(Grades K–5) W192c, McCormick Place
Science Focus: GEN, SEP
Julie Thomas, University of Nebraska–Lincoln
Ramp up elementary science lessons with simple strategies that connect concepts and practices to the real world as well as inspire STEM career interests.

3:30–4:30 PM Hands-On Workshop
Incorporating Engineering Design Principles into High School Science Experiments
(Grades 9–College) Grant Park A, Hyatt
Science Focus: ETS, SEP1, SEP3, SEP4
Andrea Van Duzor (andrea.vanduzor@csu.edu) and Rita Koziarski (rkoziars@csu.edu), Chicago State University, Chicago, IL
We will compare scientific experimentation and engineering investigation and discuss rubrics and methods for developing engineering projects from inquiry-based science projects.

Science in Action Share-a-Thon—Research from the CPS Student Science Fair
(Grades 6–12) Grant Park B, Hyatt
Science Focus: GEN, SEP
Paul Dolan, Northeastern Illinois University, Chicago
Students from the 2015 Chicago Public Schools Student Science Fair will present their research posters, showing how NGSS is in action in Chicago.

ABCs with DEs: Addressing Basic Concepts with Discrepant Events
(Grades Preschool–10) Grant Park D, Hyatt
Science Focus: GEN, NGSS
Ruth Hutson, Blue Valley High School, Randolph, KS
Carolyn Mohr, Dominican University, River Forest, IL
A discrepant event (DE) activity is a teaching strategy that identifies students’ misconceptions and provides ways to determine whether students understand concepts. Come play/practice magical science with everyday items! Make-and-take home our favorites.

Designed to Handle a Chicago Winter!
(Grades 4–12) Hyde Park B, Hyatt
Science Focus: GEN, CCC5, CCC6, CCC7
Jeffrey Lukens, Sioux Falls (SD) School District
People living in (or visiting!) Chicago in the winter are a hardy lot! Join us to find out how to stay warm (or cool) while you’re here!

Formative Assessments You Can Use on Monday
(General) Jackson Park C, Hyatt
Science Focus: GEN, INF
Jennifer Hooper, The University of Texas at San Antonio
Encounter formal assessments that are easy to use, fun to do, and still let you know how students are performing. Find out where the gaps are and who needs the most help in your classroom.
NSTA Press® Session: Teaching Science Through Integrating Children’s Literature and Outdoor Investigations (Grades 3–5) S401a, McCormick Place
Christine Royce (@caroyce; caroyce@aol.com), Shippensburg University/PSTA, Shippensburg, PA
Steve Rich (@bflyguy; bflywriter@comcast.net), West GYSTC, Carrollton, GA
Engage in lessons that combine investigations in outdoor science topics with paired children’s literature that will enhance the topic and integrate other discipline areas.

NSTA Press® Session: Phenomenon-based Learning: Fun, Hands-On, Cooperative Learning (Grades 3–College) S401d, McCormick Place
Matt Bobrowsky, Delaware State University, Dover
Experience the kind of learning that propelled Finland to international leadership in science education—learning not by memorizing facts but by exploration and discovery.

Drama of the Immune System (Grades 5–12) S402b, McCormick Place
Science Focus: LS
Tory Brady, Exploratorium, San Francisco, CA
Meet the cellular players and explore their roles as first- and second-line defenders against myriad pathogen enemies.

Don’t Tell, Let Them Inquire: Teaching Climate Science Through Data (General) S403b, McCormick Place
Science Focus: ESS, INF, SEP4, SEP7, SEP8
Anne Gold (anne.u.gold@colorado.edu), University of Colorado Boulder
Hilary Peddicord (@NOAA_SOS; hilped@mac.com), NOAA/Earth System Research Laboratory, Boulder, CO
Deb Morrison (@educatordeb; educator.deb@gmail.com), TREE Educational Services, Boulder, CO
Examining data is a fundamental science practice. Engage in climate science data inquiry activities that can be used in your classroom.

Seed Dispersal: Model Design and Redesign (Grades 6–10) S404a, McCormick Place
Science Focus: GEN, SEP
Nikelle Miller (nikelle73@yahoo.com), and Lynn Wiedelman (hwiedel2@gmail.com), Centennial High School, Champaign, IL
Germinate new learning in your classroom by building your own model seed/fruit to be dispersed by wind. Join us and collect data, analyze the performance of your model, and redesign/retest the model. Handouts and resources.

Using a Web-based Graphing Tool to Analyze and Interpret Weather Data, Climate Change, and Patterns in Weather and Climate (Grades 6–8) S404d, McCormick Place
Science Focus: ESS2.D, ESS3.D CCC1, CCC4, CCC5, SEP4, SEP5
Matthew Mirabello (mmirabello@amnh.org), Hudson Roditi (hroditi@amnh.org), and Jay Holmes (jholmes@amnh.org), American Museum of Natural History, New York, NY
Explore weather and climate data through a free online graphing tool that simplifies data visualization so students can focus on data analysis and interpretation.

Newton’s Laws Across the Science Curriculum (Grades 4–College) S501bc, McCormick Place
Science Focus: PS, CCC
Daryl Taylor (@DarylScience; daryl261@gmail.com), AP Fizzix & Astro Guy, Naugatuck, CT
Get “retro.” Join us for a fast-paced inquiry-based blast of more than 20 participation demos you can use tomorrow with no special equipment! Resources for many more. Freebies to all.

Dynamic Life Science (Grades 7–12) S501d, McCormick Place
Science Focus: LS
John Fedors (jfedors@wavecable.com), Science Activities, Lincoln, CA
Experience hands-on WOW demos. Join us and engage in activities using readily available materials to stimulate critical thinking and bridge science disciplines. Use Glo Germ™, Petrifilm plates, magic bubble/wire, various polymers, and more.
Hands-On Science Demos for Elementary and Middle School Teachers  
(Grades K–8)  
Science Focus: GEN, SEP  
Carrie Wilson Herndon, Maryville Christian School, Maryville, IL  
Ever wonder how to incorporate science and engineering practices into your elementary or middle school classroom? Experience hands-on activities that use common household items to get your students engaged and excited about science!

NSTA Press® Session: Out in the Field. Showcasing Elementary Preservice Interns Teaching Inside-Out  
(Grades 2–6)  
Science Focus: GEN, INF, CCC5, SEP1, SEP3  
Robert Blake, Jr. and Sarah Haines (shaines@towson.edu), Towson University, Towson, MD  
Join us as we showcase how activities from the NSTA Press book Inside-Out: Environmental Science in the Classroom and the Field, Grades 3–8 are actually applied in teaching by preservice elementary interns.

Seeding STEM in Early Childhood: How Language Skills Grow STEM Thinking  
(Grades P–K)  
Science Focus: ETS1, PS2.A, PS2.B, CCC1, CCC2, SEP  
Diana Dumetz Carry, Consultant, Chicago, IL  
Explore developmentally appropriate hands-on STEM opportunities for children to grow their capacity for language. As children grow language, they grow their capacity for thinking.

Full STEAM Ahead: A Summer Learning Challenge  
(Grades K–8)  
Science Focus: INF, GEN  
Bryan Wunar (bryan.wunar@msichicago.org), Museum of Science and Industry, Chicago, IL  
Chicago Public Library and the Museum of Science and Industry partnered to create a STEM-based summer learning program for more than 70,000 children in Chicago. Learn strategies for how summer reading and STEM can be paired to address the summer learning loss and to meet the learning needs of all children.

STEMLandia: A STEM-infused Geocaching Adventure  
(Grades 6–12)  
Science Focus: ESS, INF, CCC  
Barbara Fortier (@bfortier; bfortierl@une.edu), University of New England, Biddeford, ME  
Erin Bardar (@Edge_at_TERC), James Larsen (jamie_larsen@terc.edu), and Barbara MacEachern (@edge_at_terc; barbara_maceachern@terc.edu), EdGE at TERC, Cambridge, MA  
Teon Edwards, TERC, Cambridge, MA  
Open the door and use geocaching to connect STEM learning with location-based adventures. Find out how to navigate your own adventures in STEMLandia.

NESTA Session: National Earth Science Teachers Association Rock and Mineral Raffle  
(General)  
Science Focus: ESS  
Roberta Johnson Killeen (rmjohnsn@nestanet.org), National Earth Science Teachers Association, Boulder, CO  
Margaret Holzer (mholzer@monmouth.com), Chatham High School, Chatham, NJ  
NESTA offers more than 50 specimens to choose from for a chance to win display-quality specimens of rocks, minerals, and fossils as well as other Earth science-related materials.

Making the NGSS Come Alive in Your District!  
(Grades 6–8)  
Science Focus: GEN, NGSS  
Susan Agger (sagger@cpsd.us), Dr. Martin Luther King, Jr. School, Cambridge, MA  
Daniel Monahan (dmonahan@cpsd.us) and Marianne Dunne (mdunnee@cpsd.us), Cambridge (MA) Public Schools  
Experience how teachers and coaches in our urban district unpacked the NGSS using an Understanding by Design approach to create a cohesive experience for grades 6–8 students.

Smiling Faces  
(Grades 5–9)  
Science Focus: LS  
Suzanne Cunningham (scunning@purdue.edu), Purdue University, West Lafayette, IN  
Do plants and animals eat the same food? A simple assay for the presence of starch teaches students about the similarity between plants and animals.
Children’s Innovation Project
(Grades P–5, College) W186c, McCormick Place
Science Focus: GEN, CCC, SEP
Melissa Butler, Pittsburgh Allegheny K–5, Pittsburgh, PA
Join us for an interdisciplinary approach to learning about learning, both for children and teachers. We will share the content progressions of our work, including hands-on engagement with circuit blocks.

Any Time, Any Place, Any Pace Lab Science
(Grades 5–12) W187b, McCormick Place
Science Focus: GEN, NGSS
Christine Gregory and Arlyliss Lisner (alisner@ilvirtual.org), Illinois Virtual School, Edwards
Remove the barriers of schedule and facility and provide student-centered digital blended learning that supports the NGSS and CCSS through Illinois Virtual School.

Strategies for Integrating Disciplinary Literacy and Science: Where the NGSS Meets the CCSS
(Grades 4–8) W192a, McCormick Place
Science Focus: ESS2, LS1, SEP4, SEP6, SEP7, SEP8
Rebecca Abbott and Traci Wierman (twierman@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
Leverage the NGSS and CCSS ELA to increase disciplinary literacy skills and science understanding for all students—with an emphasis on argumentation. Free materials.

(Grades 6–12) W196a, McCormick Place
Science Focus: GEN, CCC2, CCC3, CCC4, CCC6, SEP
Renee Schwartz (rschwartz@gsu.edu), Georgia State University, Atlanta
Model science and engineering practices to understand a system and develop a graphical model to make predictions and evidence-based recommendations to solve an authentic problem.

4:00–4:30 PM Presentation
Minute to Win It! Science Edition
(Grades 7–12) W475b, McCormick Place
Science Focus: ETS, LS, PS, CCC2, SEP3, SEP6, SEP8
Stephanie Townsend, Memphis (TN) City Schools
Leave with ideas for challenging multisensory assessments based on the popular game show. We will share interactive biology and physical science challenges that assess your students’ ability to think quickly and offer definitive explanations.

4:00–5:00 PM Exhibitor Workshop
Climate Change Series 7: Use NGSS as a Pathway to Climate Literacy
(Grades 3–12) W184bc, McCormick Place
Science Focus: ESS, CCC, SEP
Sponsor: NOAA’s National Ocean Service
Frank Niepold, NOAA Climate Program Office, Silver Spring, MD
Kristen Poppleton, WILL Steger Foundation, Minneapolis, MN
The NGSS are the first science standards to include human-caused climate change as a core idea for students. This session will provide examples of how and where climate concepts can be integrated with the NGSS, review climate relevant performance expectations, and discuss NSTA’s efforts to identify NGSS-aligned resources.

4:00–5:30 PM Exhibitor Workshop
Grant Writing: Pipelines, Partnerships, and Finding Funding
(Grades K–12) W192b, McCormick Place
Science Focus: GEN
Sponsor: Ward’s Science
Rusti Berent, Ward’s Science, West Henrietta, NY
Explore proven strategies for finding science funding at the local, regional, state, and national levels. Learn how to implement in your planning process to secure the materials your students need to succeed. Leave this workshop armed with easy-to-implement tools, techniques, and resources to win funding.

4:00–6:00 PM Networking Opportunity
Pi Day Celebration for Preservice/New Teachers and First-Time Conference Attendees
(Ticket Required: $20) M-6 W196b, McCormick Place
Sponsored in part by Texas Instruments
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 pie and beverage reception in honor of Pi Day. Special guests, door prizes, entertainment, and more! Ticket includes pizza and beverage (beer, soda, or water). Attendance is limited to the first 200 registrants.

Tickets, if still available, must be purchased at the Registration Area before 12 Noon on Friday.
5:00–5:30 PM Presentations

Using Online Labs to Enhance Science Curriculum  
(Grades 6–12)  
Burnham C, Hyatt
Science Focus: GEN, SEP3, SEP4, SEP6  
**Kathleen Fritsch,** Waukegan High School, Brookside Campus, Waukegan, IL  
Learn how to use remote online labs to deliver science experiments using mobile devices that support the NGSS practices.

Leveraging Teacher Leadership to Support the Next Generation Science Standards  
(Grades 6–12)  
W192c, McCormick Place  
Science Focus: GEN, NGSS  
**Jeremy Peacock,** Northeast Georgia RESA, Winterville, GA  
**Zoe Evans** (@zoe Evans; zoeevans@charter.net), Central Middle School, Carrollton, GA  
Learn about a research-based model of science instructional leadership to provide practical guidance for teacher leaders to leverage support for reform.

Using the Frameworks of Performance Tasks and Claim, Evidence, and Reasoning to Assess Student Learning  
(Grades 6–12)  
W475b, McCormick Place  
Science Focus: GEN, CCC5, SEP  
**Rachel Ruggirello,** Washington University in St. Louis, MO  
Encounter an approach for upgrading current assessment practices to make visible the learning promoted by the NGSS. Model assessments will be provided.

5:00–6:00 PM Meeting

National Earth Science Teachers Association Annual Meeting  
*Skyline W375e, McCormick Place*  
Find out what NESTA has been up to. Help plan for the future, and share your thoughts on directions for NESTA. Attendance is open! For further information, visit www.nestanet.org.

5:00–6:00 PM Presentations

Assessing Students’ Skills in Using Technology to Conduct Inquiry Activities  
(Grades 6–10)  
Adler C, Hyatt  
Science Focus: GEN, SEP4, SEP7, SEP8  
**Hui-Yin Hsu** (hhsu02@nyit.edu), New York Institute of Technology, Old Westbury  
Join us as we share an electronic lab report template developed to guide students’ use of technology to conduct inquiry activities. Also, receive rubrics used to assess their new literacy and scientific literacy skills.

Bringing Service Learning into the Biology and Chemistry Classrooms  
(Grades 9–12)  
Dusible C, Hyatt  
**Cheryl Dudeck** (cdudreck@cps.edu), and **Melanie Yau,** King College Prep High School, Chicago, IL  
Delve into how to integrate a local aquatic ecosystem service-learning project with NGSS disciplinary core ideas in biology and chemistry curricula using technology.

Interactive Virtual Field Trips for Science Students  
(Grades 5–College)  
Field A/B, Hyatt  
Science Focus: GEN, SEP4, SEP6  
**Brett Samantha Dooley** (bdooley@patrickhenry.edu), Patrick Henry Community College, Martinsville, VA  
Learn to produce easily interactive virtual field trips that foster the observational and critical thinking skills of place-based field trips!

Advancing Scientific Literacy with Inquiry Lesson Plans Using Science Reading Materials  
(Grades 9–12)  
Hyde Park A, Hyatt  
Science Focus: PS, CCC, SEP  
**Patrice Pages** (@ACSCChemMatters; p_pages@acs.org), American Chemical Society, Washington, DC  
**Susan Cooper** (scooper@fgcu.edu), Florida Gulf Coast University, Fort Myers  
Hear how we have developed inquiry lesson plans that support the NGSS and CCSS and are based on successful past ChemMatters articles.
The Tree Room: A New Tool for Teaching Evolutionary Relationships
(Grades 6–College) Hyde Park B, Hyatt
Science Focus: GEN, INF, CCC1, CCC7, LS3.B, LS4, SEP2, SEP6, SEP8
David Heiser (david.heiser@yale.edu), Yale Peabody Museum of Natural History, New Haven, CT
Berkeley’s landmark Understanding Evolution website just got even better with The Tree Room. This companion site brings evolutionary relationships to life for students and teachers.

International Baccalaureate Biology, Chemistry, and Physics Field Trip to Patagonia
(Grades 10–12) Jackson Park D, Hyatt
Science Focus: LS, PS1.B, PS3, SEP4
Paula Daurat, Patricia Benmergui (patricia.benmergui@sanandres.esc.edu.ar), and Ana Varela, St. Andrew’s Scots School, Olivos, Argentina
Come as we share the amazing scientific experience we live every year with our students in Patagonia, Argentina. We develop collaborative hands-on activities within the Group 4 Project framework, an IB curriculum component.

Engineering Project Slices: How to Use Class Period-Length Physics-based Engineering Tasks
(Grades 9–12) S404 b/c, McCormick Place
Science Focus: ETS, PS, SEP
Katherine Shirey (katherineshirey@gmail.com), Grad Student at University of Maryland, College Park
Jordan Pasqualin (@jpasqualin, jpasqualin@gmail.com), Jones College Prep, Chicago, NJ
Use short-duration engineering tasks to introduce engineering, provide multiple opportunities for students to practice the processes, and assess student growth in engineering and physics.

