



Annual Conference for NIH Science Education Projects

September 29 - October 1, 2026
Virtual Conference

Conference website: <https://scied2026.vfairs.com/en/>

On the conference dates, click on the Login button to access conference sessions using your email address as your password.

All times listed in the schedule are Eastern Daylight Time (EDT); Time Zone Conversion Tables are shown below.

Conference Schedule: Tuesday, September 29 and Wednesday September 30

Session Type	EDT & AST	CDT	MDT	PDT	AKDT	HST
Concurrent Sessions	11:00am - 12:00pm	10:00am - 11:00am	9:00am- 10:00am	8:00am - 9:00am	7:00am - 8:00am	5:00am - 6:00am
Break	12:00pm - 12:30pm	11:00am - 11:30am	10:00am - 10:30am	9:00 - 9:30am	8:00 - 8:30am	6:00 - 6:30am
Concurrent Sessions	12:30pm - 1:30 or 1:45pm	11:30am - 12:30 or 12:45pm	10:30am - 11:30 or 11:45am	9:30am - 10:30 or 10:45am	8:30am - 9:30 or 9:45am	6:30am - 7:30 or 7:45am
Break	1:30pm - 2:00pm	12:30pm - 1:00pm	11:30am - 12:00pm	10:30am - 11:00 am	9:30am - 10:00am	7:30am - 8:00am
Plenary Sessions	2:00pm - 3:30pm	1:00pm - 2:30pm	12:00pm - 1:30pm	11:00am - 12:30pm	10:00am - 11:30pm	8:00am - 9:30am
Break	3:30pm - 4:00pm	2:30pm - 3:00pm	1:30pm- 2:00pm	12:30pm - 1:00pm	11:30am- 12:00pm	9:30am - 10:00am
Concurrent Sessions	4:00pm - 5:00pm	3:00pm - 4:00pm	2:00pm - 3:00pm	1:00pm - 2:00pm	12:00pm - 1:00pm	10:00am- 11:00am

Conference Schedule: Thursday, October 1

Session Type	EDT & AST	CDT	MDT	PDT	AKDT	HST
Concurrent Sessions	11:00am - 12:00pm	10:00am - 11:00am	9:00am- 10:00am	8:00am - 9:00am	7:00am - 8:00am	5:00am - 6:00am
Break	12:00pm - 12:30pm	11:00am - 11:30am	10:00am - 10:30am	9:00 - 9:30am	8:00 - 8:30am	6:00 - 6:30am
Concurrent Sessions	12:30pm - 1:30 or :45pm	11:30am - 12:30 or 12:45pm	10:30am - 11:30 or 11:45am	9:30am - 10:30 or 10:45am	8:30am - 9:30 or 9:45am	6:30am - 7:30 or 7:45am
Break	1:30pm - 2:00pm	12:30pm - 1:00pm	11:30am - 12:00pm	10:30am - 11:00 am	9:30am - 10:00am	7:30am - 8:00am
Plenary Session	2:00pm - 3:00pm	1:00pm - 2:00pm	12:00pm - 1:00pm	11:00am - 12:00pm	10:00am - 11:00pm	8:00am - 9:00am
Break	3:00pm - 3:30pm	2:00pm - 2:30pm	1:00pm- 1:30pm	12:00pm - 12:30pm	11:00am- 11:30am	9:00am - 9:30am
Concurrent Sessions	3:30pm - 4:30 or 5:00pm	2:30pm - 3:30 or 4:00pm	1:30pm - 2:30 or 3:00pm	12:30pm - 1:30 or 2:00pm	11:30am - 12:30 or 1:00pm	9:30am - 10:30 or 11:00am

Tuesday, September 29

Tuesday: 11:00am - 12:00/12:15pm - Concurrent Sessions

Session A: Designing K-12 STEM Programs that Work: Lessons Learned from NIH SEPA Programs

Carolina Machado, BS, Education and Outreach Programs Manager, Yale University

Cecilia Garibay, PhD, President & Lead Evaluator, Garibay Group

Evelyn Miguel, BA, Administrative Navigator Manager, Hispanic Access Foundation

Giovanna Guerrero-Medina, PhD, Assistant Director of Professional Development and Community, Wu Tsai Institute

Greetchen Diaz-Muñoz, PhD, Executive Director, Ciencia Puerto Rico

Juan D. Flores, BS, Evaluator, Garibay Group

Liz Hernandez, PhD, Program Manager, Ciencia Puerto Rico

Magali Robinson, MPH, Senior Director of Economic Mobility, Hispanic Access Foundation

Patricia Patron, MBA, Chief of Programs and Strategy, Hispanic Access Foundation

Rosa Malagon, MSW, LCSW, Community Navigator and STEM Associate, Hispanic Access Foundation

Yashira Valentín-Feliciano, MECEE, BS, CNP, STEM Program Manager, Hispanic Access Foundation

This interactive professional development session will explore practical strategies for designing, implementing, and sustaining K–12 STEM and health pathway programs. Through comparative case studies, participants will examine how different programs have addressed common challenges related to participant recruitment and retention, mentorship, intentional partnership development, and long-term sustainability. Speakers will share lessons learned from implementing programs with a variety of models, delivery approaches, and student populations.

K–12 STEM outreach and pathway programs play a critical role in expanding access to STEM learning opportunities, fostering career awareness, and supporting the development of future STEM and health professionals. However, even well-designed programs often encounter logistical, institutional, and geographical challenges that can limit their reach and impact. By reflecting on real-world implementation experiences, this session will provide participants with practical insights and adaptable strategies for developing effective, sustainable programs tailored to contexts and needs specific to their community. Participants will leave with concrete ideas that can be applied within educational institutions, community organizations, and outreach initiatives serving a range of student populations.

Generalizability: Participants will gain practical lessons from K–12 STEM career pathway programs that vary in target age groups, organizational structures (university- and

nonprofit-led), and delivery methods (in-person, virtual, and hybrid). Through comparative case studies and discussion, attendees will identify transferable design principles and strategies for recruitment, engagement, retention, mentorship, and partnership development that can be adapted to their own contexts. Participants will leave with a framework to assess their programs, identify support mechanisms and strategic partnerships, and position their initiatives for long-term impact and growth.

Grade Levels: Middle School, High School

Strand: Informal Science Education

Funder: NIH SEPA

Session B: Considering Data Security: Planning for Research and Evaluation Data Governance and the Use of Artificial Intelligence

Elizabeth Oyer, PhD, Director, National Institute for STEM Evaluation and Research,
University of Tennessee Synergy Evaluation Institute

Alana Newell, PhD, Assistant Professor, Department of Education, Innovation and
Technology; Assistant Director, Center for Educational Outreach, Baylor College of
Medicine

Today, researchers and evaluators are challenged to make decisions and manage data in an increasingly complex technical ecosystem. Whether called to co-construct policies or create their own, foundational knowledge and principles about data security are needed for informed strategies.

This session will engage participants in discussions related to strategies for appropriate data governance, discuss plain language explanations around common data security concerns as well as issues specific to the use of Artificial Intelligence (AI), and synthesize approaches from various projects to create a shared guide of best practices.

As a result of participating in this session, conference attendees will:

- Describe high priority data governance principles for research and evaluation work
- Describe data security decisions specific to Artificial Intelligence (AI) use
- Identify examples of data and AI governance strategies from their organizations
- Synthesize data and AI governance strategies across organizations

Generalizability: Data governance is an issue that affects every SEPA project, and identifying and implementing best practices is essential. After this session, participants will have a synthesized set of approaches and strategies utilized by other projects, as well as connections with others grappling with similar issues related to AI's impact on data governance.

Grade Levels: All

Strands: Research & Evaluation; Project Administration

Funder: NIH SEPA

Session C: Short Talks: Quantitative Reasoning; Socioscientific Reasoning; Cancer Biology

C1. Evaluating the Impact of Contextualized Data Analysis Lessons on Engagement and Quantitative Skill Development in High School Biology Classrooms

Alexa Wnorowski, PhD, MA, The Jackson Laboratory

Erica L. Gerace, PhD, Department of Genetics, Yale School of Medicine

Kristin Bass, PhD, Rockman et al. Cooperative

Christina Vallianatos, PhD, The Jackson Laboratory

Hannah Tremblay, BS, The Jackson Laboratory

Sarah Wojiski, PhD, MEd, The Jackson Laboratory

Charles Wray, PhD, The Jackson Laboratory

Based on current workforce trends, data analysis and computation skills are increasingly essential, yet many students struggle to transfer these skills to biology problems. This study evaluates two contextualized data analysis modules—Cancer Genetics and Sequence Comparison—developed as part of The Jackson Laboratory’s Teaching the Genome Generation™ (TtGG) SEPA program to integrate authentic biological data and basic quantitative concepts into high school biology classrooms. Thirteen teachers implemented one of the modules in their standard or honors high school biology classes. Student pre- and post-assessments and teacher surveys evaluated students’ quantitative skills, application of lesson concepts, and engagement.

Students demonstrated effective application of lesson-specific data analysis and quantitative skills, such as interpreting histograms and calculating sequence percent identity. However, they showed limited ability to transfer these skills to new, even closely related, contexts. Student and teacher survey responses indicated that students effectively engaged with the lessons and recognized the scientific authenticity of the data and activities. Yet, the learners primarily engaged with the biology content rather than the underlying data analysis skills.

This session will discuss the study design, results, and implications, including lessons learned and suggestions for development of lessons that support data analysis in high school biology classrooms.

Grade Level: High School

Funder: NIH SEPA

Strands: Curriculum Development; Science Teaching & Learning

C2. Socioscientific Reasoning in Pre-College Biomedical Science Classes

Carla Romney, DSc, Boston University

Donald DeRosa, EdD, Boston University

Samantha Dugan, MA, Boston University

Stuart Beard, MBA, Boston University
Carl Franzblau, PhD, Boston University

The development of socioscientific reasoning (SSR) skills requires students to consider to social, political, moral, and ethical issues attendant to the science content that they learn. We have incorporated an intentional approach to developing students' SSR skills into our current SEPA project that focuses on gene editing. To date, our work has been carried out primarily on our campus in a summer program for high school students, but we plan to offer more classroom-based implementations during the 2026-2027 school year. In this session, we will present data from two years of pilot testing of a two-week summer program held on our campus as well as from a two-week high school classroom-based capstone project implementation of embedded SSR skill development.

Grade Level: High School

Funder: NIH SEPA

Strands: Curriculum Development; Science Teaching & Learning

C3. From Pilot to Practice: Expanding Research-Based STEM Modules Through University-School Partnerships

Gulistan Tansik, PhD, University of California Santa Barbara
Siddhant Subramanian, BS, University of California Santa Barbara
Haaris Mobin, BS, University of California Santa Barbara
Melina Magno, BS, University of California Santa Barbara
Letizia Timoni, BS, University of California Santa Barbara
Daniel Wong-Moon, University of California Santa Barbara
Lekha Reddy, BS, University of California Santa Barbara
Trisha Dharmapuri, BS, University of California Santa Barbara
Brian Ngan, BS, University of California Santa Barbara
Sophia Ramirez, University of California Santa Barbara
Rafael Solorzano, Graduate Student, University of California Santa Barbara
Drew McDonald, Graduate Student, University of California Santa Barbara
Miguel Orozco, Graduate Student, University of California Santa Barbara
Jenny Gibson, Graduate Student, University of California Santa Barbara
Kaden Wheeler, Graduate Student, University of California Santa Barbara
Ishaan Shah, Graduate Student, University of California Santa Barbara
Gala Rodriguez, Graduate Student, University of California Santa Barbara
Kim Ciancio, University of California Santa Barbara
Vanessa Woods, PhD, University of California Santa Barbara
Lior Sepunaru, PhD, University of California Santa Barbara
Norbert Reich, PhD, University of California Santa Barbara

Over the past two years, the SciTrek High School Program at the University of California, Santa Barbara expanded its STEM outreach efforts through the development, pilot testing, and implementation of three inquiry-based modules: CRISPR Gene Editing, Glucose

Sensing, and Bioinformatics. Developed collaboratively by undergraduate and graduate student instructors, university faculty, research staff, and local high school teachers, the modules provide authentic experiences that connect classroom learning with current scientific research.

Following iterative refinement through summer academies and workshops, the modules were implemented in public and private high schools throughout Santa Barbara County during the 2025–2026 academic year. The modules introduced students to genetic engineering, biosensors and electrochemistry, and cancer genomics and computational biology.

Across 19 classroom implementations, the program reached 473 students and seven teachers at five local high schools. Program delivery was supported by 7 graduate student instructors, 15 undergraduate lead instructors, and 134 undergraduate mentors. Preliminary module-specific assessment data from 300 students indicated strong understanding of core concepts, with average scores ranging from 68% to 97% across the three modules. These findings highlight the potential of university–school partnerships to expand access to contemporary STEM education.

Grade Level: High School

Funder: NIH SEPA

Strands: Research Experiences for Students & Teachers; Science Teaching & Learning

C4. Early STEM Engagement Through Cancer Biology: Impact of the UAB BioBridge Program

Michelle S. Johnson, MBA, Center for Community Outreach Development (CORD), The University of Alabama at Birmingham

Kathleen C. Haynie, PhD, Haynie Research and Evaluation

Lalita A. Shevde, PhD, O’Neal Comprehensive Cancer Center and Department of Pathology, University of Alabama at Birmingham

J. Michael Wyss, PhD, Center for Community Outreach Development (CORD), The University of Alabama at Birmingham

Early Science, Technology, Engineering, and Math (STEM) interventions have been shown to enhance problem-solving skills, expose students to science-focused learning activities, and excite students’ interest in advanced STEM classes.

