PRESENTER BIOGRAPHICAL INFORMATION

Aneesha Badrinarayan
Program Associate, Science, Achieve
Aneesha Badrinarayan joined the Achieve staff in 2014 and serves as a program associate. As a member of the science team, she provides support for the state adoption and implementation efforts surrounding the NGSS. Before joining Achieve, Badrinarayan was the outreach program manager at the Ann Arbor Hands-On Museum in Ann Arbor, Michigan. In this capacity, she developed and implemented inquiry-based science curricula for K–8 audiences in an effort to improve science education practices throughout the state of Michigan. A behavioral neuroscientist by training, Badrinarayan first discovered her passion for education as a science tutor and volunteer with 826michigan. She received her BA in Biology from Cornell University and her MS in Neuroscience at the University of Michigan, where she served as a Rackham Regents Fellow and a Ruth L. Kirchstein Graduate Research Fellow through the National Institute for Mental Health.

Jacqueline Barber
Associate Director, Lawrence Hall of Science
Jacqueline Barber serves as associate director of the Lawrence Hall of Science at the University of California, Berkeley, and leads the Hall's Curriculum Center as well as one of the largest curriculum groups within the Center—the Learning Design Group. The Learning Design Group has a portfolio of award-winning curriculum products for teachers and students in preschool through grade 8, supported by a robust curriculum implementation network with active implementation support sites from Carson City to Cleveland, and from Japan to Jordan. She is engaged in research focused on the characteristics of curricula that are able to be implemented at scale. With her long-time collaborator, P. David Pearson, Barber has launched a curriculum and research program focused on the integration of science and literacy, which has yielded dozens of research presentations and publications as well as two curriculum programs: *Seeds of Science/Roots of Reading* and *Amplify Science*, a new technology-enhanced curriculum program designed to address the NGSS. Barber has worked at the Hall for over 30 years, initially working with students and teachers, and now engaging in research and design of curriculum and its implementation. She holds a BA in Biology from Hampshire College and began a research career in neuroendocrinology at the University of Strasbourg before turning to science education.

Leema Berland
Assistant Professor, University of Wisconsin-Madison
Leema Berland is an assistant professor of science education at the University of Wisconsin-Madison, where she focuses on facilitating and studying students as they engage in the sensemaking practices of science, such as scientific argumentation, modeling, and explanation, as well as engineering design practices. To that end, Berland has explored how students interpret sensemaking work, how those interpretations influence their participation in the target practices, and why they interpret it in the ways that they do. Each of these questions is designed to better understand the dynamics of how

and why students are able (or unable) to productively engage in scientific sensemaking. Recently, she has expanded this work to explore ways to better support preservice teachers in creating learning environments that will enable their future students to participate in the sensemaking practices of science. Her work has been funded via numerous NSF grants and has resulted in publications in *Science Education, Journal of Research in Science Teaching, Journal of Learning Sciences,* and *Science Scope.*

Barbara Brauner Berns

Senior Project Director, Education Development Center, Inc. (EDC)

Barbara Brauner Berns is a senior project director at EDC, where she focuses on science education with an emphasis on capacity building, curriculum implementation, state policy, and systemic change. She is PI of CADRE, the Community for Advancing Discovery Research in Education, an NSF-supported resource network serving more than 300 STEM education researchers and developers from NSF's DRK–12 program. She has also established—with an NSF and EDC team—STEM Smart, an initiative designed to disseminate successful STEM research and evidence-based practices. Previously, Berns held leadership positions with EDC's Center for Science Education and its Center for Science Curriculum Dissemination and Implementation. She co-edited the book *Making Science Curriculum Matter: Wisdom for the Road Ahead* and has contributed to diverse policy and research briefs. Before joining EDC, she was a senior policy fellow at the Center for Innovation in Urban Education at Northeastern University. She has held planning, policy, and development positions with state and local educational agencies, universities, private foundations, and nonprofit organizations. Berns received BA and MA degrees from Boston University.

Jody Bintz

Director of Professional Learning, Biological Sciences Curriculum Study (BSCS)

Jody Bintz is a senior science educator and director of professional learning at BSCS. She works primarily in the areas of leadership development, teacher professional development, and related research. Bintz has designed and led a variety of leadership development programs to build teacher and district-level leadership capacity and to enhance the knowledge and skills of professional development providers in various sites across the country. She directs the BSCS National Academy for Curriculum Leadership (NACL), including a six-year partnership with Washington State LASER and involving nearly 30 secondary science leadership teams and approximately 20 statewide leaders. She is currently the PI on an NSF-funded research study to test the influence of the NACL model on student achievement. She is the PI on an NSF-funded project to study science and mathematics teacher leadership development and synthesize the relevant research literature and program descriptions. She is a member of the design team for the Champions for STEM Education leadership development program. Bintz serves as coPI for Developing Guidelines for Assessing the Quality of Instructional Materials and the Extent to Which They Exemplify the NGSS. Through this project, BSCS has summarized existing analysis tools and processes and synthesized research and the results of a summit of leaders in science education to describe the characteristics of measures to assess, and evaluative criteria for assessing, the quality of instructional materials in light of the NGSS.