Teaching Inquiry and the Nature of Science, K–8
(Grades K–8) S504d, McCormick Place
Science Focus: GEN, SEP
Randy Bell (randy.bell@oregonstate.edu), Oregon State University, Corvallis
Kathy Cabe Trundle (kctrundl@ncsu.edu), North Carolina State University, Raleigh
Engage in activities designed to make learning about the nature of science fun for your elementary students. Take home free resources and lessons.

Modeling and Professional Development in a NSF Mathematics and Science Partnership Project: Insights and Lessons Learned
(Grades 3–8) S505a, McCormick Place
Science Focus: GEN, SEP
Arthur Camins (@arthurcamins, arthurcamins@gmail.com) and Katheryn Kennedy (katheryn.kennedy@stevens.edu), Stevens Institute of Technology, Hoboken, NJ
What professional development strategies support teachers as they enact NGSS science and engineering practices in their classrooms? Join us as we share insights from our work creating evidence-based, explanation-focused PD.

Go with the Flow! Changing Your F2F Professional Development to Online Sessions
(Grades K–8) S505b, McCormick Place
Science Focus: GEN
Ellen Thompson (ellen.thompson@uah.edu), AMSTI-UAH, Huntsville, AL
Maria Young (maria.young@uah.edu), The University of Alabama in Huntsville
Calling all professional development facilitators! Come hear how we changed our face-to-face kit-based training to quality online professional learning for our K–8 science teachers.

Finding Our Way: Making Connections with Students’ Culture and STEM
(Grades 6–8) W176b, McCormick Place
Science Focus: ESS1, ESS2, ETS, PS2, PS4, CCC1, CCC2, CCC3, SEP
Toni Kaui (@kumukaui, kumukaui@gmail.com), Virginia Tech, Blacksburg
Presented by a Native Hawaiian teacher, this session will explore how to use the engineering design process to connect physical science and Earth and space science and the geometry and trigonometry of angles with Ho’okele, the Polynesian cultural practice of navigation.

Advancing Science Learning: Teaching Elementary Physical Science Concepts Through Engineering Problems
(Grades K–6) W186c, McCormick Place
Science Focus: PS, SEP
Kevin Mason (masonk@uwstout.edu), and Brian McAlister (mcalisterb@uwstout.edu), University of Wisconsin–Stout, Menomonie
Discover how elementary teachers are using engineering problems to deepen their students’ understanding of physical science concepts and science and engineering practices.
No Child Left Inside  
(Grades 8–12)  
W187a, McCormick Place  
Science Focus: GEN, SEP  
**Scott McCready** (smccreon@lw210.org), Lincoln-Way North High School, Frankfort, IL  
Discover how natural areas became a large part of our school’s biology curriculum and how our community pulled together to build our school’s outdoor classrooms.

What Do I Do with My LOVE Lessons?  
(Grades K–5)  
W190b, McCormick Place  
Science Focus: GEN, SEP  
**Jaymee Herrington**, Katy (Tex.) ISD  
Transform some of your favorite lessons with new designs based on the NGSS—showing how progressions and modeling are crucial components in your new lesson.

5:00–6:00 PM  Hands-On Workshops

Promoting a Science-Talk Learning Community  
(Grades 6–12)  
Grant Park A, Hyatt  
Science Focus: GEN  
**Rebecca Stanley** (rls0320; rstanley@ncnewschools.org), North Carolina New Schools, Raleigh  
Explore a rubric to measure the current level of science talk within your classes, as well as tools and strategies to shift responsibility to your students.

Finding Your Way: Adapting to Argument and the Practices  
(Grades 7–11)  
Grant Park B, Hyatt  
Science Focus: GEN, SEP  
**Jay Staker** (@iastatejay; jstaker@iastate.edu), Iowa State University, Ames  
**Leah McDowell-Spink** (mcdowell.leah@gmail.com), Haine Elementary School, Cranberry Township, PA  
Shifting to the practices is intimidating. Explore an argument-based inquiry approach using converted traditional activities to explore their learner questions using the Science Writing Heuristic approach.

Play Your GAMES: Generating Academic Meaning from Entertainment Systems  
(Grades 5–12)  
W196c, McCormick Place  
Science Focus: GEN, SEP  
**Tim Kubinak**, John Yeates Middle School, Suffolk, VA  
PYG is a game play program designed to exploit the interests of diverse groups of students within the context of reinforcing STEM methodology and problem-solving acuity.

Engaging Elementary Students with Earth’s Systems  
(Grades 3–5)  
Grant Park D, Hyatt  
Science Focus: ESS2.A, ESS2.C  
**Sean Musselman** (@MrMusselman; musselman@bpsk12.org), Burlington (MA) Public Schools  
Put yourself in your students’ shoes and engage in lessons designed to teach elementary level students about Earth’s systems and their interactions with one another. The NGSS Earth Systems core ideas for grades 4–5 will be the primary focus.

The Power of Stories to Promote Deeper Conceptual Understanding  
(Grades 2–12)  
Jackson Park B, Hyatt  
Science Focus: GEN, SEP  
**Hethyr Tregerman** (@HethyrTregerman; hander3@luc.edu), Loyola University Chicago, IL  
**Rebecca Fligelman**, Chicago (IL) Public Schools  
**Emily Mathews** (emilylippert@sbcglobal.net), Patrick Henry Elementary, Chicago, IL  
Encounter strategies such as concept mapping to explore the power of story and its impact on student learning.
Easy Methods to Incorporate Nature of Science and Scientific Inquiry in Everyday Lessons  
(Grades 6–12)  
Jackson Park C, Hyatt  
Science Focus: GEN, CCC1, CCC2, CCC4, SEP  
Laura Tinigin and Laura Robinson (@ljrbios; lrobinson@gmail.com), Western Michigan University, Kalamazoo  
Renee Schwartz (rschwartz@gsu.edu), Georgia State University, Atlanta  
Receive a comprehensive overview of nature of science and nature of scientific inquiry objectives and leave with ways to easily incorporate them into existing lessons.

NSTA Press® Session: Everyday Engineering  
(Grades 4–9)  
S401d, McCormick Place  
Science Focus: ETS  
Richard Moyer (rmoyer@umich.edu) and Susan Everett (everetts@umd.umich.edu), University of Michigan–Dearborn  
Use simple activities to integrate NGSS engineering content and practices into your curriculum. Workshop will focus on activities found in Science Scope’s regular column, “Everyday Engineering.”

Empower All Students with Neuroscience!  
(Grades 3–College)  
S402b, McCormick Place  
Science Focus: LS  
Kelsey Voller (@missvoller; kelsey_voller@icloud.com), Cheney Middle School, West Fargo, ND  
Find out how to incorporate neuroscience concepts—such as multiple intelligences and brain plasticity—to enrich classroom culture, simplify differentiation, and motivate students.

Learning Gardens: Transforming Your School Yard into an Outdoor STEM Lab  
(Grades K–12)  
S403b, McCormick Place  
Science Focus: GEN, INF, SEP  
Karan Wood (karan@captainplanetfdn.org), Captain Planet Foundation, Atlanta, GA  
Discover designs for one-day garden installations. Explore free standards-based activities that turn school gardens into outdoor STEM labs, and learn how students can protect the Earth through garden-based learning.

Microalgae to Biofuel: A Pipeline for Integrating and Teaching Crosscutting STEM Concepts  
(Grades 7–12)  
S404a, McCormick Place  
Science Focus: LS, CCC, SEP  
Shawn Kenaley (bti_edu_ls@cornell.edu), Boyce Thompson Institute for Plant Research, Ithaca, NY  
An integrated, interdisciplinary approach will be required to realize the full potential of oil-producing microalgae as biofuels—a future industry created and sustained by a skilled STEM workforce! Join us and construct a simple classroom photobioreactor, permitting students to design and execute experiments to determine optimal methods for growing algae.

Assessing Three Dimensions of the NGSS in Middle School Genetics  
(Grades 6–9)  
S404d, McCormick Place  
Science Focus: LS, CCC, SEP  
Barbara Nagle (bnagle@berkeley.edu), and Maia Willcox (mwillcox@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley  
Engage in hands-on activities and explore assessments related to the three dimensions of the NGSS for heredity: modeling, inheritance and variation of traits, and cause and effect.

Using Electronic Devices to Develop Geospatial Skills and Enhance Analysis of Citizen Science Data  
(General)  
S501bc, McCormick Place  
Science Focus: GEN, NGSS  
Mary Haskins, Rockhurst University, Kansas City, MO  
Smartphones, iPads, and tablets provide a unique and easy method to collect data for geospatial analysis. Find out how to use your electronic devices to collect geospatial data for analysis and leave equipped to implement this process in your classroom.

Hands-On Science: Innovative Activities for Applying Science and Engineering Practices in the Classroom  
(Grades P–8)  
S502a, McCormick Place  
Science Focus: GEN, SEP  
Eric Welker (eric@raft.net), RAFT San Jose, CA  
Experience how to conduct a few simple yet powerful activities that emphasize the use of the science and engineering practices in the NGSS.
Addressing Student Misconceptions in K–2 Science with Children’s Literature
(Grades P–3) S502b, McCormick Place
Science Focus: PS
Lisa Felske, Harris County Dept. of Education, Houston, TX
Are you identifying and addressing student misconceptions? Topics covered include observation/inference, buoyancy/density, heat/temperature, time scale in geologic events, and misconceptions about plant and animal adaptations.

Warming Up to Engineering: How Can I Keep My Snowman from Melting?
(Grades 2) S503a, McCormick Place
Science Focus: PS, SEP
Michele Lee (scienceedchica@gmail.com), Temple University, Philadelphia, PA
Marlene Hilkowitz (mah465@drexel.edu), Drexel University, Philadelphia, PA
Frosty vs. puddle—come examine how assessment can be embedded throughout an inquiry-based lesson in which elementary students (grade 2) use a design process to learn about properties of materials and heat transfer.

Building on Inquiry Through STEM
(Grades 3–8) S503b, McCormick Place
Science Focus: GEN
John Zenchak (jjenzhenchak@noctrl.edu) and Mary Jean Lynch (mlync@noctrl.edu), North Central College, Naperville, IL
Engage in an inquiry-based activity and a STEM activity to better understand the relationship between these two effective learning approaches.

Science Seminars: How Argumentation Helps You Meet the NGSS and CCSS at the Same Time
(Grades 4–8) S504a, McCormick Place
Science Focus: GEN, SEP
Traci Wierman, The Lawrence Hall of Science, University of California, Berkeley
Experience then learn how to create your own Science Seminar, an instructional sequence that engages students in argumentation in a lively, rigorous way.

Science Teacher as Designer: Making the Tacit Designer in You Explicit
(Grades K–12) W175 a/b, McCormick Place
Science Focus: ETS1, SEP1, SEP3, SEP4, SEP6, SEP7
David Crismond, The City College of New York, NY
The challenge of the NGSS to place engineering design on equal footing with scientific inquiry may seem less daunting when the idea that “teachers are designers” is explored and experienced.

Math with a “Porpoise”: Explore Data Analysis Tools for the Middle School Classroom, Modeled with Animal Behavior Data
(Grades 6–8) W175c, McCormick Place
Science Focus: LS, INF, SEP4
Christine DeMauro (@WCSEducation; cdemauro@wcs.org), New York Aquarium, Brooklyn
Daniel Golub (golub.dan@gmail.com), P.S. 089 Cypress Hills, Brooklyn, NY
Aquariums inspire stronger data analysis! Learn how analyzing animal behavior data elevates math skills in science classrooms via graphing and measures of center. Connections to the CCSS and NGSS shared.

The Power of Questioning
(Grades K–5) W192a, McCormick Place
Science Focus: GEN, CCC, SEP
Julie McGough, Valley Oak Elementary School, Fresno, CA
Learn how to utilize engaging questioning strategies to foster inquiry, depth of knowledge, and communication of science concepts that also teach ELA standards!

The Rube Goldberg Machine Contest: Invention in the Classroom
(Grades 6–College) W196a, McCormick Place
Shawn Jordan (shawns.jordan@asu.edu), Arizona State University at the Polytechnic Campus, Mesa
Rube Goldberg Machine Contests challenge middle school, high school, and college students to build complex inventions that complete simple tasks while linking STEM and the arts. Join us as we share examples.
5:30–6:00 PM  Presentations
Innovative Instructional Technology to Engage and Assess the Science Classroom
(Grades 6–12)  Burnham C, Hyatt
Science Focus: GEN
Mark Prosise (mark.prosise@d128.org) and Chris Wolf (@wolfbioedu; chris.wolf@d128.org), Vernon Hills High School, Vernon Hills, IL.
Instruction for the 21st century requires that students develop critical life skills by accessing information, collaborating, communicating, and demonstrating creativity and entrepreneurship through these instructional technologies.

Free Mobile Device Apps for Data Collection and Analysis
(Grades 6–College)  W192c, McCormick Place
Science Focus: GEN, NGSS
Rebecca Vieyra (@RVieyraAEF; rebecca.e.vieyra@nasa.gov), Einstein Fellow, NASA Headquarters, Washington, DC.
Find out about free mobile device apps for Android and how they can be used to collect and analyze data in and outside of the classroom. Example lesson ideas and engineering projects associated with the NGSS will be presented.

Using the Lab Report as Assessment and Evidence of Achievement of NGSS Science Learning Progressions for Grades 6–12
(Grades 6–12)  W475b, McCormick Place
Science Focus: GEN, SEP1, SEP3, SEP4, SEP8
Laura Cottongim (laura_sheehan@universitylaboratoryschool.org) and Betty Skiles (betty_skiles@universitylaboratoryschool.org), University Laboratory School, Honolulu, HI.
The laboratory investigation is a learning tool and assessment piece within the science curriculum that inherently meets the NGSS. The lab report can be designed to become progressively more advanced and offer opportunities for formative and summative assessment through an authentic disciplinary experience.

5:30–7:30 PM  Networking Opportunity
Equity in Science Reception, Sponsored by National Geographic Society  Prairie B, Hyatt
Equity in Science Education is an idea nationwide that must look at a more targeted and comprehensive approach to improve educational achievement and growth as well as closing the STEM achievement and opportunity gap throughout the nation. Join us for a conversation about how to better serve communities of color and underserved students in STEM.

8:00–10:00 PM  Networking Opportunity
Celebrate Einstein’s Birthday...with a Tribute to the Blues Brothers!
Regency Ballroom, Hyatt
Professor Einstein will be joining us in celebration of his birthday. Additional evening entertainment will include a tribute to the Blues Brothers!
Cash bar. No registration or cost required.
8:00–8:30 AM Presentations
Crosscutting Educators: Exploring Effective Collaboration Between Formal and Informal Science Sectors
(Grades K–12) S402a, McCormick Place
Science Focus: INF, NGSS
Jameela Jafri (jameela.jafri@afterschoolmatters.org), After School Matters, Chicago, IL
Julianne Kanter (jkanter@expandedschools.org), The After-School Corp., New York, NY
Using results from the Frontiers in Urban Science Exploration study, we will share the impact of collaboration between informal and formal science educators on the NGSS.

STEM-Inspired Physics!
(Grades 9–12) S501a, McCormick Place
Science Focus: PS, CCC, SEP
Mimi Kallwitz (mkallwitz@d155.org), Amanda Senese (asenese@d155.org), Jenny Morris (jmorris@d155.org), and Kristin Glover (kglover@d155.org), Prairie Ridge High School, Crystal Lake, IL
Leave with a complete description of how to implement two NGSS- and STEM-inspired projects for your high school physics class! Student examples and takeaways provided.

Building Literacy Back into Science
(Grades 6–12) S501d, McCormick Place
Science Focus: GEN
Jason Forbrook (jason.forbrook@yahoo.com), Waukegan High School, Washington Campus, Waukegan, IL
Stop sacrificing content for skills! Improve science instruction by addressing both content and CCSS ELA at the same time.

Think Tank to Shark Tank: Engineering to Entrepreneurship
(Grades 5–9) W186c, McCormick Place
Science Focus: ETS, INF
Karen Plaster, The University of Akron, OH
Hear about an interdisciplinary Problem-Based Learning workshop where grades 6–10 students were challenged to brainstorm, develop, and perfect a solution to a problem with the final presentation to a “Shark Tank.”

8:00–9:00 AM Presentations
NSTA Press® Session: Inquiry and Literacy for Grades 3–5 Science: A Perfect Pair for Making Meaning of the Natural World
(Grades 3–5) S401bc, McCormick Place
Science Focus: GEN, SEP8
Jessica Fries-Gaither, Columbus School for Girls, Columbus, OH
The authors of Inquiring Scientists, Inquiring Readers share literacy strategies that support grades 3–5 science instruction. Strategies are integrated into learning cycle lessons. Engage in a literacy-infused inquiry activity from the book.

Addressing Diverse Learning Needs at Both Ends of the STEM Spectrum
(Grades 5–8) S504bc, McCormick Place
Science Focus: GEN
Gina Tesoriero (@STEMSUCCESSEDU; ginatesoriero@ gmail.com) and Amanda Solarsh (@stemsuccessedu; amand asolarsh@gmail.com), Simon Baruch MS104, New York, NY
Encounter strategies to engage lower level students in content while providing higher level students with support for communication and collaboration in the STEM classroom.

Building Buoyant Boats: A Cross-curricular Case Study in Teaching Science to Children with Learning Disabilities
(Grades 1–6) S504d, McCormick Place
Science Focus: GEN
Greg Hill-Ries (gregh@ mmfsnyc.org), Stacy Miller (stacym@mmfsnyc.org), and Rebecca Barnett (rebeccab@ mmfsnyc.org), Mary McDowell Friends School, Brooklyn, NY
Applying language to science is challenging for students with language-based learning disabilities. Join us as we examine the design and implementation of a unit on buoyancy.