BioBridge, an NCI-funded camp, is one of only two cancer biology camps in Alabama that aim to expose early learners to cancer biology and cancer-focused careers. The other camp was created as a spin-off from BioBridge, led by a previous BioBridge near-peer mentor and facilitator.

To date, BioBridge has engaged 215 rising 9th-grade students, many of whom have continued to participate in higher-level STEM camps. After the five-day hands-on learning experience, students have reported gains in knowledge of cancer biology and cancer-

related careers, as well as increased conversations about cancer with family members. Pre- and post-content knowledge scores increased from 67% correct to 86%, respectively. Furthermore, student evaluations indicated significant gains in knowledge of cancer biology and research careers, as well as in students' ability to see themselves as cancer scientists. These findings suggest that implementing STEM experiences, such as BioBridge, can actively engage students' interest in cancer biology and related biomedical research.

Grade Levels: Middle School; High School

Funder: NCI Youth Enjoy Science R25 Research Education Program

Strands: Informal Science Education; Curriculum Development

C5. What Can We Learn in One Week? Evaluation Methods for Short-Term Biomedical STEM Bridge Programs

Kathleen Haynie, PhD, Haynie Research and Evaluation

Michelle S. Johnson, MBA, University of Alabama at Birmingham

Lalita A. Shevde, PhD, University of Alabama at Birmingham

J. Michael Wyss, PhD, University of Alabama at Birmingham

How do we evaluate a one-week biomedical science program in ways that are useful, credible, and appropriately modest? This short talk shares evaluation methods and lessons learned from BioBridge, a cancer biology bridge program for rising ninth-grade students connected to an NIH-funded undergraduate cancer research education program (RACE21). Rather than focusing on the curriculum itself, the presentation examines how multiple forms of evidence, including student pre/post measures, surveys of career interest and science self-perception, open-ended feedback, family/community communication prompts, and undergraduate facilitator reflections, were used to understand what participants experienced and what they gained.

The talk highlights practical lessons for evaluating short-duration biomedical pathway programs, including aligning measures to evolving curricula, measuring meaningful near-term outcomes without overclaiming long-term impact, and capturing benefits for both youth participants and near-peer undergraduate mentors. Participants will leave with a realistic evaluation frame that can be adapted for SEPA, YES, R25, and other science education partnership programs.

Grade Level: High School

Funder: NIH SEPA and NCI Youth Enjoy Science (YES) R25

Strands: Research & Evaluation; Informal Science Education

Tuesday: 12:00pm - 12:30pm - Break

Tuesday: 12:30pm - 1:45pm - Concurrent Sessions
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Session D. Funding Interests of NIH Institutes and Offices That Participate in the SEPA Program: Meet the SEPA Program Contacts

NIH SEPA Program Officers and Program Contacts will share their Institutes' and Offices' interests in funding SEPA applications.

Participating contacts include:

- Lataisia Jones, PhD, National Institute of General Medical Sciences (NIGMS)
- Moushumi Paul, PhD, National Institute of General Medical Sciences (NIGMS)
- Angela Holmes, PhD, Program Officer, National Institute on Drug Abuse (NIDA)
- Jennifer Baumgartner, PhD, Program Director, Clinical Research in Complementary and Integrative Health Branch, National Center for Complementary and Integrative Health (NCCIH)
- James Churchill, PhD, Program Officer, Program in Training and Ethics, National Institute of Mental Health (NIMH)
- Stephen Gallo, PhD, Program Officer, National Institute of Allergy and Infectious Diseases (NIAID)
- Karobi Moitra, PhD, Research Training Officer, National Institute of Allergy and Infectious Diseases (NIAID)
- Tina Gatlin, PhD, Program Director, National Institute of Biomedical Imaging and Bioengineering (NIBIB)
- Hua Ou, MD, PhD, NIH Office of Data Science Strategy (ODSS)
- Alison Lin, PhD, Lead, Training, Workforce Development and Community Engagement, NIH Office of Data Science Strategy (ODSS)

Information about the SEPA Program, including the following, is available at

<https://nigms.nih.gov/training/Pages/sepa>

- SEPA program overview
- Link to the SEPA Notice of Funding Opportunity (PAR-27-077)
- Recording and slides from the July 29, 2026 SEPA Informational Webinar
- FAQs about PAR 27-077
- SEPA ICO (Institutes, Centers, and Offices) Contacts

Session E. Curriculum, Multimedia, and Video Showcase: Session 1

All projects have received funding from NIH SEPA.

MC: Kagan Breitenbach, Stark Science Learning Center, University of Utah

E1. Inspiring Future Rural Healthcare Professionals Through Clinical Neuroscience and Metacognitive Development

Grade Level: High School

URL: <https://sites.clarkson.edu/brainstem/curriculum-2/>

The BRAIN-STEM Addiction module is an inquiry-based curriculum for high school students that explores the issues confronting an adolescent addict, the neuroscience of addiction, and the roles of health care providers treating addiction. Lesson plans, activities, content videos, and a teacher toolbox for enhancing student metacognitive skills, are available online.

Authors/Presenters: Robert Dowman, Clarkson University; Lennart Johns, Clarkson University; Leigha Burkhalter, Clarkson University; Tamara Mitchell, Instructional Designer, Kathleen Kavanagh, Clarkson University

E2. Science Stories: Lay Summaries and Scientist Videos for the Classroom

Grade Level: High School

URL: <https://www.stjude.org/research/comprehensive-cancer-center/education-training/stemm-education-and-outreach-program.html>

The Memphis STEM Ecosystem curricular materials include classroom-ready research article lay summaries and companion scientist videos that translate authentic biomedical research into accessible learning experiences. Designed for secondary science classrooms, these resources connect students with scientists, real-world research, and STEM career pathways while supporting curriculum-aligned instruction and scientific literacy.

Authors/Presenters: Kate Ayers, St. Jude Children's Research Hospital; Kyle Bichsel, St. Jude Children's Research Hospital; Summer Jasper, St. Jude Children's Research Hospital

E3. The UQUEST Curriculum – Questioning, Understanding, Experiencing, and Scientific Thinking

Grade Level: Elementary

URL: <https://www.psy.miami.edu/faculty/uquest/lessons-and-video/index.html>

The UQUEST science enrichment curricula focus on scientific methods and the development of science practices and incorporates health and wellness topics. Lessons feature interactive activities and engage students in evaluating the data they collect during the lesson. Some activities are common demonstrations for children. All lessons utilize readily available materials.

Authors/Presenters: Patrice G. Saab, Ph.D., University of Miami; Maria I. Panizo, Ph.D., Research and Evaluation Consultant; Maria M. Llabre, Ph.D., University of Miami

E4. Teaching Science to Children in K-2 using LEARN Science Heroes of Science Cards

Grade Level: Elementary

URL: <https://learn-science.org>

We will demonstrate the development and use of LEARN Science Heroes of Science trading cards. Each of seven cards is part of a nutrition-focused life sciences kit for youth in K-2 in public library settings. Each card highlights contributions to science and fun facts.

Authors/Presenters: David H. Holben, PhD, RDN, LD, FAND, University of Mississippi; Abednego K. Bansah, PhD, Postdoctoral Research Associate, University of Mississippi; Priscilla M. Maamah, BS, Graduate Student, University of Mississippi; Cara Cairns, Cara Cairns Design

E5. It's Contagious! The Spread of Infectious Disease (Ebola Anyone?)

Grade Level: Middle School and High School science and math

URL: <https://www.txbiomed.org/education-outreach/k-12-education/unit-ebola-virus/>

It's challenging for students to interpret data--a skill that takes practice. It's equally challenging for students to understand how infectious diseases spread. We challenged secondary STEM teachers to take a common contact tracing activity and apply the Revised Blooms Taxonomy framework to create an activity with relevance: connecting classroom content to a real-world infectious disease. For relevancy, the activity is connected to a recently published peer-reviewed article about the Ebola virus. To ensure readability for secondary STEM students, the article was *transformed* to an 8th to 9th grade reading level: shortened with context clues to help students understand salient terms and including information and selected data from the original article to support education standards. In this re-imagined contact tracing, students implement an experiment, collect and analyze data to identify patient zero, and apply their experience to develop a population health plan to minimize impact of a pandemic.

Authors/Presenters: Rosemary Riggs, Texas Biomedical Research Institute; Beatriz Guajardo, Texas Biomedical Research Institute

E6. Environmental Health Investigators: Highlights from our Curriculum and Comic Book for Middle School Students

Grade Level: Middle School

URL: <https://stemcenter.siu.edu/outreach/programs/environmental-health-investigators/>

We developed a robust curriculum for our middle-school level program, Environmental Health Investigators. We will highlight elements from the measurement of air particles, noise levels, and soil metals; photovoice; and student research modules, as well as the comic book we created inspired by the curriculum.

Authors/Presenters: Charlie Blake, STEM Center at Southern Illinois University Edwardsville; Sharon Locke STEM Center at Southern Illinois University Edwardsville; Georgia Bracey, STEM Center at Southern Illinois University Edwardsville; Ben Greenfield, University of Southern Maine; Candice Johnson, STEM Center at Southern Illinois University Edwardsville; Andreia F. Dexheimer, STEM Center at Southern Illinois University Edwardsville; Carol Calaninno, STEM Center at Southern Illinois University Edwardsville; Jennifer Zuercher, Southern Illinois University Edwardsville; Lorry Jamison

E7. MindHive: A Web-based Inquiry Platform Supported by a Network of Peers and Neuroscience Mentors

Grade Levels: Middle School, High School

URL: www.mindhive.science

MindHive is a web-based platform and program used by teachers countrywide to support their students in conducting human behavioral science studies from start to finish (asking research questions, forming hypotheses, synthesizing literature, designing studies, collecting and analyzing data) within a network of peers and neuroscience mentors.

Funder: NIH SEPA

Authors/Presenters: Suzanne Dikker, New York University; Camillia Matuk, New York University; Xavier Ochoa, New York University; Safinah Ali, New York University; Felicia Zerwas, New York University; Franck Porteous, New York University; Yury Shevchenko, University of Konstanz; Kim Burgas, Independent Consultant; Patrick Bloniasz, Boston University; Esteban Romero, New York University; Jason Bair, New York University; Jaycee Sansom, New York University; Francisco Castro, New York University; Kalina Sabala, Yale University; Luz Velasco Vela, Biobus; Gaelen Hadlett, Sunset Spark

E8. A Platform for Immersive Science Education

Grade Level: Middle School, High School, Undergraduate

URL: <https://10k.science>

10k Science is a platform for VR science education, featuring inquiry-driven, immersive learning experiences based on real scientific data. We collaborate with researchers to turn complex scientific concepts into accessible, engaging narratives using interactive media and data-driven 3D visualizations in VR and on the web.

Funder: NIH SBIR/STTR

Authors/Presenters: Laura Lynn Gonzalez, Dynamoid, Inc.

Tuesday: 1:45pm - 2:00pm - Break

Tuesday: 2:00pm - 3:30pm - Plenary Session - Session F

Welcome from Conference Co-Chairs

Louisa A. Stark, PhD, H.A. and Edna Benning Presidential Endowed Chair and Professor of Human Genetics, University of Utah School of Medicine

Kristin M. Bass, PhD, Director of Research Development, Rockman et al Cooperative Inc.

Update on the SEPA Program

Kenneth Gibbs, PhD, Director, Division of Training and Workforce Development (TWD), NIH National Institute of General Medical Sciences

Behrouz Davani, PhD, Chief, Cross-Disciplinary Pathway Branch, Division of Training and Workforce Development (TWD), NIH National Institute of General Medical Sciences

SEPAcommunity.org website

Nancy P. Moreno, PhD, Professor and Chair, Huffington Department of Education, Innovation & Technology, Baylor College of Medicine

Update on the NCI Youth Enjoy Science R25 Research Education Program

Shadab Hussain, PhD, Program Director, NIH National Cancer Institute

NSF Science Education Funding Opportunities

David Daniel, PhD, Program Director, Division of Research on Learning, National Science Foundation

Tuesday: 3:30pm - 4:00pm - Break

Tuesday: 4:00pm - 5:00pm - Concurrent Sessions

Session G. Design, Implementation and Analysis of Early Intervention Research & Education Programs That Strengthen Science and Literacy for K-12 Teachers and Students

William Folk, PhD, University of Missouri
Nancy Moreno, PhD, Baylor College of Medicine
Delinda van Garderen, PhD, University of Missouri
Alana Newell, PhD, Baylor College of Medicine
Amy Lannin, PhD, University of Missouri
Faith Shahale, MS, University of Missouri
Misty Sailors, PhD, WestEd
William Romine, PhD, Wright State University
Renee Kruep, PhD, McKendree University
Katherine Harris, Baylor College of Medicine
Dolores “Lollie” Garay, Baylor College of Medicine
Molly Marek, Baylor College of Medicine

The *Linking Science, Mathematics, and Literacy (LSM&L)*, and the Authentic Literacy and Language (ALL) for Science programs help K-12 learners and teachers engage in STEM disciplinary literacy, inquiry, sense-making, text-based research and evidence-based argumentation practices. Program elements and assessments will be described, with particular attention paid to real-world health and science questions, digital literacy, and A.I. concerns, as well as topics such as the health risks of vaping for adolescents, and engaging young learners in authentic scientific practices. Participants will be invited to contribute/discuss these and additional programmatic elements that may strengthen outcomes of current and future early intervention research and education programs.

