

Curriculum Vitae
Jason Earl Miller, Ph.D.

Professor of Mathematics
California State University Channel Islands
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Education

Ph.D. in Mathematics. "Relative Critical Sets in \mathbb{R}^n and Applications to Medical Image Analysis."

University of North Carolina, Chapel Hill, 1998.

Major areas: singularity theory, differentiable topology, computer vision

B.A. (Mathematics), *magna cum laude*, with departmental distinction.

St. Olaf College, May 1993.

Budapest Semester of Mathematics. Fall 1992.

Experience

Professor of Mathematics, CSU Channel Islands, January 2013 - present.

Senior Research Officer, CSU Channel Islands, January 2013 - August 2017.

Vonnegut Group, Founder, 2012-present.

Professor of Mathematics, Truman State University, 2010-2012.

Short Term Visitor, National Institute for Mathematical and Biological Synthesis, University of Tennessee, 2009-2010.

Director of STEM Talent Expansion (STEP) Office, Truman State University, 2004-2012.

Director of Mathematical Biology program, Truman State University, 2003-2009.

Associate Professor of Mathematics, Truman State University, 2003-2010.

Assistant Professor of Mathematics, Truman State University, 1998-2003.

Visiting Member, Fields Institute, University of Toronto, 1997.

Awards and Honors

J. Burton Linker Award for Teaching Excellence. Mathematics Department, UNC Chapel Hill. 1998.

Sabbatical Award, Truman State University. 2009-2010.

Doris and Walker Allen Fellowship for Faculty Excellence. Truman State University. 2007.

Sigma Xi Researcher of the Year. Kirksville Chapter. 2006.

Grants Awarded

Principal Investigator for *Supporting Early Career STEM Majors Through Community and Interdisciplinary Interaction* (NSF SSTEM, DUE #1060658). Budget: \$600,000. 2011-2013.

Principal Investigator for PRISM: *Scientists Prepared, Enriched, and Challenged Through Research-based Activities (SPECTRA)* (NSF PRISM, MSP/DMS #0928013). With Prof. Barb Kramer (Chemistry) Prof. Tim Walston (Biology), co-PIs. Budget: \$1,200,000. 2009-2013.

Co-Principal Investigator for *UBM, RUI: Integrative Research-focused Experiences and Curriculum in Mathematical Biology*. (NSF UBM, DUE #0926737) With Prof. Pamela Ryan (PI), Prof. Jon Gering and Prof. Brent Buckner (co-PIs). Budget: \$500,000. 2009-2013.

Principal Investigator, *A Portal for Mathematical Biology Resources in Undergraduate Research and Education*. Budget: \$7000. Award from the Society for Mathematical Biology. 2007-2010.

Principal Investigator and Director for *Research-focused Learning Communities in Mathematical Biology*, (NSF UBM #0436348). With Prof. J. Beck (Computer Science), Prof. L. Fielden (Biology), and Prof. M. Kelrick (Biology), co-PIs. \$900,000. 2004-2010.

Principal Investigator and Director (2006–present) and co-PI (2004-2006) for *The Next STEP: Integrating STEM Learning Communities*, (NSF UBM #0431664). With Prof. J. Osborn (2004-2006). Budget: \$1,900,000. 2004-2010.

Principal Investigator and co-director for the National Science Foundation supported *Mathematical Biology Initiative*, (NSF UBM #0337769). With Prof. J. Beck (Computer Science), Prof. J. Osborn (Biology), and Prof. M. Kelrick (Biology) co-PIs. Budget: \$99,998. 2003-2005.

Principal Investigator for the National Science Foundation, Division of Undergraduate Education CSEMS *Undergraduates Scholars in Mathematics and Computer Science* (NSF DUE #0123094). With Prof. C. Hoferkamp, Prof. A. Garvey, Prof. P. Reich, and Prof. D. Vazzana co-PIs, Prof. J. Beck Senior Personnel. Budget: \$394,200. 2002-2005.

Faculty Research Grant from Truman State University: *Ridges of Functions and Image Geometry*. Summer 2000.

Scholarly Interests

Semi-autonomous image / data analysis.

Scholarship of Undergraduate Research.

Mathematical, Computational, Quantitative, and Theoretical Biology.

Interdisciplinary Training of Undergraduates.

Differentiable Topology and Singularity Theory.

Professional Affiliations

National Organization of Research Development Professionals, 2013-2017.

National Council of University Research Administrators, 2013-2017.

Council on Undergraduate Research, 2002-present.

Mathematical Association of America, 1992-2013, 2017-present.

The Society for Mathematical Biology, 2003-2014, 2017-present.

American Association for the Advancement of Science (AAAS), 2017-present.

Consortium for Mathematics and its Applications, 2007-2013.

Sigma Xi, The Scientific Research Society, 2005-present.

Kappa Mu Epsilon, 2000-present.

Publications

“Interdisciplinary Training in Mathematical Biology Through Team-based Undergraduate Research and Courses.” With Dr. Tim Walston. *Cell Biology Education - Life Sciences Education*. 9: 284-289. 2010.

“Mathematics In Multi-disciplinary Research-focused Learning Communities.” Proceedings of the Conference on Promoting Undergraduate Research in Mathematics. American Mathematical Society. 2007.

- “The Maximal Scale Ridge: Incorporating scale into the ridge definition.” with J. Furst. *Scale-Space Theory in Computer Vision: Proceedings of the Second International Conference, Scale-Space '99*. Springer-Verlag. Lecture Notes in Computer Science 1682: 93-104. 1999.
- “Image Loci are Ridges in Geometric Spaces” with J. Furst, R. Keller, and S. Pizer. *Scale-Space Theory in Computer Vision: Proceedings of First International Conference, Scale-Space '97*. Springer-Verlag. Lecture Notes in Computer Science 1252: 176-187. 1997.
- “Shape Based Mathematical Modeling of the Human Nasal Passages” with Len Brin, Jackie Huband, Laura Kay Potter, and Monica Price. In 1996 Industrial Mathematics Modeling Workshop for Graduate Students. Center for Research in Scientific Computation, North Carolina State University, Technical Report CRSC-TR97-8. 1996.

