

**Brenda G. Rushing, Ph.D.**  
**Department of Life Sciences-Program in Biology**  
**Texas A&M University-San Antonio**

**Education**      Ph.D., Biological Sciences, Stanford University (Emphasis in molecular microbiology)  
B.S., Microbiology, Texas A&M University, Magna cum laude

**Professional Experience**

2019-present      **Instructional Assistant Professor, Biology**  
**Texas A&M University-San Antonio, San Antonio, TX**

2013-2019      **Assistant Professor of Biology**  
**Texas A&M University-San Antonio, San Antonio, TX**

2012-2013      **Adjunct Professor**  
**Texas A&M University-San Antonio, San Antonio, TX**

2011-2013      **Laboratory Manager**  
**Texas A&M University-San Antonio, San Antonio, TX**

2004-2011      **Senior Research Scientist/Project Leader, Research & Development**  
**SA Scientific, San Antonio, TX**

2003-2004      **Research Assistant Professor of Microbiology**  
**University of Texas Health Science Center-SA, San Antonio, TX**

1999-2003      **Assistant Professor of Biology**  
**Trinity University, San Antonio, TX**

1995-1999      **Postdoctoral Research Associate/NSF Postdoctoral Fellow**  
**Indiana University, Bloomington, IN**

**Fellowships and Awards**

College of Arts and Sciences (COAS) **2020 Excellence in Teaching Award** (for non-tenure line faculty),  
Awarded June 2021

Summer Faculty Research Grants (one as PI, one as co-PI), Texas A&M University-San Antonio, Summer 2019

Research Council Grant, co-investigator, Texas A&M University-San Antonio, May 2019

Summer Faculty Research Fellowship, Texas A&M University-San Antonio, Summer 2018

President's Strategic Initiative Grant, **FIRE UP** program for undergraduate research, PI and Program Director,  
Summer 2018

Research Council Grant, Texas A&M University-San Antonio, May 2018

Summer Faculty Research Fellowship, Texas A&M University-San Antonio, Summer 2017

American Society for Microbiology Mentor to student recipient of ASM Summer Undergraduate  
Research Fellowship, Summer 2016

American Society for Microbiology Undergraduate Faculty Research Initiative Fellowship, Summer 2015

National Society of Collegiate Scholars, Distinguished Member, nom. by Trinity University students, 2002

Faculty Development Award, Summer Research Stipend, Trinity University, Summer 2001

Dean's Faculty Development Grant, Summer 2001

Blue Key Honor Society selection as a "**Favorite Professor**", Trinity University, March 2001

## Teaching

### Courses Developed and Taught at Texas A&M University-San Antonio

BIOL 2421 Introductory Microbiology and Microbiology Lab (**lead faculty**)  
 BIOL 4401 Molecular Biology and Molecular Biology Laboratory (**sole faculty**)  
 BIOL 4406 Bacteriology and Bacteriology Laboratory (**sole faculty**)  
 BIOL 1308 Introduction to Life Sciences I (non-majors)  
 BIOL 1106 General Biology I Laboratory (Faculty of record for course, mentor undergraduate TAs)  
 BIOL 3402 (now 2411) Genetics and Genetics Laboratory  
 BIOL 4426 Cell Physiology and Cell Physiology Laboratory  
 BIOL 4356 Special Topics: Diagnostic Microbiology (Spring 2015)  
 BIOL 4102/4104 Biology Seminar  
 BIOL 3104 Research Experience in Biology (1 hr, taught several times as unpaid overload)  
 BIOL 4304 Undergraduate Research Biology (3 hr)

### Professional Development in Teaching

American Society for Microbiology Conference for Undergraduate Educators (ASMCUE), Virtual Conference, June 2021

American Society for Biochemistry and Molecular Biology (ASBMB), “Teaching Science with Big Data,” Virtual Conference, June 2021

American Society for Microbiology Conference for Undergraduate Educators (ASMCUE), Virtual Conference, July 2020

Participated in multiple webinars on use of Blackboard for online teaching, Summer 2020

- To improve fully online instruction and prepare for Fall 2020 (due to pandemic)

Partnership for Undergraduate Life Sciences Education (PULSE) Workshop, Texas Regional PULSE Institute (TRPI) “Inclusivity in Teaching Practices in STEM,” San Antonio, TX, January 2020