As a result of participating in this session, conference attendees will:

- Appreciate how “Early intervention strategies in research education provide a foundation upon which essential scientific skills and visions can develop. Strong early intervention research education programs can change a young student’s trajectory in life and career.” (Lin et al. (2022). *Journal of STEM Outreach*, 5(2), 1–4.)
- Be able to apply evidence-based strategies to develop science-specific disciplinary literacies in the contexts of their own program.

Generalizability: This session focuses upon innovative strategies to build the science-specific disciplinary literacies of elementary and secondary school students. Understanding and learning the language of science (in other words, being able to read, write and speak as scientists) provides young learners with an appreciation for science and the sense of belonging in the scientific community, so they can envision future roles for themselves in science and medicine.

Grade Levels: Elementary, Middle School, High School

Funder: NIH SEPA

Strands: Science Teaching & Learning; Curriculum Development

Session H. SciEd Connecting Workforce Development to Curriculum

Moderators:

Abha Verma, PhD, Associate Professor of Chemistry, Xavier University of Louisiana
Christina Vallianatos, PhD, Genomics Education & Outreach Program Manager, The Jackson Laboratory for Genomic Medicine

Panelists:

Katherine A. Ayers, PhD, Director, STEMM Education and Outreach Program, St. Jude Children's Research Hospital, Assistant Director, Community Outreach and Engagement, St. Jude Comprehensive Cancer Center, Lead Representative, Memphis STEMM Ecosystem
Rebecca Reynolds, PhD, Professor and Program Director, PI, High School 2 Health Care (SEPA), The University of Tennessee Health Science Center
Paula Cupertino, PhD, Professor of Surgery, Public Health Sciences and Oncology, University of Rochester Medical Center
Ellen Chenoweth, PhD, Research Assistant Professor, Marine Biology, PI and PD RASOR Program, University of Alaska Fairbanks

The Curriculum Development Strand will bring together four panelists to discuss the design of curricula that address workforce development needs. Panelists will share experiences from projects involving industry partnerships and explore strategies for aligning educational programs with workforce competencies, career pathways, and evolving employer expectations.

As a result of participating in this session, conference attendees will engage in discussions on:

- How are workforce/industry partnerships formed?
- How are needs analyses conducted to determine workforce needs and identify curriculum gaps?
- What role do industry partners play in curriculum development/design?
- How do we effectively assess if the curriculum meets workforce needs?

Generalizability: Participants will gain practical ideas and strategies, for developing workforce-focused curricula, that can be adapted to their own institution to better prepare their students.

Grade Levels: All

Funder: Multiple

Strand: Curriculum Development

Session I: Short Talks - Informal Science Education

I1. The Atomic Circus: Pulling Back the Curtain on Student-Based Chemistry Theater

Matt Queen, PhD, Montana State University Billings

Amanda Obery, PhD, Central Washington University

Daniel Willems, PhD Montana State University

For eight years, The Atomic Circus has used narrative, live music, dance, and large-scale chemistry demonstrations to create an immersive chemistry theater experience for elementary students and families. While the program was initially designed around audience engagement, one of the most important lessons from the first phase of the project came from the performers themselves. Dancers and musicians involved in the fifth-grade show did more than illustrate scientific ideas, they developed embodied ways of understanding and communicating the phenomena. This observation shifted how we thought about the educational potential of chemistry theater. If performance can support learning for the students on stage, then chemistry theater can move beyond a presentation model toward a student-created model.

This presentation shares how that lesson informed a recent high school extension in which STEM club students at a local high school explored demonstrations, created dances to model scientific phenomena, and performed with student actors, and musicians for their peers. For SEPA and other STEM engagement projects, this work highlights how careful attention to participant experience can reveal new program designs that extend beyond the original outreach model.

Grade Levels: Elementary, Middle School, High School

Funder: NIH SEPA

Strands: Informal Science Education; Science Teaching & Learning

I2. Enhancing Individual Learning in a High School Pathway Program Through a Group Reflection Assignment

Susie Goolsby, Oregon Health and Science University

Kirsten Lampi, Oregon Health and Science University

Dental Explorers is a high school pathway program within the Walk In Dental Oral Ways of Science (WINDOWS) SEPA grant designed to introduce local students to careers in

dentistry or dental research. Students attend an evening lecture once monthly from local dentists and researchers, followed by a lab experience. The lectures are also streamed to Rogue Community College in Medford, Oregon, where a remote version of Dental Explorers occurs simultaneously.

Students agree to attend all sessions, and to participate in and complete (for a grade) a reflections assignment as part of the program. The students are requested to complete the assignment with their randomly assigned group members. The groups are given prompts to consider and are instructed to use their imaginations to answer and format their presentations which are then submitted for ranking. The top three presentations are selected by the course director and co-director for presenting on the final evening of the program. The group presentations demonstrate introspection, self-awareness and expression, and projection of future selves based on learning additional information about the profession.

This assignment is one example of a programmatic piece that can enhance individual learning in pathway programs and help offer guidance for those who will consider a career in healthcare.

Grade Level: High School

Funder: NIH SEPA, Oregon Health & Science University (OHSU) 30-30-30 Initiative, and the OHSU Office of Student Admissions

Strands: Informal Science Education; Project Administration

I3. Peer Recruitment for Educational Science Based Programing

Nathan Vanderford, PhD, MBA, University of Kentucky Markey Cancer Center

Kentucky has the highest cancer incidence and mortality rates in the US with the highest burden of the disease being localized to the Appalachian region of the state. Through funding from the National Cancer Institute's Youth Enjoy Science R25 program, the Appalachian Career Training In ONcology (ACTION) Program at the University of Kentucky Markey Cancer Center provides enhanced cancer-focused training for high school and undergraduate students from rural Appalachian Kentucky and works to develop a better understanding of cancer in the community through community outreach and engagement activities.

In recent years, the ACTION program has increased its visibility in Kentucky Appalachian high schools through peer led recruitment. Current and/or former ACTION students have presented on their experience as an ACTION student and have discussed the opportunities available for students interested in pursuing a career in a biomedical field. The ACTION program is finding success in recruiting potential students using a peer led recruitment model due to connections to the school district and teachers, opportunities to share similar experiences, and comfortability between the peer and potential student to ask

questions and share honest feedback about time commitment, benefits, and challenges when exploring cancer related research and clinical experiences.

Grade Level: High School

Funder: NCI R25 Youth Enjoy Science (YES)

Strands: Informal Science Education; Program Administration

I4. Appalachian Kentucky Students Take ACTION through Education

Nathan L. Vanderford, PhD, MBA, University of Kentucky Markey Cancer Center

ACTION has partnered with the American Cancer Society Cancer Action Network to educate various stakeholders about the cancer burden in Kentucky. Through this partnership, ACTION students met with state legislators at the Kentucky State Capitol and with Kentucky's Lieutenant Governor to discuss education-related initiatives that could address the high cancer rates in the state.

Students were able to share stories regarding cancer's influence on their community and propose possible solutions. One notable outcome from ACTION's cancer education activities is a proclamation from Kentucky Governor Andy Beshear naming October as "Cancer Education and Prevention Month." ACTION students say their participation in these activities equipped them with new communication skills, empowered them to participate in future education activities, and encouraged them to believe their words and actions can make a difference within their communities and across the state.

While engaging in these cancer-related education activities, ACTION students learn valuable skills while working to support their communities. Similar student-focused education activities can be implemented in other regions burdened with elevated cancer rates to improve cancer control and prevention efforts.

Grade Level: High School

Funder: NCI R25 Youth Enjoy Science (YES)

Strands: Informal Science Education; Program Administration

Wednesday, September 30

Wednesday: 11:00am - 12:00pm - Concurrent Sessions

Session J. Beyond Exposure: Outcomes of a Hospital-Based Surgical Pipeline

Ana Gomez Parga, PhD, University of Rochester Medical Center

Paula Cupertino, PhD, University of Rochester Medical Center

Rafaela Russi Ervilha, PhD, University of Rochester Medical Center

Developing an effective pipeline program requires intentionally addressing the academic, professional, and personal skill gaps that can prevent students from succeeding. This interactive session will examine the curriculum development process behind the Next Generation of Surgery (Next Gen) Internship Program, a hospital-based, paid internship designed to prepare high school students with limited access to healthcare career opportunities.

Participants will explore how program leaders identified critical academic and workforce readiness gaps through stakeholder engagement, employer feedback, student assessments, and continuous program evaluation. Presenters will share the framework used to design a competency-based curriculum that integrates scientific literacy, communication, professionalism, research skills, leadership, critical thinking, and career readiness with authentic healthcare experiences.

Attendees will leave with practical strategies, curriculum design tools, and assessment approaches that can be adapted to strengthen STEM pathway programs in their own institutions.

By the end of this session, participants will be able to:

- Identify common academic, professional, and workforce readiness gaps that influence student success in STEM and healthcare pipeline programs.
- Apply a structured, competency-based approach to designing curricula that intentionally address identified learning and skill gaps.
- Develop measurable learning outcomes and assessment strategies that align curriculum with workforce and educational objectives.
- Adapt evidence-informed curriculum development practices from the Next Gen Internship Program to strengthen STEM education initiatives within their own organizations.

Generalizability: Participants will gain a replicable framework for identifying academic and professional skill gaps, designing competency-based curricula, and using continuous evaluation to improve student outcomes. The strategies presented can be adapted to STEM education, healthcare pathway programs, workforce development initiatives, and other hospital-based educational programs seeking to better prepare students for academic and career success.

Grade Level: High School

Funder: National Institute of General Medical Sciences (NIGMS), Rochester Works

Strands: Curriculum Development; Project Administration; Research & Evaluation

Session K. From Distance to Engagement: Building Strong Connections, Virtually in a Statewide Evaluation

Gwendolyn M. Stovall, Ph.D., The University of Texas at Austin

Deanna Buckley, Ph.D., The University of Texas at Austin

Bailey Williams, M.Ed., The University of Texas at Austin
Lindsay Lamb, Ph.D., Agile Analytics
Andrea Hutson, Ph.D., Agile Analytics
Michael Kennedy, Ph.D., Northwestern University
Maranda Don, M.Ed., Northwestern University
Camellia Sanford-Dolly, Ph.D., Rockman et al Cooperative
Alison Allen, M.Ed., Rockman et al Cooperative
Maribel Campos Rivera MD, PI Emergemnos
Marytere Meléndez Rosario DrPT, PI University of Puerto Rico Medical Sciences Campus
Edjean Calderón EdD, External Evaluator Coopsei
Brian Sims PhD, External Advisory Committee
María R. López Mata, Semilla Alumni
Loyda B. Méndez, PhD, Ana G. Méndez University
Rebecca Román, Boys & Girls Clubs of Puerto Rico
Julisabel C. Soto, University of Puerto Rico

Sustaining engagement among program staff, evaluators, educators, and school administrators is a challenge in evaluation, particularly when programs and evaluators span geographic regions. This session includes perspectives from three programs and their external evaluators as they discuss best practices and challenges with sustaining remote evaluations.

Agile Analytics has implemented a virtual evaluation of the University of Texas's High School Research Initiative (HRI) for five years. Virtual activities include bi-weekly meetings, data collection, and focus groups. This breakout will discuss how to design an evaluation and collect data when the evaluator is not on site.

Rockman et al Cooperative has evaluated Northwestern University's Elementary Science Teacher Leaders (ESTELE) program for four years, which includes virtual interviews and in-person focus groups and observations. This breakout will discuss challenges engaging school administrators in supporting educators and participating in evaluation activities.

Semilla is a community-based STEM+M program implemented with Boys and Girls Clubs of Puerto Rico. Due to the participatory nature of the program, evaluation strategies required iteration to support virtual and in-person settings. This breakout will discuss evolving evaluation strategies.

These collaborative breakout sessions will share best practices for strengthening virtual evaluation efforts, leaving attendees with actionable approaches for building and sustaining engagement.

As a result of participating in this session, participants will:

Learn best practices for maintaining communication and collaboration among program staff, evaluators, educators, and school administrators virtually to strengthen evaluation efforts.

Generalizability: This session will provide attendees with transferable lessons learned and best practices for fostering ongoing engagement in program evaluation efforts. Participants will leave with actionable strategies that can be adapted to their own education, research, and evaluation projects, regardless of program size or location.

Grade Level: All

Funder: NIH SEPA

Strands: Research & Evaluation; Project Administration

Session L. Short Talks - Perspectives on Partnerships and Pathways

L1. Building Collaborative Industry–University–School Partnerships

Maria Alonso Luaces, University of Kansas Medical Center, Department of Family Medicine and Community Health

Maya Watkins, University of Kansas Medical Center, Department of Family Medicine and Community Health

Carrie L. Francis, University of Kansas Medical Center, Department of Otolaryngology–Head and Neck Surgery

Karin Chang, University of Missouri-Kansas City, Urban Education Research Center

Elizabeth Ordonez, University of Kansas Medical Center, Department of Family Medicine and Community Health

Meghan Ecker-Lyster, University of Kansas, Center for Educational Opportunity Programs

Acknowledging the barriers to sustaining partnerships beyond single interactions, including industry onboarding practices, financial constraints, transportation issues, and a lack of operational understanding among participating partners, is crucial.