Kirk Brown

Director of STEM, San Joaquin County Office of Education (SJCOE)

Kirk Brown is the director of STEM at SJCOE. He co-directs the Delta Sierra Science Project, a region of the California Science Project. He was a member of the NGSS State Review Team, Science Expert Panel, Strategic Leadership Team, and the CA Alliance for NGSS. In addition, he is one of the lead writers of the Revised CA Science Framework. His office coordinates the CaMSP Cohort 10 grant focusing on 9th- to 12th-grade modeling in math and science; the Investment in Innovation validation grant with WestEd in grades 4–5 content support using Making Sense of Science and Literacy; and other regional efforts. Before coming to SJCOE, Brown taught international baccalaureate biology and biotechnology at Tracy High School for 25 years, where he co-founded the Agricultural/Scientific Academy. He is nationally board certified in AYA Science and has won numerous teaching awards, including the Milken National Teacher Award, Carlston Family Foundation Outstanding Teachers of America, and the County Teacher of the Year. Beginning in 1992, he was appointed as a faculty scholar at Lawrence Livermore National Laboratory, doing research and helping found the Teacher Research Academies. In 1997, he helped Bio-Rad Laboratories found their Biotechnology Explorer program and published a textbook entitled *Biotechnology: A Laboratory Skills Course* in 2011. He has also authored a biotechnology e-book published by KQED. Brown has a BS in Biology with a concentration in Entomology from CSU Stanislaus and an MA in Educational Leadership from the University of the Pacific.

David Campbell

Program Director, National Science Foundation

David Campbell has been a program director in the Division of Research on Learning in Formal and Informal Settings at the National Science Foundation since 2001. He works with several programs in the Education Directorate, including Discovery Research K–12, Advanced Technology Education, Innovative Technology Experiences for Students and Teachers, and Climate Change Education Partnerships. In addition, he serves on federal interagency working groups that focus on ocean and environmental education. His research interests are within ecology and marine biology. Previously, Campbell taught coral reef ecology for the School for Field Studies in the U.S. Virgin Islands and zoology at the University of New Hampshire before settling at Rider University, where he served as chair of the Biology Department and helped to institute the university's marine biology and environmental science majors. Campbell received a BS in Zoology from the University of Rhode Island, an MS in Marine Biology from the Florida Institute of Technology, and a PhD in Biological Sciences from the University of Rhode Island.

Caleb Cheung

Science Manager, Oakland Unified School District

Caleb Cheung is the science manager for the Oakland Unified School District after previously teaching middle school science. His 20-year career in education focuses on developing districtwide structures and regional partnerships for improving science education and implementing the NGSS. He oversees an extensive K–12 science program that includes curriculum development and implementation, assessments, monthly districtwide professional development, multiple summer institutes, teacher and principal leadership, and the SMART Center—a science support center for the district. He also organizes large districtwide events such as the K–12 Science Fair, Dinner with a Scientist, and Family Science Nights. Cheung has directed many professional development and curriculum projects including Improving Teacher Quality Grants and Math and Science Partnership Grants. In 2002, he was the Marcus A. Foster Educational Institute Distinguished Educator of the Year, and in 2005, he won the Presidential Award for Excellence in Math and Science Teaching. From 2006–09, Cheung served as a commissioner and the chair of the California Commission on Teacher Credentialing. He served on the Science Curriculum Framework and Evaluation Criteria Committee to align California's Science Framework to the

NGSS. His education background includes a BA in Biology from UC Berkeley and an MA in Curriculum and Teacher Education from Stanford University. He received his teaching certification from Cal State University, Hayward in single subject biological sciences and is National Board Certified in Early Adolescent Science.

Jennifer Childress

Director, Instructional Support for Science, Achieve

Jennifer Childress is currently the director of instructional support for science at Achieve, working through state and local partnerships to help support implementation of the NGSS. She joined Achieve in 2011 from the National Science Resources Center (NSRC), an organization of the Smithsonian Institution. At the NSRC, she served as the director of the Center for Building Awareness of Science Education (BASE). In this role, she developed and managed numerous partnerships to help implement science education research and best practices in school districts, states, and countries. Childress began her education career as a secondary school tutor and a volunteer science teacher at the Boys and Girls Club. She earned her BS in Biochemistry from the University of Missouri, Columbia and her PhD in Biomedical Science from the University of Texas, Houston.

Jennifer Chiu

Assistant Professor, Curry School of Education, University of Virginia

Jennifer Chiu is an assistant professor at the Curry School of Education at University of Virginia. Currently, she develops and implements technology-enhanced engineering design projects in schools where students learn and apply science and mathematics concepts using the WISEngineering learning environment. This work aligns with both the NGSS and the Common Core State Standards. Her other projects include developing mixed-reality technologies and accompanying instructional materials for science classrooms, and implementing and researching best practices with simulations for science and engineering learning. Chiu was formerly a high school science and mathematics teacher (physics, chemistry, calculus, algebra II) and used engineering projects in her classroom as a way to motivate and demonstrate learning of science and math concepts. She is the recipient of an NSF CAREER grant and the Spencer Dissertation Fellowship. She has a BS in Engineering from Stanford University and PhD in Education in science, math, and technology from the University of California, Berkeley.

