

**FORMAT FOR
STANDARDIZED CURRICULUM VITAE
University of Alabama at Birmingham
School of Medicine Faculty**

Date: Nov. 30, 2018

PERSONAL INFORMATION

Name: Michael Jeffrey Gray

Citizenship: United States of America

Foreign Language(s): none

Home Address: 6001 5th Ct S, Birmingham, AL 35212

Phone: 205-934-6293

RANK/TITLE: Assistant Professor

Department: Microbiology

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845 19th St. S
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HOSPITAL AND OTHER (NON ACADEMIC) APPOINTMENTS:

none

PROFESSIONAL CONSULTANTSHIPS:

none

EDUCATION:

2010: Ph.D. in Microbiology, University of Wisconsin – Madison, Madison, WI.

Thesis – Synthesis, remodeling, and salvaging of the lower ligand of coenzyme B₁₂.

2001: M.S. in Food Science, University of California – Davis, Davis, CA.

Thesis - The NarX histidine kinase of *Escherichia coli*; the central domain and ligand-responsive autophosphorylation.

1999: B.S. in Food Science, Cornell University, Ithaca, NY.

MILITARY SERVICE:

none

LICENSURE:

none

BOARD CERTIFICATION:

none

POSTDOCTORAL TRAINING:

2015: Research Laboratory Specialist Intermediate, Molecular, Cellular, and Developmental Biology, University of Michigan, Ann Arbor, MI.

2010-2015: Postdoctoral Research Fellow, Molecular, Cellular, and Developmental Biology, University of Michigan, Ann Arbor, MI.

ACADEMIC APPOINTMENTS: (In reverse chronological order)

2016: Assistant Professor, University of Alabama at Birmingham Department of Microbiology

AWARDS/HONORS:

Ruth L. Kirschstein National Research Service Award for Individual Postdoctoral Fellowship (NIH F32 GM096613-01), 2011-2013

Molecular Mechanisms of Microbial Pathogenesis Training Grant (NIH T32 AI07528-12), 2010

Herman A. Smythe Award (University of Wisconsin - Madison Bacteriology Department), 2009

Louis and Elsa Thomsen Wisconsin Distinguished Graduate Fellowship (University of Wisconsin – Madison College of Agricultural and Life Sciences), 2008-2009

Jerome J Stefaniak Predoctoral Fellowship (University of Wisconsin - Madison Bacteriology Department), 2008

Herman H. and Gwendolyn H. Shapiro Medical Scholarship (University of Wisconsin – Madison), 2004-2005

Wine Spectator California Fellowship, Winter 2000

National Dairy Promotion Board Scholarship, Spring 1998

Institute of Food Technologists Junior/Senior Scholarship, Fall 1997

Charles H. Roberts Scholarship (Cornell University), Fall 1997

General Mills Food Science Award, Spring 1997

PROFESSIONAL SOCIETIES:

American Society for Microbiology (1998 - present)

American Association for the Advancement of Science (2016 – present)

Union of Concerned Scientists (2016 – present)

American Society for Biochemistry and Molecular Biology (2018 – present)

MEMBERSHIPS:

UAB Center for Free Radical Biology

UAB Microbiome Center

COUNCILS AND COMMITTEES:

Nov. 13, 2018 – present: UAB Microbiology Theme Admissions Committee

May. 29, 2017 – present: UAB Microbiology Department Bacteriology Faculty Search Committee

Jan. 4, 2016 – present: UAB Microbiology Department Seminar Series and Special Lecture Committee

UNIVERSITY ACTIVITIES:

Jul. 27, 2017- Department of Microbiology new website content meeting (with SOM Communication team)

EDITORIAL BOARD MEMBERSHIPS:

none

MAJOR RESEARCH INTERESTS: (2-3 Sentences)

I am interested in the molecular biology of how bacteria sense and respond to reactive chlorine species, which are antimicrobial oxidants produced by neutrophils during inflammation. I am particularly interested in understanding how gut microbes, both symbiotic and pathogenic, respond to inflammatory oxidants, and what role those responses play in colonization and disease.

TEACHING EXPERIENCE:

Courses Taught:

Nov. 30, 2018: Led two 2-hour bacteriology case discussion sections for UAB School of Medicine medical students.