Based on the lessons learned through T-SCORE LIFT, this short talk will provide practical guidance on how to effectively address logistical barriers in the formation of Industry–University–Schools partnerships including: 1) development of MOUs, 2) revision of institutional onboarding processes to strengthen collaboration with high schools, 3) the importance of partnering to embed projects within schools systems and curricula or 4) the need for training to understand institutional culture and promote engagement. Participants can expect to gain new tools to engage in effective, meaningful, and long-lasting partnerships.

Grade Level: High School

Funder: NIH SEPA

Strands: Program Administration

L2. Multi-Institutional Partnerships: Best Practices for Collaborative STEM Programming
Megan Mekinda, PhD, Director for Education, Training & Evaluation, University of Chicago
Medicine Comprehensive Cancer Center
Scott Burg, Senior Research Principal, Rockman et al Cooperative

The Healthcare Experience & Research in Oncology (HERO) is a virtual STEM enrichment program for high school students. Its mission is to empower talented youth from across the country to pursue careers in biomedicine, specifically related to cancer. The two-week curriculum offers hands-on research experience, career exploration, and mentorship, drawing strategically from the unique strengths and resources of participating cancer centers.

This short talk focuses on HERO's unique multi-institutional structure: Programming is delivered collaboratively and synchronously across 3 cohorts of 5 cancer centers each (15 cancer centers total), creating a rich learning environment for program participants while optimizing human, social, and financial capital for program sites. We present outcomes from a SEPA-funded, multi-institutional partnership study to highlight the benefits of—and best practices for—collaborative STEM programming. We assert that HERO is an effective and replicable model to increase institutions' capacity for early science education and career exposure, enhancing access to STEM for young people nationwide.

Grade Level: High School

Funder: NIH SEPA

Strands: Project Administration; Research & Evaluation

L3. From Lab Bench to Classroom: Training Scientists to Inspire the Next Generation Through Authentic STEM Partnerships

Kate Ayers, St. Jude Children's Research Hospital

Kyle Bichsel, St. Jude Children's Research Hospital

Summer Jasper, St. Jude Children's Research Hospital

Jaime Sabel, The Ohio State University

Shelby Monague, Lausanne School

Sondra LoRe, SPEAR Consultants

Amy Cook, University of Memphis

How can scientists and educators work together to make cutting-edge research accessible and inspiring for high school students? The Memphis STEM-M Ecosystem Scientists Communicating Research to Students (MemSCoReS) program brings biomedical researchers into secondary classrooms through virtual science journal clubs and structured science communication training. Grounded in an ecosystem approach, the program simultaneously supports scientists, teachers, and students while strengthening connections between classroom learning and authentic research experiences.

This session will share findings from a mixed-methods external evaluation of the program's third year. Data from surveys, interviews, observations, and content analysis revealed significant gains in scientists' confidence and ability to communicate complex concepts using plain language, storytelling, and interactive strategies. Teachers reported high levels of satisfaction and described increased student engagement, stronger connections to curriculum, and expanded awareness of STEM career pathways. Participants will explore practical approaches for preparing scientists as effective communicators, fostering meaningful scientist-teacher partnerships, and creating engaging learning experiences that humanize science. Lessons learned and recommendations for sustainability and scalability will also be discussed.

Grade Level: High School

Funder: NIH SEPA

Strand: Science Teaching & Learning: Curriculum Development

L4. Increasing Participation in STEM and Health Pathways Through Bilingual Rural Community Engagement

Carolina Rocha Becerra, MA, Office for Prospective Students, University of Nevada, Reno

Rural communities often face persistent barriers to STEM and health career pathways, including limited access to enrichment opportunities, geographic isolation, and shortages of bilingual programming. This short talk focuses on the rural outreach strategies implemented through the Community of Bilingual English Spanish Speakers STEM (CBESS) program, an intensive 18-month initiative designed to prepare bilingual students for STEM and health careers in rural Nevada.

The presentation will discuss intentional responsive recruitment approaches, the partnership with a rural school district and families, bilingual communication strategies, and community-based outreach efforts that increase student awareness and participation. The presentation will also share lessons learned in building trust, fostering sustained engagement, and addressing barriers to access in rural underserved communities. Attendees will gain practical insights into designing and implementing outreach strategies that expand participation in STEM and health programs with a focus on rural access.

Grade Level: High School

Funder: NIH SEPA

Strands: Project Administration; Research & Evaluation

Wednesday: 12:00pm - 12:30pm - Break

Wednesday: 12:30pm - 1:30pm or 1:45pm - Concurrent Sessions
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Session M. Online Teacher Professional Development: Making it Work!

Delinda van Garderen, PhD, University of Missouri

Amy Lannin, PhD, University of Missouri

William Folk, PhD, University of Missouri

Molly Malone, MA, University of Utah

Revati Masilamani, PhD, Tufts University School of Medicine

Jessica Rodrigues, PhD, University of North Carolina - Chapel Hill

Renee Kruep, PhD, McKendree University

Online teacher professional development (OTPD), particularly since the COVID-19 pandemic, has experienced significant growth. The use of OTPD has been promoted as a cost-effective, flexible, improved access, and far-reaching approach. Various forms of OTPD structures exist including courses, modules, and workshops that use a variety of delivery methods whether synchronous, asynchronous or hybrid (Powell & Bodur, 2019).

Access to OTPD, however, does not guarantee quality experiences or improved teacher or student outcomes (Bragg et al., 2021; Powell & Bodur, 2019). Although research has identified key characteristics for effective OTPD such as accessibility, authenticity, collaboration, democratization, and personalization (Carrillo & flores, 2022), how to make this happen can be challenging.

Therefore, the purpose of this session is to share and learn from multiple programs that are or have used OTPD. In particular, during this session various OTPD formats will be shared along with their affordances and challenges. Best practices for OTPD to promote teacher professional development will be highlighted. Importantly, this interactive workshop session will enable attendees to share approaches in their programs, ask questions about OTPD, share resources and contacts, and identify ways to enhance and/or expand OTPD with an emphasis on improving teacher practices for improved student outcomes in STEM.

As a result of participating in this session, conference attendees will be able to:

- Describe different structures of online teacher professional development;
- Identify the benefits and challenges of the different structures for online teacher professional development;
- Understand effective practices for promoting teacher professional development within an online learning environment;
- Reflect on how online teacher professional development can enhance teacher's pedagogical practice in their classrooms;
- Consider opportunities for enhancing and/or expanding online teacher professional development within current programming.

Generalizability: How OTPD can be structured and implemented to provide effective teacher professional development. Effective research-based practices for implementing OTPD in programs.

Funder: NIH SEPA

Strands: Teacher Professional Development; Science Teaching & Learning

Session N. Short Talks - Outcomes - Research & Evaluation (session is 12:30 - 1:45pm)

N1. Beyond the Stereotype: How a Neuroscience Docuseries Changes Student Attitudes Toward STEM

Madison H. Fung, PhD, University of Minnesota

Norwood A. Glaspie, BS, University of Minnesota

Logan R. Caola, MS, University of Minnesota

Shelby J. Anderson, University of Minnesota

Eva S. Nelson, PhD, University of Minnesota

Anita C. Randolph, PhD, LADC, University of Minnesota

Evaluator: Sara Asad, PhD, Rockman et al Cooperative

To inspire young learners to pursue brain-focused fields, including neuroscience, psychology, and specialized medicine, we developed "BRAINS: Behind Real-world Advances: Inspiring Neuro Stories," a seven-episode documentary series utilizing real-world video storytelling. We evaluated the series' impact using pre- and post-surveys from 308 middle and high school students across nineteen U.S. classrooms.

Students found the videos highly engaging, deeply appreciating the authentic personal stories and recurring theme of resilience. Crucially, evaluation results showed the docuseries successfully challenged traditional stereotypes of scientists. Post-series, students significantly decreased their endorsements of negative tropes (e.g., "boring," "socially awkward") and widely recognized scientists as dynamic, multidimensional professionals across various career stages. These findings suggest the BRAINS documentary series can serve as a useful resource for educators and science communicators to make brain-related concepts and STEM career opportunities more accessible, relevant, and engaging to all young learners.

Attendees will leave this talk with actionable insights on how multimedia storytelling can serve as a powerful tool for educators and science communicators to make STEM concepts and career pathways universally accessible, relevant, and welcoming for the next generation.

Grade Level: Middle School, High School

Funder: NIH SEPA

Strands: Research & Evaluation; Science Teaching & Learning

N2. Building STEM Pathways Through Scaffolded Mentorship: Evaluation Findings From an Urban Outreach Program

Tatiana Moylan, MD, Yale School of Medicine

Samreen Vora, MD, Yale School of Medicine

Leigh Evans, MD, Yale School of Medicine

Simulation Academy at Yale: Youth Entering Science (SAY-YES!) is an NIH SEPA-funded program serving students from three New Haven Connecticut public high schools. The program combines healthcare simulation, career exploration, reflective activities, and a scaffolded mentorship model that connects high school students with undergraduate mentors, medical students, residents, and faculty.

As the program expanded across three schools, we wanted to understand which parts of the experience students found most meaningful. We used survey data, interviews, and program evaluation data to explore the relationship between mentorship, STEM interest, and student development.

Preliminary findings showed improvements in students' willingness to try new things, confidence in producing high-quality work, confidence in working independently, and perceptions of science as important to their future. Students often highlighted mentorship, career exposure, and reflection activities as some of the most meaningful parts of the program.

We will discuss what worked, what surprised us, and how these findings are shaping the next phase of the program.

Grade Levels: High School

Funder: NIH SEPA

Strands: Research & Evaluation; Curriculum Development

N3. Does the SciTrek Program Positively Influence 7th and 8th Graders' Understanding of How Science Works?

Gulistan Tansik, University of California Santa Barbara

Tate Universe, University of California Santa Barbara

Nora Thomas, University of California Santa Barbara

Kim Ciancio, University of California Santa Barbara

Norbert Reich, University of California Santa Barbara

Vanessa Woods, University of California Santa Barbara

Despite efforts to promote STEM career interest, students in late elementary and secondary school show alarming decreases in science interest, and associated career aspirations. Our SEPA-funded program, SciTrek, is designed to give students authentic science experiences in the classroom, to promote scientific understanding of how science works, and to spark and maintain science interest. Guided by their teacher, SciTrek leads,

and college student mentors, this program aims to enhance students' confidence and interest in science through guided discovery learning and by providing voice and choice in experimental design.

Results from our secondary program show that SciTrek was effective in increasing 7th and 8th graders' self-report of their own understanding of how science works and how to set up an experiment. SciTrek also explored secondary students' ideas about scientists and who could and could not be a scientist, with teachers and SciTrek mentors being very influential. These findings suggest that SciTrek is positively influencing 7th and 8th graders' understanding of how science works.

Grade Level: Middle School

Funder: NIH SEPA

Strands: Research & Evaluation; Science Teaching & Learning

N4. "When You Fail, You Know What Not to Do": Durable Skills as an Emergent Outcome of Middle School Bioengineering Design

Rebecca Peterson, PhD, Interim Director, Stark Science Learning Center, University of Utah

Liyun Liu, PhD, Research Associate, Stark Science Learning Center, University of Utah

Kristin Bass, PhD, Director of Research Development, Rockman et al. Cooperative Inc.

Engineering for Health (E4H) is a middle school bioengineering curriculum in which students design prosthetic hands while learning neuroscience and engineering design. The curriculum also includes career connection videos featuring engineers, which are intended to build students' awareness of STEM careers.

Evaluation of Phase 2 implementation (N ≈ 520 students, grades 6 to 8, 7 teachers) found significant pre to post gains in content knowledge across all learning objectives. Teachers consistently rated the hands-on design activity as far more engaging than the career videos. STEM attitude and career perception measures, however, remained largely stable, and career connection videos produced no differential effects by video type.

Analysis of open-ended student responses and teacher implementation feedback revealed repeated, unprompted references to durable skills and engineering habits of mind: that failure is normal and informative, that persistence matters, that engineering requires collaboration across specialties.

We share three takeaways for SEPA projects building similar curricula: where to place career videos relative to hands-on activities, what open ended student responses can reveal that surveys cannot, and how to evaluate curriculum components without assuming any one part is doing the work.

Grade Levels: Middle School, High School

Funder: NIH SEPA

Strands: Curriculum Development; Research & Evaluation

Session O. Short Talks - Science Teaching and Learning

O1. EvolvingSTEM: Engaging Secondary School Students with Authentic Research Experiences to Improve STEM Occupational Identity Development

Abigail Matela, University of Pittsburgh

Nathan Cho, University of Pittsburgh

Audrey Buzard, University of Pittsburgh

Maya Mahler, University of Pittsburgh

Dustin Dusang, University of Pittsburgh

Cassie Quigley, University of Pittsburgh

Vaughn Cooper, University of Pittsburgh

To promote the next generation of STEM professionals, we must engage students in authentic research experiences that help them see themselves as scientists and motivate them to pursue STEM careers. Unfortunately, such experiences are rarely provided in introductory classes that serve students at a pivotal time in their occupational identity development. To address this issue, we developed EvolvingSTEM.