A Way with Words: Integrating Science and Engineering in Reading
(Grades K–5) S505a, McCormick Place
Science Focus: ETS, CCC, SEP
Brian Raygor (braygor@wcboe.org), Wicomico Board of Education, Salisbury, MD
Discover how to construct lessons integrating science and engineering into your reading time. Take home a CD with classroom resources.
Claim, Evidence, and Reasoning: Using Science Probes to Develop Scientific Literacy
(Grades 1–5) S505b, McCormick Place
Science Focus: GEN
Luis Arroyo (larroyo2@bostonpublicschools.org), Nathan Hale Elementary School, Boston, MA
Holly Rosa (hrosa@bostonpublicschools.org), Boston (MA) Public Schools
Hear how Boston Public Schools science specialists implement the Claim-Evidence-and Reasoning framework using science probes.

The Intersection of NGSS and CCSS: Promoting Content Knowledge and Literacy in the Science Classroom
(Grades 6–12) W178b, McCormick Place
Science Focus: GEN
Terry McHugh (tmchugh@wps60.org), Waukegan (IL) Public Schools
Karen Frank (kfrank@wps60.org), Waukegan High School, Waukegan, IL
Explore a range of vocabulary-based literacy strategies that build content knowledge across science disciplines. Join us as we model instructional strategies through interactive activities.

Using Flipped Classrooms to Assess the Mastery of Objectives in Middle School
(Grades 6–8) W181a, McCormick Place
Science Focus: GEN
John Pappas (@CWSScience36; johnpappas@winnetka36.org), Carleton Washburne School, Winnetka, IL
Encounter how to effectively use a mastery model to assess student performance on objectives in a flipped classroom framework.

Green Proposals to Meet NGSS and CCSS, ELA
(Grades 9–12) W187a, McCormick Place
Science Focus: CCC, DCI, SEP
Lisa McKenna (lismck@d219.org) and Susan Trzaskus (sustrz@d219.org), Niles North High School, Skokie, IL
Students solve real school sustainability problems by writing grant proposals to the district to fund improvement projects. Allows teachers to incorporate NGSS and CCSS ELA with engineering practices at all levels and core topics.

Building Biomedical Curricula Through Scientist Teacher Partnerships
(Grades 11–College) W191, McCormick Place
Science Focus: LS, INF
Berri Jacque (berri.jacque@tufts.edu), Tufts University School of Medicine, Boston, MA
Come learn about the advantages of using partnerships between teachers and scientists to build curricula that emphasize the three dimensions of the NGSS.

Infusing Practices into Lesson Sequences
(Grades K–12) W193a, McCormick Place
Science Focus: GEN, NGSS
Diane Johnson, Lewis County Board of Education, Lexington, KY
How can we assess current lessons to determine how they might meet the NGSS and where they might fall short? How can we systematically infuse practices to support student learning of science content, while deepening understanding of the practices? Join us and experience a process that can be applied to a range of resources.

Science Fair and the NGSS: Bringing Student Research to Your Institution
(Grades P–12) W193b, McCormick Place
Science Focus: GEN, INF, NGSS
Michael Lowry (mlowry@mccallie.org), Karah Nazor (knazor@mccallie.org), and Nancy Olencheck (nolencheck@mccallie.org), The McCallie School, Chattanooga, TN
See how the blueprint of the NGSS is linked to the structure of the science fair. Join us as we offer models for how to implement both in your classroom.

Connecting Physical Science, Design, and Engineering Through Underwater Robotics
(Grades 6–12) W196c, McCormick Place
Science Focus: ETS, PS2.A, PS2.B, PS2.C, INF, CCC2, CCC6, CCC7, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8
Arthur Camins (@arthurcamins; arthurcamins@gmail.com), Stevens Institute of Technology, Hoboken, NJ
Join us as we delve into underwater robotics projects as vehicles for teaching and connecting physical science and engineering design principles, along with the unique challenges involved.
8:00–9:00 AM  Hands-On Workshops

**NSTA Press® Session: The Basics of Data Literacy: Helping Your Students (and You!) Make Sense of Data**
*(Grades 6–College)*  
*S401a, McCormick Place*  
Science Focus: GEN, SEP3, SEP4, SEP5  
Tony Bartley *(abartley@lakeheadu.ca)*, Lakehead University, Thunder Bay, Ont., Canada  
Michael Bowen *(gmbowen@yahoo.com)*, Mount Saint Vincent University, Halifax, N.S., Canada

Join the authors of this groundbreaking book on data literacy in science as they present their strategies to help students produce, analyze, and interpret data.

**Playing a Jenga-based Game to Learn About Ecosystem Dynamics**
*(Grades 4–College)*  
*S401d, McCormick Place*  
Science Focus: LS2, CCC4, CCC7  
Greg Bartus *(gregory.bartus@stevens.edu)*, Stevens Institute of Technology, Hoboken, NJ  
Presider: Kathy Kennedy *(kkenned3@stevens.edu)*, Stevens Institute of Technology, Hoboken, NJ

This Jenga-based game aims to teach the importance of biodiversity (species richness and biological interactions or linkages) during ecological disruption. Other variations to the game are possible as well.

**Shattering the Gender Binary Misconceptions in Life Science**
*(Grades 6–College)*  
*S402b, McCormick Place*  
Science Focus: LS  
Andrew Milbauer *(amilbauer@greeleyschools.org)*, Northridge High School, Greeley, CO

Find ways to explore the biological basis gender in science using STEM and Common Core. Gender is far more diverse than Mendelian inheritance.

**Record and Analyze Seismic Data in the Classroom with Free IRIS Software!**
*(Grades 6–College)*  
*S404a, McCormick Place*  
Science Focus: ESS, SEP4  
Alan Kafka *(kafka@bc.edu)*, Boston College, Chestnut Hill, MA  
Tammy Bravo *(tkb@iris.edu)*, IRIS, Washington, DC

Monitor the Earth from your classroom! Display real-time data from school seismographs or nearby professional seismometers. Students can determine earthquake locations, magnitudes, and more.

**STEM Integration for Learning in Grades 4–8: The EngrTEAMS Project**
*(Grades 4–8)*  
*S502a, McCormick Place*  
Science Focus: ETS, SEP5, SEP7  
Tamara Moore *(tamara@purdue.edu)* and Siddika Guzey *(sguzey@purdue.edu)*, Purdue University, West Lafayette, IN

EngrTEAMS stands for Engineering to Transform the Education of Analysis, Measurement, and Science. Join us and learn guidelines to develop STEM integration units that use engineering design to learn science content and meaningfully integrating data analysis and measurement in grades 4–8.

**Don’t Throw the Baby Out with the Bathwater! How to Modify Elementary Science to Optimize Learning**
*(Grades P–6)*  
*S502b, McCormick Place*  
Science Focus: GEN, SEP  
Lori Ihrig *(lori-ihrig@uiowa.edu)*, The Belin-Blank Center, Iowa City, IA

Find out how to modify your elementary science curriculum for optimized student learning without throwing it out. Learn key ways to change existing curriculum to create fruitful inquiries for your students.

**Creating a Collaborative Culture: Success Stories and Strategies**
*(Grades 4–8)*  
*S503b, McCormick Place*  
Science Focus: GEN, SEP  
Liz Martinez *(emartinez@imsa.edu)*, Illinois Mathematics and Science Academy, Aurora

Engage in inquiry-based activities that focus on practices, techniques, and strategies required to establish and foster a collaborative culture for students in the classroom.

**Model Building as a Prerequisite to Mass Production: The Importance of Engineering Design in Relation to Cost and Safety**
*(Grades 4–8)*  
*S504a, McCormick Place*  
Science Focus: ETS  
William Sumrall *(sumrall@olemiss.edu)*, The University of Mississippi, University, MS

This activity-based presentation focuses on model building prior to building prototypes and eventual mass production. We’ll cover cost, safety, and other factors. Handouts.
Sunday, 8:00–9:00 AM

**All the Water**  
(Grades 2–8, College)  
W178a, McCormick Place  
Science Focus: ESS2, ETS2, CCC2, CCC4, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8  
Vicki Ardisana (vicki.ardisana@nau.edu), Northern Arizona University–Yuma  
Wade into water concepts and issues through this inquiry/problem/question/research/solution cycle as taught to fourth-graders.

**Developing Models that Have Explanatory and Predictive Power**  
(Grades K–12)  
W179a, McCormick Place  
Science Focus: GEN, SEP2  
David Brothers (davidbrothers@wentzville.k12.mo.us), Wentzville (MO) R-IV School District  
Developing and using models is an unfamiliar science practice for many teachers. Participants, in groups, will construct a model for water evaporating and condensing in an open and a closed container as well as discuss how to engage students in modeling at different grade levels and abilities.

**Creating Meaning Through the Crosscutting Concepts**  
(Grades K–12)  
W180, McCormick Place  
Science Focus: GEN, CCC  
Jennifer Gottlieb (jgottlieb@misd.net), Macomb Intermediate School District, Clinton Township, MI  
The crosscutting concepts are thinking tools that allow students to connect ideas and make sense of phenomena. Come explore ways to embed them into instruction.

**Uncovering the Awesomeness of Our Science Students**  
(Grades 6–8)  
W181c, McCormick Place  
Science Focus: GEN, NGSS  
Sarah Renish-Ratelis (sarenish@yahoo.com), Kenosha (WI) Unified School District  
Most students will do inquiry-based investigations but will have difficulty in constructing scientific explanations. Join us as we explore ways to strengthen communication skills through the use of scaffolding, workshop models, and building learner confidence.

**Your Kids Can, Too! Scientific Argumentation for All Students**  
(Grades 5–10)  
W187b, McCormick Place  
Science Focus: LS1, CCC1, CCC2, SEP4, SEP7  
Deena Gould (DNAmartin@cox.net), Arizona State University, Tempe  
Engage in exploration, meaning-making, and argumentation about core concepts in life sciences. Experience strategies, resources, and real examples for success with all learners, including English language learners.

**Biodiesel: Making Alternative Energy in the Classroom**  
(Grades 7–12)  
W192a, McCormick Place  
David Zeiger (dzeiger@trinitychristian.org) and Curtis Blagburn (cblagburn@trinitychristian.org), Trinity Christian Academy, Addison, TX  
Fuel new learning in your classroom. We will cover conservation, lab skills, and alternative fuels. Join us as we share our students’ experiences creating biodiesel in the classroom. Go from used oil to bulk quantities of fuel!

**Writing Engaging Scientific Case Studies**  
(Grades 9–12)  
W192c, McCormick Place  
Science Focus: GEN, INF, CCC  
Timothy Gay, Boston Latin School, Boston, MA  
Learn simple ways to write engaging scientific case studies. Use your original research data (or someone else’s) to cultivate higher order thinking in your students.

**Ready? Set? Fire Up a Design Challenge**  
(Grades 6–12)  
W194a, McCormick Place  
Science Focus: ETS  
Jennifer Cheesman (@azspacecampgirl; jcheesman@peoriaud.k12.az.us), Zuri Hills Elementary, Sun City, AZ  
Test your students’ engineering skills with a series of design challenges that will incorporate STEM plus cooperative learning—geared toward grades 6–12 classrooms.
8:30–9:00 AM Presentations

The Illinois State Geological Survey: Public Field Trip Guidebooks as a Resource for Earth Science Instruction
(General) S402a, McCormick Place
Science Focus: ESS, INF
Lisa Anderson (@ILGeoSurvey; lisander@illinois.edu), University of Illinois at Urbana-Champaign
The Illinois State Geological Survey discusses how public field trip guidebooks can be used in Earth science instruction. Learn how to find similar resources in your state.

Engaging Students with Literacy Strategies
(Grades 6–12) S501d, McCormick Place
Science Focus: GEN, NGSS
Kellie Dean (kdean@d125.org), Adlai E. Stevenson High School, Lincolnshire, IL
Science literacy can be a challenge for students. Learn how to create engaging literacy activities that support the NGSS and CCSS.

Designing a Bioretention Basin
(Grades 7–12) W186c, McCormick Place
Science Focus: ETS, SEP1, SEP2, SEP4, SEP6
Nidaa Makki (nmakki@uakron.edu), The University of Akron, OH
Laura Pancoe-Wilhite, Copley High School, Akron, OH
Storm water runoff is a problem in many communities. Hear about an activity in which students learn about how engineers solve real-world problems. Students engage in designing, building, and testing bioretention models to address a problem in their community.

Classroom-ready Inquiry Labs for Biology and Chemistry
(Grades 6–12) W190b, McCormick Place
Science Focus: LS, PS, INF
Julie Widinski (jwidinski@lw210.org) and Ross Widinski (rwidinski@lw210.org), Lincoln-Way East High School, Frankfort, IL
Inquiry is an essential process for science students, and this session will provide methods for converting teachers’ current laboratories into NGSS-supported inquiry labs.

9:30–10:00 AM Presentations

“But How Did They Know?” Teaching Chemistry “Data First”
(Grades 10–12) S501a, McCormick Place
Science Focus: PS, SEP4
Amber Szymbczyk, Rice University, Houston, TX
Build scientific thinkers by reordering your chemistry instruction to put the “Data-First”! See examples and receive complete lesson plans to implement in your own classroom.

The Science of Sustainable Energy
(Grades 9–12) W187a, McCormick Place
Science Focus: ETS2, LS1, LS2, PS1, PS3, PS4.A, CCC2, CCC4, CCC5, SEP1, SEP2, SEP3, SEP4, SEP5
Andrew Bowersox, Greenfield High School, Greenfield, MA
Curriculum plans for five sustainable energy classroom projects will be shared, including solar concentrators, solar photovoltaics, anaerobic digesters, cellulosic biofuels, and energy auditing of buildings. Handouts.

Analysis of a Speed and Velocity Lesson: Implications for Students with Learning Disabilities
(Grades 6–8) W187b, McCormick Place
Science Focus: PS2.A
Gregory Taylor (gregory_taylor@mail.harvard.edu), Harvard Graduate School of Education, Cambridge, MA
Join us as we review a speed and velocity lesson that supports NGSS middle school core ideas and its implications for students with learning disabilities. Come away with general, research-validated, instructional supports that help students with learning disabilities succeed.

Scientific Practice: Data Analysis by Middle School and High School Students
(Grades 6–12) W195, McCormick Place
Science Focus: GEN, SEP
Laura Robertson and Mahua Chakraborty, East Tennessee State University, Johnson City
Examine data analysis for middle school and high school students. Numerous strategies, activities, and methods of assessment will be provided in the context of the NGSS.
9:30–10:30 AM  Presentations

NSTA Press® Session: Activating Adolescent Science Identity: Research and Practice
(Grades 6 –11)  S401bc, McCormick Place
Science Focus: INF
Julia McQuillan (jmcquillan2@unl.edu), University of Nebraska, Lincoln
Review findings from a study of grades 9 –10 students on the relative influences of science-themed comics on youth engagement in science and science identity. Funded by the NIH, the Biology of Human Project develops innovative deliverables and conducts learning research on science identities.

Playing Against Nature: Natural Hazards Mitigation as a Relevant (and NGSS-focused) Topic for Scientific Argumentation
(Grades 7 –12)  S403a, McCormick Place
Science Focus: ESS, CCC1, SEP4
Seth Stein, Northwestern University, Evanston, IL
Combine geoscience data with simple ideas from economics, policy, and risk analysis to explore mitigation options for hazards affecting society into a very uncertain future.

I Introduced the Claim-Evidence-Reasoning Framework...Now What?
(Grades 5 –8)  S504bc, McCormick Place
Science Focus: GEN, SEP6, SEP7
María González-Howard, Boston College, Chestnut Hill, MA
For teachers already focusing on argumentation, we will discuss examples of student work and strategies for supporting greater student proficiency with the CER framework.

Making Space for Meaningful Connections with Science: Merging Science and Literacy Through Inquiry
(Grades P –8)  S505a, McCormick Place
Science Focus: GEN, INF, CCC, SEP
Lara Smetana and Katie Gnau, Loyola University Chicago, IL
Sarah Anderson, Peggy Notebaert Nature Museum, Chicago, IL
Samantha Ashbaker, Chicago Academy of Sciences, Chicago, IL
Heidi Rouleau, The Field Museum, Chicago, IL
Collaborate with informal institutions to engage students in standards-based inquiries that foster building skills in science, social studies, and literacy and are relevant to students’ local communities.

Next Generation Science Standards Stations
(Grades 2 –8)  S505b, McCormick Place
Science Focus: GEN, NGSS
Halle Quezada, Eugene Field Elementary School, Chicago, IL
Discover planning and implementation of NGSS stations. Emphasis will be placed on assessment, portfolios, room organization, mini-lessons, and student routines. Resources will build confidence in using stations while transitioning to the NGSS.

Multicultural STS: Teacher Preparation Model Integrating Science, Technology, and Society (STS) with Multicultural Community Resources
(Grades 1 –6, College)  W176b, McCormick Place
Science Focus: GEN, NGSS
Jiyoon Yoon, The University of Texas at Arlington
Review findings from a study on elementary science educator preparation for teaching culturally and linguistically diverse (CLD) learners by integrating science-technology-society (STS) with multiculturalism.

Modeling in Science, It’s Not Just One Practice!
(Grades 6 –12)  W178b, McCormick Place
Science Focus: GEN, SEP2, SEP6, SEP7
Eric Boehm, International Magnet School for Global Citizenship, Hartford, CT
Receive an overview of a research-based protocol on modeling in science and its foundational role in other practices.