American Society for Biochemistry and Molecular Biology (ASBMB) Symposium “Transforming Undergraduate Education in the Molecular Life Sciences,” University of the Incarnate Word, San Antonio, TX, July 2019

American Society for Microbiology Conference for Undergraduate Educators (ASMCUE), Austin, TX July 2018

Participated in Peer Mentorship of Teaching (TEAM), Biology program, A&M-San Antonio, Spring 2018-Spring 2019

- Paired with a different faculty member each year
- Attended each other’s courses and shared evaluation and feedback to improve teaching in the biology program

American Society for Microbiology Conference for Undergraduate Educators (ASMCUE), Denver, CO, July 2017

Hosted speaker, Dr. Kelly Cowan, to present workshop “Closing the Gap Between Under-resourced and Full-resourced Students,” September 2016

American Society for Microbiology Conference for Undergraduate Educators (ASMCUE),  
Bethesda, MD, July 2016

Wrote American Society for Microbiology Undergraduate Research Fellowship (ASM-URF) with  
undergraduate research student, Dayana Ebad Fardzadeh

- Awarded April 2016 providing a summer stipend for the student
- Resulted in student award-winning poster presentation at Texas Branch ASM meeting, March 2017 (2<sup>nd</sup> Place Orville Wyss Award)

ASM-LINK Workshop Manual on “Mentor Training for Microbiologists”

- Used this manual to self-teach the workshop material
- Applied guidelines to develop BIOL 4304 and 3104 research courses for Spring 2016 semester

Awarded American Society for Microbiology “Leaders Inspiring Networks and Knowledge (LINK)”  
Undergraduate Faculty Research Initiative (UFRI) Fellowship, April 2015

- Selected “as a stellar example of an active researcher committed to student learning in undergraduate biology” as stated in the award letter
- Provided online training and mentoring
- Provided \$2000 Travel Award to attend research conference of my choice
  - Attended ASM Prokaryotic Cell Biology and Development meeting, Washington, DC, June 2015

American Society for Microbiology Conference for Undergraduate Educators, Austin, TX, May 2015

American Society for Microbiology (ASM) Conference on Cell-Cell Communication, San Antonio, TX,  
October 2014

- Arranged with ASM for undergraduate Bacteriology students in my course to attend for free.

Workshop “Designing Scientific Teaching Tools for Biochemistry and Molecular Biology Education,”  
Texas State University, San Marco, TX, March 2014

Symposium “Visualize, Image, Explore, and Wonder (VIEW)” on the use of imaging technology in  
STEM-related fields, Trinity University, San Antonio, TX, March 2014

## **Professional Societies**

American Society for Microbiology  
Texas Branch of the American Society for Microbiology

## **Service**

### **Service to the University**

**Chair**, Institutional Biosafety Committee (IBC), July 2019-present

- Convened bi-weekly meetings from August 2019 to present, including summer 2020 and summer 2021
- Brought A&M-San Antonio into compliance with A&M-System to allow teaching labs and research
  - Biosafety Level 1 (BSL-1) approvals began in November 2019 within 3 months of first committee meeting
  - Biosafety Level 2 (BSL-2) approvals began in June 2021
- Guided creation of the Standard Operating Procedures (SOPs) for IBC

- Interacted frequently with Dr. Bruce Whitney, Chief Research Compliance Officer for A&M System
- Requested infrastructure support from the university in terms of an Environmental Health and Safety Office and a Director of Research Compliance, Fall 2019
- Worked with Environmental Health and Safety (EHS) Officer to produce training guidelines
- Polled faculty in spring 2021 to gauge upcoming needs for the IBC
  - Ten research applications submitted between April-August 2021
- Participated in search committee sessions with Director of Research Compliance candidates
  - Summer 2019 and Summer 2021

Member, Campus Research Resumption Committee (during COVID), Fall 2020

President's Strategic Initiative Symposium

- Gave presentation of the FIRE UP summer research program

Member, Faculty Senate Evaluation and Merit Pay Committee, Fall 2016-Spring 2017

Strategic Planning Town Hall, A&M-San Antonio, March 2016

Writing Across the Curriculum, University Committee, Spring 2016-Spring 2017

- Attended International Writing Across the Committee (IWAC) conference, University of Michigan, July 2016
- Helped develop initial curriculum guidelines and rubrics to institute WAC at A&M-San Antonio
- WAC Town Hall meeting, October 2016