Our program supports teachers in leading authentic experiments with curriculum modules that integrate scientific practices, core content knowledge, and interdisciplinary, crosscutting concepts. In the first module, students investigate how bacterial populations adapt under selection for improved biofilm production. They further explore how this research can be applied to understand chronic infections and antimicrobial resistance. In the second module, students test if biofilm-adapted mutants are better protected from consumption by a common, amoeboid soil predator. Student findings are important for understanding bacterial adaptations to evade phagocytes, including macrophages.

We will present data collected over the first three years of our program, in which we used a mixed-methods design that collects quantitative and qualitative data to assess how and to what extent participation in EvolvingSTEM influences STEM occupational identity. Preliminary findings reveal positive impacts, particularly in student identity as potential scientists.

Grade Level: Middle School, High School

Funder: NIH SEPA

Strands: Science Teaching & Learning; Curriculum Development

O2. Sticky Science: Engaging High School Students in Authentic Research on Yeast Adhesion Evolution

Sarah Heater, University of Washington

Maleigha Peterson, University of Washington

Sophia Weis, University of Washington
Mike Delmont, Frontier High School, New York
Jodie Spitze, Juanita High School, Washington
Maitreya Dunham, PhD, University of Washington

High school students can contribute original findings to active research. Fungal adhesion is a perfect area for this, being visually striking, medically relevant, and experimentally tractable in a high school classroom. By selecting for adhesion in *S. cerevisiae* (baker's yeast), students directly drive evolution in real time while generating data relevant to pathogenesis, biofilm formation, and ecological fitness.

Over a five-week protocol, high school students perform robust replicates of university-laboratory selections run under slightly varied conditions, enabling identification of recurrent evolutionary patterns. This design has proven scientifically fruitful. By sequencing both student- and laboratory-evolved strains, we have identified two primary genetic pathways underlying adhesion in these experiments, implicating likely mechanisms not previously described.

After performing selections, students analyze whole-genome sequencing results from their own strains using software designed specifically for high school use, and complete short student-designed follow-up experiments built around clear visual outputs. Pre- and post-assessments measure gains in both conceptual understanding and science identity. Together, this project can reveal the breadth of mechanisms underlying fungal adhesion evolution while showing students how they can contribute to active scientific research. We hope this classrooms-as-replicates model offers a generalizable template for others wishing to bring authentic research into secondary science education.

Grade Level: High School
Funder: NIH SEPA
Strands: Research Experiences for Students & Teachers; Science Teaching & Learning

O3. Measuring Science Teaching and Learning in Early Elementary-aged Children

David H. Holben, PhD, RDN, LD, FAND, University of Mississippi
Tricia A. Zucker, PhD, McGovern Medical School, UTHealth Houston

This session will explore science teaching methods and measurement of science learning in early elementary-aged children. The session will review the NGSS three dimensions of science learning and the 5 E's of science teaching - Engage, Explore, Explain, Elaborate, Evaluate. This session will include an in-depth examination of the development, validation, and use of a measure of science and engineering learning for children, with applications to both formal and informal settings.

Grade Level: Elementary
Funder: NIH SEPA

Strands: Science Teaching & Learning; Informal Science Education

O4. Inspiring Future Rural Healthcare Professionals Through Clinical Neuroscience and Metacognitive Development: Preliminary Findings on Program Efficacy

Robert Dowman, Clarkson University

Lennart Johns, Clarkson University

Michael Ben-Avie, Quinnipiac University

Kathleen Kavanagh, Clarkson University

BRAIN-STEM aims to inspire rural high school students to pursue careers in health care. To accomplish this, students participated in inquiry-based Summer Camp and Afterschool programs that introduced them to clinical neuroscience problems that are personally relevant, local, and important, as well as employing strategies that improve metacognitive skills.

To evaluate BRAIN-STEM efficacy, surveys were given before and after the program that measured interest in STEM and Health areas and careers; whether they can identify with Science; and their perceived STEM efficacy and metacognition. Pre and Post surveys were also obtained from Control participants who did not participate in the program. To date, data has been obtained from 43 Treatment and 18 Control group participants.

Preliminary results for the Treatment group suggest gains in metacognitive skills, science identification, and interest in STEM careers. No changes were seen in the Control group. Though promising, these results must be interpreted with caution given the number of participants is well below the 50/group needed for adequate statistical power. Challenges in obtaining participants include difficulties recruiting Control subjects and Afterschool program participants being unable to finish owing to participation in other activities. Possible solutions to these challenges will be addressed.

Grade Level: High School

Funder: NIH SEPA

Strands: Curriculum Development; Research & Evaluation

Wednesday: 1:30pm/1:34pm - 2:00pm - Break
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Wednesday: 2:00pm - 3:30pm - Plenary Session - Session P

Tony Beck Memorial Lecture - Impacts of SciEd Projects: Participant Voices

A panel of individuals who have participated in SciEd projects as students, parents of students, near-peer mentors, and/or teachers will share their perspectives on the ways SciEd projects have impacted them.

Panel Participants

- **Samuel Tulimaiau**, elementary and high school student participant in the Authentic Community Engagement in Science program at Montana State University, Billings
- **London Parks**, middle school student participant in the EMPOWER SCD (Elevating Mentoring Possibilities for Overcoming Withstanding Educational Roadblocks in Sickle Cell Disease) program at Emory University
- **Ava Thompson**, high school student participant in the EMPOWER SCD program at Emory University
- **Princess Walton**, veteran educator, doctoral student at Piedmont University, and parent advocate; her daughter, London Parks, participated in the EMPOWER SCD program at Emory University
- **Gillian Thompson**, parent, whose daughter, Ava Thompson participated in the EMPOWER SCD program at Emory University
- **Jaron Harris**, high school student participant and then undergraduate near-peer mentor in the RAMP Program (Research and Mentoring Program) at the University of Maryland School of Medicine
- **Yury Ovchinnikov**, high school student participant and then teacher in middle school summer program with the NH CREATES (New Hampshire Collaborative for Regenerative Medicine Education and Training) program at the University of New Hampshire
- **Christopher Valdes**, doctoral near-peer mentor and laboratory supervisor with the Chicago EYES (Educators and Youth Enjoy Science) on Cancer program at the University of Chicago Medicine Comprehensive Cancer Center
- **Michelle Oilar**, teacher participant and near-peer mentor in the Linking Science, Math, and Literacy program at the University of Missouri
- **Beatriz Guajardo**, teacher participant and then SEPA program manager with the TAR (Teachers as Researchers) program at Texas Biomedical Research Institute

Moderator

Elizabeth Dennis, PhD, PhD, RD, Associate Professor, Department of Physical Therapy and Rehabilitation Science, University of Maryland School of Medicine

Wednesday: 3:30pm - 4:00pm - Break

Wednesday: 4:00pm - 5:00pm - Concurrent Sessions

Session Q. Rethinking What Middle and High School Teachers Need from STEAM Professional Development: A Teacher-Centered Conversation from NH CREATES

Elizabeth Hoyt, Portsmouth High School, Portsmouth, NH
Megan Thompson, Oyster River High School, Durham, NH
Mary Hartigan-Demers, Hillside Middle School, Manchester, NH
Jillian Isherwood, Southside Middle School, Manchester, NH
Carmela Amato-Wierda, PhD, Department of Chemistry, University of New Hampshire
Amy Booth, MEd, Department of Chemistry, University of New Hampshire
Shannon McCracken-Barber, MA, Department of Biotechnology, University of New Hampshire Manchester
Alison Allen, MEd, Rockman et al Cooperative, LLC
Eleanor M. Jaffee, PhD, Insights Evaluation LLC

What do middle and high school teachers say they need from STEAM professional development (PD)? This interactive breakout session will be a teacher-centered collaborative inquiry that will examine the question, “What makes for effective in-service STEAM teacher PD?” The session will feature a panel of teachers who have participated in NH CREATES the Future: New Hampshire Collaborative for Regenerative Medicine Education and Training for Teachers, Engineers, and Scientists of the Future. For the past five years, NH CREATES has engaged 57 teachers in PD focused on regenerative medicine and biofabrication, project-based learning, and development of original projects for classroom implementation.

The session will explore challenges and gaps that exist in teacher PD models, and what program designers should understand when developing PD for classrooms. Audience members will compare their ideas with perspectives shared by the teacher panel. Through facilitated discussion, participants will consider how teacher perspectives might inform the design of future SEPA proposals, STEAM teacher PD programs, and broader-impact initiatives.

This session is designed as an inquiry rather than a presentation of conclusions, creating space for audience members to place teacher perspectives front and center, while challenging their assumptions about what teachers need from STEAM PD.

As a result of participating in this session, participants will:

- Challenge assumptions of what we think teachers need from PD.
- Change perspectives or understandings about teacher PD.
- Generate new ideas for teacher PD proposals or current PD projects.

Generalizability: Audience members will walk away with greater consideration of teacher perspectives when designing STEAM PD.

Grade Levels: Middle School, High School

Funder: NIH SEPA

Strands: Teacher Professional Development; Curriculum Development

Session R. Learning from Place: Community-Connected Approaches to Informal STEM Education

Liliana Bronner, PhD, MHSA, MBA, University of Nebraska Medical Center
Kaytlyn Gilliam, Cherokee Nation-Sequoyah High School
Aislinn Rookwood, PhD, MPH, University of Nebraska Medical Center
Kali Ratigan, MPH, University of Nebraska Medical Center
Sydney Martinez, PhD, MPH, University of Oklahoma Health Campus
Maurice Godfrey, PhD, University of Nebraska-Munroe-Meyer Institute
Regina Idoate, PhD, University of Nebraska Medical Center
Joyce Solheim, PhD, University of Nebraska Medical Center
Cara Monroe, PhD, University of Oklahoma Health Campus - Stephenson Cancer Center
Moderator: Regina Robbins, PhD, University of Nebraska Medical Center

STEM programs offer important models for making science learning more meaningful, relational, and connected to place. This Breakout session will bring together Cherokee INSPIRE, University of Nebraska Medical Center-Youth Enjoy Science (UNMC-YES), and the Nebraska Science Education Partnership Award (SEPA) Encouraging Excellence: Health Science Education in Native American Communities, to share program highlights, guiding principles, and lessons learned.

Rather than focusing on one model, the session will explore a shared question: how can approaches rooted in Native science, conventional science, place-based learning, and community connection strengthen informal STEM education across different settings, student populations, and regions?

A valuable starting point is identifying the common principles and points of intersection that connect these programs: Recognition, Relevance, Relationship, Reflexivity, Responsibility, Rights, Reciprocity, Re-Storying, Revitalization, and Respect.

Across programs, these principles can guide how students engage with science through local knowledge, hands-on learning, storytelling, mentorship, community priorities, and real-world questions. Participants will consider how these approaches can make STEM education more adaptable, more responsive to community context, and more meaningful for all learners.

Through brief program examples, guided reflection, and small-group discussion, participants will examine how grounding principles of research and practice can inform informal STEM education. By the end of the session, participants will be able to:

- Describe the 10Rs and their relevance to informal STEM education.
- Explain how place-based, relationship-centered approaches strengthen STEM program community engagement.
- Compare strategies across American Indian and Alaska Native-serving STEM programs.
- Identify complementary science perspectives.

- Develop actionable strategies to strengthen STEM programs' responsiveness to local context.

Generalizability: This session offers a transferable framework for strengthening informal STEM education through place-based learning, community connection, and scientific intersections across programming. While the examples come from programs serving American Indian and Alaska Native students, the guiding principles are broadly applicable to SciEd programs working with many communities and student populations.

Participants will take away practical ways to examine their own programs through questions such as: Whose knowledge is represented? How does the program connect to students' lived experiences and local context? Where are relationships being built? How does the program create reciprocity with students, families, schools, or communities? How can hands-on learning, storytelling, mentorship, and community priorities make STEM more meaningful? The session will highlight examples of best practices and lessons learned that can be adapted to science camps, outreach events, classroom-connected activities, research experiences, teacher support, and community-based STEM programming. Participants will leave with a simple reflection framework they can use to revise or design activities that are more relational, relevant, responsive, and grounded in place.

Grade Levels: Elementary, Middle School, High School

Funder: NIH SEPA

Strands: Informal Science Education; Science Teaching & Learning

Session S. Short Talks - Health Sector Research

S1. Evaluating a Case-Based Collaborative Learning Intervention for High School Health Science Students Using the DEAL Reflection Framework

Meghan Ecker-Lyster, University of Kansas, Center for Educational Opportunity Programs

Maria Alonso Luaces, University of Kansas Medical Center, Department of Family Medicine and Community Health

Maya Watkins, University of Kansas Medical Center, Department of Family Medicine and Community Health

Carrie L. Francis, University of Kansas Medical Center, Department of Otolaryngology–Head and Neck Surgery

Elizabeth Ordonez, University of Kansas Medical Center, Department of Family Medicine and Community Health

Karin Chang, University of Missouri-Kansas City, Urban Education Research Center

Case-Based Collaborative Learning (CBCL) is an instructional approach adapted from medical education that uses authentic health cases to promote critical thinking, collaboration, and problem-solving.

