

## Pamela Bishop, PhD

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### EDUCATION

- 2011 **Ph.D., Educational Psychology (Concentration: Evaluation, Statistics, and Measurement)**  
University of Tennessee  
Dissertation: *"Impacts of an Interdisciplinary Research Center on Participant Publication and Collaboration Activities"*
- 2005 **M.S., Entomology & Plant Pathology**  
University of Tennessee  
Thesis: *"Determining dollar spot fungicide resistance in Tennessee and Northern Mississippi"*
- 2002 **B.S., Plant Sciences**  
University of Tennessee

### PROFESSIONAL APPOINTMENTS

- 2016-Present **Director**  
**The National Institute for STEM Evaluation and Research**  
The University of Tennessee, Knoxville, TN
- 2015-Present **Adjunct Assistant Professor, Department of Educational Psychology**  
The University of Tennessee, Knoxville, TN
- 2015-Present **Associate Director for STEM Evaluation**  
**The National Institute for Mathematical and Biological Synthesis**  
The University of Tennessee, Knoxville, TN
- 2009-2015 **Evaluation Manager**  
**The National Institute for Mathematical and Biological Synthesis**  
The University of Tennessee, Knoxville, TN
- 2007- 2009 **Evaluation Research Assistant**  
**Oak Ridge Institute for Science and Education**  
Oak Ridge, TN
- 2006- 2007 **State Evaluation Coordinator**  
**Mathematics and Science Partnership Program**  
University of Tennessee, Knoxville, TN
- 2005-2006 **Research Associate**  
**Department of Plant Sciences**  
The University of Tennessee, Knoxville, TN

### PUBLICATIONS

- Baron, J., Specht, A., Garnier, E., **Bishop, P.**, Campbell, A., Davis, F., Fady, B., Field, D., Gross, L., Guru, S., Halpern, B., Hampton, S., Leavitt, P., Meagher, T., Ometto, J., Parker, J., Price, R., Rawson, C., Rodrigo, A., Sheble, L., Winter, M. Synthesis Centers as Critical Research Infrastructure. *BioScience*. 2017. (Online: <https://doi.org/10.1093/biosci/bix053>)
- Hampton, S.E., Halpern, B.S., Winter, M., Balch, J.K., Parker, J.N., Baron, J.S., Palmer, M., Schildhauer, **Bishop P.**, M.P., Meagher, T.R., and Specht, A. (2016) Best practices for virtual participation in

- meetings: experiences from synthesis centers. *The Bulletin of the Ecological Society of America* 98(1): 57-63
- Sturner, K., **Bishop, P.**, and S. Lenhart. Developing Collaboration Skills in Team Undergraduate Research Experiences. *Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 2016. 1-19. Online at <http://tinyurl.com/zn65yg2>
- Bishop, P.**, Huck, S.W., Ownley, B.O., Richards, J.K., and Skolits, G.J. (2014). Impacts of an interdisciplinary research center on participant publication and collaboration patterns. *Research Evaluation* 23 (4): 327-340.
- Duncan, S., **Bishop, P.**, and Lenhart, S. (2010). Preparing the “New” Biologist of the Future: student research at the interface of mathematics and biology. *CBE Life Sciences Education* 9(3): 311-315.
- Bishop, P.** (2012). Impacts of an Interdisciplinary Research Center on Participant Publication and Collaboration Activities. (Doctoral Dissertation, The University of Tennessee), [http://trace.tennessee.edu/utk\\_graddiss/1511](http://trace.tennessee.edu/utk_graddiss/1511).
- Crawley, C.E., and **P. Bishop.** (2012). Communicating Science Through Music: A Case Study from Mathematics and Biology. 12th International Public Communication of Science and Technology Conference Abstracts. Florence, Italy.
- Bishop, P.**, Sorochan, J.C., Ownley, B.H., Samples, T.J., Windham, A.S., Windham, M.T., and Trigiano, R.N. (2008). Resistance of *Sclerotinia homoeocarpa* to thiophanate-methyl, iprodione, and propiconazole in Tennessee and northern Mississippi. *Crop Sci.* 48: 1615-1620.
- Baird (Bishop), P.** (2005). Determining Dollar Spot Resistance in Tennessee and Northern Mississippi. (Master’s Thesis, The University of Tennessee), [http://trace.tennessee.edu/utk\\_gradthes/1634](http://trace.tennessee.edu/utk_gradthes/1634)