Strategic Planning Committee--Task Force 3—2016

University Institutional Review Board (IRB), 2015-2017

University Calendar Committee, 2015-16

- Academic Calendar subcommittee

President Matson's Water Summit, March 2015

Texas A&M System Collaborative-San Antonio region, 2014-2015

Downward Expansion Committee, 2014

Enrollment Management Committee, Texas A&M University-San Antonio, 2013-2014

### **Service to the College**

Member and student advisor, inaugural Health Professions Advising Committee (HPAC), 2017-present

- Eighteen (18) active HPAC advisees (as of August 2021)
- Helped develop Student HPAC handbook
- Subcommittee chair for advertising (2018)
- Participated in HPAC information sessions for students
- Subcommittee member for A&M-College Station summer research applications (2019, 2020, 2021)
- Interaction with Univ. of the Incarnate Word (UIW) health professions and medical school programs
- Obtained speakers for online panels for students during 2020-21 virtual year
- Learned CIVITAS/Inspire to add advising notes into new university system

Member, Arts & Sciences Librarian Search Committee, Fall 2013-Spring 2014

### **Service to the Department of Life Sciences and Biology Program**

Microbiology Curriculum Coordinator, service to Biology Program (lead faculty, continuing)

- Coordinate lecture syllabi with adjunct faculty
- Create lab syllabi each semester, work with lab manager to plan prep work and purchasing, coordinate with adjunct faculty
- Communicate with adjunct faculty to calculate overall course grades at the end of semester
- Ensure IBC registration is in place for BSL-1 work in the Microbiology laboratory

Member, Search Committee for Molecular Microbiologist faculty, Spring 2021

**Chair**, Microbiology Lab Curriculum Review Committee for Institutional Effectiveness Program (IEP), Fall 2020

Faculty Mentor, Inaugural Course BIOL 4102 Experiential Laboratory Instruction, Fall 2019

- Course was the first in our program to train senior undergraduate biology majors as Teaching Assistants (TAs) for General Biology I Labs
- Worked with another faculty member to develop syllabus and rubrics for assessment
- Attended all or part of each lab session to guide the student TA and was always on call by text message to rejoin the lab if more help needed.
- Met weekly with TAs for mentoring to discuss teaching methods and provide feedback
- Created and administered a mid-semester TA feedback survey for the Gen Bio I students to complete
- Was faculty of record for the Gen Bio I section and calculated/submitted the final grades

Mentored or co-mentored four undergraduate students in summer research, Summer 2019

Hiring of adjuncts for Biology Program for Fall 2019

- Responsible for initial screenings of the applications online in place of program coordinator
- Scheduled and performed all primary phone interviews and ranked candidates

**Director/Principal Investigator/Undergraduate research mentor**, Fostering Interdisciplinary Research Experiences for Undergraduate Potential (FIRE UP), Summer Undergraduate Interdisciplinary Research Program, Summer 2018

- Pilot program for research experience for undergraduates (REU) at A&M-San Antonio
- Wrote successful proposal funded by President's Strategic Planning Initiative
- Organized application process, review of applications, and process to pay the students
- Co-mentored research student Karla Tapia with Dr. Alan Daniels
  - Resulted in publication with an undergraduate research student
- Co-mentored research student Marissa Narvaez with Dr. Rodolfo Valdez
  - Resulted in several student poster presentations
- Planned and held FIRE UP Research Symposium, August 2018

Masters in Biology, Curriculum Development Committee, Spring 2018

Member, Search Committee for Water Resources Science & Technology (WateRST) faculty, Fall 2017

Member, Search Committee for Developmental Biologist faculty, Spring 2017

Biology Program subcommittee to revise Genetics curriculum, Fall 2016

Planning meetings for the STEM building, 2016-2018

- Highly involved in lab space design for research and teaching labs in the new building
- WebEx and in-person meetings with architects
- Building walk-throughs

Member, Search committee for first Department Chair of Science and Mathematics, June 2016

Mentor, Summer Undergraduate Research Students, Summer 2016

- ASM Undergraduate Fellowship (1 student)
- CIMA-LSAMP NSF Fellowship (1 student)
- BIOL 4304 Research Projects course (1 student)