NGSS Practices and the Reason for the Seasons
(Grades 6 –8)  W181a, McCormick Place
Science Focus: ESS, SEP
Kathy Kennedy, Stevens Institute of Technology, Hoboken, NJ
Hear how we have modified a “reason for the seasons” lesson to highlight the NGSS practices while scaffolding for varied student math levels.

Media and Middle School Making: Partners in Inspiring Engineering and Design
(Grades 6 –9)  W181b, McCormick Place
Science Focus: ETS, CCC6, SEP6
Rachel Connolly, WGBH, Boston, MA
Discover strategies and tools for teaching engineering practices through stories of innovation and hands-on projects from Design Squad, NOVA, and PBS LearningMedia.
Discovery Box Engineers: Growing a STEM Classroom  
(Grades 4–7) W186c, McCormick Place  
Science Focus: ETS, SEP  
Sherri Cianca (scianca@niagara.edu), Niagara University, Niagara University, NY  
Explore a transdisciplinary integration approach to designing STEM discovery boxes—an approach that organizes curriculum around real-life problems, questions, or concerns and that calls for a holistic interconnection and interdependence of science, technology, engineering, and mathematics.

Interactive Science Notebooks as Integrative Assessment Tools  
(Grades P–12) W190b, McCormick Place  
Science Focus: PS, SEP  
Michelle Fleming (michelle.fleming@wright.edu) and Lisa Kenyon (lisa.kenyon@wright.edu), Wright State University, Dayton, OH  
Interactive Science Notebooks integrate content and practices while building literacy skills. This equitable formative assessment provides unique measures of student understanding and engagement.

Interactive Word Walls: Visual Scaffolds that Transform Content Vocabulary Instruction  
(Grades K–12) W191, McCormick Place  
Science Focus: GEN  
Julie Jackson (jj32@txstate.edu), Texas State University, San Marcos  
Hear about an effective research-based teaching strategy that supports academic vocabulary development and instruction in classrooms with English language learners.

New Science Standards! Where Do I Begin?  
(Grades K–12) W193a, McCormick Place  
Science Focus: GEN, NGSS  
Chris Embry Mohr (chrisembry.mohr@olympia.org), Olympia High School, Stanford, IL  
Find out how teams of cross-curricular teachers are striving to implement the NRC Framework and NGSS by cohesively analyzing resources, adjusting curriculum, and developing lessons and assessments.

Partnerships for World Class STEM Education: Using the Resources Outside Our Doors  
(Grades 1–12) W196c, McCormick Place  
Science Focus: ESS, INF, SEP  
Ruth McDonald (wesmcd@charter.net), Lincoln County School District, Newport, OR  
Using ocean science and coastal natural resources, students address authentic local issues and partner with researchers, government agencies, and informal science educators in place-based, Project Based Learning.

Creating Partnerships That Work  
(Grades 4–12) W476, McCormick Place  
Science Focus: GEN  
Liz Martinez (emartinez@imsa.edu) and Brian Grublesky (bgrublesky@imsa.edu), Illinois Mathematics and Science Academy, Aurora  
Identify needs, goals, responsibilities, and potential partnerships as well as develop a plan of action and network during this interactive session. Leave with a list of potential partnerships.
9:30–10:30 AM  Hands-On Workshops

NSTA Press® Session: The Method—A Systematic Approach to Problem Solving
(Grades 10–College)  S401a, McCormick Place
Science Focus: GEN
Norman LaFave (@nlafave0; nlafave0@yahoo.com), Northland Christian School, Houston, TX
The Method is a systematic and general approach to improving student problem solving. Join us as we present examples and engage in a practice problem.

Using Your Local Zoo to Enhance Genetics Instruction
(Grades 4–12)  S401d, McCormick Place
Science Focus: LS3.A, LS3.B, INF, CCC1, CCC4, CCC6, CCC7, SEP1, SEP2, SEP3, SEP4, SEP8
Kathy McKee, Blank Park Zoo, Des Moines, IA
Kacia Cain (kacia.cain@dmschools.org), Des Moines Central Campus, Des Moines, IA
Jodi Morgan-Peters (morgan-petersj@newton.k12.ia.us), Newton High School, Newton, IA
Explore how to connect classroom learning with a local non-formal science resource and experience investigations focusing on concept development in genetics. We’ll cover individual traits; genomes, chromosomes, and genes; mutation and adaptation; simple dominance; and human effects on organisms.

Taste Blind
(Grades 8–College)  S402b, McCormick Place
Science Focus: LS, INF, SEP
Presenter to be announced
Why can some people taste PTC (a bitter substance) while others can’t? Match diagrams with a reading about the parts of the nervous system involved in tasting. Interpret a pedigree and a simulated electrophoresis gel to determine the genotypes of 10 family members. These and other neurobiology activities are available online from the University of Rochester’s Life Sciences Learning Center.

Dream Green Model Homes and Communities in Your Classroom
(Grades 3–12)  S404a, McCormick Place
Catherine Wilkins (catwill1@gpsk12.org), Greenfield High School, Greenfield, MA
Susan Reyes (sreyes7@mac.com), UMass Amherst, MA
Explore energy concepts, ecology, and sustainability with your students as you design, construct, and manipulate model green “dollhouses,” landscapes, and communities.

The Bottle Racer Project: Physics in Motion
(Grades 5–12)  S501bc, McCormick Place
Science Focus: PS
Gregory Reiva, Streamwood High School, Streamwood, IL
Rev up learning in your classroom with this Bottle Racer Project that showcases an engineering-based approach to learning science by constructing and testing air pressure-driven vehicles.

Engineering a Story: Following the Engineering Design Process to Solve Problems in Books
(Grades P–8)  S502a, McCormick Place
Science Focus: ETS, INF, SEP
Mia Dubosarsky (mdubosarsky@wpi.edu), The STEM Education Center at WPI, Worcester, MA
We will provide preK–8 teachers with practical methods to turn any book or classroom text into an engaging engineering design project.

Building a Classroom Culture of Questioning
(Grades K–8)  S502b, McCormick Place
Science Focus: GEN, SEP
Jennifer Hope, McKendree University, Lebanon, IL
Glenda McCarty (@Glenda_Plexus; mccargl@quincy.edu), Quincy University, Quincy, IL
Science begins with questions! But what makes a question “good”? Find out, plus how student questions show us their abilities relative to the science practices.

STEM Activities for the Elementary and Middle School Classroom
(Grades K–8)  S503a, McCormick Place
Science Focus: ETS, PS, CCC, SEP
Donald Powers (Dt-Powers@wiu.edu), Western Illinois University, Macomb
Join us and design and build a cart, bridge, or tower and/or modify a previously built device. Basic data from these devices will be collected and analyzed. NGSS connections included.

Engineering with Young Learners
(Grades P–2)  S504a, McCormick Place
Science Focus: ETS, SEP
Melissa Higgins (@EiE_org; mhiggins@mos.org), Museum of Science, Boston, MA
Engage in engineering activities appropriate for our youngest learners and discuss what successful engineering activities look like in early education classrooms.
How Did I Get This? A Series of Hypothetical Case Studies of Sexually Transmitted Infections
(Grades 9–College) W178a, McCormick Place
Science Focus: LS, SEP
Rita Wakefield, Brownstown Junior/Senior High School, Brownstown, IL
Laura Barden-Gabbei (lm-barden@wiu.edu), Western Illinois University, Macomb
Use case studies to develop a better understanding of the NGSS relating to group behavior, natural selection, and population dynamics. The hypothetical case studies of sexually transmitted infections are interconnected with one another and designed for high school and college level students.

Integrating Issues
(Grades 4–12) W180, McCormick Place
Science Focus: GEN
Rhoda Goldberg (rhoda.goldberg@cfisd.net), Cypress-Fairbanks ISD, Houston, TX
Laura Schisler, Crowder College, Neosho, MO
Use socio-scientific issues for increasing engagement and understanding! Write an evidenced-based perspective, participate in learning strategies, and leave with classroom-ready activities and rubrics.

Poetry in Motion
(Grades 6–8) W181c, McCormick Place
Science Focus: GEN
Mildred Wigfall, University of Missouri-St. Louis
If you’ve got the time, join us for science inquiry rhyme. Explore how the arts (intertwined with science inquiry investigations) can be used to build a foundation for science literacy skills recommended by STEM initiatives. Science poetry music productions could be that spark toward developing science literacy skills in young budding scientists.

Sick!
(Grades 6–9) W192a, McCormick Place
Laura Robinson, Western Michigan University, Kalamazoo
How effective are the cleaners we use in our homes and schools? How do we know? Examine how you can use microbiology techniques to get students to engage in inquiry to answer their questions about the bacteria they find and grow in class. Sick!

Writing NGSS Student-centered Learning Targets
(Grades 6–12) W194a, McCormick Place
Science Focus: GEN, NGSS
Beverly Pierson (bpierson@ecasd.k12.wi.us), Niki Anderson (nanderson@ecasd.k12.wi.us), and Joel Robaidek (jrobaidek@ecasd.k12.wi.us), Memorial High School, Eau Claire, WI
We will create student-centered learning targets, based on the NGSS performance expectations, which provide students with a clear understanding of what they need to know and do.
10:00–10:30 AM  Presentations
Mastery Learning in the Chemistry Classroom  
(Grades 9–12)  
S501a, McCormick Place
Science Focus: PS
Sarah Eales  (sarah_eales@gwinnett.k12.ga.us), Peachtree Ridge High School, Suwanee, GA
Come see how a group of chemistry teachers have increased content knowledge and engagement through the use of mastery learning in their classrooms.

NOAA Science On a Sphere®: Earth and Space Science Data Visualizations in the Classroom  
(Grades 6–12)  
W187a, McCormick Place
Science Focus: ESS, SEP4, SEP7
Hilary Peddicord  (@NOAA_SOS; hilped@mac.com), NOAA/Earth System Research Laboratory, Boulder, CO
NOAA Science On a Sphere® (SOS) has partnered with government labs, museums, universities, science organizations, and teachers to bring hundreds of scientific data visualizations and movies to the classroom with SOS Explorer. Previously only seen in museums—it can now be manipulated and viewed in your classroom!

Day-to-Day Data Analysis: Strategies for Scaffolding Student Data Analysis  
(Grades 6–12)  
W195, McCormick Place
Science Focus: GEN, SEP
Presenter to be announced
Join us as we introduce three strategies for scaffolding data analysis in the classroom: (1) partially completed data tables, (2) spot the outliers, and (3) claim-evidence-analysis graphic organizers for collecting lab data.

11:00–11:30 AM  Presentations
Bring Relativity to Everyday Life  
(Grades 10–11)  
S501a, McCormick Place
Science Focus: PS
Jianlan Wang, Indiana University Bloomington
Find out about an activity that contextualizes the abstract theory of special relativity in a scenario with Global Positioning System (GPS).

Can I Grow Enough Trees to Offset My Carbon Footprint?  
(Grades 4–8)  
W504bc, McCormick Place
Science Focus: ESS3.C, SEP4, SEP5
Barbara Wheeler  (wheeleba@mail.gvsu.edu), Grand Valley State University, Allendale, MI
Calculate your annual carbon footprint and convert usage into various amounts/types of trees. Then determine if forest storage can mitigate the climate change.

NGSS: The Enterprise Going Where No Model Has Gone Before!  
(Grades 6–8)  
W181b, McCormick Place
Science Focus: GEN, SEP2, SEP6, SEP8
Lisa Kenyon  (lisa.kenyon@wright.edu) and Michelle Fleming  (michelle.fleming@wright.edu), Wright State University, Dayton, OH
Hear how we changed Family Science Night to engage students in building model-based explanations to explain a physical science phenomenon to an audience.

HAWK: Honoring Urban Resources and Acting with Knowledge  
(Grades 9–12)  
W187a, McCormick Place
Science Focus: LS2
Ann Wallenmeyer  (awallenmeyer@spsmail.org), Springfield (MO) Public Schools
Join us for lessons learned during the development and implementation of an integrated biology/English course taught through the lens of conservation of urban resources.

Using Physics Dialogues to Motivate Students and Assess Student Learning  
(Grades 6—College)  
W476, McCormick Place
Science Focus: GEN
Marian Schraufnagel, Washburn High School, Washburn, WI
Dialogues are two-person mini-plays that students participate in, or construct, to demonstrate their understanding. Examples provided—learn how to write your own.
11:00 AM–12 Noon Presentations

NSTA Press® Session: Forensics in Chemistry
(Grades 10–12) S401bc, McCormick Place
Science Focus: PS, SEP
Sara McCubbins (samccub@ilstu.edu), Illinois State University, Normal
Forensics is the foundation in this yearlong lab series. As students solve the case, the narrative shows the relevance of chemistry. Rubrics that support the NGSS will be provided.

Visualizing the Unviewable: Simple Models to Activate Your Earthquake/Plate Tectonics Unit
(Grades 7–12) S403a, McCormick Place
Science Focus: ESS, SEP2
Michael Hubenthal, IRIS Consortium, Washington, DC
Explore a collection of simple and inexpensive physical models designed to aid in developing students’ understanding of abstract earthquake/plate tectonics-related concepts.

The Reflective Assessment Practice: 15 Minutes to Improved Instruction and Learning
(Grades 3–8) W475b, McCormick Place
Science Focus: GEN
Helen Weber, Science Education Consultant, Trenton, NJ
Kathy Long (kathy.long@lhs.net), The Lawrence Hall of Science, University of California, Berkeley
Michele Francis (mfrancis@mhs-pa.org), Milton Hershey School, Hershey, PA
Explore a quick assessment practice that pinpoints what students need to learn next—without giving a quiz. See how it improved student performance in individual classrooms and a national study.

Using STEM to Meet the CCSS
(Grades 3–5) S505a, McCormick Place
Science Focus: SEP
Nancy Johnson (@jcjvb; jcjvb@sbcglobal.net), Curriculum Consultant, Waukegan, IL
Get tales from the classroom front. Learn about a classroom teacher’s experiences using STEM projects to integrate academic subjects and meet the CCSS.

Driving with Data in a Title I STEM Academy
(Grades K–5) S505b, McCormick Place
Science Focus: GEN
Sara Holm (sholm@washoeschools.net) and Tom Wortman (twortman@washoeschools.net), Smithridge STEM Academy, Reno, NV
Leave with practical ideas for how to start or continue your own journey to a Project Learning Based STEM academy with a collaborative data-driven culture.

Formative Assessment in the Physics Classroom
(Grades 9–College) W176b, McCormick Place
Science Focus: PS, SEP4, SEP7, SEP8
Ryan Fedewa (rfedewa@dl25.org) and Sheila Edstrom (sedstrom@district125.k12.il.us), Adlai E. Stevenson High School, Lincolnshire, IL
Discover the value, uses, and best practices for formative assessments in the AP or NGSS-based physics classroom.

Project-based Inquiry SciencePromotes Reading, Writing, and Presenting in the Science Classroom
(Grades 6–8) W181a, McCormick Place
Science Focus: GEN, SEP
Elizabeth Gorak and Mary Fassbender (@maryfazz; mary.fassbender@franklin.k12.wi.us), Forest Park Middle School, Franklin, WI
Discover how the structure of a project-based science curriculum provides opportunities to target the CCSS ELA, including students working collaboratively, writing explanations from evidence, and participating in small- and large-group discussions.

The Science Behind Advanced Coursework in High School
(Grades 10–College) W191, McCormick Place
Science Focus: GEN
Philip Sadler (psadler@fas.harvard.edu), Harvard-Smithsonian Center for Astrophysics, Cambridge, MA
Join us as we review findings from our national studies measuring the impact of AP, IB, and other advanced coursework on STEM career interest and later performance in college science.
Read Their Minds with TALs
(Grades 5—College) W193b, McCormick Place
Science Focus: GEN, NGSS
Nancy Foote (@carbon; tinkerbell0611@gmail.com), Sossaman Middle School, Queen Creek, AZ
If we could only see inside our students’ minds and see exactly what they are thinking! I’ve come up with a great solution—TALs (Tasks to Advance Learning) for science. I will share ones already designed and show you how to design them, too.

11:00 AM–12 Noon Hands-On Workshops

NSTA Press® Session: CCSS ELA and Literacy + NGSS = Even More Brain-Powered Science
(Grades 5—College) S401a, McCormick Place
Science Focus: GEN, NGSS
Thomas O’Brien (tobrien@binghamton.edu), Binghamton University, Binghamton, NY
Discrepant event activities and cartoons model how to integrate English language arts and science literacy standards to show “the whole is greater than the sum of the parts.”

The Green and Growing Classroom
(Grades P—12) S401d, McCormick Place
Science Focus: LS, SEP
Rebecca Ammann (rammann@chicagobotanic.org), Chicago Botanic Garden, Glencoe, IL
Nurture budding scientists in your classroom with a variety of techniques for easy indoor gardening and ideas for using those plants across the curriculum and to support the NGSS.

Disease Detectives: Meningitis
(Grades 8—College) S402b, McCormick Place
Science Focus: LS, INF, SEP
Presenter to be announced
Conduct simulated lab tests to determine that a teen patient has bacterial meningitis. Use a prewriting grid to organize information for writing a letter to inform parents about the importance of the meningitis vaccine. This activity and other neurobiology activities are available online from the University of Rochester’s Life Sciences Learning Center.

Analyzing and Interpreting GRACE Satellite Data Using Visualizations and Scientific Data Sets
(Grades 6—College) S403b, McCormick Place
Science Focus: ESS, INF, CCC, SEP
David Randle (drandle@amnh.org) and Jay Holmes (jholmes@amnh.org), American Museum of Natural History, New York, NY
Using NASA’s Gravity Recovery and Climate Experiment (GRACE) satellite data on ice sheets, explore how climate change is affecting these regions.