## EXTERNAL SUPPORT

### *Current Support*

#### **2019-2023 NSF-Simons #1764406, NSF-Simons Southeast Center for Mathematics and Biology**

Total project funding: \$2,750,000

#### **(Evaluator—education component only, sub award to Georgia Tech Research Corporation: \$58,088)**

This award promotes the mathematics of complex biosystems by establishing the NSF-Simons Southeast Center for Mathematics and Biology (SCMB) at the Georgia Institute of Technology. The SCMB is a regional center with national impact whose defining mission is connecting mathematical theory with biosystems data. The core Center activity is catalyzing new research collaborations at the mathematics-biology interface with a collective focus on understanding emergent properties at critical genome-to-phenome junctures. This is complemented by a strong interdisciplinary training component, with an emphasis on enabling trainees to initiate new transdisciplinary collaborations as they progress in their research careers and is supplemented by educational outreach and convening research activities. In these ways, SCMB is addressing the challenge of building research capacity at the mathematics-biology interface by driving discoveries that propel both fields forward into new territory.

#### **2019-2021 NSF #1852160, REU Site: Advanced Chemistries for Energy and Sensing Applications at the University of Tennessee**

Total project funding: \$329,840

**(Evaluator, University of Tennessee: \$25,223)** This award from the Division of Chemistry (CHE) supports a Research Experience for Undergraduates (REU) Site at the University of Tennessee-Knoxville entitled "Advanced Materials for Energy and Sensing Applications at the University of Tennessee" that is led by Professors Michael D. Best and Shawn R. Campagna. The site supports the training of 10 undergraduate students for 10 weeks during the summers of 2019-2021. In this program, funded by the Division of Chemistry, participants engage in research projects and receive mentoring to develop complementary professional skills critical for successful scientific careers. The individual research projects center around the theme of advanced chemistries for energy and sensing applications. The professional development and mentoring component places an emphasis on building undergraduates' communication skills through collaboration with the English Department. The students create high quality science writing. This program also exposes participants to a variety of possible careers in chemical research through interaction with neighboring institutions such as the Oak Ridge National Laboratory.

**2018-2023 NSF #1829075, NRT-HDR: A team-based training paradigm integrating informatics and ecology**

Total project funding: \$2,899,112

**(Evaluator, sub award to Northern Arizona University: \$200,089)** The NSF Research Traineeship (NRT) Program is couched in the interdisciplinary research theme of understanding and forecasting the properties and processes of terrestrial ecosystems, especially the impact of and feedbacks to global change. The field is being flooded with data (e.g., from various ecological and Earth observatory networks) that are critical to understanding and forecasting terrestrial ecosystem responses. However, most graduate students and scientists lack the quantitative, computational, and collaborative skills to leverage such data to address grand, challenging questions. This NRT program will train the next generation of scientists to overcome these limitations, with a focus on training in informatics tools and team-science skills that facilitate solutions to complex problems. The primary areas include data analytics and computing, analysis and synthesis, and terrestrial ecosystem science; the supporting areas include relevant data collection tools and products as well as skillsets in communication, collaboration, and team building. Key elements of this NRT program are scalable and sustainable, including: (1) a curriculum that allows students to personalize their training, (2) workshops, courses, and other activities that focus on team skills and applying these skills to collaborative research projects, (3) preparation for a range of careers via professional development and applied internship opportunities, and (4) the graduate ecological and environmental informatics certificate that is accessible to students in a range of STEM fields.

**2018-2021 NSF #1760382, ADVANCE Adaptation - ASCEND: Adaptations for a Sustainable Climate of Excellence and Diversity**

Total project funding: \$713,763

**(Evaluator, University of Tennessee, budgeted: \$110,964)** The NSF ADVANCE program is designed to foster gender equity through a focus on the identification and elimination of organizational barriers that impede the full participation and advancement of diverse faculty in academic institutions. Organizational barriers that inhibit equity may exist in policies, processes, practices, and the organizational culture and climate. ADVANCE "Adaptation" awards provide support for the adaptation and adoption of evidence-based strategies to academic and non-academic non-profit organizations. The University of Tennessee Knoxville (UT) Adaptation project will adapt proven initiatives from ADVANCE programs at other institutions to transform the campus climate at UT and

reduce disparities in the recruitment, hiring, retention, and advancement of women faculty in STEM disciplines. The project is called the Adaptions for a Sustainable Climate of Excellence and Diversity (ASCEND). The ASCEND initiatives target three specific institutional issues identified by UT: (1) a culture of implicit bias (UT-CLIMBS), (2) experience of social and professional isolation (UT-CONNECTS), and (3) lack of support for work-life integration (UTWINS). The project is not designed to facilitate the assimilation of women into problematic work cultures, but rather to identify and change problematic aspects of campus work cultures.