April 30 – May 24, 2018: Co-instructor for graduate-level UAB Scientific Communication course (GBS 768) – directly taught 3 lectures, participated in assessing student writing throughout module

Jan. 8 – Feb. 2, 2018: Course director for graduate-level UAB Prokaryotic Genetics and Molecular Biology course (GBS 760-01) – directly taught 7 lectures

Dec. 1, 2017: Led two 2-hour bacteriology case discussion sections for UAB School of Medicine medical students. (Developed one of the cases used.)

Nov. 1 & 6, 2017: Co-instructor for graduate level UAB Advanced Topics in Bacterial Pathogenesis course (GBS 748) – taught one lecture and coordinated one 2-hour student presentation session on the same topic

May 1 – 26, 2017: Co-instructor for graduate-level UAB Scientific Communication course (GBS 768) – directly taught 1 lecture, participated in assessing student writing throughout module

Jan. 3 – 27, 2017: Co-course director for graduate-level UAB Prokaryotic Genetics and Molecular Biology course (GBS 760-01) – directly taught 5 lectures

Nov. 2, 2016: UAB Center for Free Radical Biology Journal Club (with Jeffrey Morris, UAB Department of Biology) – 2 hrs.

Fall 2016 - present: Co-course director for UAB Bacterial Pathogenesis and Physiology journal club (GBSC 720) – meets weekly during the semester

Winter 2012: Co-designed and taught Microbiology 295, Introduction to Research in the Microbial World (1 credit), along with 3 other postdoctoral research fellows (U. of Michigan Microbiology Department).

Summer 2009: Co-designed and taught a four-day introduction to fundamental microbiology lab techniques with one other graduate student (U. Wisconsin-Madison Research Experience for Undergraduates).

Fall 2007: Teaching Assistant responsible for leading weekly discussion sections and grading exams in introductory-level undergraduate microbiology lecture course (U. Wisconsin-Madison).

Fall 2006 and Spring 2007: Participated, along with a group of faculty, post-docs, and graduate students, in the design of a new introductory-level microbiology course, emphasizing the implementation of active learning techniques (U. Wisconsin-Madison).

Fall 2006: Teaching Assistant responsible for preparing and delivering lectures, teaching microbiology techniques, and grading for twice-weekly sections in introductory-level undergraduate microbiology laboratory course (U. Wisconsin-Madison).

Spring 2005: Teaching Assistant responsible for grading, holding office hours, and delivering one lecture in a graduate-level survey course in prokaryotic molecular biology (U. California-Davis).

Training In Teaching (see also Professional Development Activities section below):

Fall 2011: Postdoctoral Teaching Short Course (U. of Michigan Center for Research on Learning and Teaching)

Summer 2008: semester-long Mentor Training Seminar with Dr. Jo Handelsman (Wisconsin Program for Scientific Teaching).

2008 – 2009: Howard Hughes Medical Institute Teaching Fellow

Graduate Students Mentored:

Aug. 13, 2018 – present: Nicole Arroyo Diaz (UAB Graduate Biomedical Sciences) rotation student

Oct. 16, 2017 – present: Marvin Bowlin (UAB Graduate Biomedical Sciences) Ph.D. student

Mar. 3, 2016 - present: Rhea Derke (UAB Graduate Biomedical Sciences) Ph.D. student

Aug. 14, 2017 – Oct. 13, 2017: Rachel Muir (UAB Graduate Biomedical Sciences) rotation student

Jan. 3, 2017 – Mar. 10, 2017: N'Toia Hawkins (UAB Graduate Biomedical Sciences) rotation student

Oct. 17, 2016 – Dec. 16, 2016: Ashleigh Riegler (UAB Graduate Biomedical Sciences) rotation student

Aug. 15, 2016 – Oct. 14, 2016: Benjamin Hunt (UAB Graduate Biomedical Sciences) rotation student

Service on Graduate Student Thesis Committees:

2016 - present: Rhea Derke (Ph.D. student, UAB Graduate Biomedical Sciences - mentor)

2017 - present: Marvin Bowlin (Ph.D. student, UAB Graduate Biomedical Sciences - mentor)

2016 - present: James L. Kizziah (Ph.D. student, UAB Graduate Biomedical Sciences,

T. Dokland Lab)

2017 - present: N'toia Hawkins (Ph.D. student, UAB Graduate Biomedical Sciences, T. Dokland Lab)