Your Ecological Footprint: NGSS Practices at Work on the Pathway to a Sustainable Planet
(Grades 4—College) S404a, McCormick Place
Science Focus: ESS, SEP1, SEP2, SEP3,SEP4, SEP5, SEP7, SEP8
Laurel Kohl (kohll@easternct.edu), Eastern Connecticut State University, Willimantic
How much of our world resources do you (and your students) use? This lesson from ctenergyeducation.com brings global issues to a personal level, fosters use of NGSS science practices, and encourages student action.

A Suite of Sweet Sound Activities
(Grades 5—12) S501bc, McCormick Place
Science Focus: PS4.A, INF, CCC2, SEP1, SEP2, SEP3, SEP6, SEP7, SEP8
Presenter to be announced
Come do hands-on, ears-on investigations that reveal the science of sound. Use NGSS practices to develop your understanding of resonance, waves, and our auditory system.
Integrating Science and Art: A New Strategy to Teach Central Dogma
(Grades 9–College) S501d, McCormick Place
Pamela Snyder (psnyder5396@gmail.com), Columbus City Schools, Columbus, OH
Kerry Dixon (kerrydixon001@gmail.com), Hodos Education Consulting, Granville, OH
Experience how inquiry unites art and science by promoting student thinking in biology. Create a representative work of art that models transcription and translation. Developed through a grant from the Ohio Soybean Council, this activity is one of several free curriculum materials. Handouts.

Engaging Preschool Students in STEM
(Preschool) S502a, McCormick Place
Science Focus: ETS1, LS2.C, PS2.A, CCC1, SEP
Elizabeth Gajdzik, INSPIRE, West Lafayette, IN
Discover how to engage preschool students in STEM through hands-on, developmentally appropriate, problem-based tasks that build understanding of foundational science and math content.

Let’s Talk about Early Learners
(Grades P–2) S502b, McCormick Place
Science Focus: GEN, INF
Patty Born Selly (@StKateSTEM; pebornsely@stkate.edu), National Center for STEM Elementary Education, St. Paul, MN
Young children (grade 2 and younger) have unique needs in the classroom. Effective teachers need to understand developmentally appropriate practices and approaches to teaching very young children. Learn how best to support the needs of early learners to maximize learning and engagement while reducing “challenging” classroom behavior.

An Integrated Science and Literacy 5E Learning Cycle About Electricity
(Grades 3–5) S503a, McCormick Place
Science Focus: PS
Brenda Turgeon, Purdue University Calumet, Hammond, IN
Spark new learning in your grades 3–5 classroom. Teach electricity and circuits as well as integrate science and literacy with a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) learning cycle that uses inexpensive and readily available materials. Correlations to the CCSS ELA included.

Simple Machines Made Simple
(Grades 3–6) S504a, McCormick Place
Science Focus: PS2.A, INF, CCC1, CCC2, CCC6, SEP1, SEP2, SEP3, SEP4, SEP5
Dustin Axe (dustin.axe@msichicago.org), Jason Dupuis (jason.dupuis@msichicago.org), and Jessica Dietzel, Museum of Science and Industry, Chicago, IL
Discover how to teach simple machines using everyday classroom objects and materials. Free lesson plans, videos, and prizes!

Cooperative Learning in the Science Classroom: Get Your Kids Talking and Helping Each Other Learn
(Grades 9–12) W178a, McCormick Place
Science Focus: LS, PS
Denise Sanders (denise.sanders@austinisd.org), James Bowie High School, Austin, TX
Get your students talking, learning, and working together every day using easily integrated, low-prep strategies you can implement Monday. Receive biology and chemistry examples—on-level to AP.

Flipping the Classroom 2.0: Let’s Get to Work! BYOD (Bring Your Own Device)
(Grades 8–12) W178b, McCormick Place
Science Focus: GEN
Traci Lowes (@LowesChemClass; tlowes@neisd.net), Lee High School, San Antonio, TX
Bring your laptop/iPad or other device and create flipped lessons in a collaborative, supportive learning environment. You’ll leave this workshop with a fully flipped lesson!

Reading to Learn Science and Learning to Read Science
(Grades 3–12) W179a, McCormick Place
Science Focus: GEN, SEP4, SEP7, SEP8
Jonathan Osborne, Stanford Graduate School of Education, Stanford, CA
Brian Donovan (briand79@stanford.edu), Stanford University, Stanford, CA
Reading is key to obtaining, evaluating, and communicating information—practice 8 in the NGSS. Join us as we explore ways of supporting students’ reading for learning in science.
Assessing Argument: Rubric Creation for Grading Science Arguments

(General) W180, McCormick Place
Science Focus: GEN, SEP7
Sherry Geesaman (sgeesaman@msd.k12.de.us), Milford Central Academy, Milford, DE
Victoria Deschere (victoria.deschere@appo.k12.de.us), Louis L. Redding Middle School, Middletown, DE
Now that your students are writing arguments, how do you assess them? Learn how to create rubrics to suit the specific needs of a science argument—clear, direct claims, qualitative and quantitative evidence, and implications of findings.

Kernels of Knowledge

(Grades 6–8) W181c, McCormick Place
Science Focus: LS, SEP2
Kristin Camp (campkr@champaignschools.org) and Jackie Baxter (jackiebaxter1@gmail.com), Jefferson Middle School, Champaign, IL
Join us and gain “kernels of knowledge” as you study how cells carry out the essential processes needed to sustain and perpetuate life by connecting these processes with a healthy snack—popcorn!

Constructing Scientific Explanations: Enhancing High School Students’ Reasoning Skills

(Grades 9–12) W192c, McCormick Place
Science Focus: GEN, SEP6, SEP7
Mary Clark (mclark2@cps.edu) and Kristel Hsiao (kristel.keegan@gmail.com), Solorio Academy High School, Chicago, IL
Kevin Tam (ktam@auslctr.org), AUSL Chicago Teacher Residency Program, Chicago, IL
Alissa Berg (alissaberg@gmail.com), Academy for Urban School Leadership (AUSL), Chicago, IL
Miguel Garcia, Alejandra Valencia, Diana Reyes, Jaqueline Navarro, and Nancy Contreras, Students, Solorio Academy High School, Chicago, IL
Explore ways to support students to construct logically reasoned explanations for science phenomena. Analyze student work samples and walk away with formative assessment tools!

Organizing Effective Feedback Processes for Students Learning with Infographics

(Grades 9–12) W194a, McCormick Place
Science Focus: GEN, CCC, SEP4, SEP5, SEP8
Joseph Polman (@joepolman; joseph.polman@colorado.edu), University of Colorado Boulder
Rob Lamb (@lambchop1998; rlamb@psdr3.org), Pattonville School District, Maryland Heights, MO
Find out how organizing technology-supported peer and expert feedback for students who create infographics enhances learners’ collaborative and constructive engagement in key STEM and NGSS practices.
11:30 AM - 12 Noon Presentation

**Bringing the NGSS Outdoors**  
(Grades 9–12)  
W187a, McCormick Place  
Science Focus: INF, SEP

*Samantha Ozik (@ChiPubSchools; scmatton@cps.edu), Chicago (IL) Public Schools*  
*Mark Hauser (@chicagoriver; mhauser@chicagoriver.org), Friends of the Chicago River, Chicago, IL*  
Hear how Chicago Public Schools partner with local environmental organizations to support place-based science teaching tied to high school service-learning projects.

**A Culture of Learners: Using “Self-service” Tools, Reflection, Remediation, and Collaborative Problem-solving to Cultivate Growth Mind-sets**  
(Grades 6–12)  
W195, McCormick Place  
Science Focus: GEN, NGSS

*Brett Erdmann (berdmann@d125.org), Adlai E. Stevenson High School, Lincolnshire, IL*  
How do students “know what they know”? Learn how to build a culture in which learning is an iterative process involving student self-reflection, remediation, and extension.

**Using Chemistry and Physical Science Dialogues to Engage Students and Assess Student Learning**  
(Grades 6–College)  
W476, McCormick Place  
Science Focus: PS

*Nancy Smith (nsmith@waterforduhs.k12.wi.us), Waterford High School, Waterford, WI*  
Learn how to elevate student engagement by using dialogues in the classroom and incorporate a new assessment strategy by having students write dialogues. Examples provided.
Meetings and Social Functions Index

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

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
   Boardrm. 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 Blroom, Hyatt ........................8:00–10:00 PM

112

NSTA Chicago National Conference on Science Education
<table>
<thead>
<tr>
<th>Exhibitor Workshops</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3D Molecular Designs (Booth #1833)</strong></td>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W193b, McCormick Place</td>
<td>New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits (p. 46)</td>
</tr>
<tr>
<td><strong>A+ Mobile Solutions (Booth #1750)</strong></td>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W179b, McCormick Place</td>
<td>Monitor, Guide, and Control Student Activity While Delivering STEM/STEAM Applications with the Intelligent Laptop Cart (p. 60)</td>
</tr>
<tr>
<td><strong>Accelerate Learning (Booth #1056)</strong></td>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W470a, McCormick Place</td>
<td>Woodles! Vocabulary Development for Scientific Literacy! (p. 26)</td>
</tr>
<tr>
<td><strong>Activate Learning (Booth #1353)</strong></td>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W476, McCormick Place</td>
<td>Implementing the NGSS Eight Practices with Research-based Curriculum (p. 27)</td>
</tr>
<tr>
<td><strong>Backyard Brains (Booth #471)</strong></td>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W470a, McCormick Place</td>
<td>Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (p. 46)</td>
</tr>
<tr>
<td><strong>Battle Creek Area Mathematics and Science Center (Booth #877)</strong></td>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W475a, McCormick Place</td>
<td>Finding Your Way to Curriculum that Supports NGSS and CCSS (p. 62)</td>
</tr>
<tr>
<td><strong>Bedford, Freeman, &amp; Worth Publishing Group (Booth #752)</strong></td>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W474b, McCormick Place</td>
<td>Living by Chemistry: What Shape Is That Smell? (p. 46)</td>
</tr>
<tr>
<td><strong>Bio–Rad Laboratories (Booth #847)</strong></td>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W474a, McCormick Place</td>
<td>Science, Fashion, and Fun! Genes in a Bottle™ Kit (p. 26)</td>
</tr>
<tr>
<td><strong>BIOZONE International (Booth #876)</strong></td>
<td>Saturday, March 14</td>
<td>10:30 AM–12 Noon</td>
<td>W474a, McCormick Place</td>
<td>NGSS in the High School Biology Classroom (p. 49)</td>
</tr>
<tr>
<td><strong>Carolina Biological Supply (Booth #1131)</strong></td>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W470b, McCormick Place</td>
<td>Biology for NGSS: A New Approach for a New Program (Grades 9–12) (p. 46)</td>
</tr>
<tr>
<td><strong>Celestron (Booth #1656)</strong></td>
<td>Saturday, March 14</td>
<td>2:00–3:30 PM</td>
<td>W475a, McCormick Place</td>
<td>Stretch Your Legs for Science! (p. 81)</td>
</tr>
</tbody>
</table>
## Index of Exhibitor Workshops

### Conservation International (Booth #1092)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>2:00–3:30 PM</td>
<td>W474b, McCormick Place</td>
<td>ECO Classroom: Field-based Professional Development for STEM Teachers (p. 81)</td>
</tr>
</tbody>
</table>

### eCYBERMISSION (Booth #1181)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W475a, McCormick Place</td>
<td>Modeling and Engineering Design: From Ideas to Reality (p. 48)</td>
</tr>
</tbody>
</table>

### Educational Innovations, Inc. (Booths #1067/#1167)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W178a, McCormick Place</td>
<td>3–2–1 Blast Off!! (p. 42)</td>
</tr>
</tbody>
</table>

### Energy Concepts Inc. (ECI) (Booth #577)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W476, McCormick Place</td>
<td>Biotechnology...the New Field of Converged Science (p. 62)</td>
</tr>
</tbody>
</table>

### Flinn Scientific, Inc. (Booth #631)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W180, McCormick Place</td>
<td>Dynamic Demonstrations from Flinn Scientific (p. 42)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W180, McCormick Place</td>
<td>Flinn Activities to Integrate STEM Education (p. 60)</td>
</tr>
</tbody>
</table>

### G–Biosciences (Booth #456)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W476, McCormick Place</td>
<td>Biotechnologies: Restriction Digestion in STEM Education (p. 48)</td>
</tr>
</tbody>
</table>

### Intelitek (Booth #989)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>2:00–3:30 PM</td>
<td>W184d, McCormick Place</td>
<td>Creating a Science Class for the 21st Century (p. 80)</td>
</tr>
</tbody>
</table>

### K’NEX Education (Booth #789)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:00 AM</td>
<td>W471b, McCormick Place</td>
<td>Off to the Races with K’NEX Education’s Forces, Energy, and Motion Set! (p. 22)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>9:30–10:30 AM</td>
<td>W471b, McCormick Place</td>
<td>Forensic DNA Activities and More with K’NEX Education’s DNA, Replication, and Transcription Set (p. 39)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>11:00 AM–12 Noon</td>
<td>W471b, McCormick Place</td>
<td>Introduction to Simple Machines with K’NEX Education Models and Lessons for the Elementary Classroom (p. 58)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>1:00–2:00 PM</td>
<td>W471b, McCormick Place</td>
<td>Off to the Races with K’NEX Education’s Forces, Energy, and Motion Set! (p. 72)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>2:30–3:30 PM</td>
<td>W471b, McCormick Place</td>
<td>Forensic DNA Activities and More with K’NEX Education’s DNA, Replication, and Transcription Set (p. 82)</td>
</tr>
</tbody>
</table>

### LAB–AIDS®, Inc., cont.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W195, McCormick Place</td>
<td>Investigating Chemical Changes (p. 26)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W195, McCormick Place</td>
<td>Chemical Formula and Amino Acids (p. 46)</td>
</tr>
</tbody>
</table>

### LaMotte Co. (Booth #1650)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W475a, McCormick Place</td>
<td>Getting the Most from Your Low-Cost Water Monitoring Kit (p. 27)</td>
</tr>
</tbody>
</table>

### Learning A–Z (Booth #1461)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W179b, McCormick Place</td>
<td>Use Science to Teach Reading—Use Reading to Teach Science (p. 42)</td>
</tr>
</tbody>
</table>
### LEGO Education (Booth #956)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W186b, McCormick Place</td>
<td>MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 24)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W186b, McCormick Place</td>
<td>Multiple Subjects, One Platform: Tackle STEM Learning with LEGO Education WeDo! (p. 44)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W186b, McCormick Place</td>
<td>Exploring How Machines Work with the LEGO® Education Simple and Motorized Mechanisms Set (p. 61)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>2:00–3:30 PM</td>
<td>W186b, McCormick Place</td>
<td>Exploring Forces, Motion, and Engineering Design with LEGO® Education Simple Machines (p. 80)</td>
</tr>
</tbody>
</table>

### The MiniOne Electrophoresis (Booth #984)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W474b, McCormick Place</td>
<td>Electrophoresis in a Flash—Complete a Lab in a Single Class Period (p. 62)</td>
</tr>
</tbody>
</table>

### miniPCR (Booth #1828)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W470b, McCormick Place</td>
<td>Genes in Space: Design a DNA Analysis Experiment for the International Space Station (p. 26)</td>
</tr>
</tbody>
</table>

### MSOE Center for BioMolecular Modeling (Booth #1835)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W193b, McCormick Place</td>
<td>Going Viral: From Proteins to Pandemics (p. 25)</td>
</tr>
</tbody>
</table>

### Nano-Link: Center for Nanotechnology Education (Booth #888)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W184d, McCormick Place</td>
<td>Leading Students to Exciting Careers in Emerging Technology Fields (p. 24)</td>
</tr>
</tbody>
</table>

### National Geographic Learning (Booth #1546)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W186a, McCormick Place</td>
<td>Go Virtual! Enhancing Instruction with Technology in Geography, Physical Geology, and Environmental Science (p. 24)</td>
</tr>
</tbody>
</table>

### NOAA’s National Ocean Service (Booth #1358)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W184bc, McCormick Place</td>
<td>Climate Change Series 1: Climate Stewards Roundtable Presentations (p. 24)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>9:30–11:15 AM</td>
<td>W184bc, McCormick Place</td>
<td>Climate Change Series 2: Antarctic Team Showcases Ice Cores (p. 39)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>11:20 AM–12:20 PM</td>
<td>W184bc, McCormick Place</td>
<td>Climate Change Series 3: Teaching Climate? Learn How to Use the Climate.gov 2014 National Climate Assessment Resources for Educators (p. 58)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>12:45–1:45 PM</td>
<td>W184bc, McCormick Place</td>
<td>Climate Change Series 4: Bring Climate Change Closer to Home: U.S. Forest Service Climate Change Education Resources (p. 71)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>1:50–2:50 PM</td>
<td>W184bc, McCormick Place</td>
<td>Climate Change Series 5: Climate Science in Action (p. 72)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>2:55–3:55 PM</td>
<td>W184bc, McCormick Place</td>
<td>Climate Change Series 6: ClimateChangeLIVE Distance Learning Project—Engage Your Students in Climate Change Learning and Being Part of the Solution! (p. 82)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>4:00–5:00 PM</td>
<td>W184bc, McCormick Place</td>
<td>Climate Change Series 7: Use NGSS as a Pathway to Climate Literacy (p. 90)</td>
</tr>
</tbody>
</table>
# Index of Exhibitor Workshops