**2018-2023 NSF #178325, VolsTeach for Appalachia: Strengthening the STEM Teacher Pathway from Community College to East Tennessee High-need School Districts**

Total project funding: \$1,135,651

**(Evaluator, University of Tennessee, budgeted: \$110,964)** This project, referred to as VolsTeach for Appalachia (VFA), is a Robert Noyce Track 1 project at the University of Tennessee, Knoxville. The project aims to help meet the national need for new STEM teachers who can serve in diverse rural school settings. To accomplish this goal, the University of Tennessee, Knoxville, will collaborate with Pellissippi State Community College (PSCC) and five East Tennessee school districts (Anderson County, Campbell County, Claiborne County, Lenoir County, and Sevier County). The goal of VFA is to grow and diversify the STEM teacher workforce by supporting community college students to become STEM teachers. Located in the heart of Appalachia, the East Tennessee region is experiencing a persistent shortage in mathematics and science teachers that is increasingly compounded by many retiring teachers. VFA will support 32 high-potential Noyce Appalachian Scholars, recruited from PSCC, as they become STEM teachers. Scholars will devote at least their first four years of teaching to high-need school districts. VFA aims to accomplish this goal by recruiting students and providing them with summer internships, enhanced coursework, academic supports, and out-of-classroom experiences. The research results and lessons learned from this project will be shared nationally to help address the need for highly prepared STEM teachers who will teach and inspire the next generation of STEM professionals and problem solvers.

**2017-2020 NIH #5R25GM129177-05, PiPES: Possibilities in Postsecondary Education and Science Among Rural Appalachian Youth**

Total project funding: \$958,110

**(Evaluator, University of Tennessee, budgeted: \$44,674)** Our long-range goal in this effort is to develop efficacious interventions that both reduce these contextual barriers (via mentoring and support) and increase interest in (via direct exposure to research and career options) pipeline science, technology, engineering, mathematics, and medical science (STEMM) majors among Appalachian youth. Our objective is to determine the extent to which such a multifaceted intervention strategy leads to increased intentions to pursue an undergraduate STEMM degree. Our hypothesis is that students who experience such interventions will show increases in important intrapersonal social-cognitive factors and in their intentions to pursue a postsecondary degree than students not exposed to such interventions. Our specific aims are to 1) understand the role of barriers to and support for higher education in Appalachian high school students' interest in pursuing STEMM-related undergraduate degrees, and 2) to develop sustainable interventions that decrease barriers to and increase support for higher education and that increase STEMM-related self-efficacy and interest. Achieving these aims will provide concrete tools for schools across rural Appalachia to use to increase the number of their students equipped with the skillsets required to join our State's high-growth biomedical and clinical research industry workforce.

**2017-2022 HHMI Inclusive Excellence Award, REALising Inclusive Science Excellence (REALISE)**

Total project funding: \$1,000,000

**(Evaluator, sub award to Radford University: \$76,180)** This project intends to capitalize on the national and on-campus emergence of making culture to address our first- year student retention challenge. We will center the REALISE program around a making-themed, problem- based entry-level curriculum. Tangibly, this means biology students might build electronic physiological sensors to measure their own test anxiety, or physics students might build gyroscopic stabilizers for a camera used at campus sporting events - instead of listening to lectures and answering multiple choice exams. Embedding these experiences in entry-level courses will reach all students, avoiding the frequently inequitable access to gold-standard high impact practices like faculty-mentored research. REALISE will transform the natural science programs, sustain itself beyond a five-year granting period, and serve as a model to catalyze institution-wide change in policies and practices limiting student success at Radford University.