Samantha Daley

Director of Research, CAST

As director of research at CAST, Samantha Daley oversees all research activities, supporting her colleagues, providing guidance in the areas of research methodology and data analysis, and working with many external partners. In her own research, Daley investigates the relationship between emotions and cognitive performance of students, particularly those with learning disabilities. She focuses on the role of emotions in learning activities and how to design instruction to reflect the relationship between emotion and cognition in learning. Recently, her work has focused primarily on reading motivation among struggling readers and on the effects and reduction of stigma and stereotype threat in learning environments. In addition to this work, she has contributed to projects funded by the U.S. Department of Education's Institute for Educational Sciences and the NSF to incorporate universal design for learning (UDL) in middle and high school science curricula and has led efforts in supporting implementation of the principles of UDL in lesson development and school-wide change. Daley teaches a course on UDL at the Harvard Graduate School of Education. Before joining CAST, she was a clinical fellow in the Learning Disabilities Program at Children's Hospital, Boston; an instructor in the Language & Literacy Program at the Harvard Graduate School of Education; and a learning disabilities specialist working with high school and college students. She received her BS in Journalism and Political Science

from Northwestern University, her MA in Education/Teaching of Individuals with Specific Learning Disabilities from Teachers College of Columbia University, and her MED in Mind, Brain, and Education and EdD in Human Development and Psychology from Harvard Graduate School of Education.

Sarah Delaney

Science Program Administrator, San Francisco Unified School District

Sarah Delaney is the science program administrator of San Francisco Unified School District. Her primary focus is to ensure rigorous and relevant science learning for all students through the use of professional learning, curriculum development, and instruction coaching. She has been in this role for the past three years and has prepared the district for the implementation of the NGSS. Her experience includes six years as a middle school science teacher, four years as a professional development provider and instructional coach, and an exciting summer spent teaching science to three and four year olds. Delaney has successfully provided teacher professional development on the NGSS using science notebooking to support literacy, unit planning with Understanding by Design, the art and science of questioning, and the benefit of environmental education. She supervises a science team comprising 12 people and facilitates a strong network of 35 science education partners that support SFUSD teachers, students, and families. She has successfully written and obtained several grants to support SFUSD science programs and is dedicated to ensuring that all students have access to high-quality science learning. Delaney has a BS from UC Santa Barbara in Physiology and an MA in Organization and Leadership from University of San Francisco. She has an administrative credential and a single subject science credential.

Kathy DiRanna

Statewide Director, K–12 Alliance, WestEd

Kathy DiRanna is the director of the California NGSS K–8 Early Implementation Initiative, a four-year demonstration project with eight districts and two charters whose goals are to build district leadership for full NGSS implementation, develop and/or field test implementation tools and processes, and serve as a resource to districts in state and nationally. She also facilitated the Science Expert Panel that recommended the NGSS for adoption and the NGSS State Implementation Plan. DiRanna has helped shape California's science reform efforts for the past 28 years, serving as a PI/PD for NSF-funded projects, including the California Systemic Initiative, the Center for the Assessment and Evaluation of Student Learning (CAESL), and Science Partnerships for Articulation and Networking (SPAN), as well as multiple California Mathematics and Science Partnership grants. She co-developed the professional development for the Biological Sciences Curriculum Study (BSCS) SCI Center, FOSS Leadership Academy, and Using Data Project. She has been an instructional materials consultant and is a featured speaker at state and national conferences. She is the co-author of *Assessment-Centered Teaching: A Reflective Practice, A Data Coaches Field Guide*, and a chapter in *Professional Learning Communities for Science Teaching: Lessons from Research and Practice*. DiRanna has received several awards for her work, including the WestEd's Paul Hood Individual and Team Award, Learning Forward's Susan Loucks-Horsley Award, the California Science Teachers Association's Margaret Nicolson Award, and the National Science Education Leadership Association's Outstanding Leadership in Science Education Award. She has an MS in Zoology from the University of California, Los Angeles.

Daniel C. Edelson

Executive Director, Biological Sciences Curriculum Study (BSCS)

Daniel Edelson joined BSCS as executive director and president in January 2015. He brings significant experience as a curriculum and educational software developer, educational researcher, and advocate for science and social studies education to this role. From 2007–14, Edelson was vice president for education at the National Geographic Society and executive director of the National Geographic

Education Foundation. In these roles, he led National Geographic's educational outreach and reform efforts. From 1993–2007, he was on the faculty at Northwestern University, where he had a joint appointment in education and computer science. At Northwestern, he conducted a program of integrated research and development focusing on earth and environmental science education. As a curriculum and software developer, Edelson is lead author of a high school environmental science course, *Investigations in Environmental Science: A Case-Based Approach to the Study of Environmental Systems,* and an author of units in two comprehensive middle school science programs, *Project-Based Inquiry Science* and *Investigating and Questioning our World through Science and Technology (IQWST)*. He has also led the development of several educational software environments for visualizing and analyzing geographic data, including *National Geographic FieldScope, My World GIS*, and *WorldWatcher*. As a researcher and advocate, he has written extensively on the importance of geoscience, geography, and environmental science education, and has published numerous research papers on motivation, instructional design, educational technology, and teacher professional development. Edelson has a BS in Electrical Engineering from Yale University and a PhD in Computer Science (Artificial Intelligence) from Northwestern University.