Program Building

Senior Research Officer. CSU Channel Islands. 2013-2017.

Responsibilities: Lead the grants and contracts enterprise at the University, manage compliance efforts, encourage faculty pursuit of external funding, lead internal funding efforts, liaison with CSU Council of Chief Research Officers, and encourage creative and proactive thinking in supporting faculty and student research, scholarship, and creative activity.

Accomplishments: Oversaw a doubling of staff applications for and securing of external funding through grants and contracts. Grew FTE staff support for grants. Encouraged growth and institutionalization of undergraduate research efforts and learning communities. Led University efforts to embrace the use of small unmanned aerial vehicles in student and faculty scholarship and education. Developed connections, including three Educational Partnership Agreements, between academic programs and the Naval laboratories at Naval Base Ventura County.

Director of STEM Talent Expansion Program Office. Truman State University. 2006-2012.

Responsibilities: Develop and sustain grant-funded activities to broaden participation in and completion of STEM degree programs. Supervise and evaluate Office staff. Administer budgets, recruit faculty support, advertise programs to students, employ multi-institutional Steering and Advisory committees for programs.

Accomplishments: Secured funding from and managed programs for NSF programs including UBM, STEP, and PRISM. Organized and assessed 10-week multidisciplinary summer research experience for early-career college students. Increased recruitment and graduation rate for STEM transfer students from community colleges. Developed STEM focused articulation agreements for major community college partners.

Director of Truman State University’s undergraduate Mathematical Biology program. 2003-2009.

Responsibilities: Created a research-based undergraduate program in mathematical biology involving 20 faculty from biology, mathematics, and computer science. Identified faculty mentor teams and recruited high-ability students. Managed NSF budgets. Wrote internal and external reports.

Publicized program with external stakeholders. Supported faculty scholarship related to program. *Accomplishments:* Secured funding from NSF UBM program (2003, 2004, 2009). Created year-long, interdisciplinary research experiences for undergraduates and faculty. Created innovative outcome-based interdisciplinary minor in mathematical biology. Established Truman as a national leader in research-based interdisciplinary training for undergraduates.

Founding Member, Truman State University Faculty Caucus for Scholarship, Research, and Creative Activity. 2007-present.

Accomplishments: Responding to faculty desire for more visible support for scholarly activity, a group of senior faculty members from a variety of disciplines formed this informal Caucus. Convene social gatherings (two per term) at which faculty interact to learn more about others’ scholarly interests, and we discuss University policy and decisions that affect faculty scholarship. Organize a single session

Faculty Research Day for faculty to make presentations on their interests and learn about research in other departments. Provide faculty with a network of colleague that support their scholarly efforts.

Member, Truman State University Strategic Advisory and Planning Committee. 2005-2009.

Responsibilities: Used institutional assessment and information about the higher education market to update the University's five-year strategic plan for FY 2008-1010.

Accomplishments: Successfully added institutional goals concerning the teacher-scholar model, environmental sustainability, and supporting community college transfer students.

Synergistic Activities

UAS PROGRAMS AND OPERATIONS. Administrative/University liaison for UAV-related activities in Ventura County including regional competition for UAS Test Site, and UAS Center of Excellence. Liaison for local chapter of the Association of Unmanned Vehicle Systems International (AUVSI) and vocal proponent for the use of UAS in education and research. Chair of University UAS Board; developed and refined policies and procedures for UAS at the University. Developed MOU with Channel Islands National marine Sanctuaries and its UAS group.

MIGRANT SUMMER LEADERSHIP INSTITUTE; 2013, 2014, 2015. Administrative lead and co-developer of a summer program in STEM and Leadership that serves talented high school students from migrant families. Program included college-level academic work for students and multi-day program for their parents. Liaison with California Migrant Education program.

MATHEMATICAL BIOLOGY PROGRAM. Established by individuals from our Mathematics, Computer Science, and Biology departments, Truman's Mathematical Biology program is a cross-cutting activity that brings faculty and undergraduates from the mathematical and life sciences to carry-out research at the interface of the disciplines. Our learning-communities model incubates long-term collaborative interdisciplinary research projects and gives students long-term research experiences. (2002-present)

COLLEGE RESIDENTIAL INSTITUTE (CRI) FOR KAUFFMAN SCHOLARS, INC. Leveraging experience from summer programs for undergraduates in STEM and an interest in the Maker Movement (<http://makezine.com>), I worked with colleagues to create a three day residential experience for two dozen seventh graders in the Kauffman Scholars program (<http://www.kauffmanscholars.org>). I trained a dozen college students to mentor and supervise the youth during this short pre-college program. Using 'flight' as a theme, we taught elementary mathematics, statistics, and physics through hands-on learning in the lab and the field. Students also took a mini-course in writing in which they reflected on what they were learning and expressed their goals to attend college.

MATHEMATICAL BIOLOGY MINOR. Led the development and writing of an interdisciplinary minor in mathematical biology. The minor provides a flexible vehicle for students from agricultural science, biology, computer science, and mathematics interested in earning a degree that demonstrates interdisciplinary ability through topics such as bioinformatics, biostatistics, and computational or mathematical modeling. This minor provides Missouri with its only undergraduate program in mathematical biology. (2008)

STEM FIELD TRIP PROGRAM. With several colleagues in the STEM disciplines at Truman, developed a template for and conducted more than a dozen two-day professional development field trips for undergraduates. On such a trip, a group of 15-20 students and 2-4 faculty travel to a regional metro area to visit two companies that value the skills and habits of mind developed in their STEM degree program. On the first day, students prepare for the visits in an evening workshop. On the second day, they visit the hosts. Participants return to school energized about their choice of major, are more likely to pursue an internship before

graduation, and are more confident when they interview for internships, graduate positions, and jobs. (2001-present)

COURSE DEVELOPMENT. Developed *Conflict, Cooperation, & Choice* (JINS 333), an Interdisciplinary course on rational choice for Truman's liberal studies program; with S. Thatcher, *Introduction to Scientific Programming for Scientists* (MATH 288) for Truman's mathematical biology program; the *Capstone Seminar* (MATH 497) in Mathematics to assist our majors through our Capstone program. Also facilitated the development of courses in bioinformatics, introduction to mathematical biology, and biostatistics. With the support of an NSF PRISM grant, have developed an *Integrative (cross-STEM) Freshman Seminar* and an introduction to independent, faculty-mentored research in STEM called an *Inquiry Seminar*. Develop a two-course sequence called *Mathematical Methods in Biology and Chemistry* and assisted in the development of a course *Analytical Chemistry for Biologists*.