**Chair**, Biology Lecturer Search Committee (2 full-time positions), Spring 2016

Member, Biology Faculty Search Committee (2 tenure track positions), Spring 2016

Member, Analytical Chemist Faculty Search Committee, Spring 2016

Member, Chemistry Lab Manager Search Committee, Spring 2016

Member, Organic Chemist Faculty Search Committee, Fall 2014

Member, Aquifer Storage and Recovery Committee, 2013-2015

Planning meetings for design of teaching labs in the Central Academic Building (CAB), 2013-2014

**Chair**, Lab Manager Search Committee, Summer 2013

### **Service to the Profession and Community**

Proposal reviewer for COVID research funding, San Antonio Partnership for Precision Therapeutics, Spring/summer 2020

Poster judge for graduate student presentations, Texas Branch ASM meetings, March 2017, November 2018, March 2019

Presentation to TAMUSA Biology Club Career Series, February 2017 and September 2018

Science Olympiad, Event Coordinator, 2012-2020 (every March)

American Society for Microbiology Conference for Undergraduate Educators (ASMCUE), Facilitator for Microbrew session, July 2017

American Society for Microbiology (ASM) protocol reviewer for Microbe Library, Spring 2016

Reviewer for the McGraw-Hill online Connect system for “Prescott’s Microbiology” textbook

Mentored summer research student from the Alamo Community Colleges, Summer 2015

- NSF-Louis Stokes Alliance for Minority Participation undergraduate fellow

Representative to 5<sup>th</sup> Annual STEM Symposium, St. Philip’s College, San Antonio, TX, Dec. 2014

STEM-ulate Recruiting Event, San Antonio College, September 2013 and September 2014

## Scholarship

### Publications-Peer Reviewed (\*indicates undergraduate research student)

Thompson, Joanna B., Alan M. Daniel, **Brenda G. Rushing**, and Mauricio R. Papini. (2021) Recovery profiles from reward downshift are correlated with operant licking maintained by alcohol, but not with genetic variation in the mu opioid receptor. *Physiology & Behavior* 228: Article 113192.

Daniel, Alan M., **Brenda G. Rushing**, and Karla Y. Tapia Menchaca\*. (2020) Variation of the Human mu-Opioid Receptor (OPRM1) Gene Predicts Vulnerability to Frustration. *Scientific Reports* 10:21840.

Valdez Barillas, J.R.^, **Rushing, B.G.**^, M. Narvaez\*. Rhizospheric microbial partners facilitate the establishment of the native perennial *Bouteloua curtipendula* when grown in competition with the non-native invasive *Cynodon dactylon* (manuscript in preparation) ^these authors contributed equally to the article

McClain, Jonathan, Rollo, David, **Rushing, Brenda G.**, and Carl E. Bauer. (2002) *Rhodospirillum centenum* Utilizes Separate Motor and Switch Components to Control Lateral and Polar Flagellum Rotation, *J. Bacteriol.* 184: 2429-2438.

Oke, Valerie, **Rushing, Brenda G.**, Fisher, Emily J., Moghadam-Tabrizi, Mohamad, and Sharon R. Long. (2001) Identification of the Heat Shock Sigma Factor RpoH and a second RpoH-like protein in *Sinorhizobium meliloti*, *Microbiology* 147: 2399-2408.

Jiang, ZeYu, Lee R. Swem, **Brenda G. Rushing**, Savitha Devanathan, Gordon Tollin, and Carl E. Bauer (1999) Bacterial Photoreceptor with Similarity to Photoactive Yellow Protein and Plant Phytochromes, *Science* 285:406-409.

Jiang, ZeYu, **Brenda G. Rushing**, Yong Bai, Howard Gest, and Carl E. Bauer (1998) Isolation of *Rhodospirillum centenum* Mutants Defective in Phototactic Colony Motility by Transposition Mutagenesis, *J. Bacteriol.* 180: 1248-1255.

Barnett, Melanie J., **Rushing, Brenda G.**, and Sharon R. Long (1996) Transcription Start Sites for *symM* and *nodD3* Flank an Insertion Sequence Relic in *Rhizobium meliloti*, *J. Bacteriol.* 178:1782-1787.