2017 – present: Saman M. Najmi (Ph.D. student, UAB Graduate Biomedical Sciences, D. Schneider Lab)

2017 – present: Ashleigh Riegler (Ph.D. student, UAB Graduate Biomedical Sciences, C. Orihuela Lab – chair of dissertation committee)

2017- 2018: Jeffrey Singer (M.D.-Ph.D. candidate, UAB NIH Medical Scientist Training Program, C. Weaver lab – graduated with Ph.D. Summer 2018)

Service on Undergraduate Student Honors Thesis Committees:

2017: Alexandria Nichols (UAB Science and Technology Honors College)

Undergraduate Students Mentored:

Fall 2018 - present: Abigail Long (UAB University Honors Program) – directly mentored by Researcher V Poulami Basu Thakur

Summer 2018: Benjamin Nelson (UAB SIBS undergraduate research program) – directly mentored by Researcher V Poulami Basu Thakur

Fall 2017 – present: Leanna Crafford (UAB University Honors Program) – directly mentored by graduate student Rhea Derke

Summer 2017: Rachel Sutton (UAB SIBS undergraduate research program) – directly mentored by Researcher V Poulami Basu Thakur

Fall 2016 – present: Arya Pokhrel (UAB University Honors Program)

Summer 2016: Jennifer Chavez (UAB PARAdiGM undergraduate research program)

Spring 2016 – Spring 2018: Amanda Rudat (UAB University Honors Program)

Summer 2012 – Fall 2015: Emily Schwessinger, Benjamin Parker, Nico Wagner, Adam Krieger, Nathaniel Hock, Siddhant Dogra, and Mehadi Muhith (U. of Michigan mBio and Undergraduate Research Opportunity Programs).

Summer and Fall 2011: Erica M. Smith (U. of Michigan)

Summer 2009: Karla J. Esquilin (UW-Madison Research Experience for Undergraduates).

Summer 2008: Becky Thorburn (UW-Madison Research Experience for Undergraduates).

MAJOR LECTURES AND VISITING PROFESSORSHIPS:

none

GRANT SUPPORT: (PAST AND CURRENT)

(Include year(s) of funding, amount of funding, PI on award, role on award if not PI)

Current

NIH R35 GM124590-01

09/01/17-08/31/22

Title: Bacterial responses to reactive chlorine stress and their role in host-microbe interactions.

Role on project: PI

Annual direct costs: \$250,000

Past

Faculty Development Grant Program 2016–2017 (UAB)

05/16/16-08/31/17

Title: Reactive chlorine sensing in the probiotic *Escherichia coli* Nissle 1917

Role on project: PI

Annual direct costs: \$10,000

UAB Center for Clinical and Translational Science

06/24/16-03/31/17

CCTS Research Vouchers Program, NIH UL1TR001417

Title: Bioinformatics support for studies of the effect of inflammatory stress on commensal *E. coli*

Role on project: PI

Funding: \$3,750

NIH F32 GM096613-01

09/01/11-08/31/13

Title: Cellular stress response to the oxidizing effects of bleach

Role on project: PI (postdoctoral fellow)

NIH T32 AI07528-12

09/01/10-8/31/11

Title: Characterization of the hypochlorous acid stress response in bacteria and its role in bacterial colonization

Role on project: Appointee (postdoctoral fellow)

PI: Victor DiRita (Program Director)

Submitted

Young Investigator Grant for Probiotics Research (Global Probiotics Council)

Title: Regulation of anti-inflammatory genes in *Lactobacillus reuteri*.

Role on project: PI

Submitted 02/13/2017

Annual direct costs: \$50,000

Not funded

NIH R01 AI132428-01

Title: Recombinant myeloperoxidase as a novel therapeutic for antibiotic-resistant

bacterial infections.

Role on project: co-I (5% effort)

Submitted 10/5/16

Not funded

Young Supporters Board of the UAB Comprehensive Cancer Center New Faculty Development Award in Cancer Research

Title: The role of reactive chlorine response by the microbiome during gut inflammation

Role on project: PI

Submitted 05/27/16

Not funded

Young Investigator Grant for Probiotics Research (Global Probiotics Council)

Title: How does *Lactobacillus reuteri* respond to inflammatory oxidants?