In Fall 2025, eighteen health science teachers from Kansas City Kansas, Lawrence, Wichita, and Hays were invited to utilize T-SCORE LIFT's case-based collaborative learning (CBCL) lessons focused on Type 1 diabetes and asthma in their classrooms during AY 2025-2026. Teachers implemented the curriculum following summer professional development through T-SCORE LIFT and training with the localized, standards-aligned curricular materials.

The DEAL Reflection Framework (Describe, Examine, Articulate Learning) is an innovative evaluation strategy for capturing teacher experiences with CBCL implementation. Structured teacher reflection guides were developed to document implementation practices, student engagement, challenges, and perceived impacts on learning and career awareness. Teachers reflected on their roles as facilitators of student sense-making, the effectiveness of collaborative problem-solving activities, and opportunities for improving future implementation.

Findings highlight the value of DEAL as a scalable, efficient, and meaningful evaluation method that reduces participant burden while generating valuable feedback on CBCL tasks in the high school, health science context.

Grade Level: High School

Funder: NIH SEPA

Strands: Research & Evaluation; Curriculum Development

S2. Increasing Access to Career Pathways in Medical Laboratory and Healthcare Data Science: Evaluation of the High School2Health Care Project

Mary Randolph-Frye, PhD, Research Associate II, Center for Research in Educational Policy, University of Memphis

Jacen Moore, PhD, MA, MLS (ASCP), Program Director, Medical Laboratory Sciences, College of Health Professions, University of Tennessee Health Science Center

Rebecca Reynolds, PhD, RHIA, FAHIMA, Department Chair of Health Informatics, College of Health Professions, University of Tennessee Health Science Center

Keisha Brooks Burnett, EdD, Department Chair, Diagnostic and Health Science, Program Director of Cytotechnology and Histotechnology, College of Health Professions, University of Tennessee Health Science Center

Simpfronia Taylor, EdD, Director of Community Grants and Programs, University of Tennessee at Martin Ripley Center

Elizabeth Chambliss, MS, Research Associate II, Center for Research in Educational Policy, University of Memphis

This presentation will provide an overview of the interim outcomes from the evaluation of the High School to Healthcare (HS2HC) program aimed at creating and fostering interest in medical lab science (MLS) and healthcare information technology (HIT) careers through pathway programs for high school students in rural areas in southwestern Tennessee.

The program's dual-enrollment pathway and summer camp for high school students along with professional development for HS faculty was designed to: 1) increase awareness of the target professions, 2) increase knowledge of subject matter and skills for careers in MLS and HIT, and 3) increase self-efficacy in entering undergraduate or graduate programs in MLS and HIT, with the long term goal of increasing the number of rural underserved students in these professions.

Independent evaluation by the Center for Research in Educational Policy (CREP) addresses research questions directly aligned with these project goals using a mixed methods design intended to leverage multiple formats for data collection both in person and virtually. Program outcomes to date will be presented along with a discussion of the different approaches needed in evaluating the different initiatives (e.g., teacher professional development, dual enrollment, and student summer camp) as well as challenges and lessons learned.

Grade Level: High School

Funder: NIH SEPA

Strands: Research & Evaluation; Teacher Professional Development

S3. CBESS Outcomes to Establish Long-Term Success

Ruben K. Dagda, University of Nevada, Reno School of Medicine

Jafeth E. Sanchez, University of Nevada, Reno Latino Research Center

This short-talk highlights how outcomes from the Community English Spanish STEM (CBESS) program are being leveraged to ensure long-term sustainability and impact. CBESS is an intensive 18-month bilingual STEM and health career pipeline program serving students from rural Nevada through a one-week residential experience, a two-week online program, and ongoing research and community outreach.

The presentation will share evidence of student growth in STEM identity, college and career readiness, bilingual workforce skills, and community engagement. In addition, presenters will discuss how IRB approval is used to leverage program evaluation data, participant experiences, and community partnerships to strengthen future funding opportunities, expand research initiatives, and institutionalize key program components. Attendees will learn strategies for scaling community-responsive STEM programs that prepare bilingual students for health and STEM careers while centering workforce needs in rural communities.

Grade Level: High School

Funder: NIH SEPA

Strands: Research & Evaluation; Project Administration

S4. Fostering AI Literacy and Health Career Interest Through Narrative-Centered Gameplay

Elizabeth Ozer, Department of Pediatrics, School of Medicine, University of California, San Francisco

Jessica Vandenberg, Department of Computer Science, North Carolina State University

Bradford Mott, Department of Computer Science, North Carolina State University

Carlos Penilla, Department of Pediatrics, School of Medicine, University of California, San Francisco

Renee Navarro, Office of Opportunity and Outreach, University of California, San Francisco

Donald Woodson, Office of Opportunity and Outreach, University of California, San Francisco

Anthony Amaro, Office of Opportunity and Outreach, University of California, San Francisco

Ryan Hernandez, Department of Bioengineering, School of Pharmacy, University of California, San Francisco

Ralph Gonzales, UCSF Health, University of California, San Francisco

Cathy Ringstaff, WestEd, San Francisco, California

James Lester, Department of Computer Science, North Carolina State University

AI is transforming healthcare and creating new opportunities for students to engage with AI-enabled careers. However, few middle school learning experiences connect foundational AI literacy with meaningful career exploration.

This presentation introduces AI4Health, a game-based learning environment that integrates Narrative-Centered Learning and Social Cognitive Theory to support both AI literacy and interest in health-related careers. In AI4Health, students assume the role of a medical intern investigating patient cases using AI tools, while navigating ethical dilemmas and making evidence-based decisions.

We present findings from a design-based research program that first included a usability study with 25 middle school students followed by a classroom implementation across four seventh-grade classrooms (N = 51). Results suggest that students found the experience engaging, developed a deeper understanding of how training data influences AI model performance, and reported increased awareness of AI applications in healthcare. Classroom data further revealed statistically significant gains in AI conceptual knowledge and stronger endorsement of key AI literacy principles related to training data, model limitations, and the importance of human judgment. Implications for designing career-connected AI learning experiences will be discussed.

Grade Level: Middle School

Funder: NIH SEPA

Strands: Research & Evaluation

Thursday, October 1

Thursday: 11:00am - 12:00pm - Session T: Roundtable Discussions
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Each roundtable will be in a separate breakout room.

T1. Writing an Effective NCI Youth Enjoy Science (YES) R25 Research Education Grant Application

Learn about the NCI YES R25 program from experienced PIs who will share their tips for putting together a successful proposal.

Facilitators

Megan Mekinda, PhD, Director for Education, Training & Evaluation, University of Chicago Medicine Comprehensive Cancer Center

Eileen Dolan, PhD, Deputy Director, University of Chicago Medicine Comprehensive Cancer Center

Nathan Vanderford, PhD, MBA, Associate Professor of Toxicology and Cancer Biology, University of Kentucky Markey Cancer Center

Jeanne Chowning, PhD, Associate Vice President, Science Education, Fred Hutchison Cancer Center

T2. Evaluators Meet & Greet

External and Internal evaluators are invited to meet. Share best practices and ways to address challenges, methodologies, and instruments.

Facilitators

Elizabeth Oyer, PhD, Director, National Institute for STEM Evaluation and Research, University of Tennessee Synergy Evaluation Institute

Alana Newell, PhD, Assistant Professor, Department of Education, Innovation and Technology; Assistant Director, Center for Educational Outreach, Baylor College of Medicine

T3. Planning for Leadership Succession: How, When, and Why?

We will provide an open forum for dialogue among attendees to discuss strategies for successful leadership transitions in SEPA and NCI YES projects.

Facilitator

Carla Romney, DSc, Director of Research, CityLab, Boston University

T4. Early Career STEM Outreach Professionals Meet & Greet

Connect with attendees who are embarking on or exploring a career in science education outreach—share resources, opportunities, etc.

Facilitators

Morgan Coburn, PhD, Assistant Director of Outreach and Education, Center for the Neurobiology of Learning and Memory, University of California, Irvine

Manuella Yassa, PhD, Director of Outreach and Education, Center for the Neurobiology of Learning and Memory, University of California, Irvine

T5. Middle School Programming

Meet others who work with middle school (grades 6–8) students and teachers —share the types of projects in which you’re involved, your favorite tips and practices, as well as challenges and ways you’ve addressed them.

Facilitator

Cara Monroe, PhD, Senior Project Manager-Cancer Research Education & Training Coordination, University of Oklahoma Health Campus - Stephenson Cancer Center

T6. PreK and Elementary School Programming

Chat with colleagues who do STEM outreach with preKindergarten through 5th grade students and teachers. Let’s have a Show & Tell of great activities, storybooks, and other ways to make science come alive for the youngest among us.

Facilitator(s)

Maria Isabel Panizo, PhD, Research and Evaluation Consultant

T7. MiNDS Research Exchange Program: Neuroscience Research Talks for High School Students

Mentoring in Neuroscience Discovery at Sinai (MiNDS), the Icahn School of Medicine at Mount Sinai’s student- and faculty-run neuroscience outreach organization, instituted a new Research Exchange program for graduate students to present their research to high school students at a local STEM-oriented school. In this roundtable, we’ll review the program design, outcomes, and key takeaways from the implementation of the program. We’ll also invite attendees to share their experiences connecting graduate researchers and precollege students.

Facilitators

Emma Hays, PhD Candidate, Icahn School of Medicine at Mount Sinai, Department of Neuroscience

Denise Croote, PhD, Assistant Professor, Department of Neuroscience, Icahn School of Medicine at Mount Sinai

Thursday: 12:00pm - 12:30pm - Break
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Thursday: 12:30pm - 1:30pm or 1:45pm - Concurrent Sessions

Session U. Empowering Future STEM Leaders in Mental Health: Centering Student Voices and Experiences

Rachel Harris, MA, University of California, San Francisco

Sabine Jeske, MS, University of California, San Francisco

Heather Gerke, PhD, University of Cincinnati

Susan Watts-Taffe, PhD, University of Cincinnati

This interactive breakout session brings together two innovative youth programs: UCSF's Teen Wellness Connection and the University of Cincinnati's Youth Built Change, which is funded by the National Institute of Minority Health and Health Disparities.

Teen Wellness Connection is a nine-month, out-of-school program that connects students with mental health researchers and clinicians, culminating in a student-led mental health Summit for their peers. Youth Built Change empowers high school students as co-researchers.

Through a course embedded in the school year, students partner with university researchers to design and conduct original research investigating topics such as substance use, addiction, and other mental health factors affecting their communities. Both programs are grounded in shared values of fostering belonging and self-efficacy, centering students' unique expertise and lived experience, and cultivating the next generation of STEM and public health leaders.

We will draw from shared experiences and program outcomes to explore best practices and common challenges in youth leadership development work and what it takes to center youth expertise and lived experiences. Whether you work in research, education, or community health, you'll leave with practical insights into supporting youth as genuine partners in mental health work.

As a result of participating in this session, conference attendees will:

- Learn about program structures and strategies used to empower high school students as public health ambassadors in their communities.
- Share strategies used in your own projects for developing youth leadership and centering youth voice into research, programming, or health and science outreach.
- Discuss common obstacles, best practices, and impact related to youth leadership development and centering youth expertise in community engagement.

Generalizability:

- Best practices for engaging high school students in science and health communication.
- How to design programs that build students' self-efficacy and sense of belonging.
- Strategies to center and leverage students' lived experiences and insider knowledge of their communities.
- Models for connecting youth to STEM and public health career pathways.¹

Grade Level: High School

Funder: NIH SEPA, National Institute of Minority Health and Health Disparities

Strands: Research Experiences for Students & Teachers; Informal Science Education

Session V. Speaking the Same Language: How to Work Effectively with Your Multimedia Production Partners

Kagan Breitenbach, Video & Audio Producer, Stark Science Learning Center, University of Utah

Ashe Erickson, Web Systems Manager, Stark Science Learning Center, University of Utah

Max Kelly, Art Director, Stark Science Learning Center, University of Utah

Natalie Holland, Graphic Designer, Stark Science Learning Center, University of Utah

Moriah Davies, Graphic Designer, Stark Science Learning Center, University of Utah

Brooklee Watters, User Experience Software Developer, Stark Science Learning Center, University of Utah

Claudia Morales, Interim Associate Director, Stark Science Learning Center, University of Utah

Many NIH-funded science education projects rely on outsourced or external partners to produce videos, animations, and interactive media, yet project teams are rarely fluent in how that production actually works. The result is avoidable miscommunication: misaligned expectations, scope creep, costly rework, and deliverables that miss the mark. This interactive session builds that fluency. Three discipline leads from the Stark Science Learning Center, covering video and sound, art and animation, and web and interactive development, walk participants through the production process from pre-production to completion. Each segment introduces the terminology you need, sets expectations for each phase, and shows real samples, including storyboards, animatics, and interactive prototypes, so you can see what good work looks like. Participants will leave knowing what to ask for, when to ask for it, and how to give productive and timely feedback, making collaboration with a production partner smoother and more productive.

By the end of this session, participants will be able to:

- Outline the high-level stages of multimedia production, from pre-production to completion, across video, art and animation, and interactive media.
- Use accurate production terminology when communicating with collaborators.
- Anticipate what to expect at each phase and identify what to request, including when to ask for a storyboard versus an animatic.
- Review production deliverables more critically by recognizing what strong samples look like.