**2017-2020 NSF #1719262, Fisk University I-SERIAL project**

Total project funding: \$350,000

**(Evaluator, sub award to Fisk University: \$35,719)** This Broadening Participation Research Program implements theoretically-driven research and innovations that enhance participation and success of underrepresented groups in STEM disciplines. The I-SERIAL proposal project tests a theoretical model of evaluating the foundations that cause STEM students to switch to non-STEM disciplines. After developing reliable and valid instruments to empirically measure the Performance Pyramid model, we propose to test the model by analyzing the performance and efficacy of these two interventions. The overall goal of the Fisk University I-SERIAL project is to increase academic performance and retention in STEM disciplines at Fisk University, with the intent to test two specific interventions that, if effective, would provide replicable national models for implementation nationally. The responsive interventions evaluated in the context of the Performance Pyramid model are: (1) to increase student achievement by creating a small Learning Community of learners who work on challenging mathematics problems/projects via peer-mentored small group learning, and (2) to achieve iterative, interactive student-faculty advising via an e-Advising support tool does NOT substitute for face-to-face interactions but enriches them via prior student-reflections and real-time input from faculty academic advisors, course instructors, peer mentors, and other mentors in the student's network.

**2016-2019 NSF #1446269, Quantitative Undergraduate Biology Education and Synthesis**

Total project funding: \$3,440,464

**(Evaluator, sub award to University of Pittsburgh: \$331,837)** The Quantitative Undergraduate Biology Education and Synthesis (QUBES) project involves initiatives that promote the integration of quantitative and computational skills across the biological sciences curriculum. The project is building on the investments of existing communities by coordinating the efforts and resources of diverse groups that are already involved in quantitative biology education reform. This approach allows QUBES to amplify the strengths of organizations like professional societies and specialized curriculum projects while streamlining the communications and coordination required to grow broader community of reform-minded faculty educators in quantitative biology (QB). Mentoring networks will be used to support faculty understanding and classroom implementation of specific quantitative biology concepts and teaching strategies. These mentoring networks will be led by teams containing both quantitative and pedagogical expertise and will serve spatially distributed groups of instructors

who share a common interest in reforming their current teaching practices. Participating instructors will disseminate resources within their own institutions, organize new mentoring networks, and take leadership roles in their professional societies. By strengthening QB research and development tools, the project is enriching the discipline and catalyzing long-term academic cultural change across STEM education.

**2016-2021 NSF #1643393 ASPIRE: Appalachian Students Promoting the Integration of Research in Education.**

Total project funding: \$5,000,000

**(Evaluator, University of Tennessee, budgeted: \$100,078)** This project will support high achieving, low-income Appalachian students who attend the University of Tennessee in Knoxville or Chattanooga to complete degrees in science because economic growth in Appalachia is projected to rely heavily on science. However, these Appalachian students come from households where post-secondary education is rare and poverty rates are high, thus creating barriers to degree completion. ASPIRE will address financial, academic, and other barriers to graduating with a scientific degree by providing scholarships and targeted academic and social support. Eighty students will receive four-year scholarships, live in research-focused living/learning communities, engage in mentored research, and participate in academic transition seminars, career-building fellowships and family activities. Scholarship students on the larger Knoxville campus will also engage with the new Appalachian Mentoring Program, which will provide support across social, academic, and career-related domains. Outcomes for students from low-income, low-minority rural schools (those receiving S-STEM scholarships and not receiving this support) and students from low-income, high-minority, urban schools (who are and are not receiving existing support services) will be compared to advance knowledge about practices that facilitate success for diverse students.

**2016-2019 NSF #1612072, Biology undergraduate Mathematics Attitudes and Anxiety Program**

Total project funding: \$298,846

**(Evaluator, sub award to Radford University: \$32,000)** This project will: 1) develop experiential learning materials that guide students towards greater comfort with math, and pilot those materials with Radford University undergraduates who self-identify as needing help in math/stat courses; 2) conduct a controlled study in which some sections of courses are assigned our materials as a supplement to their content instruction; 3) disseminate these materials to instructors nationwide, by leveraging the QUBES (Quantitative Undergraduate Biology Education and Synthesis) project, with its faculty development networks, online instructor hub, and consortium of partners (e.g., HHMI, AAAS, Society for Mathematical Biology, MAA). Through QUBES, we will reach key “change-makers” - instructors interested in quantitative biology reform who can act as conduits for implementing the materials at their home institutions.

**2016-2021 USDA-MSP #2016-38413-25270, Building Capacity for the Recruitment and Retention of Students in Forestry: Multicultural Scholars Program.**

Total project funding: \$232,971

**(Co-PI, University of Tennessee Institute of Agriculture)** This project targets historically underrepresented students in agriculture and natural resource sciences and seeks to recruit, educate and graduate minority undergraduate scholars. We will utilize newly passed state legislation (Tennessee Promise) that provides two-years of free community college tuition to Tennessee residents to recruit underrepresented students into Forestry through articulation agreements with

local community colleges. MSP scholars will complete a rigorous curriculum designed to promote experiential learning opportunities through undergraduate research and professional internship experiences. At the completion of this project, we anticipate placing 9 underrepresented scholars directly into the workforce in the fields of Resource Management or Urban Forestry.