**Rushing, Brenda G.** and Sharon R. Long (1995) Cloning and Characterization of the *sigA* gene Encoding the Major Sigma Subunit of *Rhizobium meliloti*, *J. Bacteriol.* 177: 6952-6957.

**Rushing, Brenda G.**, Yelton, M. Melanie, and Sharon R. Long (1991) Genetic and Physical Analysis of the *nodD3* Region of *Rhizobium meliloti*, *Nucleic Acids Res.* 19: 921-927.

### Publications--Invited chapters

**Rushing, Brenda G.**, ZeYu Jiang, Howard Gest, and Carl E. Bauer. "Photosensory Behavior" in Encyclopedia of Microbiology, 2<sup>nd</sup> edition (Vol. 3), Ed. Joshua Lederberg, Academic Press, 2000, (invited chapter, also peer reviewed).

Fisher, Robert F., **Brenda Rushing**, Joy Ogawa, Melanie Barnett, and Sharon R. Long. "Nodulation Gene Expression in *Rhizobium meliloti*" in Advances in Molecular Genetics of Plant-Microbe Interactions (Vol. 3), Eds. Michael J. Daniels, J. Allan Downie, and Anne E. Osbourn, Kluwer Academic Publishers, Boston, 1994.

## Oral Presentations

**Rushing, Brenda, G.**, M. Narvaez, and JR Valdez Barillas, “Metagenomic and metabolic microbiome analysis of native plant soils versus invasive plant soils and the effect of soil inoculation on plant growth,” Texas Branch American Society for Microbiology Meeting. (Corpus Christi, TX, November 2018).

**Rushing, Brenda**, “Career Paths in Industrial Research and Academics,” Texas Branch American Society for Microbiology Meeting, invited speaker. (New Braunfels, TX, March 2017).

**Rushing, Brenda**, “Loop-mediated Isothermal Amplification (LAMP) Technology for Detection of *E. coli* O157, Salmonella, Campylobacter, and Listeria monocytogenes,” Current Concepts in Foodborne Pathogens Symposium. (University of Wisconsin-River Falls, WI, October 2009).

**Rushing, Brenda G.**, “Variation in Virulence of *Coccidioides* Strains,” South Central Medical Mycology Group, Annual Meeting. (Oklahoma City, OK, October 2003).

## Meeting Abstracts and Posters (\*indicates undergraduate research student, # indicates projects at A&M-SA)

Daniel, A., **Rushing, B.**, and Tapia, K.\*, Does the Mu-opioid Receptor Polymorphism A118G Predict Sensitivity to Reward Downshifts? Society for Neuroscience Annual Meeting. (Chicago, IL, October 2019) #

Narvaez, M.A.\*, **Rushing, B.**, and Valdez Barillas, J.R. Metabolic characterization and community composition of soil microbes associated with the rhizosphere of Sideoats grama when growing in competition with Bermuda grass. Texas Society for Ecological Restoration Annual Meeting. (Galveston, TX, November 2019) #

Narvaez, M.\*, **Rushing, B.G.**, and Valdez Barillas, J.R. Microbial analysis in plant-soil interaction between Sideoats grama and Bermuda grass. Texas Branch Meeting of the American Society for Microbiology. (New Braunfels, TX, March 2019) #

Narvaez, M.\*, **Rushing, B.G.**, and Valdez Barillas, J.R. Microbial analysis in plant-soil interaction between Sideoats grama and Bermuda grass. Texas Society for Ecological Restoration Annual Meeting. (San Antonio, TX, November 2018) #

Ebad Fardzadeh, D.\* and **Rushing, B.G.** Pigmentation in the Photosynthetic Bacterium *Rhodospirillum centenum*: Mutagenesis and Sequencing Strategy for Selected Mutants. Texas Branch Meeting of the American Society for Microbiology (New Braunfels, TX, March 2017) (**2<sup>nd</sup> Place Orville Wyss Award winner**) #

Solbach, Amanda,\* and **Rushing, B.G.** Cloning Strategy for Transposon-generated Pigment Mutation in *Rhodospirillum centenum* Mutant 2-19. CIMA-LSAMP Symposium. (St. Philip’s College, San Antonio, TX, August 2016) #