MULTIDISCIPLINARY STEM LEARNING COMMUNITIES. Through external funding, in partnership with, and with the support and guidance of many colleagues from the STEM disciplines at Truman, developed and implemented a summer undergraduate research community to bring together students and faculty and to deliver a coordinated, value-added program of workshops and seminars that foster students' professional, personal, and social growth. Much of the programming centers on strengthening student research skills. The summer community has transformed Truman's summer scholarly community and has led to greater interdepartmental interactions of students and faculty in the School of Science and Mathematics throughout the year.

COMMUNITY COLLEGE PARTNERSHIPS. With support from Truman State University, an NSF STEP grant, and an NSF PRISM grant, have established and cultivated partnerships with three regional community colleges to broaden participation in STEM programs that lead to a baccalaureate degree. These colleges are St. Charles Community College, Moberly Area Community College, and Metropolitan Community College. Originally made possible by articulation agreements, these partnerships created additional programs at the community colleges and increased opportunity for faculty, staff, and student interaction. In development is the Missouri Pre-STEM Pathway Program that will help prepare community college students to transfer to STEM baccalaureate programs. (2003-present)

Major National Service

Board Chair, National Conferences on Undergraduate Research (NCUR). 2010-2011.

Responsibilities: Represent NCUR to external organizations. Coordinate interaction between Board and host sites. Manage organizational 'merger' with CUR.

Member, NCUR Board of Governors. 2008-2012.

Responsibilities: Work with other Board members online and at biannual meeting to provide oversight to conference hosts and to secure future host sites. Across all disciplines and all institution types.

Member of the Mathematical Association of America's (MAA) Science Policy Committee, which advises the President and Executive Director on organizational priorities, comments on reports from political consultants, and assists in aligning the organization's strategy toward policy with the needs, interests, and abilities of its membership. 2009-2012.

As director of the NSF STEP and NSF PRISM grant projects, responsible for creating and maintaining a partnership between Truman State University and three regional community college partners that will increase the number of students who pursue baccalaureate degrees in STEM. Created 2+2 programs, pre-STEM articulation agreements, and inter-institutional research collaborations between faculty. 2004-2012.

As director of an NSF CSEMS program and the NSF STEP program, worked with colleagues to establish and sustain relationships with Missouri companies (in St. Louis and Kansas City) such as Boeing, Pfizer, and Monsanto to host professional development and career awareness field trips for STEM students. 2000-2012.

Additional National Service

INTEL International Science Engineering Fair, Judge. Special Award from *Sigma Xi*, the Scientific Honor Society. Los Angeles, CA. 2015, 2017.

Committee of Visitors for NSF SSTEM and Noyce programs. Washington, DC. March 2015.

Advisory Committee for the development of a web portal to serve grantees of the NSF *Science, Technology, Engineering, and Mathematics Talent Expansion Program*. 2010-2011.

Advisory Committee for the Annual NSF *Science, Technology, Engineering, and Mathematics Talent Expansion Program* Grantee Meetings. 2009-2010.

Organizing Committee for the first annual Undergraduate Research Symposium for UBM Students at the *National Institute for Mathematical and Biological Synthesis* (NIMBioS). University of Tennessee, Knoxville. 2009.

Mathematical Bioscience Institute's Panel on Undergraduate Mathematical Biology Programs (PUMP). 2009-2010.

Mathematical Association of America's Committee on Undergraduate Program in Mathematics subcommittee on Research in Mathematics by Undergraduates. 2009-2012.

Mathematical Association of America's Science Policy Committee. 2009-2012.

National Conference on Undergraduate Research (NCUR), Board Member. 2008-2011, Board Chair 2012.

MAA Special Interest Group in Mathematical and Computational Biology, Electronics Communications Coordinator. 2008-2010.

Society for Mathematical Biology, Education Committee. 2005-2012.

Council on Undergraduate Research, Division of Mathematics & Computer Science. Councilor, 2004-2009, 2012-2013.

Council on Undergraduate Research, Secretary for Math & CS Division. 2008-2009.

Additional Leadership and Service: Regional & National

Workshop Panelist. NAVAIR-NCWD, NAVSEA-PHD Innovation Discovery Event. Port Hueneme, CA. October 2017.

STEM Education Lead. Martine Advanced Systems and Technology Laboratory and Open House. Port Hueneme, CA. 2017.

Organizing Committee, Annual AUVSI Mini-symposium for local chapter. 2014, 2015, 2016.

Institutional Liaison to AUVSI local chapter. 2013-2016.

Institutional Liaison to Navy Laboratories for Educational Partnership Agreement Activities: NAVAIR-NCWD, NAVSEA-PHD, NAVFAC-EXWC. 2013-2016.

Advanced Manufacturing Partnership of Southern California, Institutional Representative and Chair of Research & Innovation Pillar Committee. 2015, 2016, 2017.

Ventura County's Workforce Development Board's Manufacturing Committee, Member. 2015-2017.

Member of state-wide proposal development group for Missouri EPSCoR Track 1 Project Group, STEM Education and Workforce Development team. Summer-Fall 2012.

Mathematical Association of America's Committee on Undergraduate Program in Mathematics (CUPM) subcommittee on *Research in Mathematics by Undergraduates*. 2009-2012.

Review panelist and *ad hoc* reviewer for National Science Foundation UBM, STEP, PRISM, and C-RUI programs. 2003-present.