### ***Previous support***

#### **2015-2018 NSF #1560033, REU Site: Advanced Materials for Energy and Sensing Applications at the University of Tennessee**

Total project funding: \$330,000

**(Evaluator, University of Tennessee, budgeted: \$21,000)** This award from the Division of Chemistry (CHE) supports a Research Experience for Undergraduates (REU) Site at the University of Tennessee-Knoxville entitled "Advanced Materials for Energy and Sensing Applications at the University of Tennessee" that is led by Professors Michael D. Best and Shawn R. Campagna. The site offers an intensive introductory research experience for undergraduate students which is designed to introduce and train participants in modern research techniques and mentor them in the development of complementary professional skills that are critical for successful scientific careers. In this way, the program strengthens the scientific enterprise in the United States by recruiting students and developing them into skilled researchers at an early point in their education. Further, the program emphasizes the inclusion of a diverse group of participants to address the underrepresentation of various demographic groups in the sciences.

#### **2016-2018 NSF #1650390 INCLUDES Conference on Multi-Scale Evaluation in STEM Education.**

Total project funding: \$248,397

**(Co-PI, University of Tennessee)** This project will develop, organize and host a Conference to assist in the planning of the NSF INCLUDES Alliances and National Network. The focus of this project is the design and implementation of program evaluations necessary for the INCLUDES Alliances and National Network. The proposed Conference will be the first ever held that emphasizes the multiple scales at which evaluations occur for programs that include components based at single institutions, at interdisciplinary centers/institutes within larger institutions, at alliances/partnerships between several institutions and at entities with a national scope. As the INCLUDES Alliances and National Network will operate across multiple scales, the proposed Conference will provide guidance on the technical aspects of designing and planning multi-scale evaluations. The target audience for the activities are those individuals involved in current INCLUDES projects, those considering collaborating in such projects and STEM educators considering inclusion of formal evaluation in their projects. The overall goals are to (i) enhance the knowledge of the participants about evaluation methods; (ii) present the experiences of individuals who have successfully developed alliances and carried out evaluation efforts for these; and (iii) provide advice regarding evaluation methods for those planning to participate in future requests for INCLUDES Alliances and/or the National Network.

#### **2015-2018 NSF #1544375, Math: EAGER: Assessing Impacts on Student Learning in Mathematics from Inclusion of Biological, Real-World Examples.**

Total project funding: \$299,900

**(PI, University of Tennessee)** This project is to develop a new instrument to investigate and compare learning comprehension and skill development in college-level mathematics courses that use real-world examples from the life sciences versus courses that use more abstract learning. The

instrument—the Quantitative Biology Concept Inventory (QBCI)—could serve as a model for measuring the effect of using real-world interdisciplinary examples on enhancing mathematical comprehension in undergraduates.

**2015-2016 Alfred P Sloan Foundation # G-2015-14145, Blackwell-Tapia Conference**

Total project funding: \$26,364

**(Co-PI, University of Tennessee)** This conference seeks to address the underrepresentation of minorities in the mathematical sciences. The goals are to recognize and showcase mathematical excellence by minority researchers; recognize and disseminate successful efforts to address under-representation; educate participants about career opportunities in mathematics, especially outside academia; and provide networking opportunities for mathematical researchers at all career stages.

**2015-2016 HHS-NIH-NIAID-National Institute of Allergy and Infectious Diseases NIH# 1 R13 AI124621-01, X International Conference on HFRS, HPS and Hantaviruses**

Total project funding: \$5,000

**(Co-PI, University of Tennessee)** Travel and evaluation support for the X International Conference on Hemorrhagic Fever with Renal Syndrome (HFRS), Hantavirus Pulmonary Syndrome (HPS) and Hantaviruses to be held at Fort Collins, Colorado, May 31-June 3, 2016. The International Society of Hantaviruses (ISH) organizes this international conference every three years, which rotates in location to include all areas of the world with hantavirus diseases. The ISH is a chartered organization with an international Governing Committee, and an elected President, Vice President and Secretary. These conferences have provided a forum for a synergistic group of clinicians, basic researchers, mammalogists, epidemiologists and ecologists to share their expertise and interests in all aspects of hantavirus research.