Generalizability: A clear mental model of how multimedia production moves from pre-production to completion, the terminology to communicate across that process, and the judgment to know what to ask for at each phase and what each deliverable along the way is meant to tell you. The session distills lessons learned from real video, art, and interactive

projects into best practices any team can apply, regardless of medium or the specific collaborator they hire. Participants leave better equipped to set expectations early, give feedback that recognizes quality work, and avoid the costly rework that comes from misaligned visions, all of which transfer directly to their own outsourced or co-produced media efforts.

Grade Level: All

Funder: NIH SEPA

Strands: Curriculum Development; Project Administration

Session W. Short Talks - Research & Evaluation Methods and Programs

W1. UQUEST: Questioning, Understanding, Experiencing, and Scientific Thinking

Patrice G. Saab, Ph.D., University of Miami

Maria I. Panizo, Ph.D., Research and Evaluation Consultant

Maria M. Llabre, Ph.D., University of Miami

The UQUEST science education research project was conducted in an after-school program serving youth in Miami's Overtown neighborhood. The overall goal of UQUEST was to enhance grade 2-5 students' science-related competencies by offering curricula that focused on scientific methods and the development of science practices.

Participants were 162 students who completed at least one pretest assessment during the three-year implementation period. The sample was comprised of 60% girls. Participants were randomly assigned to one of two teaching instruction conditions: 1) QUEST standard "didactic" condition or 2) QUEST+ modified Question Formulation Technique. While teaching strategies differed, lesson content was identical across conditions. Assessments were conducted at the beginning and end of each academic year. College students majoring in STEM fields served as near-peer mentors. Mentors received weekly training on how to deliver the curriculum and provided instruction to participants for an hour per week.

This presentation will report quantitative and qualitative results. We will also discuss lessons learned. The implications of our findings for future work will be examined.

Grade Level: Elementary

Funder: NIH SEP

Strands: Research & Evaluation; Curriculum Development

W2. Facilitating Deeper Reflections for Research and Evaluation: Adapting Phenomenological Interview Techniques

Dayna DeFeo, University of Alaska Anchorage

Kathryn Davis, University of Alaska Anchorage

Douglas Cost, University of Alaska Fairbanks

Reflection is a critical part of sensemaking, and we see it applied in a variety of teaching, learning, and management tasks. It is also valuable for research and evaluation projects that want to elicit how participants experienced specific learning or program activities.

This short talk introduces phenomenological interviewing as a data collection process, and shares how the authors have adapted its key tenets to facilitate deeper participant reflection and sensemaking in a single sitting. The authors have used this technique to collect data for six different research studies and three evaluation projects, and will share links to full-text articles and other resources that attendees can access and cite to develop their own interview approach.

Grade Levels: All

Funder: NIH SEPA

Strand: Research & Evaluation

W3. Lights, Science, Assessment: Understanding Learning in Informal Contexts

Amanda Obery, PhD, Central Washington University

Matt Queen, PhD, Montana State University Billings

Martha Cabell, Yellowstone Evaluation Services

Shelly Hogan, Yellowstone Evaluation Services

Many impactful learning experiences occur in informal contexts that drive engagement and identification with science. However, often learning in these spaces goes unmeasured, in part due to the difficulty of maintaining the open-choice nature of the context. Especially for abstract concepts like the particle nature of matter, being able to uncover students' mental models could lead towards developing better learning experiences. Thus, a challenge is to craft valid assessment tools that minimally impact the experience of students. The Authentic Community Engagement in Science uses writing and drawing as assessments. Our project uses Chemistry Theater to support conceptual understanding of chemical and physical change for 5th grade students, and one of our goals is to gain a rich understanding of the mental models that students have about changes in matter while keeping the barriers to completing the assessments low.

We will examine assessment tools, including those that center drawings, and data collection processes to support research in informal contexts. In addition, we will explore corresponding student data to spur conversation about best practices for assessing learning and data collection practices in informal learning spaces.

Grade Level: Elementary

Funder: NIH SEPA

Strands: Research & Evaluation; Informal Science Education

W4. Co-Creating a Better Future: Outcomes of STEAM in Action Adult Environmental Health Education

Kaitlyn Krushefski, The University of Arizona
Sanlyn Buxner, The University of Arizona
God'sgift Chukwuonye, The University of Arizona
Miriam Jones, The University of Arizona
Miracle Martinez, The University of Arizona, Regenerating Sonora, Inc.
Carol Newbauer, The University of Arizona
Kunal Palawat, The University of Arizona
Illiana Samorano, The University of Arizona
Abigail Zettlemoyer, The University of Arizona
Mónica Ramírez-Andreotta, The University of Arizona

Rural mining communities often face disproportionate environmental health risks and limited access to environmental health education and decision-making processes. The STEAM in Action (Science, Technology, Engineering, Art, and Math) program was developed to help bridge this gap.

This presentation introduces the results of two adult environmental health training sessions held in Globe/Miami and Hayden/Winkelman, Arizona in the summer of 2024. Mixed methods are used to evaluate learning outcomes. A pre/post-survey set was administered before/immediately after the trainings and retained knowledge was measured qualitatively via follow-up interviews with ~30% of trainees 6-8 months after the training. This study evaluates whether participation in the STEAM in Action training improved environmental health literacy, environmental monitoring skills and confidence, critical thinking, and community efficacy related to decision-making. We also investigate the main lasting impressions of the training as expressed in the follow-up interviews.

Findings indicate a significant increase in environmental monitoring skills, with increased confidence reflected in the interviews. Critical thinking and community efficacy for change-making also appeared to increase. Main themes from the interviews included frequent use of environmental vocabulary, discussion of concerns about local environmental problems and possible solutions, and repeated expressions of empowerment and self-efficacy among interviewed participants.

Grade Level: Adult
Funder: NIH SEPA
Strands: Research & Evaluation

Thursday: 1:30pm - 2:00pm - Break
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Thursday: 2:00pm - 3:00pm - Plenary Session - Session X
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Celebrate the SciEd contributions of Louisa Stark & the Genetic Science Learning Center (now the Stark Science Learning Center)

Thursday: 3:00pm - 3:30pm - Break

Thursday: 3:30pm - 4:30, 4:45 or 5:00pm - Concurrent Sessions

Session Y. Curriculum, Multimedia, and Video Showcase: Session 2 (session goes until 5:00pm)

Y1. The Atomic Circus

Grade Level: Elementary

URL: https://youtu.be/bwhlpAbYn_g?si=-dJDGJhinb0FYwvV

This video pulls back the curtain and introduces you to The Atomic Circus. The circus is a multimedia stage show that blends live music, dance, and narrative storytelling into engaging chemistry theater.

Funder: NIH SEPA

Authors/Presenters: Matt Queen, PhD, Montana State University Billings; Amanda Obery, PhD, Central Washington University; Daniel Willems, PhD, Montana State University Billings

Y2. Presenting BRAINS: Breaking STEM Barriers with a Neuroscience Docuseries

Grade Levels: Middle School, High School, Undergraduate

URL: <https://www.youtube.com/@thebraineryorg>

By highlighting career paths and experiences in STEM and the psychological sciences, this innovative docuseries aims to make brain-related concepts and career opportunities more accessible, relevant, and engaging to young learners.

Funder: NIH SEPA

Authors/Presenters: Madison H. Fung, PhD, University of Minnesota; Norwood A. Glaspie, BS, University of Minnesota; Logan R. Caola, MS, University of Minnesota; Shelby J. Anderson, University of Minnesota; Eva S. Nelson, PhD, University of Minnesota; Anita C. Randolph, PhD, LADC, University of Minnesota; Evaluator: Safa Asad, PhD, Rockman et al Cooperative

Y3. University of Nevada, Reno's Community of Bilingual English Spanish Speakers (CBESS) Program

Grade Level: High School

URL: <https://youtu.be/Lxn4g5aeqgg?si=nsqkl6hmc3P66Y5B>

CBESS is an intensive 18-month program that includes a one-week residential campus experience, a two-week online program, and an ongoing research and community outreach project. Focused on rural Nevada, CBESS promotes workforce readiness through bilingual

STEM and health career preparation, emphasizing hands-on learning, mentoring, and community engagement.

Funder: NIH SEPA

Authors/Presenters: Kenia Ramirez Moreno, University of Nevada, Reno; Jacqueline Del Real Adame, University of Nevada, Reno

Y4. Empowering Teachers and Students to Take Ownership of Their Learning Through the Use of Zines as a Professional Learning Innovation

Grade Levels: Middle School, High School

URL: <https://tinyurl.com/empowerzine>

This showcase features the ‘EMPOWER zines,’ resources helping teachers modify their curricula to promote student ownership. ‘Zines’ are short, self-published materials whose creative formats invite active engagement, making them an innovative medium for professional learning. Teachers can use them independently or collaboratively in professional learning communities to support planning and reflection.

Authors/Presenters: Nga Hoang, University of Colorado Boulder; Nicholas Leonardi, University of Illinois Urbana-Champaign; Monica Ko, University of Colorado Boulder; Barbara Hug, University of Illinois Urbana-Champaign; Stefanie Christensen, University of Colorado Boulder; Kerri Wingert, Good Questions Research LLC; Holly Wingren, University of Illinois Urbana-Champaign

Y5. Same Cancer, Different Treatment: Using AI-Generated Cancer Claims to Make Human Scientific Reasoning Visible

Grade Level: Grades 11-12

URL: Not available

Students enter a simulated tumor-board environment and encounter a plausible AI-generated recommendation concerning two colorectal cancer cases. As they investigate the underlying cancer biology, patient evidence, pathology, genomic information, and disease characteristics, students determine whether the evidence actually warrants the AI-generated conclusion. The lesson uses an authentic cancer-science problem to develop scientific reasoning and AI literacy by making visible the human questioning, evidence evaluation, interpretation, and revision that occur between an AI-generated claim and an informed judgment.

Author/Presenter: Neril Sandeep, Jose Marti STEM Academy, Union City, NJ

Mr. Sandeep developed this lesson plan as part of his participation in the Rutgers Youth Enjoy Science (RUYES) Program.

Y6. Design Challenge: Build a Model of Nano-based Drug Delivery System for Chemotherapeutics

Grade Level: High School

URL: Not available

In this PBL presentation, participants will be introduced to multiple lessons and labs that were designed as scaffolding for students to build an educational model/prototype of a nano-based drug delivery system for the treatment of cancer. Healthcare professionals

can use this model when they discuss treatment options to patients and their families. This will help reduce their anxiety and increase their understanding of the disease during a very difficult time.

Author/Presenter: Maria Tolentino, Woodbridge High School, Woodbridge, NJ

Ms. Tolentino developed this lesson plan as part of her participation in the Rutgers Youth Enjoy Science (RUYES) Program

Y7. Is Cancer Only a Human Story? Exploring Cancer Across the Tree of Life

Grade Levels: Grades 9-10

URL: Not available

This inquiry-based lesson challenges students to investigate cancer as a biological phenomenon rather than exclusively a human disease. Using multimedia resources and authentic scientific evidence, students compare cancer occurrence and resistance across diverse organisms to explore evolution, genetics, and biomedical research.

Author/Presenter: Natalia Coleman, Jose Marti STEM Academy, Union City, NJ

Ms. Coleman developed this lesson plan as part of her participation in the Rutgers Youth Enjoy Science (RUYES) Program

Session Z. Short Talks - Teacher Professional Development (session goes until 4:45pm)

Z1. Evaluating a Contextual STEM Professional Development Program: Outcomes and Lessons Learned from the CRE2STEM Summer Institute

Arlette Chavez Iniguez, University of Rochester

Paula Cupertino, University of Rochester

Dina Markowitz, University of Rochester

Dawn Flowers Thompson, Rochester School District

The CRE2STEM Summer Institute was developed to enhance secondary educators' capacity to deliver contextual education in STEM and foster supportive learning environments for students. This presentation will describe the curriculum development process, implementation strategies, and evaluation approach used to assess program effectiveness. The institute combined interactive workshops, hands-on STEM activities, mentorship, and collaborative curriculum design to support educators in integrating contextual teaching practices into their classrooms.

Evaluation findings from participant surveys and qualitative feedback will be presented, highlighting changes in educator confidence, self-efficacy, and preparedness to implement contextual STEM instruction. Participants reported high satisfaction with the program and identified practical classroom applications, collaboration with peers, and mentorship opportunities as key strengths. Lessons learned from curriculum implementation and evaluation will be discussed.

Grade Levels: Middle School, High School

Funder: NIH SEPA

Strands: Teacher Professional Development; Research & Evaluation

Z2. Exploring the Impact of a Long-Duration Teacher Professional Development Program that Combined Emerging Science and Iterative Design on Teachers' Self-Efficacy and Biomedical Career Awareness

Kathleen M. Gray, University of North Carolina-Chapel Hill

Dana B. Haine, University of North Carolina-Chapel Hill

Jolan Motyka, University of North Carolina-Chapel Hill

Lynn Chesnut, University of North Carolina-Chapel Hill

Jenna Hartley, University of North Carolina-Chapel Hill

This presentation will describe a long-duration professional development (PD) program for secondary science teachers that utilized design thinking principles to support the co-design of instructional materials featuring biomedical research on PFAS (per- and polyfluoroalkyl substances, a class of emerging contaminants). The use of design thinking principles guided co-creation of lessons featuring PFAS by teachers and university researchers. Participants engaged in core elements of design thinking to create, test, and revise lessons that incorporated PFAS data.