Ebad Fardzadeh, D.\*, Speer, N.\*, Velasco, S.\*, Castaneda, A.\*, Carrasco, R.\* and **Rushing, B.G.** Analysis of Pigment Mutants of the Photosynthetic Bacterium *Rhodospirillum centenum*. 2<sup>nd</sup> Annual Student Research Symposium. (Texas A&M University-San Antonio, April 2016) #

Ebad Fardzadeh, D.\* and **Rushing, B.G.** Production of Pigment Mutants in the Photosynthetic Bacterium *Rhodospirillum centenum*. CIMA-LSAMP Symposium. (University of Texas at San Antonio, August 2015) #

**Rushing, B. G.**, A.L. Wiatrek, C.M. Ward and A. Kasra. Rapid Detection of Salmonella spp. and Escherichia coli O157 in Foods Using Loop-mediated Amplification (LAMP). American Society for Microbiology General Meeting. (New Orleans, LA, May 2011)

Magee, D.M. and **Rushing, B.G.**, Variation in Protective Capacity of a *Coccidioides* Vaccine. ASM Conference on Dimorphic Fungal Pathogens. (Denver, CO, March 2006)

**Rushing, Brenda G.**, Kazuhiro Tateda, Keizo Yamaguchi, Miyuki Arai, Isao Manome, Masanari Ikedo, and Shinya Sadamoto. Development of a Rapid Urine Test for Legionellosis. 6th International Conference on Legionella. (Chicago, IL, October 2005)

**Rushing, Brenda G.**, D.M. Magee and R.A. Cox. Variation in Virulence of *Coccidioides* Strains. American Society for Microbiology General Meeting. (New Orleans, LA, May 2004).

**Rushing, Brenda G.** and Mark McCauley\*. The Effect of a Possible GTPase Mutation on Pigment Production in *Rhodospirillum centenum*. Wind River Conference on Prokaryotic Biology. (Estes Park, Colorado, June 2002).

Schumacher, J. Kyle\* and **Brenda G. Rushing**. Plasmid Vectors for Use in the Photosynthetic Bacterium *Rhodospirillum centenum*. American Society for Microbiology General Meeting. (Orlando, Florida, May 2001).

**Rushing, Brenda G.** and J. Kyle Schumacher\*. Testing Plasmid Vectors and Antibiotic Resistances for Genetic Study in the Phototactic, Photosynthetic Bacterium *Rhodospirillum centenum*. Lost Pines Molecular Biology Conference. (UT-M.D. Anderson Cancer Center-Science Park, Smithville, TX, October 2000).

**Rushing, Brenda G.** and Carl E. Bauer. Disruption of a *fixI* Homolog in *Rhodospirillum centenum* Causes Increased Phototactic Response. IXth International Symposium on Phototrophic Prokaryotes. (Vienna, Austria, September, 1997).

**Rushing, Brenda G.** and Carl E. Bauer. Sequence Analysis of Phototaxis Mutants of *Rhodospirillum centenum*. 97th American Society for Microbiology General Meeting. (Miami, Florida, May 1997).

**Rushing, Brenda G.** and Carl E. Bauer. Sequence Analysis Near Transposition Insertions Affecting Phototaxis in *Rhodospirillum centenum*. Bacterial Locomotion and Signal Transduction IV. (Cuernavaca, Mexico, January 1997).

**Rushing, Brenda G.** and Carl E. Bauer. A Sequence Survey of Transposition Mutants Affecting Phototaxis in *Rhodospirillum centenum*. Diversity, Genetics & Physiology of Photosynthetic Prokaryotes. (Indiana University, Bloomington, IN, October 1996).

Fisher, R.F., **B.G. Rushing**, J.M. Ogawa, and S. R. Long. Studies on the activation of *nod* gene expression in *Rhizobium meliloti*. 7th International Symposium on Molecular Genetics of Plant-Microbe Interactions. (Edinburgh, Scotland, June 1994).

**Rushing, B. G.**, and S. R. Long. Isolation and Characterization of Multiple Sigma Factor Genes from the Symbiont *Rhizobium meliloti*. West Coast Bacterial Physiologists Conference, seminar presentation. (Monterey, CA, December 1993).

