

Angela Mitchell

Curriculum Vitae

CONTACT INFORMATION

Department of Biology
Texas A&M University
3258 TAMU
College Station, TX 77843-3258

301A Biological Sciences Building East
amitchell@bio.tamu.edu
<https://mitchelllab.wixsite.com/website>
Orcid.org/0000-0003-1062-0716

EDUCATION

- Ph.D. in Microbiology and Immunology** 2013
University of North Carolina at Chapel Hill, Chapel Hill, NC 27599
Thesis Advisor: R. Jude Samulski, Ph.D.
- B.S. in Biotechnology, Summa cum Laude, Honors in the Discipline** 2008
Elizabethtown College, Elizabethtown, PA 17022
Thesis Advisor: Jane F. Cavender, Ph. D

PROFESSIONAL APPOINTMENTS

- Assistant Professor, Texas A&M University** 2019-current
Department of Biology
- Adjunct Faculty, Delaware Valley University** 2015-2016
Department of Biology
- Postdoctoral Research Associate, Princeton University** 2014-2019
Department of Molecular Biology, Mentor: Thomas J. Silhavy, Ph.D.
- Graduate Research Assistant, University of North Carolina at Chapel Hill** 2008-2013
Department of Microbiology and Immunology, Mentor: R. Jude Samulski, Ph.D.
- Undergraduate Researcher, Elizabethtown College** 2005-2008
Department of Biology, Mentor: Jane F. Cavender, Ph. D.

GRANTS AND FELLOWSHIPS

Current:

- NIAID R01—R01-AI155915, Role: PI 2021-2026
“Biogenesis of cyclic and phospholipid-linked enterobacterial common antigen”
Total award: \$1.83 million (\$1.25 million direct)
- NIAID Diversity Supplement—R01-AI155915-S1, Role: PI 2023-2026
For “Biogenesis of cyclic and phospholipid-linked enterobacterial common antigen”; Total award: \$242,312 (\$170,904 direct)
- NIAID R03—R03-AI177677, Role: PI 2023-2025
“A novel pathway altering OM permeability”
Total award: \$143,817 (\$100,000 direct)

Pending Review:

- NIAID R01— R01-AI188941-A1, Role: Multi-PI; Contact PI: Dr. Pushkar Lele 2025-2030
“Rapid stress response in bacterial pathogens: role of extant porins in antibiotic tolerance”; Total budget: \$2.94 million (\$251,863 direct to Mitchell Lab)

Completed:

| | |
|---|-----------|
| NRSA Postdoctoral Fellowship—F32-GM116188, Role: PI “Elucidating stationary phase changes to the outer membrane permeability barrier” | 2016-2017 |
| NIGMS MIRA Grant—R35-GM118024 (PI: Thomas Silhavy), Role: Key Personnel “Biogenesis and maintenance of the outer membrane of gram-negative bacteria” | 2016-2019 |
| Pre-doctoral Training Grant—T32-AI007419, Role: Trainee “Molecular Biology of Viral Diseases”: University of North Carolina at Chapel Hill | 2009-2010 |
| Tri-beta Biological Honor’s Society Research Scholarship Foundation Grant Title: “The maintenance of transformation by SV40 T antigen” | 2008 |

AWARDS AND HONORS

| | |
|---|------------|
| Recognition as a Top Performing Reviewer for <i>mBio</i> | 2022, 2023 |
| ASM Peggy Cotter Award for Early Career Texas Branch Members | 2022 |
| American Society for Virology Student Travel Grant | 2013 |
| The University of North Carolina Graduate School Transportation Grant | 2013 |
| American Society for Virology Student Travel Grant | 2011 |
| Barry M. Goldwater Scholarship | 2007 |

PEER-REVIEWED PUBLICATIONS

Corresponding author; ¹ Mitchell Lab Graduate Student; ² Mitchell Lab Postdoc; ³ Mitchell Lab Undergraduate Student; *Underrepresented Mitchell Lab Trainee*; *Authors contributed equally to manuscript

[Google Scholar Link](#)

[NCBI MyBibliography Link](#)