Organizing Committee for the first annual Undergraduate Research Symposium for UBM Students at the *National Institute for Mathematical and Biological Synthesis* (NIMBioS). University of Tennessee, Knoxville. 2009.

Promotion committees, external evaluator: SUNY Geneseo, St. Olaf College. 2009.

Howard Hughes Medical Institute *Quantitative Biology Curriculum Planning Workshop* working group on introductory biology courses. *Ex-officio* member. 2007-2009.

Reviewer for *Bulletin of Mathematical Biology*, Springer-Verlag, PRIMUS, and CUR Quarterly. 2008, 2009.

External Content Area Specialist in Interdisciplinary Programs, for Johnson County Community Colleges planned Academy for Mathematics, Science, and Computing. 2008.

Reviewer for *CUR Quarterly*. 2002-2007.

Faculty Consultant, Advanced Placement Calculus, Educational Testing Service and the College Board. Fort Collins, CO. 2003.

Reviewed Dossey's *Discrete Mathematics*. 1999.

University Leadership and Service

Assessment Officer, Mathematics Program. 2017-present.

University UAS Board, Chair. CSU Channel Islands. 2013-present.

University Representative of the CSU Council of Chief Research Officers. CSU Channel Islands. 2013-2017.

IRB Administrator. CSU Channel Islands. 2013-2017.

SAGE Student Research Conference, Organizer. CSU Channel Islands. 2014. 2015. 2016. 2017.

Student Research Advisory Committee. CSU Channel Islands. 2013-present.

Transfer and Articulation Committee, Chair. School of Science and Mathematics. Truman State University. 2012.

Mathematics Department's Undergraduate Program Committee. Truman State University. 1998-2012. Chair, 2005-2006.

Truman Task Force on Transfer Student Issues. Truman State University. 2008. 2012.

Mathematics Department's Computer Issues Committee. Truman State University. 1998-2012. Chair, 1999-2001.

University Indirect Costs Policy Review Committee. Truman State University. 2010.

Summer Research Fellowship review committee. Truman State University. 2008-2009.

Task Force on Institutional Mechanisms and Structures to Support External Funding. Truman State University. 2008.

Program reviewer for Truman State University's Department of Chemistry. 2005.

Howard Hughes Medical Institute proposal preparation committee, representative for Mathematics and Computer Science division. Truman State University. 2003-2004.

Consultant regarding proposed junior interdisciplinary (JINS) courses for Dr. David Christiansen, Director of Interdisciplinary Studies. Truman State University. 2000-2004.

Courses Taught (* created by J. Miller)

Freshman Seminar (MATH 101)	Discrete Mathematics (MATH 347)
Integrative Freshman Seminar: STEM (IDSMS 140)*	Algebraic Structures I (MATH 451)
Plane Trigonometry (MATH 157)	Advanced Calculus I (MATH 461)
Pre-Calculus/Elementary Function (MATH 186)	Advanced Calculus II (MATH 462)
Basic Statistics (STAT 190)	Topics in Math Modeling (MATH 530)
Liberal Arts & Sciences Calculus (MATH 194)	Inquiry Seminar: STEM (IDSMS 130/131)*
Calculus & Mathematical Concepts for the Life Sciences (MATH 196)*	Conflict, Cooperation, and Choice: Understanding Human Rationality (JINS 333)*
Calculus I (MATH 198)	Capstone Seminar (MATH 497)*
Calculus II (MATH 263)	Senior Seminar (MATH 498)
Calculus III (MATH 264)	Undergraduate Readings in Mathematics (MATH 489)
Linear Algebra (MATH 357)	Undergraduate Research (MATH 473)*
Ordinary Differential Equations (MATH 365)	Grant Writing (ENG 473)

Presentations & Posters (* indicates undergraduate co-author)

- "A Stratification of the Space of Real Symmetric Matrices." MAA Regional Meeting for the Southern California and Nevada Section. October 2017.
- "Bats and Stats." Undergraduate Seminar Series. CSU Channel Islands. September 2017.
- "Genericity, Transversality, and Relative Critical Sets." Graduate Seminar Series. CSU Channel Islands. September 2017.
- "UAS Excellence at CSU Channel Islands." International Drone Expo. Los Angeles, CA. December 2015.
- Manufacturing Roundtable Panelist. University of Southern California. July 2015.
- Invited Panelist. California Governor's UAS Panel Presentation and Discussion. June 2014.
- Invited Panelist. California UAS Summer Program. San Diego, CA. June 2014.
- "Weaving a Research Net." Poster at CUR Summit for State Systems and Consortia. Washington, DC. March 2014.
- "Preparing Undergraduates to Work at the Intersection of Biology and Mathematics." Presentation and Poster. Next Generation of STEM Learning: Investigate, Innovate, Inspire. AAC&U, Kansas City, MO. November 2012.
- "A Research-based Model for Interdisciplinary Training of STEM Undergraduates." Chemistry Research Seminar, Missouri State University. October 2012.
- "Undergraduate Research as Interdisciplinary Training." HHMI Integrative STEM Learning: Pedagogy and Partners Conference. Trinity University, San Antonio, TX. October 2012.
- "Highs and Lows of an Interdepartmental Undergraduate MathBio Program." Invited Presentation. Annual meeting of the Society for Mathematical Biology. 25 July 2012.
- "Cultivating Partnerships between 2-year and 4-year Colleges and Universities." Invited Presentation. Radford University. 13 July 2012.
- Invited panelist. *Making Biomath Happen* Conference. University of Arizona. Tucson, AZ. 13-16 June 2012.
- "Smoothing the Way for STEM transfers from 2-year program to baccalaureate programs." Presentation with T. Walston and B. Kramer. Missouri Coordinating Board for Higher Education's Conference on Transfer and Articulation. Columbia, MO. February 2012.