Joan Ferrini-Mundy
Assistant Director, NSF Directorate for Education and Human Resources
Joan Ferrini-Mundy is assistant director of the NSF for Education and Human Resources, a position she has held since February 2011, and is responsible for the leadership of the NSF Directorate for Education and Human Resources (EHR). She had served the NSF in a number of capacities since 2007 including as inaugural director (through an Intergovernmental Personnel Act appointment) of the EHR Directorate's Division of Research on Learning in Formal and Informal Settings. From 2007 through 2009, Ferrini-Mundy was a member of the National Science and Technology Council's (NSTC) Subcommittee on Education, and currently co-chairs the Strategic Plan workgroup of the NSTC Committee on STEM Education. She is a member of the Mathematics Expert Group of the Programme for International Student Assessment (PISA), and in 2007–08, representing NSF, she served as an ex-officio member of the President's National Mathematics Advisory Panel, and co-chaired its Instructional Practices Task Group. From 1999–2011, Ferrini-Mundy held an appointment at Michigan State University (MSU), where she was a university distinguished professor of mathematics education in the Departments of Mathematics and Teacher Education, and associate dean for science and mathematics education in the College of Natural Science. Her research interests include calculus teaching and learning, mathematics teacher learning, and mathematics and science education policy at the K–12 level. Ferrini-Mundy holds a PhD in Mathematics Education from the University of New Hampshire. She was elected a Fellow of the American Association for the Advancement of Science in 2011.

Christopher Harris
Senior Researcher in Science Education, Center for Technology in Learning, SRI International
Christopher Harris leads the science education research group within the Center for Technology in Learning at SRI International in Menlo Park, California. His research focuses on the design, implementation, and study of science instructional innovations in PK–12 classrooms and informal settings. Of central interest is the design and research of curricula and assessments that capitalize on innovative technologies and make learning accessible for students of diverse backgrounds and abilities. At SRI, he leads large-scale multi-year, multi-institutional research, development, and evaluation projects and has been involved in developing scalable approaches to address the NGSS through curricula and assessments that help teachers engage their students in using science practices, core ideas, and crosscutting concepts to make sense of phenomena and design solutions to problems. His research often involves collaborative work in real-world educational settings for the purpose of informing both

research and practice. His recent publications have addressed science education policy, science curriculum implementation, science assessment, design-based implementation research, science teaching practice, and the role of authenticity in science education. Previously, Harris was an assistant professor of science education at the University of Arizona. He completed his doctoral work at the University of Michigan, where he conducted learning sciences-based research within the Center for Highly Interactive Computing in Education.

Evan Heit

Director, Division of Research and Learning, Directorate of Education and Human Resources, National Science Foundation

Evan Heit is director of the Division of Research on Learning in the Education and Human Resources Directorate of the National Science Foundation. Heit's academic background is in cognitive science. He has published numerous papers on learning and cognition by adults and children, involving experimentation and computational modeling. His research on concept learning, memory, scientific and informal reasoning, metacognition, math anxiety, and neuroscience approaches to reasoning is particularly relevant to his work at NSF. Heit is visiting NSF under the Intergovernmental Personnel Act program. He is a professor the University of California, Merced, where he was a founding faculty member. At UC Merced, he served in various roles such as graduate group chair, planning and budget committee chair, and faculty senate chair. He was previously a faculty member at the University of Warwick in the UK. He holds a BSE in Computer Science and Engineering and a BA in Psychology from the University of Pennsylvania, and a PhD in Psychology from Stanford University.

Sara C. Heredia

Postdoctoral Researcher, Learning Research Scientist, Exploratorium Teacher Institute

Sara C. Heredia is a postdoctoral researcher at the Exploratorium Teacher Institute. Her research focuses on helping secondary science teachers in the Bay Area make sense of the NGSS and the shifts required to align their practice to this new vision for science education. In particular, she is developing a planning tool that supports their modification of hands-on inquiry activities into practice-rich, three-dimensional learning opportunities. Previously, Heredia worked on a long-term school-embedded professional development program at the University of Colorado, Boulder, which is designed to support high school biology in the design and enactment of formative assessment in evolution. Her dissertation analyzed how the teachers' school and district context influenced their sensemaking about formative assessment tools and practices. Heredia has a BA in Environmental, Population, and Organismic Biology from the University of Colorado, Boulder; an MA in Secondary Science Education from The City College of New York; and a PhD in Curriculum and Instruction from the University of Colorado, Boulder.

Sybil Kelley

Assistant Professor, Portland State University

Sybil Kelley is an assistant professor of science education and sustainable systems at Portland State University in the Leadership for Sustainability Education program, and she teaches the Elementary Science Methods courses in the Graduate Teacher Education Program. Her programming and research focuses on connecting K–12 students and educators in underserved schools and neighborhoods to authentic, project-based learning experiences that contribute to real-world problem solving. Taking a collaborative approach, Kelley supports teachers and community-based educators in aligning learning experiences across formal and informal contexts. Her research focuses on investigating the impacts of these experiences on student engagement, thinking, and learning; teacher self-efficacy; pedagogical content knowledge; and instructional practices. She is coPI for the DRK–12 project, Science in the Learning Gardens: Factors That Support Racial and Ethnic Minority Students' Success in Low-Income

Middle Schools, which emphasizes the use of school learning gardens as milieu for teaching and learning science. In this role, Kelley has been designing curriculum materials aligned to the NGSS that complement the school district's adopted middle school curriculum (SEPUP). This work has included developing and organizing garden-based curricula into thematic instructional units, particularly emphasizing engineering design. Additionally, she has led professional development activities for classroom teachers and garden-based educators implementing the curriculum. Prior to her work in education, Kelley worked as an environmental scientist and aquatic toxicologist. She earned her MST from the Center for Science Education and her PhD in Environmental Sciences and Management at Portland State University, with a research focus on teaching and learning science.