Role on project: PI

Submitted 02/12/2016

Not funded

NIH K99 GM110112-01A1

Title: Hypochlorous acid-specific sensing and stress response in bacteria

Role on project: PI

Submitted 06/10/13, revised and resubmitted 03/11/2014

Impact score: 28 (original submission), 17 (revision)

Not funded

OTHER:

Professional Development Activities:

April 18-22, 2016: UAB Mentoring Academy (UAB Office of Postdoctoral Studies)

UAB Center for Teaching and Learning Workshops:

Aug. 2, 2016 - Faculty Foundations: New Faculty Teaching Orientation (4 hrs)

Sept. 6, 2016 – Faculty Foundations: Understanding the QEP (1 hr)

Oct. 4, 2016 – Faculty Foundations: Disability Support Services (1 hr)

Dec. 6, 2016 – Faculty Foundations: Understanding Research (1 hr)

Feb. 7, 2017 – Faculty Foundations: Title IX (1 hr)

Mar. 7, 2017 – Faculty Foundations: Guide to the IDEA Survey (1 hr)

Apr. 4, 2017 – Faculty Foundations: Promoting Global Awareness in the Classroom (1 hr)

Nov. 3, 2016 - UAB Faculty Senate Faculty Development Promotion & Tenure

roundtable discussion (1.5 hrs)

Jan. 20, 2017 – UAB School of Medicine Junior Faculty Career Workshop (4 hrs)

Alabama Drug Discovery Alliance Lecture Series:

Feb. 21, 2017 – Introduction to Drug Discovery (1 hr)

Mar. 14, 2017 – Medicinal Chemistry: From Hit to Lead (1 hr)

Mar. 21, 2017 – High Throughput Screening (1 hr)

Apr. 4, 2017 – How to Submit an IND (1 hr)

Apr. 18, 2017 – Pharmacokinetics and ADME (1 hr)

May 9, 2017 – What is a Valid and Druggable Target? (1 hr)

UAB Center for Clinical and Translational Science Case Studies in Mentoring:

Aug. 7, 2017 – Maintaining Effective Communication (1 hr)

Aug. 28, 2017 – Addressing Equity and Inclusion (1 hr)

Sept. 18, 2017 – Promoting Professional Development (1 hr)

Sept. 25, 2017 – Cultivating Ethical Behavior (1 hr)

Oct. 2, 2017 – Articulating Your Mentoring Philosophy and Plan (1 hr)

Oct. 18, 2017 – Aligning Mentor/Mentee Expectations (1 hr)

Oct. 25, 2017 – Assessing Mentee Understanding (1 hr)

Mar. 5, 2018 – Cultivating Ethical Behaviors (1 hr)

May 14 – 17, 2018: Computational Genomics Advanced Level Immersion Course for Investigators at UAB (Heflin Center for Genomic Sciences, CCTS)

Peer Reviewer (number of manuscripts reviewed):

• Publons Record = <https://publons.com/a/1514968>

Proceedings of the National Academy of Sciences, USA (2)

Journal of Bacteriology (3)

Applied and Environmental Microbiology (1)

Free Radical Biology and Medicine (1)

Molecular Microbiology (2)

Microbial Drug Resistance (1)

Scientific Reports (1)

Trends in Biochemical Sciences (1)

Journal of Applied Microbiology (1)

Environmental Science & Technology (1)

Antonie van Leeuwenhoek Journal of Microbiology (1)

PLOS One (1)

PLOS Pathogens (1)

Research in Microbiology (1)
Nature Chemical Biology (1)
American Society for Microbiology Press book chapter (1)
The Plant Cell (1)
Frontiers in Microbiology (1)
Antioxidants and Redox Signaling (1)

BIBLIOGRAPHY:

ORCID iD = 0000-0002-7112-4188
h-index = 18 (Google Scholar, 11/29/2018)

MANUSCRIPTS:

(Numbered, in chronological order, faculty member's name should be underlined or highlighted)