**SPEAKING ENGAGEMENTS/SYNERGISTIC ACTIVITIES**

**Invited Presenter and Breakout Facilitator**, “The National Institute for STEM Evaluation and Research,” NSF INCLUDES Environmental Data Science Inclusion Network Conference, Boulder, CO, 2019

**Invited Presenter**, “Evaluating Research and Educational Diversity Initiatives at the National Institute for Mathematical and Biological Synthesis,” NSF INCLUDES Summit, Alexandria, VA, 2018

**Working Group Leader**, Howard Hughes Medical Institute Constellation Studios Meeting, Chevy Chase, MD, 2017

**Organizer**, NSF INCLUDES evaluation conference, tutorial, and webinar: “Multi-Scale Evaluation in STEM Education,” 2017

**Keynote Speaker**, “How Program Evaluation Can Enhance your Project,” National Science Foundation Research Coordination Networks in Undergraduate Biology Education Summit, Washington, DC, 2016

**TEACHING**

**Guest lecturer**, “Grant Writing,” ENGL 360, Technical/Professional Writing, 2015-2018

**Guest lecturer**, “Introduction to Quantitative Research Methods,” COUN 650, Foundations of Counselor Education, University of Tennessee Knoxville, September 2012-2016

**Instructor**, EDPY 577, Statistics in Applied Fields II, University of Tennessee Knoxville, 2011

**Workshop Organizer**, NSF Biology Research and Education Center Evaluation Meeting, 2010

**Teaching Assistant**, PLSC 441, Advanced Turfgrass Physiology, University of Tennessee Knoxville, 2005

**Lab Instructor**, PLSC 441, Advanced Turfgrass Physiology, University of Tennessee Knoxville, 2005

## **PROGRAM EVALUATION EXPERIENCE**

### **8/16-Present**

The National Institute for STEM Evaluation and Research (NISER)

*Provide independent evaluations to the STEM research and education sector, with a focus on improving postsecondary STEM education, including curriculum improvement, student recruitment and retention, and faculty education.* Evaluate multiple STEM-related projects, with an emphasis on expanding the inclusion of underrepresented groups. Develop and implement STEM-focused evaluation workshops to educate STEM faculty about program evaluation and to build a community of STEM evaluators for sharing best practices, lessons learned, and useful evaluation tools and methods.

### **4/15-7/16**

NIMBioS Evaluation Services

*Provide independent evaluations of research and education programs in science, technology, engineering and mathematics fields.* Evaluate multiple projects involving interdisciplinary scientific research groups, K-16 and graduate-level interdisciplinary educational programs, and outreach events aimed at promoting teaching, learning, and research at the intersection of mathematics and biology.

### **2/09-Present**

National Science Foundation

*Evaluation of the Research and Education and Outreach Programs at the National Institute for Mathematical and Biological Synthesis (NIMBioS)*

Management and establishment of research protocols for all NIMBioS program evaluation activities, including the working group and workshop research activities, research-level tutorials, and analytics of team science and productivity. Also responsible for evaluation of the variety of outreach activities including public, K-12 programs at schools, mentoring networks for high school teachers, and mentoring networks for undergraduates.

### **9/07-2/09**

Joint Genome Institute

*Evaluation of the JGI Bioinformatics Education Consortium course*

Analysis of pre- and post-survey data from student responses for a project utilizing undergraduate research in a bioinformatics course at multiple universities across the country.

### **9/07-2/09**

U.S. Department of Energy

*Evaluation of the DOE National Science Bowl*

Analysis of responses to a questionnaire collected by DOE Workforce Development for Teachers and Scientists at their National Science Bowl.

Analysis of data from the Cray XT Quad-core workshop, the Cray Quad XT5 workshop, and NCCS user meeting surveys.

### **9/07-2/09**

U.S. Department of Energy

*Science Teacher as Researcher*

Analysis of pre- and post-survey data from participant responses for a project providing pre-service and early-career science teachers with eight-week-long, paid and mentored research internships at a

national research center.

**3/06-8/07**

Tennessee Department of Education

*Evaluation of the Mathematics and Science Partnership Program*

Coordination and establishment of evaluation reporting protocols and data collection instruments for 21 MSP projects across the state of Tennessee. Analysis of site visit, interview, and observation data.