- “Report on the NSF PRISM project at Truman State University.” Presentation at Joint Mathematics Meetings, New Orleans, LA. 6–9 January 2011
- “Interdisciplinary Training in Mathematical Biology Through Team-based Undergraduate Research and Courses.” Presentation at Joint Mathematics Meetings, New Orleans, LA. Session on Undergraduate Mathematical Biology. 6–9 January 2011.
- “Rising Above the Gathering Storm by Building Bridges for STEM Transfers from Community Colleges to Baccalaureate Programs” Presentation with J. Thompson and J. Roads. Missouri Coordinating Board for Higher Education’s Conference on Transfer and Articulation. Columbia, MO. 12 February 2010)
- “What Does It Take to Help Student Transfer Successfully in the Sciences?” a one hour concurrent session and a two hour post-conference session. With Kate Hulpke and Dean Livelybrooks (University of Oregon). At the 8th annual Conference of the National Institute for the Study of Transfer Students. Addison, Texas. 27-29 January 2010)
- “Quantitative Network Descriptors of Endothelial Tubulogenesis on Matrigel.” Poster with David Hayes, Bo Forrester, and Robert Baer (ATSU). *Frontiers in Microcirculation: Control Processes and Clinical Applications*. Annual meeting of the Microcirculation Society. Columbia, MO. 16–17 October 2009)
- Panelist on Undergraduate Research Opportunities at Truman State University and A.T. Still University of Health Sciences. A.T. Still University of Health Sciences. Kirksville, MO. 26 September 2009)
- “Visual perception, Computation, and Geometry.” Presentation at the inaugural Faculty Research Conference Day. Truman State University. Kirksville, MO. 12 September 2009)
- “Training Undergraduates in Mathematical Biology Using Research with Faculty.” Presentation at 2009 meeting of the Society for Mathematical Biology. Vancouver, BC, Canada. 27-30 July 2009)
- “On the Care and Feeding of Undergraduates in Mathematical Biology.” Panelist at the 2009 Meeting of the Society for Mathematical Biology. Vancouver, BC, Canada. 27-30 July 2009)
- “Training Undergraduates in Mathematical Biology Using Research with Faculty.” Colloquium presentation. University of Missouri, Columbia. 25 April 2009)
- “Learning Experiences in Integrative Mathematics and Biology at Truman State University.” Poster at NSF & AAAS conference on *Transforming Undergraduate Biology Education*. Washington, DC. 15-17 July 2009)
- “Preparing Missouri’s Next Generation of Innovators and Educators in Science and Mathematics: Truman’s Science & Mathematics Talent Expansion Program” Poster presentation at Missouri Capitol building. 10 February 2009 .
- “Training Undergraduates in Mathematical Biology Using Research With Faculty.” Presentation at Joint Mathematics Meetings, Washington, DC. Session on Undergraduate Mathematical Biology. 7–10 January 2009 .
- “Relative Critical Sets: structure and application.” Presentation at Joint Mathematics Meetings, Washington, DC. Session on Manifolds and Cell Complexes. 7–10 January 2009 .
- “The Next STEP: Integrating STEM Learning Communities.” Poster Presentation. The MAA–AMS Joint Mathematics Meetings: Washington, D.C. 6-10 January 2009.
- “Research-focused Learning Communities in Mathematical Biology.” Poster Presentation. The MAA–AMS Joint Mathematics Meetings: Washington, D.C. 6-10 January 2009.
- “Creating a Pathway to the Baccalaureate for Community College Transfers” with Jennifer Thompson (STEP Office) and Kelsey Aurand de Rosso (Admissions). Truman State University Faculty Development Lunch series. 15 October 2008.
- “Matlab and Mammalogists: Toward Quantitative Identification of Free-flying Bats.” Saint Louis University’s Interdisciplinary Applied Science seminar series. 7 October 2008.

- "Learning Experiences in Integrative Mathematics and Biology at Truman State University" with Prof. Tim Walston (Biology). Annual Meeting of the Society for Mathematical Biology. 31 July - 2 August 2008.
- "Learning Experiences in Integrative Mathematics and Biology at Truman State University" with Prof. Tim Walston (Biology). Poster at Howard Hughes Medical Institute workshop on Quantitative Biology. 21-24 July 2008.
- "Advice on Advising Transfer Students: The Transfer Student Experience." with Jennifer Thompson (STEP Office) and Kimberly Fitzgerald (Admissions). Truman State University Faculty Development Lunch series 27 February 2008.
- "Preparing Missouri's Next Generation of Innovators and Educators in Science and Mathematics: Truman's METS Talent Expansion Program" Poster presentation at Missouri Capitol building. 26 February 2008.
- "Field Trips Motivate Students to Pursue Mathematics." Oral Presentation. The MAA-AMS Joint Mathematics Meetings: San Diego, CA. 6-10 January 2008.
- "The Next STEP: Integrating STEM Learning Communities." Poster Presentation. The MAA-AMS Joint Mathematics Meetings: San Diego, CA. 6-10 January 2008.
- "Research-focused Learning Communities in Mathematical Biology." Poster Presentation. The MAA-AMS Joint Mathematics Meetings: San Diego, CA. 6-10 January 2008.
- "Centrality Measures on Vascular Networks." Poster Presentation by Alexandra Wehrman*. The MAA-AMS Joint Mathematics Meetings: San Diego, CA. 6-10 January 2008.
- "Curriculum Development and Research by Undergraduates in Mathematical Biology." Organizer and moderator, panel discussion (with K. Renee Fister, Murray State University). MAA MathFest 2008. San Jose, CA. 3-5 August 2007.
- "Quantitative Identification of Bats via Echolocation Data." Poster with Josh Kelly*, Phil Vance*, Ben Hale*, and M. Scott Burt. Annual Meeting of the Society for Mathematical Biology. San Jose, CA. 31 July-3 August 2007.
- "Towards Bio2010: Educating Mathematicians, Biologists, and Computer Scientists collaborating to redesign education: Content & Pedagogy." Keynote Address. Howard Hughes Medical Institute Quantitative Biology Curriculum Planning Workshop. Eastern Tennessee State University. Johnson City, TN. 18-20 July 2007.
- "Charting a Course Toward Interdisciplinary Collaborations." Invited keynote address at Tuskegee University's Models for Interdisciplinary Research and Curriculum Development at the Undergraduate Level workshop. Tuskegee University. Tuskegee, Alabama. 15 February 2007.
- "Using Electronic Journals to Assess Student Growth from Undergraduate Research Experiences" with Jennifer Thompson and Sue Pieper. Truman State University Assessment Colloquium. 5 December 2006.
- "Connectedness As a Measure of Robustness." Sigma Xi seminar series, Kirksville Chapter. 17 November 2006.
- "Crossing Disciplinary Boundaries through Undergraduate Research." Poster with Jon Beck, Jeffrey Osborn, and Michael Kelrick. Joint SMB-SIAM Conference on the Life Sciences, N.C. State. Raleigh, NC. 31 July-4 August 2006.
- "Integrating Science and Mathematics Learning Communities: Developing Interdisciplinary Research and Curricular Programs." Poster with Jeffrey Osborn, Maria Nagan, and Jennifer Thompson. Botany 2006. Chico, CA. 18 July-2 August 2006.
- "Integrating Science and Mathematics Learning Communities: Developing Interdisciplinary Research and Curricular Programs." with Jeffrey Osborn. Council on Undergraduate Research National Conference, DePauw University. Greencastle, IN. 24-27 June 2006.
- "Quantitative Approaches to Recognizing Bat Species via Acoustic Data." with Scott Burt. Bats and Caves Roundtable, pre-meeting to the Missouri Natural Resources Conference. Lake of the Ozarks, MO. 1 February 2006 .