**Rushing, B. G.**, and S. R. Long. Evidence for Multiple Sigma Factor Genes in *Rhizobium meliloti*. Federation of American Societies for Experimental Biology (FASEB): Control of Transcription Initiation in Prokaryotes. (Saxton's River, VT, July 1993).

**Rushing, B.G.**, R.F. Fisher and S.R. Long. Isolation of sigma factor genes from the symbiont *Rhizobium meliloti*. 92nd General Meeting of the American Society for Microbiology. (New Orleans, Louisiana, May 1992).

Fisher, R., J. Ogawa, M. Barnett, **B. Rushing**, J. Swanson and S. Long. Control of *nod* gene expression in *Rhizobium meliloti*. 5th International Symposium on the Molecular Genetics of Plant-Microbe Interactions. (Interlaken, Switzerland, September 1990).

Long, S.R., R.F. Fisher, J. Ogawa, M. Barnett, **B. Rushing** and J. Swanson. *Rhizobium nod* gene expression: promoters and circuits are complex. Supplement of the Genetics Society of Canada Bulletin 21, 70. (1990 Joint Meeting of the Genetics Society of America and Genetics Society of Canada, San Francisco, CA, July 1990).

Long, S.R., J. Schwedock, **B. Rushing**, M. Barnett, M. Yelton and R. Fisher. Nodulation genes and regulation in *Rhizobium meliloti*. NATO Advanced Research Workshop on Molecular Signals in Microbe-Plant Symbiotic and Pathogenic Systems. (Biddinghuizen, The Netherlands, May 1989).

### **Past Research Support**

Research Council Grant, co-I, A&M-SA, "Characterization of soil microbes that influence the growth and establishment of a native grass when grown in competition with a non-native invasive grass" May 2019

Summer Faculty Research Grant, A&M-SA, "Bacterial Genetics of Phototaxis and Pigment Production in the Photosynthetic Bacterium *Rhodospirillum rubrum*" Summer 2019

Summer Faculty Research Grant, co-PI, A&M-SA, "Characterization of soil microbes that influence the growth and establishment of a native grass when grown in competition with a non-native invasive grass" Summer 2019

Research Council Grant, Texas A&M University-San Antonio, "Next Generation Sequencing for Molecular Diagnosis of Lyme Disease" May 2018

Summer Faculty Research Fellowship, A&M-SA, "Use of Next Generation Sequencing Methods for Diagnosis of Lyme Disease," Summer 2018

Summer Faculty Research Fellowship, A&M-SA, "Development of Next Generation Sequencing Methods for Clinical Microbiology Applications," Summer 2017

Texas A&M AgriLife Extension Service Grant, Aquifer Storage and Recovery Committee, A&M-SA, Co-PI, "Aquifer Storage and Recovery for Texas – A Research and Extension Initiative"

Executive Research Committee, UTHSCSA, Principal Investigator, "Determination of Antigenicity in Isolates of the Fungal Pathogen *Coccidioides*"

San Antonio Area Foundation, Principal Investigator, “Inhibitors of Isocitrate Lyase as Potential Therapy against *Coccidioides*”

National Science Foundation Grant, Trinity University, Co-Principal Investigator, “RUI: Image Acquisition and Analysis Facility for Faculty-Student Research”

**Professional development in scholarship/additional conferences attended**

American Society for Microbiology, Texas Branch meeting, University of Texas at San Antonio, November 2019

Accepted to and attended Cold Spring Harbor Laboratory Workshop: “DNA Subway & Microbiome Workshop,” Austin, TX, July 2018

- Provided samples to workshop coordinators to use for demonstration purposes

Initiated research collaboration with Dr. Alan Lambowitz at University of Texas-Austin, January 2017-Summer 2019

- Developing diagnostic method for Lyme Disease using Next Generation Sequencing
- Summer Faculty Research Fellowships, Summer 2017 and 2018
- Research Council Grant, awarded May 2018

American Society for Microbiology (ASM) Prokaryotic Cell Biology and Development, Washington, DC, June 2015

American Society for Microbiology (ASM) Cell-cell Communication, San Antonio, TX, October 2014

Texas Aquifer Conference: Drought and Supply Uncertainty, Austin, TX, June 2014

American Society for Microbiology (ASM) General Meeting, Boston, MA, May 2014

Clean Air Through Energy Efficiency (CATEE) conference, San Antonio, TX, December 2013