**3/06-8/07**

Tennessee Department of Education

*Evaluation of School-Wide Positive Behavior Support Program*

Development of evaluation data collection tools and analysis methods for School-Wide Positive Behavior Support Program across the state of Tennessee. Analysis of interview data.

## PRESENTATIONS

*Evaluating Project Outcomes for NSF Grants.* (2018, September). Presentation at the University of Tennessee Proposal Writing Institute.

*Evaluation Strategies for Measuring the Broader Impacts (BI) of NSF INCLUDES Projects.* (2018, June).

Live webinar for NSF INCLUDES, recording here: <http://www.nimbios.org/IncludesConf/webinars>

*Qualitative Data in Culturally Rich Evaluations of NSF INCLUDES Projects.* (2018, May). Live webinar for NSF INCLUDES, recording here: <http://www.nimbios.org/IncludesConf/webinars>

*Engaging Diverse Populations in Evaluations of NSF INCLUDES Projects.* (2018, April). Live webinar for NSF INCLUDES, recording here: <http://www.nimbios.org/IncludesConf/webinars>

*Program Models as a Tool for Scaling up NSF INCLUDES Projects.* (2018, March). Live webinar for NSF INCLUDES, recording here: <http://www.nimbios.org/IncludesConf/webinars>

*Evaluating Social Media Impact in NSF INCLUDES Projects.* (2018, February). Live webinar for NSF INCLUDES, recording here: <http://www.nimbios.org/IncludesConf/webinars>

*Concept inventories as an evaluator's tool for measuring knowledge within STEM subjects – lessons from the development of the Quantitative Biology Concept Inventory (QBCI).* (2017, November).

Paper presentation at the American Evaluation Association Annual Conference. Washington, DC.

*Evaluating the role of diversity in the Science of Team Science.* (2017, November). Paper presentation at the American Evaluation Association Annual Conference. Washington, DC.

*Multi-scale evaluation and NSF INCLUDES Alliance Projects.* (2017, November). Paper presentation at the American Evaluation Association Annual Conference. Washington, DC.

*Assessment and Evaluation for Data Science Programs.* (2017, October). Live webinar for the National Academies of Sciences Engineering and Medicine, recording here:

[https://sites.nationalacademies.org/CSTB/CSTB\\_181242http://www.mobilelabcoalition.com/wp/ignite/past-webinars/](https://sites.nationalacademies.org/CSTB/CSTB_181242http://www.mobilelabcoalition.com/wp/ignite/past-webinars/)

*Program Evaluation for Mobile Science Education.* (2017, August). Live webinar for BioBus, recording here: <http://www.mobilelabcoalition.com/wp/ignite/past-webinars/>

*Development of the Quantitative Biology Concept Inventory.* (2017, March). Invited presentation at the Howard Hughes Medical Institute Constellation Studios Spring Meeting.

*How Evaluation Can Help You Improve Your Program.* (2017, February). Keynote presentation at the NSF INCLUDES Multi-Scale Evaluation in STEM Education Tutorial.

*Evaluation 101.* (2017, February). Live webinar, recording here: [www.stemeval.org/webinars](http://www.stemeval.org/webinars)

*Evaluation of Center-Scale Initiatives.* (2016, September). Presentation at the Joint International Synthesis Center Consortium Meeting in Fort Collins, CO.