## Ocean Classrooms (Booth #1625)
- **Saturday, March 14**  
  - 8:00–9:30 AM  
  - W184a, McCormick Place  
  - Marine Science Education: Awareness, Understanding, and Action (p. 23)
- **Saturday, March 14**  
  - 10:00–11:30 AM  
  - W184a, McCormick Place  
  - Marine Science Education: Awareness, Understanding, and Action (p. 42)

## PAEMST (Booth #1281)
- **Saturday, March 14**  
  - 12 Noon–1:30 PM  
  - W193b, McCormick Place  
  - Leadership Pathways for Exemplary K–12 STEM Teachers (p. 61)

## Perimeter Institute (Booth #767)
- **Saturday, March 14**  
  - 8:00–9:30 AM  
  - W471a, McCormick Place  
  - Hands-On Wave-Particle Duality (p. 26)
- **Saturday, March 14**  
  - 10:00–11:30 AM  
  - W471a, McCormick Place  
  - The Mystery of Dark Matter (p. 46)

## Publisher Spotlight (Booth #1544)
- **Saturday, March 14**  
  - 12 Noon–1:30 PM  
  - W184d, McCormick Place  
  - HOWTOONS! Engaging Kids with DIY STEM Projects via Comic Books (p. 60)

## Royal Society of Chemistry (Booth #548)
- **Saturday, March 14**  
  - 10:00–11:30 AM  
  - W186a, McCormick Place  
  - Free Chemistry Resources and Tools to Support BYOD, from the Royal Society of Chemistry (p. 44)

## SAE International–A World In Motion (Booth #891)
- **Saturday, March 14**  
  - 12 Noon–1:30 PM  
  - W194a, McCormick Place  
  - Gliding Flight and the Engineering Design Experience (p. 62)

## Scholastic Inc. (Booths #1744/ #1867)
- **Saturday, March 14**  
  - 10:00–11:30 AM  
  - W184d, McCormick Place  
  - Using Science Magazines to Connect the NGSS with CCSS ELA (p. 42)

## Shape of Life (Booth #1445)
- **Saturday, March 14**  
  - 12 Noon–1:30 PM  
  - W470b, McCormick Place  
  - Evolving Curiosity in the Animal Kingdom (p. 62)

## Share My Lesson (Booth #947)
- **Saturday, March 14**  
  - 8:00–9:30 AM  
  - W474b, McCormick Place  
  - Share My Lesson: Free Classroom Resources Developed by Teachers for Teachers (p. 27)

## Society for Neuroscience (Booth #1661)
- **Saturday, March 14**  
  - 12 Noon–1:30 PM  
  - W471a, McCormick Place  
  - Telling the Story of Neuroscience (p. 62)

## South Dakota State University (Booth #1459)
- **Saturday, March 14**  
  - 12 Noon–1:30 PM  
  - W184a, McCormick Place  
  - Interesting Demonstrations for the Chemistry Classroom (p. 60)

## SparkFun Electronics (Booth #552)
- **Saturday, March 14**  
  - 8:00–9:30 AM  
  - W193a, McCormick Place  
  - Physics and Open-Source Robotics: The Opera of Math and Science (p. 25)
- **Saturday, March 14**  
  - 10:00–11:30 AM  
  - W193a, McCormick Place  
  - Seeing the Sky with High Altitude Weather Balloons and Data Collection (p. 44)
- **Saturday, March 14**  
  - 12 Noon–1:30 PM  
  - W193a, McCormick Place  
  - Circuit Scribe: Joining Art and Science with Conductive Gel Pens (p. 61)
## Index of Exhibitor Workshops

### TCI (Booth #1552)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W194a, McCormick Place</td>
<td>Ride the Wave with Bring Science Alive! (p. 26)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W194a, McCormick Place</td>
<td>Modeling the Earth, Sun, and Other Stars with Bring Science Alive! (p. 46)</td>
</tr>
</tbody>
</table>

### Vernier Software & Technology (Booth #1244)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W185a, McCormick Place</td>
<td>Biology with Vernier (p. 24)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W185d, McCormick Place</td>
<td>Integrate Chromebook and BYOD with Vernier Technology (p. 24)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W185a, McCormick Place</td>
<td>Chemistry with Vernier (p. 44)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W185d, McCormick Place</td>
<td>Renewable Energy with KidWind and Vernier Technology (p. 44)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W185a, McCormick Place</td>
<td>Inquiry-based Chemistry with Vernier (p. 61)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W185d, McCormick Place</td>
<td>Middle School Science with Vernier (p. 61)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>2:00–3:30 PM</td>
<td>W185d, McCormick Place</td>
<td>Introductory Engineering Design Projects with Vernier (p. 80)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>2:00–3:30 PM</td>
<td>W185a, McCormick Place</td>
<td>Human Physiology with Vernier (p. 80)</td>
</tr>
</tbody>
</table>

### Ward's Science (Booth #830)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W192b, McCormick Place</td>
<td>Who's Killing Crystal Creek? Solve an Environmental Science Mystery (p. 24)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>10:00–11:30 AM</td>
<td>W192b, McCormick Place</td>
<td>Teaching with Technology in the Elementary Classroom (p. 44)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>12 Noon–1:30 PM</td>
<td>W192b, McCormick Place</td>
<td>AP Biology Investigation 4: The Ins and Outs of Diffusion and Osmosis (p. 61)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>2:00–3:30 PM</td>
<td>W192b, McCormick Place</td>
<td>Dissection Connections: Using Preserved Specimens to Explore Human Biology, Disease, and Development (p. 80)</td>
</tr>
<tr>
<td>Saturday, March 14</td>
<td>4:00–5:30 PM</td>
<td>W192b, McCormick Place</td>
<td>Grant Writing: Pipelines, Partnerships, and Finding Funding (p. 90)</td>
</tr>
</tbody>
</table>

### Zula International (Booth #479)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Workshop Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 14</td>
<td>8:00–9:30 AM</td>
<td>W179b, McCormick Place</td>
<td>Implementing Inquiry: Strategies and Tools for Elementary Students (p. 23)</td>
</tr>
<tr>
<td>Name</td>
<td>Page Numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abbott, Rebecca</td>
<td>63, 90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abuan, Rodelio</td>
<td>77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agger, Susan</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alderman, Matt</td>
<td>40, 73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander, Amy</td>
<td>84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander, Julie</td>
<td>79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allan, Elizabeth</td>
<td>81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allan, Richard</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allison, Erika</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammann, Rebecca</td>
<td>108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anderson, Kevin</td>
<td>71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anderson, Lisa</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anderson, Niki</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anderson, Sarah</td>
<td>102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ansberry, Karen</td>
<td>77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthes-Washburn, Matthew</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arch, Lara</td>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Archer, Julie Dyess</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ardisana, Vicki</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnswald, Jennifer</td>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aronin, Sara</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arroyo, Luis</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artero, Jason</td>
<td>83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arthur, Victoria</td>
<td>71, 82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artz, Anne</td>
<td>74, 85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ashbaker, Samantha</td>
<td>102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ashmann, Scott</td>
<td>79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axe, Dustin</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balbach, Stacey</td>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balint, Elena</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ballard, Melissa</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baltz, Doug</td>
<td>67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bardar, Erin</td>
<td>34, 89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barden-Gabbei, Laura</td>
<td>87, 105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnett, Sara</td>
<td>97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barthelemy, Cathy</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bartley, Tony</td>
<td>99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barto, Marcia</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bartus, Greg</td>
<td>99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baxter, Jackie</td>
<td>30, 110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beattie, Rachel</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bell, Randy</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belmont, Danielle</td>
<td>81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benenson, Gary</td>
<td>20, 69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benmergui, Patricia</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bennett, Steve</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berent, Rusti</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berg, Alissa</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Betancourt, Veronica</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biernat, Kathy</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birts, Teshia</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisaccio, Daniel J.</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bjerk, Heidi</td>
<td>49, 77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bjorklind, Martha</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black, David</td>
<td>14, 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blagburn, Curtis</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blake, Robert Jr.</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bobrowsky, Matt</td>
<td>88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bochm, Eric</td>
<td>102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boggs, Anita</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borman, Gregory</td>
<td>79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bourke, Nicholas</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowen, Michael</td>
<td>18, 99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowersox, Andrew</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowling, Kristi</td>
<td>66, 77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brachman, Rachel</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brady, Corey</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brady, Tory</td>
<td>88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brandis, Katrina</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Branson, Jeff</td>
<td>25, 44, 61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bravo, Tammy</td>
<td>99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brewton, Cherry</td>
<td>71, 83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brissenden, Gina</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brisson, Angela</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brkhi, Katie</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brothers, David</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown, James</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown, Leigh</td>
<td>26, 49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown, Tom</td>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brunette, Matt</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buehler, David</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bueno-Potts, Drew</td>
<td>69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butler, Mari</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butler, Melissa</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butler-Check, Ebonic</td>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buzby, Colleen</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cain, Kacia</td>
<td>104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camacho, Angula</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camins, Arthur</td>
<td>92, 98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camp, Kristin</td>
<td>37, 52, 110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campanella, Melissa</td>
<td>83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannon, Cherubin</td>
<td>57, 69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caplan, Marcelo</td>
<td>69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carroll, Jason</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carry, Diana Dumetz</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carter, David</td>
<td>61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casey, Liam</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catlin, Janell</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cesa, Irene</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chakrabarty, Mahua</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chan, Richard</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheesman, Jennifer</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheng, Pauline</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinske, Thomas</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christensen, Brad</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christol, Pamela</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chudoba, Tara</td>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cianca, Sherri</td>
<td>103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark, Mary</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, Susan</td>
<td>81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clementz, Stacey</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloud, Cory</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codron, Angela</td>
<td>85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collins, Jim</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connealy, Selena</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connolly, Rachel</td>
<td>102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contreras, Nancy</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper, Susan</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosentino, Michelle</td>
<td>58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cottongim, Laura</td>
<td>96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coy, Stephanie</td>
<td>67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craven, John</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crawford, Lyla Mae</td>
<td>71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crismond, David</td>
<td>50, 95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crowther, David</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cruse-Craig, Johni</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culbertson, Britta</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cunningham, Suzanne</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czarnik, Cheryl</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damery, Doug</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dassler, Troy</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daugherty, Ellyn</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daurat, Paula</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David-Valentine, Jai</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davis, Lucie</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davis, Michael</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dean, Kellie</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dean, Melissa</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delacy, Caine</td>
<td>23, 42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DeMauro, Christine</td>
<td>95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deschere, Victoria</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DeVore-Wedding, Bev</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DeWolf, Kris</td>
<td>57, 70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietzel, Jessica</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disch, Susan</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dixon, Kerry</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dobos, Nikki</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dolan, Paul</td>
<td>87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donkers, Kevin</td>
<td>26, 46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donley, Jean</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donovan, Brian</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dooley, Brett Samantha</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dosch, Don</td>
<td>31, 85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dowling, Jeffrey</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downing, Chuck</td>
<td>18, 32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dragotta, Nick</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dubosarsky, Mia</td>
<td>28, 104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dudeck, Cheryl</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dunn, Linda</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dunne, Marianne</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dupuis, Jason</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dupuis, Roxane</td>
<td>78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyasi, Rebecca</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyson, Samuel</td>
<td>84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eales, Sarah</td>
<td>106</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eckholt, Erin</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edmondson, Elizabeth</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edstrom, Matt</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edstrom, Sheila</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edwards, Teon</td>
<td>34, 89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effron, David</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English, Jason</td>
<td>82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erdmann, Brett</td>
<td>111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ervin, Jeremy</td>
<td>63, 83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ervin, Tom</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esch, Wendy</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eskridge-Lincoln, Mary</td>
<td>58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esler, Jamie</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estes, Fred</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evans, Zoe</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evens, Susan</td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everett, Susan</td>
<td>94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farley, Cristina</td>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fassbender, Mary</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatemeh HossainMardi</td>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fedewa, Ryan</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fedors, John</td>
<td>88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fee, Jennifer</td>
<td>81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Felske, Lisa</td>
<td>95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferguson, Robert</td>
<td>51, 83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferrin, Emily</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleming, Kevin</td>
<td>32, 86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleming, Michelle</td>
<td>103, 106</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fligelman, Rebecca</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fogarty, Ian</td>
<td>67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foote, Nancy</td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Forbrook, Jason 97
Fortier, Barbara 89
Fraley, Natasha 62
Francis, Michele 107
Frank, Karen 66, 98
Franzen, Margaret 25
Fraser, Paul 28
Frazier, Mike 42
Fries-Gaither, Jessica 97
Fritsch, Kathleen 91
Fudge, T. J. 39
Fuerst, Rebekah 72
Fulco, Charles 68

G
Gajdzik, Elizabeth 109
Garcia, Miguel 110
Gardiner, Lisa 37
Garik, Peter 58
Garimella, Umadevi 65
Garner, Megan 52
Gay, Timothy 100
Gee, Jennifer 109
Gehl, Miguel 110
Gardiner, Lisa 37
Garik, Peter 58
Garimella, Umadevi 65
Garner, Megan 52
Gay, Timothy 100
Geesaman, Michelle 66

H
Hadenfedlt, John 36
Hafza, Rabieh 15
Haines, Heather 85
Haines, Sarah 89
Hall, Garrett 74
Hall, Alfred II 67
Hanuscin, Deborah 65, 81
Haralambakis, Lee Alex 28
Harasty, Kenneth 52
Harcourt, Patricia 79
Harris, Tina 21
Harrison, Chris 74
Harrison, Molly 24
Hartley, Susan 36, 70
Hartman, Matthew 48
Haskins, Mary 94
Hauser, Mark 111
Hayes, Laurie 36, 70
Haynes, Elizabeth 71
Heikkinnen, Kathleen 66
Heiser, David 92
Henderson, Brenda 70
Hennessey-McDonald, Kristin 34
Herman, Tim 25, 46
Herndon, Carrie 89
Herrington, Jaymee 93
Herrold, Ardis 70
Hersberger, Kimber 64
Higgins, Melissa 78, 104
Hilokwitz, Marlene 95
Hill, Bradford 85
Hill-Ries, Greg 97
Hincks, Liz 16
Hines, S. Maxwell 71
Hinojosa, Tom 24
Hoang, Ngoc 81
Hobs, Mary 52
Hodges, Georgia 30
Hodgson-Drysdale, Tracy 86
Hodson, Michele 72
Hoekenga, Janet 60
Hoelzer, Mark 46
Hogan, Kathleen 85
Hokkanen, Susanne 68
Holdaway, Simon 48
Holliday, Gary 49, 83
Holm, Sara 66, 107
Holmes, Jay 78, 88, 108
Holzer, Margaret 20, 38, 49, 70, 79, 89
Hooper, Jennifer 87
Hope, Jennifer 104
Hovarth, Kathy 58
Howard, Cindy 24, 44, 61, 80
Howarth, John 69
Hsiao, Kristel 110
Hsu, Hui-Yin 91
Hsu, Matthew 79
Huang, Brian 25, 44, 61
Hubenthal, Michael 107
Huet, Carol 70
Huff, Kenneth 75
Hunnings, Douglas 76
Hutson, Ruth 87

I
Ihig, Lori 99

J
Jabot, Michael 49, 63, 73
Jackson, Debbie 51
Jackson, Julie 103
Jackson, Laura 24, 44, 61, 80
Jacque, Berri 98
Jafri, Jami 97
Janes, Patricia 42
Janowski, Joan 65, 83
Januszka, Rita 22
Jeffery, Christine 69
Jesbert, Robert 22, 39, 58, 72, 82
Johnson, Candyce 40
Johnson, Diane 98
Johnson, Nancy 107
Jordan, Shawn 95
Juister, Charles 87

K
Kafka, Alan 99
Kahn, Sami 71
Kalevati, Karen 68
Kallwitz, Mimi 97
Kaner, Julianne 97
Kararo, Matthew 82
Karre, Nancy 62
Kaufman, Toni 92
Kedves, James 63
Keeley, Page 52, 66
Kelly, Susan B. 87
Kelter, Paul 54
Kenaley, Shawn 94
Kennedy, Ann 38
Kennedy, Kathryn 92
Kennedy, Kathy 99, 102
Kennedy, Michael 32
Kenyon, Lisa 103, 106
Keselman, Alla 78
Kifer, Roberta Johnson 20, 38, 70, 79, 89
King, Jane 42
Kirk, Suzanne 56
Kirkland, Michelle 66
Klingseisen, Elizabeth 80
Knapps, Christine 77
Koba, Susan 58
Kohl, Laurel 108
Koker, Mark 26, 46
Konicke-Moran, Richard 66
Kopach, Jennifer 75
Kozierski, Rita 87
Krajcik, Joseph 27
Kraves, Sebastian 26
Kravitz, Dora 64
Kreider, Rusti 21
Krim, Jessica 51
Kruse, Brian 70
Kruse, Jerri 56
Kubinak, Tim 93
Kuhn, Mason 30

L
Labash, Jennifer 76
LaFave, Norman 104
Lagas, Ashley 72
Lamb, Rob 110
Lancor, Rachel 65
Larsen, James 89
Larson, Katie 79
Larson, Larry 79
Lauterbach, Lynn 66, 77
Layde, Erin 31
Leder, Norman 22
Lee, Claudia 62
Lee, Michele 95
Lettizia, Rachel 87