Joseph Krajcik
Director, CREATE for STEM Institute, Michigan State University
Joseph Krajcik is director of the CREATE for STEM Institute and a faculty member in science education at Michigan State University. A former high school chemistry and physical science teacher, he spent 21 years at the University of Michigan before coming to Michigan State in 2011. During his career, he has focused on working with science teachers to reform science teaching practices to promote students' engagement in and learning of science. He was PI on an NSF project that aims to design, develop, and test the next generation of middle school curriculum materials to engage students in obtaining deep understandings of science content and practices. He also served as head of the Physical Science Design Team to develop the NGSS. Krajcik serves as co-editor of the *Journal of Research in Science Teaching*. He has authored and co-authored curriculum materials, books, software, and over 100 manuscripts, and makes frequent presentations at international, national, and regional conferences. He is a fellow of the American Association for the Advancement of Science and has served as president of the National Association for Research in Science Teaching, from which he received the Distinguished Contributions to Science Education Through Research Award in 2010. Krajcik has a PhD from the University of Iowa.

James C. Lester
Distinguished Professor, North Carolina State University
James C. Lester is a distinguished professor of computer science and director of the Center for Educational Informatics at North Carolina State University. He is a fellow of the Association for the Advancement of Artificial Intelligence (AAAI). His research centers on personalized learning technologies that utilize artificial intelligence to create learning experiences that are designed to be both highly effective and highly engaging. Over the past decade his work has focused on adaptive learning environments for K–12 STEM education that feature scientific modeling, game-based learning, and intelligent virtual agents. His lab also creates next-generation AI-based learning technologies spanning immersive narrative-centered learning, affective computing, and natural language tutorial dialogue systems. Lester has served as editor-in-chief of the *International Journal of Artificial Intelligence in Education*, as conference co-chair for the International Conference on Intelligent Virtual Agents, and as program chair for the ACM Conference on Intelligent User Interfaces, the International Conference on Intelligent Tutoring Systems, and the International Conference on Foundations of Digital Games. The adaptive learning environments he and his colleagues develop have been used by thousands of students in K–12 classrooms.

Marcia C. Linn
Professor, University of California, Berkeley
Marcia C. Linn is professor of development and cognition, specializing in science and technology in the Graduate School of Education at University of California, Berkeley. She is a member of the National Academy of Education and a fellow of the American Association for the Advancement of Science (AAAS),

the American Psychological Association, and the Association for Psychological Science. She has served as president of the International Society of the Learning Sciences, as chair of the AAAS Education Section, and on the boards of the AAAS, the Educational Testing Service Graduate Record Examination, the McDonnell Foundation Cognitive Studies in Education Practice, and the NSF Education and Human Resources Directorate. Awards include the National Association for Research in Science Teaching Award for Lifelong Distinguished Contributions to Science Education, the American Educational Research Association Willystine Goodsell Award, and the Council of Scientific Society Presidents first award for Excellence in Educational Research. Linn earned her PhD at Stanford University where she worked with Lee Cronbach. She spent a year in Geneva working with Jean Piaget, a year in Israel as a Fulbright Professor, and a year in London at University College. She has been a fellow at the Center for Advanced Study in Behavioral Sciences three times.

Suzanna Loper
Middle School Curriculum Director, Lawrence Hall of Science
Suzanna Loper is the middle school curriculum director for the Learning Design Group at the Lawrence Hall of Science at the University of California, Berkeley, where she leads a team that is creating science curriculum materials designed for the NGSS. This curriculum program, *Amplify Science*, integrates hands-on investigations and development of literacy skills with innovative use of technology. She also serves as the PI on an NSF grant focused on supporting teachers in teaching about scientific argumentation. This project is a collaboration with Dr. Katherine L. McNeill at Boston College. Loper is the author of a number of teacher's guides and student books for the *Seeds of Science/Roots of Reading* elementary science and literacy curriculum program. Before coming to the Lawrence Hall of Science in 2006, she was a middle and high school science teacher in public schools. Loper holds Pa PhD in Science Education from the University of California, Berkeley.

Jacqueline S. Miller
Senior Research Scientist, Education Development Center, Inc. (EDC)
Jacqueline S. Miller is a senior research scientist at EDC in Waltham, Massachusetts. She is currently developing online resources for teachers related to emerging and reemerging diseases and evaluating the current state of student-centered learning and deeper learning in high school science classes. She has also developed curricula in introductory high school courses in biology, chemistry, and physics concepts and practices; developed an exemplar electronic teacher guide to accompany research-based curricula; and redesigned science units based on the universal design for learning (UDL) model. Miller was a reviewer for *A Framework for K-12 Science Education* and the NGSS. She has served on the Mathematics and Science Education Advisory Council for the Massachusetts Department of Elementary and Secondary Education and was a member of the steering committee for NAEP Science Framework. Miller has an MA from Wellesley College, a PhD from University of Wisconsin-Madison, and was a postdoctoral fellow at Harvard University and Brandeis University.