- “A research-focused learning community in Mathematical Biology.” with Jon Beck, Jeffrey Osborn, and Michael Kelrick. European Conference on Mathematical and Theoretical Biology. Dresden, Germany. 18–22 July 2005 .
- “An Open Source Tool to Aid in the Characterization of the Structure of 2D Vascular Networks.” with M. Miller*. 16th Annual Argonne Symposium For Undergraduates In Science, Engineering And Mathematics, Argonne National Laboratory. 4–5 November 2005 .
- “Quantitative identification of northeastern Missouri bats: survey results.” with Rachel O. Van Amburg*, Scott Burt, John Hainline*, and Joshua B. Kelly*. Annual meeting of the Central Plains Society of Mammalogists. Truman State University, Kirksville, MO. 15 October 2005 .
- “Quantitative identification of northeastern Missouri bats via acoustic and standard surveys.” with Joshua B. Kelly*, Scott Burt, John Hainline*, and Rachel O. Van Amburg*. Annual meeting of the Central Plains Society of Mammalogists. Truman State University, Kirksville, MO. 15 October 2005.
- “A known call library for the quantitative identification of northeast Missouri bats.” with John Hainline*, Scott Burt, Joshua B. Kelly*, and Rachel O. VanAmburg*. Annual meeting of the Central Plains Society of Mammalogists. Truman State University, Kirksville, MO. 15 October 2005.
- “Mathematical Biology at Truman.” Invited presentation at the 2005 Annual Meeting of the Society for Mathematical Biology, University of Michigan. Ann Arbor, MI. 25–28 July 2004.
- “Grant writing and project design: A panel discussion.” Panelist. Annual Missouri MAA section meeting. Southeast Missouri State University. Cape Girardeau, MO. 6–7 April 2004.
- “Mathematical Biology at Truman State University.” with J. Osborn, J. Beck, and M. Kelrick. Society of Mathematical Biology’s Annual Meeting, Ann Arbor, MI. 25–28 July 2004.
- “Truman State University’s Mathematical Biology Initiative.” Poster at 10th National Meeting of the Council for Undergraduate Research. University of Wisconsin, La Crosse. 24 June 2004. With J. Osborn, J. Beck, and M. Kelrick.
- “Crossing Disciplinary Boundaries: Truman’s Mathematical Biology Initiative.” Invited presentation, Basic Sciences Seminar, Kirksville College of Osteopathic Medicine, A. T. Still University of Health Sciences. 17 October 2003.
- “Correlating Bat Species Using Search-Phase Echolocation Calls and Wavelet Analysis” with Christopher Bay* and Greg Knese*. Presentation at the National Conference on Undergraduate Research. Salt Lake City, UT. 13–15 March 2003.
- “Structures in the Space of Real Symmetric Matrices.” Annual meeting of the Missouri section of the MAA. 12 April 2002.
- “Relative Critical Sets and Ridge Sets of Functions.” Contributed talk at the Institute for Mathematics and its Applications workshop on Image Analysis and High Level Vision. Part of the program on Vision, Speech, and Language. 15 November 2000.
- “The Maximal Scale Ridge: Incorporating scale into the ridge definition.” (with J.Furst). Invited talk at Scale-Space Theory in Computer Vision, 1999. Corfu, Greece. 26–27 September 1999.
- “What is the shape of an amoeba?” Invited Mathematics Colloquium talk. Saint Olaf College. Northfield, MN. Fall 1998.

Conferences & Workshops

- Regional Mathematics Conference. Project PROMESAS. Ventura County Office of Education, Camarillo, CA. April 2017.
- Grant Resource Center’s Funding Competitiveness Conference. January 2017.
- California Islands Symposium. October 2016.
- NSF Opportunities in the Social Sciences. CSU Long Beach. June 2016.
- CSU Research Competition. CSU Bakersfield. April 2016.
- CSU COAST Annual Meeting. Long Beach, CA. April 2016.

Grant Resource Center's Funding Competitiveness Conference. Washington, DC. February, 2016.

Council on Undergraduate Research Dialogues. Washington, DC. February, 2016.

IDE International Drone Expo. Los Angeles, CA. December 2015.

Southern California Conference for Student Research. Harvey Mudd College. November 2015.

National Summer Institute on Learning Communities. Washington Center at the Evergreen State College. Seattle, WA. July 13-15, 2015.

Grant Resource Center's Funding Competitiveness Conference. Washington, DC. February 2015.

Council on Undergraduate Research Dialogues. Washington, DC. February 2015.

Maritime Advanced Systems & Technology Open House & Technology Expo. June 2015.