Manuscripts already published

1. Douglas, S.A., **Gray, M.J.**, Crandall, A.D. and Boor, K.J. Characterization of chocolate milk spoilage patterns. **J Food Prot** 2000; 63(4): 516-21.
2. Ferreira, A., **Gray, M.**, Wiedmann, M. and Boor, K.J. Comparative genomic analysis of the *sigB* operon in *Listeria monocytogenes* and in other Gram-positive bacteria. **Curr Microbiol** 2004; 48(1): 39-46.
3. Sasahara, K.C., **Gray, M.J.**, Shin, S.J., and Boor, K.J. Detection of viable *Mycobacterium avium* subsp. *paratuberculosis* using luciferase reporter systems. **Foodborne Pathog Dis** 2004; 1(4): 258-266.
4. **Gray, M.J.**, Zadoks, R.N., Fortes, E.D., Dogan, B., Cai, S., Chen, Y., Scott, V.N., Gombas, D.E., Boor, K.J. and Wiedmann, M. *Listeria monocytogenes* isolates from foods and humans form distinct but overlapping populations. **Appl Environ Microbiol** 2004; 70(10): 5833-41.
5. Chen, Y., Ross, W.H., **Gray, M.J.**, Wiedmann, M., Whiting, R.C., and Scott, V.N. Attributing risk to *Listeria monocytogenes* subgroups: dose response in relation to genetic lineages. **J Food Prot** 2006; 69(2): 335-344.
6. **Gray, M.J.**, Freitag, N.E. and Boor, K.J. How the bacterial pathogen *Listeria monocytogenes* mediates the switch from environmental Dr. Jekyll to pathogenic Mr. Hyde. **Infect Immunol** 2006; 74(5): 2505-12.

7. **Gray, M.J.** and Escalante-Semerena, J.C. Single-enzyme conversion of FMNH₂ to 5,6-dimethylbenzimidazole, the lower ligand of B₁₂. **Proc Natl Acad Sci USA** 2007; 104(8): 2921-2926.
8. Noriega, C.E., Schmidt, R., **Gray, M.J.**, Chen, L.-L. and Stewart, V. Autophosphorylation and dephosphorylation by soluble forms of the nitrate-responsive sensors NarX and NarQ from *Escherichia coli* K-12. **J Bacteriol** 2008; 190(11): 3869-3876.
9. **Gray, M.J.**, Tavares, N.K., and Escalante-Semerena, J.C. The genome of *Rhodobacter sphaeroides* 2.4.1 encodes functional cobinamide salvaging systems of bacterial and archaeal origins. **Mol Microbiol** 2008; 70(4): 824-836.
10. **Gray, M.J.** and Escalante-Semerena, J.C. *In vivo* analysis of cobinamide salvaging in *Rhodobacter sphaeroides* strain 2.4.1. **J Bacteriol** 2009; 191(12): 3842-3851.
11. **Gray, M.J.** and Escalante-Semerena, J.C. The cobinamide amidohydrolase (cobyrinic acid-forming) CbiZ enzyme: a critical activity of the cobamide remodeling system of *Rhodobacter sphaeroides*. **Mol Microbiol** 2009; 74(5): 1198-1210.
12. **Gray, M.J.** and Escalante-Semerena, J.C. A new pathway for the synthesis of α -ribazole-phosphate in *Listeria innocua*. **Mol Microbiol** 2010; 77(6): 1429-1438.
13. Collins, H.F., Biedendieck, R., Leech, H.K., **Gray, M.**, Escalante-Semerena, J.C., McClean, K.J., Munro, A.W., Rigby, S.E.J., Warren, M.J., and Lawrence, A.D. *Bacillus megaterium* has both a functional BluB protein required for DMB synthesis and a related flavoprotein that forms a stable radical species. **PLoS One** 2013; 8(2): e55708.
14. **Gray, M.J.**, Wholey, W.-Y., Parker, B.W., Kim, M., and Jakob, U. NemR is a bleach-sensing transcription factor. **J Biol Chem** 2013; 288(19): 13789-13798.
15. **Gray, M.J.**, Wholey, W.-Y., and Jakob, U. Bacterial responses to reactive chlorine species. **Annu Rev Microbiol** 2013; 67: 141-60.
16. Parker, B.W., Schwessinger, E.A., Jakob, U, and **Gray, M.J.** The RclR protein is a reactive chlorine-specific transcription factor in *Escherichia coli*. **J Biol Chem** 2013; 288(45): 32574-32584.
17. **Gray, M.J.**, Wholey, W.-Y., Cremers, C.M., Wagner, N.O., Mueller-Schickert, A.,

Hock, N.T., Krieger, A.G., Smith, E.M., Bender, R.A., Bardwell, J.C.A., and Jakob, U. Polyphosphate is a Primordial Chaperone. **Mol Cell** 2014; 53(5): 689-699. *Featured article. F1000Prime recommended article.*