NSTA Chicago National Conference on Science Education 119
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lindebrekk, Karen</td>
<td>79</td>
</tr>
<tr>
<td>Lindgren, Samantha</td>
<td>54, 78</td>
</tr>
<tr>
<td>Lindow, Mary</td>
<td>62</td>
</tr>
<tr>
<td>Lisne, Arlyliss</td>
<td>90</td>
</tr>
<tr>
<td>Litherland, Rebecca</td>
<td>76</td>
</tr>
<tr>
<td>Long, Cynthia</td>
<td>23, 42</td>
</tr>
<tr>
<td>Long, Kathy</td>
<td>107</td>
</tr>
<tr>
<td>LopezLeiva, Carlos</td>
<td>73</td>
</tr>
<tr>
<td>Lough, Tom</td>
<td>53</td>
</tr>
<tr>
<td>Lowes, Traci</td>
<td>65, 109</td>
</tr>
<tr>
<td>Lowry, Matthew</td>
<td>20</td>
</tr>
<tr>
<td>Lowry, Michael</td>
<td>98</td>
</tr>
<tr>
<td>Lubchenco, Peggy</td>
<td>81</td>
</tr>
<tr>
<td>Lubker, Kathryn</td>
<td>67</td>
</tr>
<tr>
<td>Ludwig, Chris</td>
<td>52</td>
</tr>
<tr>
<td>Lujan, Vanessa</td>
<td>82</td>
</tr>
<tr>
<td>Lukens, Jeffrey</td>
<td>87</td>
</tr>
<tr>
<td>Lynch, Mary Jean</td>
<td>95</td>
</tr>
<tr>
<td>Lyon, Edward</td>
<td>71</td>
</tr>
<tr>
<td>MacCarthy, James</td>
<td>81</td>
</tr>
<tr>
<td>MacEachern, Barbara</td>
<td>89</td>
</tr>
<tr>
<td>Maceri, Julia</td>
<td>66</td>
</tr>
<tr>
<td>Macke, Natalie</td>
<td>18, 31</td>
</tr>
<tr>
<td>MacNeil, Janet</td>
<td>86</td>
</tr>
<tr>
<td>Magoon, Carla</td>
<td>71</td>
</tr>
<tr>
<td>Makki, Nidaa</td>
<td>83, 101</td>
</tr>
<tr>
<td>Maksymowycz, Terry</td>
<td>75</td>
</tr>
<tr>
<td>Mallya, Aarti</td>
<td>31</td>
</tr>
<tr>
<td>Mannarino, Anne</td>
<td>56</td>
</tr>
<tr>
<td>Manocchi-Verrino, Carol</td>
<td>13</td>
</tr>
<tr>
<td>Martinez, Liz</td>
<td>20, 99, 103</td>
</tr>
<tr>
<td>Marzullo, Timothy</td>
<td>46</td>
</tr>
<tr>
<td>Mason, Kevin</td>
<td>92</td>
</tr>
<tr>
<td>Massey, Vicki</td>
<td>14</td>
</tr>
<tr>
<td>Mathews, Emily</td>
<td>93</td>
</tr>
<tr>
<td>Matias-Leonard, Emmy</td>
<td>20</td>
</tr>
<tr>
<td>Matsler, Karen</td>
<td>20</td>
</tr>
<tr>
<td>McAlister, Brian</td>
<td>92</td>
</tr>
<tr>
<td>McAuliffe, Carla</td>
<td>70</td>
</tr>
<tr>
<td>McCarty, Glenda</td>
<td>104</td>
</tr>
<tr>
<td>McCollum, Timothy</td>
<td>36</td>
</tr>
<tr>
<td>McCormack, Alan</td>
<td>86</td>
</tr>
<tr>
<td>McCready, Scott</td>
<td>93</td>
</tr>
<tr>
<td>McCubbins, Sara</td>
<td>86, 107</td>
</tr>
<tr>
<td>McDaniels, Colleen</td>
<td>24</td>
</tr>
<tr>
<td>McDonald, Jim</td>
<td>22, 39</td>
</tr>
<tr>
<td>McDonal, Ruth</td>
<td>103</td>
</tr>
<tr>
<td>McDowell-Spink, Leah</td>
<td>93</td>
</tr>
<tr>
<td>McGough, Julie</td>
<td>95</td>
</tr>
<tr>
<td>McGrath, Edward</td>
<td>86</td>
</tr>
<tr>
<td>McGregor, Deb</td>
<td>83</td>
</tr>
<tr>
<td>McHugh, Terry</td>
<td>98</td>
</tr>
<tr>
<td>McKe, Kathy</td>
<td>104</td>
</tr>
<tr>
<td>McKenna, Lisa</td>
<td>98</td>
</tr>
<tr>
<td>McKinney, Russ</td>
<td>16</td>
</tr>
<tr>
<td>McNamara, Mona</td>
<td>67, 86</td>
</tr>
<tr>
<td>McLellan, Julia</td>
<td>102</td>
</tr>
<tr>
<td>McQuillan, Patrick</td>
<td>36</td>
</tr>
<tr>
<td>McWilliams, Chuck</td>
<td>75</td>
</tr>
<tr>
<td>Meine, Curt</td>
<td>50</td>
</tr>
<tr>
<td>Meirs, Caryn</td>
<td>68</td>
</tr>
<tr>
<td>Melville, John</td>
<td>80</td>
</tr>
<tr>
<td>Metty, Jane</td>
<td>78</td>
</tr>
<tr>
<td>Metz-Bugg, Jessica</td>
<td>32</td>
</tr>
<tr>
<td>Micceri, Jennifer</td>
<td>65</td>
</tr>
<tr>
<td>Michal, Laurie</td>
<td>23</td>
</tr>
<tr>
<td>Milbauer, Andrew</td>
<td>99</td>
</tr>
<tr>
<td>Miller, Matthew</td>
<td>60</td>
</tr>
<tr>
<td>Miller, Nikelle</td>
<td>88</td>
</tr>
<tr>
<td>Miller, Ruth</td>
<td>66</td>
</tr>
<tr>
<td>Miller, Stacy</td>
<td>97</td>
</tr>
<tr>
<td>Millsap-Palmore, Krishna</td>
<td>84</td>
</tr>
<tr>
<td>Milto, Elissa</td>
<td>70</td>
</tr>
<tr>
<td>Mirabello, Matthew</td>
<td>67, 86, 88</td>
</tr>
<tr>
<td>Mohr, Carolyn</td>
<td>38, 87</td>
</tr>
<tr>
<td>Mohr, Chris Embry</td>
<td>85, 103</td>
</tr>
<tr>
<td>Monahan, Daniel</td>
<td>89</td>
</tr>
<tr>
<td>Monahan, Peggy</td>
<td>51</td>
</tr>
<tr>
<td>Moore, Abby</td>
<td>74</td>
</tr>
<tr>
<td>Moore, Tamara</td>
<td>99</td>
</tr>
<tr>
<td>Morales-Doyle, Daniel</td>
<td>66</td>
</tr>
<tr>
<td>Moravchik, Bruce</td>
<td>24</td>
</tr>
<tr>
<td>Morgan, Emily</td>
<td>77</td>
</tr>
<tr>
<td>Morgan-Peters, Jodi</td>
<td>104</td>
</tr>
<tr>
<td>Morris, Jenny</td>
<td>97</td>
</tr>
<tr>
<td>Morris, Linda M.</td>
<td>39</td>
</tr>
<tr>
<td>Morris, Suzan</td>
<td>20</td>
</tr>
<tr>
<td>Morrison, Deb</td>
<td>54, 71, 75, 88</td>
</tr>
<tr>
<td>Moser, Kurt</td>
<td>27</td>
</tr>
<tr>
<td>Moulding, Brett</td>
<td>28, 72</td>
</tr>
<tr>
<td>Moyer, Richard</td>
<td>94</td>
</tr>
<tr>
<td>Mudarthy, Melanie</td>
<td>77</td>
</tr>
<tr>
<td>Munn, Maureen</td>
<td>54</td>
</tr>
<tr>
<td>Murphy, Beth</td>
<td>74</td>
</tr>
<tr>
<td>Muscatello, Patty</td>
<td>44</td>
</tr>
<tr>
<td>Muskin, Joe</td>
<td>68, 77</td>
</tr>
<tr>
<td>Musselman, Sean</td>
<td>93</td>
</tr>
<tr>
<td>Musson, Stephanie</td>
<td>44</td>
</tr>
<tr>
<td>Nagle, Barbara</td>
<td>94</td>
</tr>
<tr>
<td>Nam, Elaine</td>
<td>44</td>
</tr>
<tr>
<td>Navarro, Jaqueline</td>
<td>110</td>
</tr>
<tr>
<td>Nazor, Karah</td>
<td>98</td>
</tr>
<tr>
<td>Newberry, Deb</td>
<td>24</td>
</tr>
<tr>
<td>Newton, Beth</td>
<td>52</td>
</tr>
<tr>
<td>Niepold, Frank</td>
<td>58, 90</td>
</tr>
<tr>
<td>Noel-Storr, Jake</td>
<td>22, 56</td>
</tr>
<tr>
<td>Northcutt, Cathy</td>
<td>36</td>
</tr>
<tr>
<td>Norton-Meier, Lori</td>
<td>56</td>
</tr>
<tr>
<td>Novak, Deb</td>
<td>64</td>
</tr>
<tr>
<td>Novak, Michael</td>
<td>28</td>
</tr>
<tr>
<td>Nowak, Stephanie</td>
<td>66</td>
</tr>
<tr>
<td>Nye, Leith</td>
<td>68</td>
</tr>
<tr>
<td>O'Brien, Thomas</td>
<td>108</td>
</tr>
<tr>
<td>O'connor, Tami</td>
<td>42</td>
</tr>
<tr>
<td>O'Hare, Jenny</td>
<td>44</td>
</tr>
<tr>
<td>O'Leary-Driscoll, Sarah</td>
<td>85</td>
</tr>
<tr>
<td>Olencecheck, Nancy</td>
<td>98</td>
</tr>
<tr>
<td>O'Mahony, Timothy</td>
<td>76</td>
</tr>
<tr>
<td>O'Malley, Jim</td>
<td>86</td>
</tr>
<tr>
<td>Orvis, Kathryn</td>
<td>82</td>
</tr>
<tr>
<td>Osborne, Jonathan</td>
<td>109</td>
</tr>
<tr>
<td>Owen, Dawn</td>
<td>76</td>
</tr>
<tr>
<td>Ozik, Samantha</td>
<td>111</td>
</tr>
<tr>
<td>Padalino, Jack</td>
<td>50</td>
</tr>
<tr>
<td>Pagani, Michelle</td>
<td>61</td>
</tr>
<tr>
<td>Page, Taryn</td>
<td>81</td>
</tr>
<tr>
<td>Pages, Patrice</td>
<td>91</td>
</tr>
<tr>
<td>Paglierani, Ruth</td>
<td>70</td>
</tr>
<tr>
<td>Pan, Yaozhein</td>
<td>22</td>
</tr>
<tr>
<td>Pancce-Willhite, Laura</td>
<td>101</td>
</tr>
<tr>
<td>Panion, Frank</td>
<td>78</td>
</tr>
<tr>
<td>Papayannis, George</td>
<td>34</td>
</tr>
<tr>
<td>Pappa, John</td>
<td>98</td>
</tr>
<tr>
<td>Parks, Melissa</td>
<td>33</td>
</tr>
<tr>
<td>Pasqualin, Jordan</td>
<td>92</td>
</tr>
<tr>
<td>Passow, Michael</td>
<td>38, 70, 79</td>
</tr>
<tr>
<td>Paulsen, Michelle</td>
<td>14</td>
</tr>
<tr>
<td>Paulson, Nicole</td>
<td>28</td>
</tr>
<tr>
<td>Peacock, Jeremy</td>
<td>91</td>
</tr>
<tr>
<td>Peddicord, Hilary</td>
<td>88, 106</td>
</tr>
<tr>
<td>Pence, Cameron</td>
<td>32</td>
</tr>
<tr>
<td>Pennycrow, Jean</td>
<td>71</td>
</tr>
<tr>
<td>Peters, Melanie</td>
<td>74</td>
</tr>
<tr>
<td>Peters-Burton, Erin</td>
<td>31</td>
</tr>
<tr>
<td>Peterson, Gina</td>
<td>70</td>
</tr>
<tr>
<td>Petrone, Christopher</td>
<td>81</td>
</tr>
<tr>
<td>Philpot, Leslie</td>
<td>59</td>
</tr>
<tr>
<td>Pierson, Beverly</td>
<td>57, 105</td>
</tr>
<tr>
<td>Plaster, Karen</td>
<td>97</td>
</tr>
<tr>
<td>Polman, Joseph</td>
<td>110</td>
</tr>
<tr>
<td>Poodyr, Fran</td>
<td>44</td>
</tr>
<tr>
<td>Pope, Damian</td>
<td>26, 46</td>
</tr>
<tr>
<td>Poppleton, Kristen</td>
<td>73, 90</td>
</tr>
<tr>
<td>Potter-Nelson, Elizabeth</td>
<td>39</td>
</tr>
<tr>
<td>Poulsen, Daniell</td>
<td>68</td>
</tr>
<tr>
<td>Powers, Deborah</td>
<td>20</td>
</tr>
<tr>
<td>Price, Kelly</td>
<td>75</td>
</tr>
<tr>
<td>Prosise, Mark</td>
<td>58, 96</td>
</tr>
<tr>
<td>Quezada, Halle</td>
<td>102</td>
</tr>
<tr>
<td>Radencic, Sarah</td>
<td>20</td>
</tr>
<tr>
<td>Ramdass, Derek</td>
<td>71</td>
</tr>
<tr>
<td>Randall, Jack</td>
<td>61</td>
</tr>
<tr>
<td>Randle, David</td>
<td>108</td>
</tr>
<tr>
<td>Raygor, Brian</td>
<td>97</td>
</tr>
<tr>
<td>Reason, Shaun</td>
<td>74</td>
</tr>
<tr>
<td>Reed, Ann</td>
<td>79</td>
</tr>
<tr>
<td>Reed, Janel</td>
<td>38</td>
</tr>
<tr>
<td>Reiva, Gregory</td>
<td>104</td>
</tr>
<tr>
<td>Renish-Ratelis, Sarah</td>
<td>100</td>
</tr>
<tr>
<td>Rentfro, Lauren</td>
<td>51, 75</td>
</tr>
<tr>
<td>Revelins, Beatrice</td>
<td>63</td>
</tr>
<tr>
<td>Reyes, Diana</td>
<td>110</td>
</tr>
<tr>
<td>Reyes, Susan</td>
<td>104</td>
</tr>
<tr>
<td>Rich, Steve</td>
<td>32, 88</td>
</tr>
<tr>
<td>Richmond, Shannon</td>
<td>80</td>
</tr>
<tr>
<td>Robaidek, Joel</td>
<td>105</td>
</tr>
<tr>
<td>Roberts-Harris, Deborah</td>
<td>30, 39, 75, 83</td>
</tr>
<tr>
<td>Robertson, Laura</td>
<td>101</td>
</tr>
<tr>
<td>Robinson, Laura</td>
<td>18, 94, 105</td>
</tr>
<tr>
<td>Robinson, Preston</td>
<td>51</td>
</tr>
<tr>
<td>Roddy, Mark</td>
<td>34</td>
</tr>
<tr>
<td>Roditi, Hudson</td>
<td>88</td>
</tr>
<tr>
<td>Rogers, Melissa</td>
<td>81</td>
</tr>
<tr>
<td>Rosa, Holly</td>
<td>86, 98</td>
</tr>
<tr>
<td>Rouleau, Heidi</td>
<td>102</td>
</tr>
<tr>
<td>Royce, Christine</td>
<td>18, 77, 88</td>
</tr>
<tr>
<td>Rudes, Merrill</td>
<td>62</td>
</tr>
<tr>
<td>Ruggirello, Rachel</td>
<td>91</td>
</tr>
<tr>
<td>Runberg, Derek</td>
<td>25, 44</td>
</tr>
<tr>
<td>Rust, Cindy</td>
<td>21</td>
</tr>
<tr>
<td>Ryack-Bell, Sandra</td>
<td>17</td>
</tr>
<tr>
<td>Ryan, Denise</td>
<td>62</td>
</tr>
<tr>
<td>Index of Participants</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>S</strong></td>
<td></td>
</tr>
<tr>
<td>Saavedra, Ezequiel Alvarez 26</td>
<td></td>
</tr>
<tr>
<td>Sachs, Deborah 85</td>
<td></td>
</tr>
<tr>
<td>Sadler, Bill 67</td>
<td></td>
</tr>
<tr>
<td>Sadler, Philip 107</td>
<td></td>
</tr>
<tr>
<td>Sallade, Sarah 68</td>
<td></td>
</tr>
<tr>
<td>Sampson, Victor 77</td>
<td></td>
</tr>
<tr>
<td>Sanders, Denise 109</td>
<td></td>
</tr>
<tr>
<td>Saur, Karen 78</td>
<td></td>
</tr>
<tr>
<td>Saxton, Laura 38</td>
<td></td>
</tr>
<tr>
<td>Scantlebury, Kathryn 30</td>
<td></td>
</tr>
<tr>
<td>Schaller, Emily 76</td>
<td></td>
</tr>
<tr>
<td>Schisler, Laura 105</td>
<td></td>
</tr>
<tr>
<td>Schlobohm, Antoinette “Toni” 71</td>
<td></td>
</tr>
<tr>
<td>Schloemer, Tracy 64</td>
<td></td>
</tr>
<tr>
<td>Schmitz, Darrel 20</td>
<td></td>
</tr>
<tr>
<td>Schraunfagel, Marian 106</td>
<td></td>
</tr>
<tr>
<td>Schwartz, Renee 18, 90, 94</td>
<td></td>
</tr>
<tr>
<td>Scolavino, Ray 83</td>
<td></td>
</tr>
<tr>
<td>Selby, Patty Born 109</td>
<td></td>
</tr>
<tr>
<td>Senesse, Amanda 97</td>
<td></td>
</tr>
<tr>
<td>Shahidullah, Kazi 54</td>
<td></td>
</tr>
<tr>
<td>Shamblin, Jull 34</td>
<td></td>
</tr>
<tr>
<td>Sheeha, Angela 61</td>
<td></td>
</tr>
<tr>
<td>Shelton, Tricia 53</td>
<td></td>
</tr>
<tr>
<td>Shiland, Thomas 49</td>
<td></td>
</tr>
<tr>
<td>Shirey, Katherine 92</td>
<td></td>
</tr>
<tr>
<td>Sinclair, Joy 70</td>
<td></td>
</tr>
<tr>
<td>Skiles, Betty 96</td>
<td></td>
</tr>
<tr>
<td>Slawny, Kristina 39</td>
<td></td>
</tr>
<tr>
<td>Sleeper, Melissa 57</td>
<td></td>
</tr>
<tr>
<td>Sloane, Travis 38</td>
<td></td>
</tr>
<tr>
<td>Stetina, Lara 102</td>
<td></td>
</tr>
<tr>
<td>Smith, Ben 15</td>
<td></td>
</tr>
<tr>
<td>Smith, Julie 66</td>
<td></td>
</tr>
<tr>
<td>Smith, Kelly 69</td>
<td></td>
</tr>
<tr>
<td>Smith, Linda 78</td>
<td></td>
</tr>
<tr>
<td>Smith, Lori 42</td>
<td></td>
</tr>
<tr>
<td>Smith, Nancy 111</td>
<td></td>
</tr>
<tr>
<td>Smithson, Candace 36</td>
<td></td>
</tr>
<tr>
<td>Snyder, Joanna 28</td>
<td></td>
</tr>
<tr>
<td>Snyder, Pamela 109</td>
<td></td>
</tr>
<tr>
<td>Soeffing, Cassie 70</td>
<td></td>
</tr>
<tr>
<td>Solarsh, Amanda 97</td>
<td></td>
</tr>
<tr>
<td>Solis, Jorge 71</td>
<td></td>
</tr>
<tr>
<td>Spencer, Erica Beck 28</td>
<td></td>
</tr>
<tr>
<td>Spillane, Nancy 31</td>
<td></td>
</tr>
<tr>
<td>Stacy, Angelica 46</td>
<td></td>
</tr>
<tr>
<td>Staker, Jay 56, 93</td>
<td></td>
</tr>
<tr>
<td>Stanley, Rebecca 93</td>
<td></td>
</tr>
<tr>
<td>Staples-Knox, Dawn 36</td>
<td></td>
</tr>
<tr>
<td>Steffen, Peg 24, 72</td>
<td></td>
</tr>
<tr>
<td>Stein, Seth 102</td>
<td></td>
</tr>
<tr>
<td>Stewart, Roslynn 75</td>
<td></td>
</tr>
<tr>
<td>Stoddart, Trish 71</td>
<td></td>
</tr>
<tr>
<td>Strang, Craig 56</td>
<td></td>
</tr>
<tr>
<td>Stroh, Terry 59</td>
<td></td>
</tr>
<tr>
<td>Stronach, Rachel 17</td>
<td></td>
</tr>
<tr>
<td>Stubbs, Tamica 54</td>
<td></td>
</tr>
<tr>
<td>Suero, Maryann 66</td>
<td></td>
</tr>
<tr>
<td>Suiter, Marilyn 61</td>
<td></td>
</tr>
<tr>
<td>Sumrall, William 99</td>
<td></td>
</tr>
<tr>
<td>Swenson, Andrea 32</td>
<td></td>
</tr>
<tr>
<td>Szydlowski, Jennifer 52</td>
<td></td>
</tr>
<tr>
<td>Szymanski, Thomas 32</td>
<td></td>
</tr>
<tr>
<td>Szymczyk, Amber 38, 101</td>
<td></td>
</tr>
<tr>
<td><strong>T</strong></td>
<td></td>
</tr>
<tr>
<td>Taber, John 85</td>
<td></td>
</tr>
<tr>
<td>Tam, Kevin 110</td>
<td></td>
</tr>
<tr>
<td>Tamez, Modesto 38</td>
<td></td>
</tr>
<tr>
<td>Tashima, Nancy 70</td>
<td></td>
</tr>
<tr>
<td>Taylor, Benjamin 22, 38</td>
<td></td>
</tr>
<tr>
<td>Taylor, Daryl 88</td>
<td></td>
</tr>
<tr>
<td>Taylor, Gregory 101</td>
<td></td>
</tr>
<tr>
<td>Tesoriero, Gina 97</td>
<td></td>
</tr>
<tr>
<td>Texley, Juliana 90</td>
<td></td>
</tr>
<tr>
<td>Thakkar, Sephali 65</td>
<td></td>
</tr>
<tr>
<td>Thomas, Christie 70</td>
<td></td>
</tr>
<tr>
<td>Thomas, Jeff 53</td>
<td></td>
</tr>
<tr>
<td>Thomas, Julie 87</td>
<td></td>
</tr>
<tr>
<td>Thompson, Ellen 92</td>
<td></td>
</tr>
<tr>
<td>Thompson, Julie 14</td>
<td></td>
</tr>
<tr>
<td>Tillotson, John 16, 65</td>
<td></td>
</tr>
<tr>
<td>Tininig, Laura 18, 94</td>
<td></td>
</tr>
<tr>
<td>Tolbert, Sara 71</td>
<td></td>
</tr>
<tr>
<td>Towns, Marcy 59</td>
<td></td>
</tr>
<tr>
<td>Townsend, Stephanie 90</td>
<td></td>
</tr>
<tr>
<td>Tregerman, Hethyr 93</td>
<td></td>
</tr>
<tr>
<td>Trochez, Jennifer 37</td>
<td></td>
</tr>
<tr>
<td>Trundle, Kathy Cabe 92</td>
<td></td>
</tr>
<tr>
<td>Trzaskus, Susan 98</td>
<td></td>
</tr>
<tr>
<td>Tucker, Vanessa 71</td>
<td></td>
</tr>
<tr>
<td>Tugel, Joyce 69</td>
<td></td>
</tr>
<tr>
<td>Turgeon, Brenda 33, 109</td>
<td></td>
</tr>
<tr>
<td>Tweed, Anne 58</td>
<td></td>
</tr>
<tr>
<td><strong>U</strong></td>
<td></td>
</tr>
<tr>
<td>Ugalde, Nora 14</td>
<td></td>
</tr>
<tr>
<td>Unger, David 17</td>
<td></td>
</tr>
<tr>
<td>Valadez, Jerry 71</td>
<td></td>
</tr>
<tr>
<td>Valencia, Alejandra 110</td>
<td></td>
</tr>
<tr>
<td>Van Duzor, Andrea 87</td>
<td></td>
</tr>
<tr>
<td>Van Zee, Emily 51, 59</td>
<td></td>
</tr>
<tr>
<td>Varela, Ana 92</td>
<td></td>
</tr>
<tr>
<td>Vargas, Claudio 56</td>
<td></td>
</tr>
<tr>
<td>Velez, Diana 56</td>
<td></td>
</tr>
<tr>
<td>Veresan, Cristina 32</td>
<td></td>
</tr>
<tr>
<td>Vernier, David 80</td>
<td></td>
</tr>
<tr>
<td>Veronesi, Peter 16</td>
<td></td>
</tr>
<tr>
<td>Vieyra, Rebecca 96</td>
<td></td>
</tr>
<tr>
<td>Villa, Julie Ann 15, 53</td>
<td></td>
</tr>
<tr>
<td>Vincente, Joseph 32</td>
<td></td>
</tr>
<tr>
<td>Vogt, Greg 21</td>
<td></td>
</tr>
<tr>
<td>Voller, Kelsey 94</td>
<td></td>
</tr>
<tr>
<td>Waibel, Bill 60</td>
<td></td>
</tr>
<tr>
<td>Wakefield, Rita 105</td>
<td></td>
</tr>
<tr>
<td>Wallenmeyer, Ann 50, 106</td>
<td></td>
</tr>
<tr>
<td>Walls, Laura 71</td>
<td></td>
</tr>
<tr>
<td>Walter, Ashely 16</td>
<td></td>
</tr>
<tr>
<td>Walvig, Steven 74</td>
<td></td>
</tr>
<tr>
<td>Wang, Jianlan 64, 106</td>
<td></td>
</tr>
<tr>
<td>Wang, Laura 65</td>
<td></td>
</tr>
<tr>
<td>Ward, Amy 66</td>
<td></td>
</tr>
<tr>
<td>Wazlaw, Brian 15</td>
<td></td>
</tr>
<tr>
<td>Weaver, Shari 78</td>
<td></td>
</tr>
<tr>
<td>Weber, Helen 107</td>
<td></td>
</tr>
<tr>
<td>Weiss, Emily 56</td>
<td></td>
</tr>
<tr>
<td>Weiss, Rita 50</td>
<td></td>
</tr>
<tr>
<td>Welch, Jason 17</td>
<td></td>
</tr>
<tr>
<td>Welker, Eric 94</td>
<td></td>
</tr>
<tr>
<td>Wellborne, Nathan 26, 46</td>
<td></td>
</tr>
<tr>
<td>Wheeler, Barbara 106</td>
<td></td>
</tr>
<tr>
<td>Whisler, Dan 16</td>
<td></td>
</tr>
<tr>
<td>Whisler, Karen 31</td>
<td></td>
</tr>
<tr>
<td>White, Jennifer 30, 49</td>
<td></td>
</tr>
<tr>
<td>White, Rob 16, 67</td>
<td></td>
</tr>
<tr>
<td>Whitney, Brandy 67</td>
<td></td>
</tr>
<tr>
<td>Whitney, Sharry 26</td>
<td></td>
</tr>
<tr>
<td>Whitt, Katahdin Cook 28</td>
<td></td>
</tr>
<tr>
<td>Wickersham, Jennifer 66</td>
<td></td>
</tr>
<tr>
<td>Widinski, Julie 101</td>
<td></td>
</tr>
<tr>
<td>Widinski, Ross 101</td>
<td></td>
</tr>
<tr>
<td>Wiebke, Heidi 56</td>
<td></td>
</tr>
<tr>
<td>Wiedeman, Lynn 88</td>
<td></td>
</tr>
<tr>
<td>Wierman, Traci 31, 63, 90, 95</td>
<td></td>
</tr>
<tr>
<td>Wigfall, Mildred 105</td>
<td></td>
</tr>
<tr>
<td>Wilcox, Jesse 56, 74</td>
<td></td>
</tr>
<tr>
<td>Wilder, Lesia 38</td>
<td></td>
</tr>
<tr>
<td>Wilkins, Catherine 104</td>
<td></td>
</tr>
<tr>
<td>Wilkinson, Michael 76</td>
<td></td>
</tr>
<tr>
<td>Willard, Ted 65</td>
<td></td>
</tr>
<tr>
<td>Willcox, Maia 94</td>
<td></td>
</tr>
<tr>
<td>Williams, Kevin 74</td>
<td></td>
</tr>
<tr>
<td>Willis, Rolene 73</td>
<td></td>
</tr>
<tr>
<td>Winston, Amy 76</td>
<td></td>
</tr>
<tr>
<td>Wolf, Chris 96</td>
<td></td>
</tr>
<tr>
<td>Wolfe, Becky 85</td>
<td></td>
</tr>
<tr>
<td>Wood, Karan 57, 94</td>
<td></td>
</tr>
<tr>
<td>Wood, Steve 14</td>
<td></td>
</tr>
<tr>
<td>Wortman, Tom 107</td>
<td></td>
</tr>
<tr>
<td>Wunar, Bryan 32, 89</td>
<td></td>
</tr>
<tr>
<td><strong>Y</strong></td>
<td></td>
</tr>
<tr>
<td>Yates, Jennifer 62</td>
<td></td>
</tr>
<tr>
<td>Yau, Melanie 91</td>
<td></td>
</tr>
<tr>
<td>Yoon, Jiyoon 102</td>
<td></td>
</tr>
<tr>
<td>Yopp, Ruth 57</td>
<td></td>
</tr>
<tr>
<td>York, Donald 70</td>
<td></td>
</tr>
<tr>
<td>Young, Maria 92</td>
<td></td>
</tr>
<tr>
<td><strong>Z</strong></td>
<td></td>
</tr>
<tr>
<td>Zajac, Shannon 58</td>
<td></td>
</tr>
<tr>
<td>Zeiger, David 100</td>
<td></td>
</tr>
<tr>
<td>Zenchak, John 95</td>
<td></td>
</tr>
<tr>
<td>Zobloty, Todd 28</td>
<td></td>
</tr>
</tbody>
</table>
Advertisers