CSU COAST Annual Meeting. Long Beach, CA. April 2015.

Naval Sea Weapons Command - Port Hueneme Division Innovation Day. December 2014.

Invited attendance at Council on Undergraduate Research NSF CCLI Workshop on student research and high impact practices. University of San Diego. November 2014.

Southern California Conference for Student Research. November 2014.

SACNAS National Conference. Creative, Vision, & Drive: Toward Full Representation in STEM. Los Angeles, CA. October 16-18, 2014.

STEM Education Workshop on White House College Opportunity Initiative. October 2014.

Santa Rosa Island Writing Retreat. Channel Islands National Park, CA. May 2014.

CUR Workshop Program on Institutionalizing Undergraduate Research Summit for State Systems and Consortia. Alexandria, VA. March 28-30, 2014.

NCURA Pre-award Research Administration Conference. San Francisco, CA. March 18-20, 2014.

NCURA Financial Research Administration Conference. The Practical and the Possible. San Francisco, CA. March 15-17, 2014.

Emerging Researchers National (ERN) Conference in STEM. AAAS. Washington, D.C. February 20-22, 2014.

Grant Resource Center's Funding Competitiveness Conference. Washington, DC. February 2014.

National Conference on Undergraduate Research. La Crosse, WI. April 11-13, 2013.

NCURA. March 2014.

NCURA National Meeting. Washington, DC. August 2013.

CUR Business Meeting. Chapman University. Orange, CA. June 2013.

NORDP Annual Research and Development Conference. Austin, TX. May 2013.

Civilian Applications of UAVs – A California Perspective. AIAA Regional Conference. Westlake, CA. March 2013.

GRC 2013. February 2013.

CUR Dialogues 2013. February 2014.

AAC&U summer 2012

Missouri EPSCoR Planning Meeting. University of Missouri, Columbia. July 30-31, 2012.

Annual Meeting of the Society for Mathematical Biology. National Institute for Mathematical and Biological Synthesis. Knoxville, TN. Vancouver, British Columbia, Canada. 25–27 July 2012

Making Biomath Happen Conference. University of Arizona. June 2012.

National Science Foundation Grantee Meeting for PRISM grantees. Washington, DC. June 25-26, 2012.

Workshop on Introductory Biology Programs. American Association for the Advancement of Science. Washington, DC. June 2012.

Supplemental Instruction Training Workshop. University of Missouri, Kansas City. May 2012.

Missouri Coordinating Board for Higher Education's Conference on Transfer and Articulation. Columbia, MO. February 2012.

Missouri Conference on Transfer and Articulation. Columbia, MO. 11 February 2011.

National Science Foundation Grantee Meeting for PRISM grantees. Washington, DC. July 2012.

The MAA-AMS Joint Mathematics Meetings, New Orleans, LA. January 2011.

National Conference on Undergraduate Research. University of Montana. Missoula, MT. April 2010.

National Science Foundation, Building Community. Grantee Meeting for STEM Talent Expansion Program (STEP) program. Arlington, VA. March 3-6. 2010.

Missouri Coordinating Board for Higher Education's Conference on Transfer and Articulation. Columbia, MO. 12 February 2010.

National Institute for the Study of Transfer Students, annual national meeting. University of North Texas, Denton, TX. 27-29 January 2010.

The MAA-AMS Joint Mathematics Meetings: San Francisco, CA. January 2010.

Frontiers in Microcirculation: Control Processes and Clinical Applications. Annual Meeting of the Microcirculation Society. Columbia, MO. 16-17 October 2009.

NSF UBM grantee meeting and National Conference for Undergraduates in Mathematical Biology. National Institute for Mathematical and Biological Synthesis (NIMBioS). University of Tennessee, Knoxville, TN. 22-24 October 2009.

Belknap Springs Workshop on Partnerships Between 2- and 4-year STEM Degree Programs. Participant and Facilitator. Belknap Springs, Oregon. 8-10 October 2009.

Annual Meeting of the Society for Mathematical Biology. Vancouver, British Columbia, Canada. 27-30 July 2009. Organized the following with K. Renee Fister (Murray State University):

- Minisymposium: *Interdisciplinary Training of Undergraduates through Research Experiences* for undergraduate presentations on research sponsored by NSF UBM programs
- Minisymposium: *On the Care and Feeding of Undergraduates in Mathematical Biology*, a panel discussion on preparing undergraduates for interdisciplinary career paths

NSF and AAAS invitation-only conference on Transforming Undergraduate Biology Education. Washington, DC. 15-17 July 2009.

CUR Business Meeting. Montana State University. Bozeman, MT. 19-20 June 2009.

National Science Foundation, Building Community. Grantee Meeting for STEM Talent Expansion Program (STEP) program. Arlington, VA. 11-13 March 2010.

Missouri Coordinating Board for Higher Education's Conference on Transfer and Articulation. Columbia, MO. January 2009.

The MAA-AMS Joint Mathematics Meetings: Washington, DC. January 2009.

Annual Meeting of The Society of Mathematical Biology. Toronto, Ontario. 31 July - 3 August 2008.

Quantitative Biology II Workshop. Howard Hughes Medical Institute. Chevy Chase, MD. 21-24 July 2008.

CUR Business Meeting. College of St. Benedict. Collegeville, MN. 20-21 June 2008.

Workshop on Establishing an Academy for Science, Mathematics, and Computation. As Content Area Specialist. Johnson County Community College. Overland Park, Kansas. 19 June 2008.

Grantee Meeting for UBM program. Mathematical Biosciences Institute. Columbus, OH. 4-6 June 2008.

National Science Foundation, Building Community. Grantee Meeting for STEM Talent Expansion Program (STEP) program. Arlington, VA. March 5–7, 2008.

CUR Institute on Initiating and Sustaining an Office of Undergraduate Research. University of Arizona. Tucson, AZ. 15-16 February 2008.

The MAA–AMS Joint Mathematics Meetings: San Diego, California. January 2008.

The annual MAA MathFest conference. San Jose, CA. 3-6 August 2007.