Barbara Nagle
SEPUP Director, Lawrence Hall of Science
Barbara Nagle is the SEPUP director at the Lawrence Hall of Science at the University of California, Berkeley. Her current work focuses on development of curriculum materials and professional development programs that support three-dimensional learning as envisioned in the NGSS. She is leading SEPUP's development of new editions of the SEPUP middle school program and is a coPI for the NSF DRK–12 project Moving Next Generation Science Standards into Practice: A Middle School Ecology Unit and Teacher Professional Development Model. For this project, the Lawrence Hall of Science is collaborating with PI Jim Short of the American Museum of Natural History and coPI Suzanne Wilson of

the University of Connecticut. Nagle has taught high school chemistry in Oakland, California, and college-level biology courses at the University of Pennsylvania and UC Berkeley. She has contributed to numerous NSF-funded SEPUP curriculum modules and units as an author, project coordinator, and PI. Her published products, developed in collaboration with the SEPUP team, include a complete middle school science series that includes *Issues and Earth Science, Issues and Life Science,* and *Issues and Physical Science*, and two high school courses titled *Science and Sustainability* and *Science and Global Issues: Biology.* All SEPUP materials are based on an issue-oriented instructional model in which personal, community, or global issues related to science provide a context for learning. Nagle received her PhD in Cell Biology from the University of Pennsylvania.

Jonathan Osborne

Professor, Stanford University

Jonathan Osborne is the Kamalachari Family Professor of Science in the Graduate School of Education, Stanford University. He started his career teaching high school physics in inner London before joining King's College London in 1985, where he worked for 23 years. He became a full professor in 2000 and Head of the Department of Education in 2005. He then joined Stanford in 2009. During his career, he has been an advisor to the United Kingdom House of Commons Science and Technology Committee for their report on Science Education in 2002, has been President of the U.S. National Association for Research in Science Teaching (2006–07) and has won the association's award for the best research publication in 2003 and 2004 in the *Journal of Research in Science Teaching*. He was a member of the U.S. National Academies Panel that produced the new framework for the NGSS in the United States. Currently, he is chair of the expert group responsible for producing the framework for the OECD PISA science assessments in 2015. His research focuses on the teaching and learning of argumentation, how to teach literacy in science, and students' attitudes towards science. Osborne earned Physics and an MS in Astrophysics and PhD in Education from the University of London.

Cynthia Passmore

Associate Professor, University of California, Davis

Cynthia Passmore is an associate professor specializing in science education at the University of California, Davis School of Education. Her research focuses on the role of models and modeling in student learning, curriculum design, and teacher professional development. She investigates model-based reasoning in a range of contexts and is particularly interested in understanding how the design of learning environments interacts with students' reasoning practices. She has been the PI of several large grants and has co-authored several papers on modeling in science education that have been published in journals such as *Science & Education*, *The International Journal of Science Education* and *School Science and Mathematics*. Passmore completed her doctoral work at the University of Wisconsin-Madison, and prior to that she was a high school science teacher.

Kathy Perkins

Director, PhET Interactive Simulations, University of Colorado, Boulder

Kathy Perkins is director of the PhET Interactive Simulations Project at University of Colorado, Boulder. Her work focuses on the design and classroom use of interactive simulations to increase engagement and learning in STEM, and on scaling impact with free, open educational resources. Currently, PhET's collection of 130 simulations are used 75 million times/year. Under her leadership, PhET Interactives Simulations has received international recognition for its innovative work in STEM education, including being named a 2011 Tech Award Laureate and the 2014 Overall Winner of the Reimagine Education Awards. Perkins also directed CU's Science Education Initiative, and serves as a faculty member in physics and a fellow of the Center for STEM Learning at the University of Colorado, Boulder. She has

worked in the field of STEM education since 2003, reforming undergraduate courses, studying students' beliefs about science, training faculty in new forms of pedagogy, and engaging in institutional change efforts. Perkins holds a BA in Physics, an MA in Chemistry, and a PhD in Atmospheric Science from Harvard University.

Gillian Puttick
Senior Scientist, TERC
Gillian Puttick is a co-leader of the Life Sciences Initiative at TERC. This group seeks to understand how students encounter living systems through laboratory and field experiences. She is currently the PI or coPI of three NSF-funded projects related to ecological environmental science. Innovate to Mitigate is researching student learning in a challenge for young people that calls for mitigation of atmospheric greenhouse gases. Teams of middle and high school students collaborate on projects that, for example, improve biochar creation efficiency, design and test prototype wave-powered electricity generators for a local community, and investigate ways to sequester oceanic carbon. Building Systems from Scratch is using a design-based research (DBR) approach to research the development of computational and systems thinking in middle school students through explorations of earth systems. Students design games using Scratch programming software that teaches others about the complex interactions among land, oceans, atmosphere, and biosphere (including humans) that contribute to changing climates. The Climate Lab uses a DBR approach to study a partnership among scientists, education researchers, and middle school teachers that engages teachers and students in collecting and analyzing data on local biotic and abiotic indicators of climate change on transects at school grounds, and in learning about climate adaptation and mitigation. Puttick is a member of American Education Research Association, National Science Teachers Association, National Association of Biology Teachers, Ecological Society of America, and Learning Disabilities Association. She has a BSc in Zoology, a BA in Social Anthropology, and a PhD in Zoology from the University of Cape Town.

Helen Quinn
Professor Emerita, Stanford University
Helen Quinn is professor emerita of physics at SLAC National Accelerator Laboratory at Stanford University. A theoretical physicist, she was elected to the National Academy of Sciences in 2003 and was president of the American Physical Society in 2004. In addition to her scholarship in physics, she has had long-term involvement in science education and in the continuing education of science teachers. She was an active contributor to the California State Science Standards development process. She recently chaired the Committee on a Conceptual Framework for New K–12 Science Education Standards for the National Research Council, chaired the Science Work Group, and co-chaired the Public Dialogue Committee. Quinn holds a bachelor's degree in Physics and a PhD in Elementary Particle Physics from Stanford University.