- How Program Evaluation Can Help You.* (2016, January). Keynote presentation at the National Science Foundation Research Coordination Networks for Undergraduate Biology Education Summit in Washington, DC.
- Factors influencing productivity in interdisciplinary synthetic team science groups.* (2015, June). Paper presentation at the American Evaluation Association Annual Conference. Chicago, IL.
- NIMBioS Evaluation Strategies.* (2015, January). Presentation at the Joint International Synthesis Center Consortium Meeting in Leipzig, Germany.
- Applying Social Network Analysis to Evaluate the Evolution of Interdisciplinary Research Teams.* (2014, August). Paper presentation at the Science of Team Science Annual Conference. Austin, TX.
- Impacts of an interdisciplinary research center on participant publication and collaboration patterns.* (2013, September). Paper presentation at the Global Tech Mining Conference in Atlanta, GA.
- Impacts of an Interdisciplinary Research Center on Participant Publication and Collaboration Activities.* (2012, October). Poster presentation at the American Evaluation Association Annual Conference. Minneapolis, MN.
- A Student-Generated Collaborative Approach to Developing New Evaluator Competencies.* (2010, November). Roundtable presentation at the American Evaluation Association Annual Conference. San Antonio, TX.
- My First Year as an Internal Evaluator: What I Didn't Know That I Didn't Know.* (2010, November). Roundtable presentation at the American Evaluation Association Annual Conference. San Antonio, TX.
- Using Program Theory to Communicate Evaluation Plans with Stakeholders.* (2010, February). Paper presented at the Southeastern Evaluation Association Annual Conference. Tallahassee, FL.
- Development of a Visual Program Theory Framework for Multilevel Evaluation of the National Institute for Mathematical and Biological Synthesis.* (2009, November). Paper presented at the American Evaluation Association Annual Conference. Orlando, FL.
- To PhD or not to PhD? That is the Question.* (2009, November). Roundtable presentation at the American Evaluation Association Annual Conference. Orlando, FL.
- Internal and External Evaluation Issues: Where Do You Draw the Line?* (2008, November). Roundtable presentation at the American Evaluation Association Annual Conference. Denver, CO.
- Issues in Multisite, Multilevel Evaluations of Science, Technology, Engineering, and Mathematics (STEM) Education Programs.* (2008, November). Paper presented at the American Evaluation Association Annual Conference. Denver, CO.
- A Logic Model Framework for Evaluation of a National Workforce Development Endeavor.* (2008, November). Poster presentation at the American Evaluation Association Annual Conference. Denver, CO.
- Developing a National Evaluation System for Science Education Programs.* (2008, May). Paper presented at the Canadian Evaluation Society Annual Conference. Quebec, Canada.
- A Logic Model Framework for Evaluation of a National Workforce Development Endeavor.* (2008, May). Poster presented at the Canadian Evaluation Society Annual Conference. Quebec, Canada.
- Inheriting a National Evaluation System: Lessons Learned and Advice Given.* (2008, February). Paper presented at the Southeastern Evaluation Association Annual Conference. Tallahassee, FL.
- A Logic Model Framework for Evaluation of a National Workforce Development Endeavor.* (2008, February). Poster presented at the Southeastern Evaluation Association Annual Conference. Tallahassee, FL.

*Mathematics and Science Partnership Programs Evaluation Design.* (2006, December). Paper presented at the Tennessee Department of Education Meeting for MSP Principle Investigators. Nashville, TN.

*Determining Dollar Spot Fungicide Resistance in Tennessee and Northern Mississippi.* (2004, November). Paper presented at the American Society of Agronomy Annual Conference. Seattle, WA.

*University of Tennessee Golf Turf Research Update.* (2004, August). Paper presented at the East Tennessee Golf Course Superintendents Association Meeting. Greenville, TN.

*Dollar Spot Fungicide Resistance and Managing for it.* (2004, April). Paper presented at the Middle Tennessee Golf Course Superintendents Association Meeting. Nashville, TN.

*University of Tennessee Turfgrass Research Update.* (2004, January) Paper presented at the Tennessee Turfgrass Association Annual Conference. Nashville, TN.

### **PROFESSIONAL SERVICE and TRAINING**

2016-present Member, University of Tennessee Commission for Women

2016 University of Tennessee Certificate in Supervisory Foundations Program

2016-present Member, University of Tennessee Committee for the Status of Women

2015-present Member, University of Tennessee Institutional Review Board

2014 University of Tennessee Certificate in Grant Writing and Proposal Development

2010-present Collaborative Institutional Training (CITI) Course Certified in Responsible Conduct of Research

2015-2016 Reviewer, Journal of Applied Ecology

2015-2016 Reviewer, Research Evaluation

2015-2016 Reviewer, Cell Biology Education--Life Sciences Edition

2012 Volunteer Activity Coordinator, Gadget Girls: Adventures in STEM, Knoxville, TN

2010 Member of iPlant Collaborative External Evaluation Advisory Panel, Durham, NC

2008-present Invited Member, American Evaluation Association Annual Conference Proposal Review Committee

2005 Reviewer, Tennessee Mathematics and Science Partnership Programs grants; Tennessee Department of Education, Nashville, TN.

### **PROFESSIONAL MEMBERSHIPS**

2014-Present Joint International Synthesis Center Consortium

2009-Present American Psychological Association  
Division 5 (Evaluation, Measurement, and Statistics)

2008-Present Southeastern Evaluation Association

2008-2011 American Association for Public Opinion Research

2006-Present American Evaluation Association