18. Knoefler, D., Leichert, L.I.O., Thamsen, M., Cremers, C.M., Reichmann, D., **Gray, M.J.**, Wholey, W.-Y., and Jakob, U. About the dangers, costs, and benefits of living an aerobic lifestyle. **Biochem Soc Trans** 2014; 42: 917-921.
19. Dahl, J.-U., **Gray, M.J.**, and Jakob, U. Protein Quality Control Under Oxidative Stress Conditions. **J Mol Biol** 2015; 427(7): 1549-1563.
20. **Gray, M.J.** and Jakob, U. Oxidative stress protection by polyphosphate: new roles for an old player. **Curr Opin Microbiol** 2015; 24: 1-6.
21. **Gray, M.J.**, Li, Y., Leichert, L.I.O., Xu, Z., and Jakob, U. Does the transcription factor NemR use a regulatory sulfenamide bond to sense bleach? **Antioxid Redox Signal** 2015; 23(9): 747-754.
22. Docter, B.E., Horowitz, S., **Gray, M.J.**, Jakob, U., and Bardwell, J.C.A. Do nucleic acids moonlight as molecular chaperones? **Nucl Acids Res** 2016; 44(10): 4835-4845.
24. Rudat, A.K., Pokhrel, A., Green, T.J., and **Gray, M.J.** Mutations in *Escherichia coli* polyphosphate kinase that lead to dramatically increased *in vivo* polyphosphate levels. **J Bacteriol** 2018 200(6): e00697-17.
25. Yoo, N., Dogra, S., Meinen, B., Tse, E., Haeflinger, J., Southworth, D.R., **Gray, M.J.**, Dahl, J.-U., and Jakob, U. Polyphosphate Stabilizes Protein Unfolding Intermediates as Soluble Amyloid-Like Oligomers. **J Mol Biol** 2018 430(21):4195-4208.

Manuscripts in Press

1. Pokhrel, A., Lingo, J., Wolschendorf, F., and **Gray, M.J.** Assaying for inorganic polyphosphate in bacteria. *In press at J Visual Exp.*

Manuscripts submitted but not yet accepted

1. Singer, J.R., Blosser, E.G., Kumar, R., Zindl, C.L. Silberger, D.J., Morrow, C.D., **Gray, M.J.**, Randolph, D.A., and Weaver, C.T. Mechanisms to Prevent or Promote Late Onset Sepsis by Altering Primary Succession of the Neonatal Microbiome. *Submitted to Nature Medicine.*

2. **Gray, M.J.** Inorganic polyphosphate accumulation in *Escherichia coli* is regulated by DksA but not by (p)ppGpp. *Submitted to J Bacteriol.*

Manuscripts in preparation

1. Derke, R.M., Chaple, I.F., Lapi, S.E., and **Gray, M.J.** The reactive chlorine response protein RclA is a thermostable copper (II) reductase in *Escherichia coli*. *In preparation for J Biol Chem.*
2. Basu Thakur, P., Long, A.R., Nelson, B.J., Rosenberg, A.F., and **Gray, M.J.** Complex responses to oxidative stress in the probiotic bacterium *Lactobacillus reuteri*. *In preparation for mSystems.*

Other Publications (letters to the author, book reviews, etc.)

BOOKS:

(Numbered, in chronological order, faculty member's name should be underlined or highlighted)

Books and Book Chapters

1. **Gray, M.J.** and Boor, K.J. 2006. Genetics and physiology of pathogenicity in food-borne bacterial pathogens. In: **Food Biotechnology**, 2nd edition. (K. Shetty, G. Paliyath, A. Pometto, and R. E. Levin, eds.) pp. 1293-1327.

Published abstracts

(Numbered, in chronological order, faculty member's name should be underlined or highlighted)

Poster Exhibits

1. Wind River Conference on Prokaryotic Biology. 2006. Wind River, CO. (*Won poster award.*)
2. General Meeting of the American Society for Microbiology. 2009. Philadelphia, PA.
3. Gordon Research Conference on Vitamin B₁₂ and Corphins. 2009. Oxford, UK.
4. Federation of American Societies for Experimental Biology Conference on Mechanisms and Regulation of Prokaryotic Transcription. 2011. Saxton's River, VT.
5. Gordon Research Conference on Microbial Stress Response. 2012, Mt. Holyoke, MA.
6. Federation of American Societies for Experimental Biology Conference on Mechanisms and Regulation of Prokaryotic Transcription. 2013. Saxton's River, VT.
7. Gordon Research Conference on Stress Proteins in Growth, Development, and Disease. 2013. Mt. Snow Resort, West Dover, VT.