Brian J. Reiser
Professor, Northwestern University
Brian J. Reiser is professor of learning sciences in the School of Education and Social Policy at Northwestern University. He was a member of the National Research Council committee authoring the report *Taking Science to School* (2007), which provided research-based recommendations for improving K–8 science education. He worked with the NRC committee to develop the *Framework for K-12 Science Education* (2012), which guided the design of the NGSS, and *Developing Assessments for the Next Generation Science Standards* (2014), which provides guidelines for NGSS assessments. Reiser has also worked with Achieve to provide feedback on the design of the NGSS and on the tools to help states implement the NGSS, and is collaborating with several state initiatives to design and provide

professional development for K–12 teachers to support them in realizing the reforms in the NGSS in their classrooms. His research examines how to make the scientific practices of argumentation, explanation, and modeling meaningful and effective for classroom teachers and students. He co-led the development of Investigating and Questioning our World through Science and Technology (IQWST), a three-year middle school curriculum that supports students in science practices to develop disciplinary core ideas. Reiser has a BA in Psychology from the University of Pennsylvania, an MA in Psychology from New York University, and a PhD in Cognitive Science from Yale University.

Jeremy Roschelle
Director, SRI International
Jeremy Roschelle is the director of SRI International, where he leads the Center for Innovative Research in Cyberlearning, conducts studies of the impact of online and blended learning in mathematics education, and develops innovative assessments for NAEP mathematics. Prior to that, he worked on SimCalc/SunBay/Cornerstone Mathematics—an integration of technology, workbooks, and teacher professional development that increases students' understanding of challenging middle school mathematics concepts. Roschelle has a BS from Massachusetts Institute of Technology and a PhD from the University of California, Berkeley.

Steven Schneider
Senior Program Director, WestEd
Steven Schneider is the senior program director of the Science, Technology, Engineering, & Mathematics program at WestEd. He also serves as the PI of NSF's Center for Assessment and Evaluation of Student Learning (CAESL). He directs the National Center on Cognition and Mathematics Instruction, and serves as the PI and content expert for the Science Review Team for the U.S. Department of Education's What Works Clearinghouse. He previously served as the evaluation chairperson for the National Network of Eisenhower Mathematics and Science Consortia and Clearinghouse, and represented the Network on the Department of Education's Mathematics and Science Expert Panels. Schneider has published numerous articles on science, mathematics, and technology education, professional development, and teacher preparation. In 2006, Schneider and his fellow NAEP Framework Team members received WestEd's Paul D. Hood Award for Distinguished Contribution to the Profession. In 2004, he received this award for his creation of collaborative partnerships that have advanced math and science education in the nation including curricula, professional development, assessment, and evaluation. Schneider received a BA in Biology from the University of California, Berkeley, and a PhD in the Design and Evaluation of Educational Programs with an emphasis in science, mathematics, and technology education from Stanford University. He has a State of California Life Teaching Credential from California State University, San Jose.

Maria C. Simani
Executive Director, California Science Project
Maria C. Simani leads the California Science Project, a statewide network of 14 sites providing sustained professional development opportunities to K–12 school teachers in partnership with higher education faculty and educators. The California Science Project has established partnerships with over 60 districts statewide and serves over 3,000 science teachers annually. Since 2012, Simani has collaborated with the California Department of Education (CDE) on the Science Expert Committee for the review and adoption of the NGSS. She and the California Science Project have been appointed by CDE as lead writers of the new California Science Curriculum Framework. In 2013, the California Commission on the Status of Women and Girls nominated her as one of the Trailblazer STEM Women of the Year. Prior to entering the field of STEM education, Simani conducted physics research at the German accelerator DESY, at the

Stanford Linear Accelerator Center, and at the Lawrence Livermore National Laboratory. She also performed three years of research on brain functioning and learning at the Keck Institute for Integrative Neuroscience at the University of California, San Francisco. Simani holds a PhD in Physics.

Bethany Sjoberg

Secondary Science Specialist, Highline Public Schools

Bethany Sjoberg is a secondary science specialist at Highline Public Schools in Washington. In this role, she provides job-embedded professional learning, which includes science studio days and individual coaching. She has collaborated with Jessica Thompson's research group at the University of Washington to engage teachers in collaborative inquiry cycles aimed at improving students' scientific models, explanations, and arguments. Sjoberg leads teams of teachers in aligning curriculum frameworks and assessment to the NGSS as they transition to full NGSS implementation. She is passionate about improving science education and is especially committed to supporting teachers in providing equitable, culturally responsive science teaching and learning for the diverse student population of Highline Public Schools. Previously, she taught science courses in biology, chemistry, integrated physical science, AP biology, and anatomy and physiology for six years at Technology, Engineering & Communications High School in White Center. In this role, she collaborated to create STEM units for a 9th-grade integrated science course and worked on a shared leadership team to implement standards-based instruction and grading practices across the school. Sjoberg has a BS in Chemistry and a master's degree in Teaching from the University of Washington. She is currently pursuing a master's in Educational Leadership at the University of Washington, Bothell.