Annual Meeting of The Society of Mathematical Biology. San Jose, CA. 31 July 31- 3 August 2007.

National Science Foundation PI Meeting for Interdisciplinary Training for Undergraduates in Biology and Mathematics grant. San Jose, CA. 2 August 2007.

Howard Hughes Medical Institute’s Quantitative Biology Curriculum Planning Workshop Eastern Tennessee State University. Johnson City, TN. 18-20 July 2007.

Models for Interdisciplinary Research and Curriculum Development at the Undergraduate level workshop. Tuskegee University, Tuskegee, Alabama. 15 February 2007.

National Science Foundation, PI Meeting for STEM Talent Expansion Program (STEP) program. Arlington, VA. 20-23 March 2007 .

The MAA–AMS Joint Mathematics Meetings: New Orleans, Louisiana. January 2007.

CUR National Conference 2006, Learning Through Research: Dynamic Faculty, Students, and Institutions. DePauw University, Greencastle, Indiana. 24-27 June 2006.

The AMS-NSA Conference on Promoting Undergraduate Research in Mathematics. Westin O’Hare Hotel, Rosemont, IL. 28-30 September 2006.

CUR National Conference. DePauw University, Greencastle, IN. 24-27 June 2006.

CUR/SPS Workshop on Undergraduate Research. DePauw University, Greencastle, IN. 27-28 June 2006.

“Building Communities.” National Science Foundation, PI Meeting for STEM Talent Expansion Program (STEP) program. Arlington, VA. 20-21 April 2006.

BioMathematics Workshop. West Point Military Academy, West Point, NY. 4-7 April 2006.

National Science Foundation, PI Meeting for Interdisciplinary Training for Undergraduates in Biology and Mathematics program. Arlington, VA. 22-24 March 2006.

Missouri Caves & Bats Round-table. Osage Beach, MO. 1 February 2006.

The MAA–AMS Joint Mathematics Meetings: San Antonio, TX. 12-15 January 2006.

Central Plains Society of Mammalogists. Truman State University 14-16 October 2005.

Sixteenth (16th) Annual Argonne Symposium For Undergraduates In Science, Engineering And Mathematics. Argonne National Laboratory. Argonne, IL. 4-5 November 2005.

ECMTB05: European Conference for Mathematical and Theoretical Biology. Dresden, Germany. 18-22 July 2005.

Investigating Interdisciplinary Interactions. BioQuest Summer Workshop, Beloit College, Beloit, WI. 11-19 June 2005.

Annual Meeting of the Society of Mathematical Biology. University of Michigan. 25-28 July 2004.

The 10th National Council on Undergraduate Research Conference. LaCrosse, WI. 23-26 June 2004.

MAA Regional Meeting, Missouri Section. Southeast Missouri State University. Cape Girardeau, MO. 6-7 April 2004.

AMS Midwest Regional Meeting. University of Wisconsin. Madison, WI. 12-13 October 2002.

MAA Regional Meeting, Missouri Section. Truman State University. 12-13 April 2002.

Third International Conference on Scale Space Theory in Computer Vision, Vancouver, British Columbia, Canada. 7-8 July 2001.

MAA Regional Meeting, Missouri Section. University of Missouri, Rolla. 6-7 April 2001.

Image Analysis and High Level Vision, a workshop in the Institute for Mathematics and its Application's program in Vision, Speech, & Language. University of Minnesota. 13-15 November 2000.

Second International Conference on Scale Space Theory in Computer Vision, Corfu, Greece. Invited Speaker with Jacob Furst. September 1999.

Joint Mathematics Meetings. Baltimore, MD. 7-10 January 1998.

Short Course on Mathematical Imaging. Baltimore, MD. 5-7 January 1998.

Festival in Honour of V.I. Arnol'd. Fields Institute, Toronto, Ontario, Canada. June 1997.

12th Annual Geometry Festival. Durham, North Carolina. March 1997.

Workshop on the Topology of Real algebraic Varieties, Fields Institute. Toronto, Ontario, Canada. January 1997.

SIAM Southeastern Section meeting. Clemson, SC. Spring 1996.

MAA Southeastern Section's Annual Spring Meeting. University of North Carolina, Asheville, NS. Spring 1995.

Effective College Teaching in Technical Fields: A Workshop for TAs & Graduate Students. Professor Richard Felder (NCSU), presenter. 3 March & 4 April 1995.

Third Annual International Conference on Technology in Collegiate Mathematics. Orlando, FL. November 1994.

Research Experience for Undergraduates Program, Worcester Polytechnic Institute. Student participant. Worcester, MA. Summer 1992.

Manuscripts in Preparation (* indicates undergraduate co-author)

- n.d. "Local Generic Structure of Ridges of Functions." In preparation.
- n.d. "On Stratifying the space of $n \times n$ real symmetric matrices." In preparation.
- n.d. "Search-phase echolocation call structure for seven species of bats in Northeastern Missouri." With M. Scott Burt, Ben Hale*, Josh Kelly*, Rachel Van Amburg*, and Phil Vance*. In preparation.
- n.d. "Using Anabat Technology to Identify Bats of Northeast Missouri." With M. Scott Burt, Ben Hale*, Josh Kelly*, Rachel Van Amburg*, and Phil Vance*. In preparation.
- n.d. "Expert Models for Quantitative Identification of Northeast Missouri Bats I: biotic and abiotic sources of variation." With M. Scott Burt, Ben Hale*, Josh Kelly*, Rachel Van Amburg*, and Phil Vance*. In preparation.
- n.d. "Expert Models for Quantitative Identification of Northeast Missouri Bats II: models and validation." With M. Scott Burt, Ben Hale*, Josh Kelly*, Rachel Van Amburg*, and Phil Vance*. In preparation.
- n.d. "Computer Aided Shape Description of 2D Vascular Networks" With R. Baer, A. Wehrman*, and M. Miller*. In preparation.
- n.d. "The Vascular Network Toolkit for ImageJ" With R. Baer and M. Miller*. In preparation.