8. Gordon Research Conference on Microbial Stress Response. 2014, Mt. Holyoke, MA.
9. Molecular Genetics of Bacteria and Phages Meeting. 2015. Madison, WI.
10. Gordon Research Conference on Microbial Stress Response. 2016, Mt. Holyoke, MA.
11. American Society for Microbiology Microbe 2017, New Orleans, LA.
12. Gordon Research Conference on Microbial Stress Response. 2018, Mt. Holyoke, MA.
13. Molecular Genetics of Bacteria and Phages Meeting. 2018. Madison, WI.

Oral Presentations

(Numbered, in chronological order, faculty member's name should be underlined or highlighted)

Scientific papers presented at national and international meetings

1. **Gray, M.J.** and Escalante-Semerena, J.C. The cobinamide amidohydrolase (cobyrinic acid-forming) CbiZ enzyme: a critical activity of the cobamide remodeling system of *Rhodobacter sphaeroides*. Gordon Research Conference on Vitamin B₁₂ and Corphins. 2009. Oxford, UK.
2. **Gray, M.J.**, Wholey, W.-Y., Cremers, C.M., Wagner, N.O., Mueller-Schickert, A., Hock, N.T., Krieger, A.G., Smith, E.M., Bender, R.A., Bardwell, J.C.A., and Jakob, U. Polyphosphate is a Primordial Chaperone. Gordon Research Conference on Stress Proteins in Growth, Development, and Disease. 2013. Mt. Snow Resort, West Dover, VT.
3. **Gray, M.J.**, Schroeder, J.W., Xie, L., and Jakob, U. Hypochlorous acid stress response in the probiotic *Lactobacillus reuteri*. Molecular Genetics of Bacteria and Phages Meeting. 2015. Madison, WI.
4. Rudat, A.K., Green, T.J., **Gray, M.J.** A Novel Selection Strategy to Identify Regulatory Residues in Polyphosphate Kinase. ASM Microbe 2017, New Orleans, LA.

Scientific papers presented at local and regional meetings

1. **Gray, M.J.**, Wholey, W.-Y., Cremers, C.M., Wagner, N.O., Mueller-Schickert, A., Hock, N.T., Krieger, A.G., Smith, E.M., Bender, R.A., Bardwell, J.C.A., and Jakob, U. Polyphosphate is a Bleach-Induced Chaperone. Midwest Stress Response and Molecular Chaperone Meeting. 2013. Evanston, IL.

Invited workshops, lectures, etc. at national postgraduate courses and meetings and at

other universities

1. "Stress regulation of inorganic polyphosphate, a ubiquitous primordial chaperone." University of Maryland Baltimore County Department of Biological Sciences Seminar Series. Nov. 29, 2017. Baltimore, MD.
2. "Stringent alleles of RNA polymerase inhibit inorganic polyphosphate accumulation in *Escherichia coli*." Gordon Research Conference on Microbial Stress Response. July 18, 2018. Mount Holyoke, MA.

Invited lectures at local and regional universities, courses, and meetings

1. "Bacterial responses to reactive chlorine stress." University of Alabama at Birmingham / Society for Redox Biology and Medicine Regional Redox Symposium. 2017. Birmingham, AL.
2. "Bacterial responses to reactive chlorine stress: the role and regulation of inorganic polyphosphate." University of Alabama at Birmingham Biology Department Seminar Series. Apr. 19, 2017. Birmingham, AL.
3. "Regulation of inorganic polyphosphate, a universal bacterial stress response factor." University of Alabama at Birmingham Microbiology Department Seminar Series. May. 29, 2018. Birmingham, AL.

MISCELLANEOUS:

Films, educational tapes, syllabi, software packages and courses developed, etc.

1. Course packet and syllabus for GBS760 Prokaryotic Genetics and Molecular Biology (updated annually)
2. Course packet for GBS768 Scientific Communication (updated annually)