Camp Invention (Booth #1563), www.campinvention.org, 800–968–4332 ......................................................... 41
GEICO (Booth #747) www.geico.com/edu/NSTA, 800–841–3000 ................................................................. 1
National Association for the Education of Young Children (NAEYC) (Booth #559) www.naeyc.org, 800 424 2460 .............. 11
National Earth Science Teachers Association www.nestanet.org ................................................................. 55
OHAUS Corp. (Booth #1051), www.ohaus.com, 800–672–7722 ............................................................... Cover 4
PASCO scientific (Booth #1522), www.pasco.com, 800–772–8700 ................................................................. 7
TCI (Booth #1552), www.teachtci.com, 800 497 6138 ............................................................... 19
University of the Sciences in Philadelphia www.usciences.edu ................................................................. Cover 2
Vernier Software & Technology (Booth #1244), www.vernier.com, 888–837–6437 ................................................ Cover 3
Ward’s Science (Booth #830) www.wardsci.com ......................................................................................... 4, 33
XPRIZE Foundation www.googlelunarxprize.org/domeshow ......................................................................... 25

NSTA Ads

NSTA (Booth #967: NSTA Expo), www.nsta.org .................................................................................................. 15
NSTA Conferences (Booth #782, Reno) (Booth #784, Philadelphia) (Booth #785, Kansas City) (Booth #778, Nashville) (Booth #783, 2015 STEM Forum), www.nsta.org/conferences ......................................................... 9, 21, 27, 29, 37, 45, 48
NSTA Expo (Booth #967), www.nsta.org/chicago ........................................................................................... 43
NSTA Member Services (Booth #967, NSTA Membership), www.nsta.org/membership, 800–722–6782 ....................... 17, 23, 47
NSTA Press®, store.nsta.org, 800–277–5300 ................................................................................................. 2, 35
<table>
<thead>
<tr>
<th>WORKSHOP ROOM</th>
<th>DATE</th>
<th>TIME</th>
<th>SESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>W185a</td>
<td>THURSDAY, MARCH 12</td>
<td>8:00-9:30</td>
<td>HANDS-ON Integrate Chromebook and BYOD with Vernier Technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:00-11:30</td>
<td>HANDS-ON Biology with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:00-1:30</td>
<td>HANDS-ON Inquiry-Based Biology with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2:00-3:30</td>
<td>HANDS-ON Wireless Sensor Exploration with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4:00-5:30</td>
<td>HANDS-ON Chemistry with Vernier</td>
</tr>
<tr>
<td>W185d</td>
<td>THURSDAY, MARCH 12</td>
<td>8:00-9:30</td>
<td>HANDS-ON Investigating Wind Energy with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:00-11:30</td>
<td>HANDS-ON Renewable Energy with KidWind and Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:00-1:30</td>
<td>HANDS-ON, BYOD iPad and Wireless Sensors with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2:00-3:30</td>
<td>HANDS-ON Advanced Physics with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4:00-5:30</td>
<td>HANDS-ON Physics with Vernier</td>
</tr>
<tr>
<td>W185a</td>
<td>FRIDAY, MARCH 13</td>
<td>8:00-9:30</td>
<td>HANDS-ON Chemistry with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:00-11:30</td>
<td>HANDS-ON Environmental Science with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:00-1:30</td>
<td>HANDS-ON Water Quality with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2:00-3:30</td>
<td>HANDS-ON Spectroscopy with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4:00-5:30</td>
<td>HANDS-ON Biology with Vernier</td>
</tr>
<tr>
<td>W185d</td>
<td>FRIDAY, MARCH 13</td>
<td>8:00-9:30</td>
<td>HANDS-ON Physics with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:00-11:30</td>
<td>HANDS-ON Explore Motion with Vernier Video Physics for iOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:00-1:30</td>
<td>HANDS-ON Advanced Physics with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2:00-3:30</td>
<td>HANDS-ON, BYOD iPad and Wireless Sensors with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4:00-5:30</td>
<td>HANDS-ON STEM/Engineering Activities using Vernier Sensors with Arduino</td>
</tr>
<tr>
<td>W185a</td>
<td>SATURDAY, MARCH 14</td>
<td>8:00-9:30</td>
<td>HANDS-ON Biology with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:00-11:30</td>
<td>HANDS-ON Chemistry with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:00-1:30</td>
<td>HANDS-ON Inquiry-Based Chemistry with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2:00-3:30</td>
<td>HANDS-ON Human Physiology with Vernier</td>
</tr>
<tr>
<td>W185d</td>
<td>SATURDAY, MARCH 14</td>
<td>8:00-9:30</td>
<td>HANDS-ON, BYOD Integrate Chromebook and BYOD with Vernier Technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:00-11:30</td>
<td>HANDS-ON Renewable Energy with KidWind and Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:00-1:30</td>
<td>HANDS-ON Middle School Science with Vernier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2:00-3:30</td>
<td>HANDS-ON Introductory Engineering-Design Projects with Vernier</td>
</tr>
</tbody>
</table>

NO PRE-REGISTRATION! NO FEE!
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

Learn more online at www.ohaus.com/adventurer