A research study explored the impact of this program on participants': 1) knowledge of PFAS and related biomedical research careers, 2) self-efficacy for incorporating current biomedical science into instruction, and 3) instructional approaches for engaging students in learning about emerging science topics. Quantitative and qualitative data collected throughout the program showed statistically significant increases in knowledge and self-efficacy, and qualitative data also illuminated shifts in classroom practice. Research findings offer important insights for those working to support teachers in introducing cutting-edge scientific research to students. The featured PD program, Iterative Design to Engage All Learners, was led by the Center for Public Engagement with Science in the UNC Institute for the Environment from 2021-2025.

Grade Level: High School

Funder: NIH SEPA

Strands: Teacher Professional Development; Research & Evaluation

Z3. For the Teachers: Creating a Professional Development Environment to Engage and Address Teacher Needs

Abha Verma, Co-I, Department of Chemistry, Xavier University of Louisiana

Safa Asad, Evaluator, Rockman et al Cooperative

Maria Valdez, Program coordinator, Department of Chemistry, Xavier University of Louisiana

Mehnaaz Ali, PI, Department of Chemistry, Xavier University of Louisiana

Under the umbrella project of Xavier University of Louisiana's Mobile Outreach for Laboratory Enrichment (XULA-MOLE), initiation and progression of a teachers' professional development (PD) workshop was explored. This session aims to discuss and share both challenges, successes and lessons learned from recruiting and engaging teachers in pedagogy and research training.

The format for our workshops has included sessions focusing on social-emotional learning within the classroom, strategies to address self-care for teachers, as well as hands-on experimental activities that are 'take-home' ready. With each successive workshop, we have assessed the interest of participating teachers in future strategies to better inform the long-term impact of our workshop. Additionally, this workshop also provides a platform for a teachers' Peer Mentoring Network (PMN) that meets throughout the school year. It is the expectation of our project that providing a peer mentoring group to discuss challenges and successes as well as participate in on going professional development activities selected by teachers themselves, would benefit the participating teachers during the school year and impact retention.

This session will highlight multiple strategies that may already be part of existing projects and to provide inspiration for multi-themed PD workshops to be widely adapted.

Outcomes:

- Exploring/Examining challenges and solutions in recruitment of teachers
- Designing 'hands-on' easily accessible take-home-STEM experiments
- Establishing pedagogical and professional development topics relevant to both middle and high schools
- Topics of interest for continuing/sustaining the teachers' peer mentoring network

Grade Levels: Middle School, High School

Funder: NIH SEPA

Strands: Teacher Professional Development; Science Teaching & Learning

Z4. Empowering STEM Teachers through a Community of Practice

Rosemary Riggs, Texas Biomedical Research Institute

Beatriz Guajardo, Texas Biomedical Research Institute

Nicole Jarvis, MA, Research Associate, Rockman et al Cooperative Inc

Kristin Bass, PhD, Director of Research Development, Rockman et al. Cooperative Inc.

Within schools, teachers participate in numerous formal networks, many of which dictate teaching practices to achieve a shared goal: student success on high-stakes tests. We hypothesized the lack of control over teaching practices associated with formal networks diminishes teacher professional identity. We investigated what impact an informal network would have on teacher professional identity using a Community of Practice (CoP) model. Our findings indicate an informal CoP network supported the evolution of teacher professional identity through their efforts to sustain the informal network, increased their

sense of self-advocacy, increased their confidence to apply their pedagogical skills, increased their confidence when communicating with colleagues and administration. In other words, the CoP positively impacted teacher professional identity.

Grade Levels: Middle School, High School

Funder: NIH SEPA

Strands: Teacher Professional Development; Science Teaching & Learning

Z5. Advancing STEMM Education and Workforce Readiness by Immersing Middle and High School Teachers in Scientific Research

Denise E. Croote, Icahn School of Medicine at Mount Sinai

Veronica Szarejko, Icahn School of Medicine at Mount Sinai

Emma Hays, Icahn School of Medicine at Mount Sinai;

Carol C. Gregorio, Icahn School of Medicine at Mount Sinai

Mount Sinai's Summer Research Program for Science Teachers provides middle and high school science teachers with an opportunity to spend seven weeks per summer for two consecutive summers interning in a laboratory at the Icahn School of Medicine at Mount Sinai. Through immersion in active research environments, teachers gain a firsthand understanding of the needs of today's biomedical workforce. With these insights, they can tailor classroom learning to equip students with the critical thinking, experimental design, data literacy, and hands-on skills necessary to excel in an evolving STEMM landscape.

This talk will focus on the program's core design, which includes laboratory internships, weekly professional development workshops, and a supply stipend enabling teachers to bring newly learned laboratory skills and knowledge back to their classrooms. We will discuss the program's impact on participating teachers and scientist mentors during the summers of 2025 and 2026, as well as the broader community built through school-year student field trips to Mount Sinai and scientist-led guest lectures. Finally, we will discuss implementation challenges and outline goals for evaluating and scaling the program. By sharing our lessons learned, we hope to illustrate how research programs for science teachers can support educators, build community, and strengthen the future STEMM workforce.

Grade Level: Middle School, High School

Funders: NIH NCATS via its Clinical and Translational Science Awards (CTSA) Program;

Friedman Brain Institute at the Icahn School of Medicine at Mount Sinai; Center for

Excellence in Youth Education at the Icahn School of Medicine at Mount Sinai

Strands: Research Experiences for Students & Teachers; Teacher Professional Development

Session AA. Short Talks - Curriculum Development and Research Experiences for Students & Teachers

AA1. Designing for Persistence in STEM: The New York City Virus Hunters Program

Christine Marizzi, BioBus, Inc, USA; Department of Microbiology, Icahn School of Medicine at Mount Sinai, USA; Ludwig Boltzmann Institute SOAP at the Medical University of Vienna, Austria

Robert J. Frawley, BioBus, Inc, USA

Benjamin Dubin-Thaler, BioBus, Inc, USA

Lindsay Barone, independent evaluator

Philip S. Meade, Department of Microbiology, Icahn School of Medicine at Mount Sinai, USA

Abigail Maciejewski, Department of Microbiology, Icahn School of Medicine at Mount Sinai, USA

Florian Krammer, Department of Microbiology, Icahn School of Medicine at Mount Sinai, USA; Center for Vaccine Research and Pandemic Preparedness, Icahn School of Medicine at Mount Sinai, USA; Department of Pathology, Molecular and Cell-Based Medicine, Icahn School of Medicine at Mount Sinai, USA; Ludwig Boltzmann Institute SOAP at the Medical University of Vienna, Austria; Ignaz Semmelweis Institute, Interuniversity Institute for Infection Research, Medical University of Vienna, Austria

The New York City Virus Hunters (NYCVH) program is a year-long, out-of-school science research internship that engages high school students in authentic urban microbe tracking research as well as discussing and understanding the connections between classroom learning and their research experiences. This short talk examines how its core structures are intended to support youths' developing relationships to science. Drawing on program documentation and student reflective journals, we articulate the design principles underlying NYCVH and analyze how these principles are enacted in practice, which may ultimately inform the development, study, and evaluation of similar community-based STEM initiatives. Attendees will walk away with best practice examples for interdisciplinary participatory action research, such as the NYCVH.

Grade Level: High School

Funder: NIH SEPA

Strands: Research Experiences for Students & Teachers; Informal Science Education

AA2. Long-term Mentorship for Change: A Retrospective on LSTR1 and its Effects on Student Trajectory in STEM

Jesse Mast, PhD, New Hampshire Academy of Science

Alyson Michael, PhD(ABD), New Hampshire Academy of Science

Claire Quimby, MA, Rockman et al Cooperative Inc.

Kristin Bass, PhD, Rockman et al Cooperative Inc.

The New Hampshire Academy of Science (NHAS) has been operating SEPA-funded programs since 2020. Learning Science Through Research (LSTR)1 and LSTR2 programs have demonstrated the effectiveness of long-term mentorship on both current students and alumni of these programs since their beginning. At the NHAS, we leverage a “nested mentor” model, using our senior staff as well as alumni of our programs to help guide our

students to where they want to go in STEM. We will discuss our philosophy, our programs, and the summative results of LSTR1, including surveys of alumni. These results point to long-term mentorship as a key component of success in STEM education programs.

Grade Levels: Middle School, High School

Funder: NIH SEPA

Strands: Research Experiences for Students & Teachers; Informal Science Education

AA3. Baked In, Not Bolted On: Designing Science Education Materials With Accessibility From Day One

Rebecca J. Peterson, PhD, Interim Director, Stark Science Learning Center, University of Utah

Matt Beecham, Interactive Developer, Stark Science Learning Center, University of Utah

Ashe Erickson, Web Systems Manager, Stark Science Learning Center, University of Utah

Quintin Williams, Assistive Technology Specialist, Utah Schools for the Deaf and the Blind

Lewis Burdette, Braille Proofreader, Utah Schools for the Deaf and Blind

How do you design science materials that truly work for every student, including those who use assistive technology (AT) to learn? Designing for all learners has long been a priority for our team, and we draw on Universal Design for Learning (UDL) and Web Content Accessibility Guidelines (WCAG) in our work. As we develop *Genetics at Work*, a set of SEPA-funded curriculum modules for middle and high school students, we have come to see that materials can meet required accessibility standards and still be hard for students using assistive technology to perceive, navigate, and use.

We are working to build true accessibility into our development process more proactively. We partnered with assistive technology specialists from the Utah Schools for the Deaf and the Blind, who joined us as paid design partners. Their guidance is helping us plan for accessibility from the start of each new module rather than adding it at the end. This talk is a look at work in progress: we will introduce key terms and examples and share practical recommendations for involving AT users as design partners and designing for accessibility from a project's earliest stages.

Grade Levels: Pre-K, Elementary, Middle School, High School

Funder: NIH SEPA

Strands: Curriculum Development; Science Teaching & Learning

AA4. Developing Student Empathy with Disability

Paul Gabrielsen, MS, Lead Science Writer, Stark Science Learning Center, University of Utah

Empathy with disability goes far beyond earmuffs and blindfolds. How do you help students step into the shoes of someone whose life is different than their own? And how do

you do it in a way that avoids pitfalls of stereotyping and enhances, not diminishes, communities' voices?

In this talk, Paul Gabrielsen, a science writer at the Stark Science Learning Center, will recount the production process for an activity designed to help students consider the viewpoints and needs of people with upper limb loss as part of a bioengineering module. He'll talk about how he approached the projects with a priority toward sensitivity and inclusion, and how he listened to members of the limb loss community through the production process. Teachers report the final activity is highly engaging for students and develops their sense of centering engineering design on user needs.

Gabrielsen will offer lessons learned and advice for including communities in activity development, using as an example a later activity designed to build students' empathy with agricultural producers. Thoughtfully presented viewpoints show students how to consider the values and perspectives that shape people's actions and experiences.

Grade Levels: All

Funder: NIH SEPA

Strands: Curriculum Development; Science Teaching & Learning

AA5. Investigating Kate Bionda and the Yellow Fever Epidemic in 19th-Century Memphis: A Case-Based Learning Tool for the Classroom

Mary Randolph-Frye, PhD, Research Associate II, Center for Research in Educational Policy, University of Memphis

Jacen Moore, PhD, MA, MLS (ASCP), Program Director, Medical Laboratory Sciences, College of Health Professions, University of Tennessee Health Science Center

Rebecca Reynolds, PhD, RHIA, FAHIMA, Department Chair of Health Informatics, College of Health Professions, University of Tennessee Health Science Center

Keisha Brooks Burnett, EdD, Department Chair, Diagnostic and Health Science, Program Director of Cytotechnology and Histotechnology, College of Health Professions, University of Tennessee Health Science Center

Simpfronia Taylor, EdD, Director of Community Grants and Programs, University of Tennessee at Martin Ripley Center

Elizabeth Chambliss, MS, Research Associate II, Center for Research in Educational Policy, University of Memphis

This curriculum presentation introduces a problem-based learning (PBL) module designed for high school students using the historical case of yellow fever in 19th-century Memphis, centered on the experience of Kate Bionda. Through this real-world case study, students investigate disease transmission, epidemiology, and public health responses while developing scientific reasoning and critical thinking skills. The module engages learners in analyzing historical data from a journal article containing disease data pertaining to the Memphis epidemic of yellow fever, forming and testing hypotheses about how yellow fever

spread, and reevaluating assumptions considering emerging evidence mirroring the evolution of scientific understanding.

Participants will explore how narrative-driven, place-based learning increases student engagement and deepens comprehension of complex biological and public health concepts. The presentation will also demonstrate how the module aligns with high school science standards and incorporates crosscutting concepts such as cause and effect, systems thinking, and data interpretation. In addition, strategies for teacher professional development focused on designing similar PBL experiences will be highlighted. We will introduce a structured framework for developing scenario-based modules using historical or contemporary case studies to promote inquiry, relevance, and student-centered learning.

Grade Level: High School

Funder: NIH SEPA

Strands: Curriculum Development; Science Teaching & Learning