Craig Strang

Associate Director, Lawrence Hall of Science

Craig Strang has worked at the Lawrence Hall of Science at the University of California, Berkeley, since 1991. He is a science, ocean science, and environmental educator. He directs the Center for Leadership in Science Teaching, which designs and carries out professional learning programs around the country and internationally for educational leaders in schools, science centers, aquariums, museums, colleges, and universities. In 1985, he founded the award winning Marine Activities, Resources & Education (MARE) Program, and since 2002 he has played a key role co-leading the nationwide Ocean Literacy Campaign. His work in ocean literacy has recently taken him to Japan and several countries in Europe interested in improving public understanding of the importance of the ocean. Strang currently leads programs that assist school districts to increase their capacity for supporting high-quality science programs in the Common Core/NGSS era; conduct research on effective approaches to professional learning; and develop curriculum and instructional materials for classrooms and residential outdoor science schools. He is PI on a variety of grants, including BaySci (the Bay Area Partnership for Science Education), a project that has helped a dozen California school districts to implement the NGSS simultaneously with Common Core. He is the author of many articles, presentations, and instructional materials. Before turning to science education full time, he did research on elephant seals, humpback whales, and California sea lions, and until 2002 led ecotours in East Africa, the Sea of Cortez and the Galapagos Islands. Strang has a BA in Environmental Studies from University of California, Santa Cruz.

Robert Taylor

Senior Research Software Engineer, North Carolina State University

Robert Taylor is a senior research software engineer in the Center for Educational Informatics at North Carolina State University. His primary responsibilities center on designing and developing intelligent learning environments and game-based learning environments that leverage artificial intelligence algorithms and techniques, game technologies, and cloud-based computing. This work includes creating cutting-edge artificial intelligence research platforms while deploying scalable software systems. Most recently, he led software design and development for the *Leonardo Project*, an interactive scientific modeling environment for elementary science education. Students in grades 4 and 5 use Leonardo's intelligent virtual science notebooks to create and experiment with interactive models of physical phenomena. As students interact with the digital notebook, Leonardo's intelligent virtual tutors engage them in meaning-making exchanges in which students interactively devise explanations and make predictions. Leonardo and other adaptive learning environments that Taylor has built have been used by thousands of students in elementary STEM classrooms across the United States. He earned a BS and an ME in Engineering Mathematics and Computer Science from University of Louisville.

Jessica Thompson

Assistant Professor, University of Washington

Jessica Thompson is an assistant professor at the University of Washington's College of Education. Her scholarship focuses on building K–12 networks that support novice and experienced science teachers in learning ambitious and equitable teaching practices. She is the PI on federally funded projects that support the development of local improvement networks with science teachers, coaches, and principals in nine secondary schools and five elementary schools. Thompson also runs an after-school girls' program, STARS Students Tackling Authentic and Relevant Science, with April Luehmann (University of Rochester) and Angie Calabrese Barton (Michigan State University). This line of research generates knowledge about how to learn from and with ethnic minority girls' engagement in scientific inquiry in an out of school context. She received a dissertation fellowship from the American Association of University Women and the 2007 Selma Greenberg Dissertation Award for an earlier version of this project. Thompson has a background in biology and chemistry, and she taught high school and middle school science as well as a drop-out prevention course for eight years in North Carolina and Washington State. At the University of Washington, she teaches secondary and elementary science teaching methods courses, Teacher Learning and School Change, and Culturally Responsive Math and Science Teaching.

Dilafruz Williams

Professor, Portland State University

Dilafruz Williams is professor of educational leadership and policy at Portland State University, where she founded the Leadership for Sustainability Education master's program. She is also co-founder of Sunnyside Environmental School in the Portland Public School District. She was elected city-wide to the Portland School Board, 2003–11. She taught biology and mathematics in grades 6–12. Her recent research and professional interests relate to the use of school gardens for academic learning. She has also written extensively on environmental/place-based education and service learning. She serves as PI on the NSF DRK-12 project, Science in the Learning Gardens: Factors that Support Racial and Ethnic Minority Students' Success in Low-Income Middle Schools. This three-year project aligns the curriculum with the NGSS and uses school gardens as milieu for teaching science at the middle level to facilitate students' motivational engagement. Her latest co-authored book is *Learning Gardens and Sustainability Education: Bringing Life to Schools and Schools to Life* (Routledge, 2012). Williams has degrees in public administration, botany, and philosophy of education from Harvard, Syracuse, and Bombay Universities.

Trish Williams

Member, California State Board of Education

Trish Williams was appointed to the California State Board of Education in 2011 and reappointed in 2015. She served as vice president of the board in 2011 and 2012. In 2011, she became a board liaison and lead on California's NGSS and committed to working closely with the national and state science leadership throughout the standards adoption and implementation process. Under her leadership, the board voted unanimously to adopt the California NGSS in 2013. To ensure policy coherence through the adoption process, Williams attended all meetings of the California curriculum framework committee, and she regularly weighs in on the development of a California new state summative test for science. In an informal board role, she helped to conceive of the California NGSS K–8 Early Implementation Initiative and assisted with brokering funding for the participation of eight school districts and two charter management organizations. In October 2015, she was selected by the California Science Teachers Association as the first recipient of their Christine Bertrand Advocacy Award, given for "demonstrating a commitment to quality science education in California going beyond expected levels of involvement." Most recently, Williams has broadened her board of education STEM leadership by becoming the first-ever SBE lead for expanding and diversifying K–12 computer science education in California. This new role enabled her to assist in strengthening computational thinking and engineering design practices in California's new NGSS curriculum framework. Before being appointed to the State Board, she served 19 years as the executive director of the nonprofit EdSource. Williams has a master's degree in Public Policy.