21. Rai AK², Sawasato K, Bennett HC¹, Kozlova A, Sparagna GC, Bogdanov MV, & Mitchell AM[#]. (2024) Genetic evidence for functional diversification of gram-negative intermembrane phospholipid transporters preference. *PLoS Genetics*. 20(6): e1011335
20. Saenkham-Huntsinger P, Ritter M, Donati GL, Mitchell AM, Subashchandrabose S. (2024) The Inner Membrane Protein YhiM Links Copper and CpxAR Envelope Stress Responses in Uropathogenic *E. coli*. *mBio*. 15(4): e03522-23
 - Responsible for aiding in interpret data and shape experimental directions in the context of envelope biology and stress responses, and for providing key reagents
19. Morris KN³ & Mitchell AM[#]. (2023) Phosphatidylglycerol is the lipid donor for synthesis of phospholipid-linked enterobacterial common antigen. *J Bacteriol*. 205(1): e00403-22.
18. Rai AK², Carr JF^{1*}, Bautista DE^{1*}, Wang W, Mitchell AM[#]. (2021) ElyC and cyclic enterobacterial common antigen regulate synthesis of phosphoglyceride-linked enterobacterial common antigen. *mBio*. 12(6): e02846-21.
17. Bautista DE^{1*}, Carr JF^{1*}, Mitchell AM[#]. (2021) Suppressor Mutants: History and Today’s Applications. *EcoSal Plus*. 9(2): eESP-0037-2020.
16. Rai AK² & Mitchell AM[#]. (2020) Enterobacterial common antigen: synthesis and function of an enigmatic molecule. *mBio*. 11(4): e01914-20.
15. Grimm J*, Shi H*, Wang W, Mitchell AM, Wingreen NS, Huang KC, & Silhavy TJ. (2020) The inner membrane protein YhdP modulates the rate of anterograde phospholipid flow in *Escherichia coli*. *Proc Natl Acad Sci U S A*. 117(43): 26907-26914.

- *Responsible for using expertise in YhdP function to aid in data interpretation and shaping experimental directions*
14. May KL, Lehman KM, **Mitchell AM**, & Grabowicz M. (2019) A Stress Response Monitoring Lipoprotein Trafficking to the Outer Membrane. *mBio*. 10(3): e00618-19.
 - **Associated Commentary:** <https://mbio.asm.org/content/10/3/e01302-19>
 - *Responsible for design, data acquisition, and data analysis for quantitative PCR experiments*
 13. Hart EM*, **Mitchell AM***, Konovalova A, Grabowicz M, Sheng J, Han X, Rodriguez-Rivera FP, Schwaid AG, Malinverni JC, Balibar CJ, Bodea S, Si Q, Wang H, Homsher MF, Painter RE, Ogawa AK, Sutterlin H, Roemer T, Black TA, Rothman DM, Walker SS, & Silhavy TJ. (2019) A small molecule inhibitor of BamA impervious to efflux and the outer membrane permeability barrier. *Proc Natl Acad Sci U S A*. 116(43): 21748-21757.
 - **Nature News and Views highlight:** <https://www.nature.com/articles/d41586-019-03730-x>
 - **F1000Prime recommendation:** <https://f1000.com/prime/736725510?bd=1>
 - *E.M. Hart and A.M. Mitchell shared all aspects of project management, experimentation, data analysis, and writing. J. Sheng was an undergraduate E.M Hart and A.M. Mitchell co-mentored.*
 12. **Mitchell AM** & Silhavy TJ. (2019) Envelope stress responses: balancing damage repair and toxicity. *Nat Rev Microbiol*. 17(7): 417–428.
 11. Silhavy TJ & **Mitchell AM**. (2019) Genetic analysis of protein translocation. *Protein J*. 38(3):217-228.
 - *Responsible for producing all figures and editing of manuscript*
 10. **Mitchell AM**, Srikumar T, & Silhavy TJ. (2018) Cyclic enterobacterial common antigen maintains the outer membrane permeability barrier of *Escherichia coli* in a manner controlled by YhdP. *mBio*. 9(4): e01321-18.
 - **Associated Commentary:** <https://mbio.asm.org/content/9/5/e02162-18>
 9. **Mitchell AM**, Wang W, & Silhavy TJ. (2017) Novel RpoS-dependent mechanisms strengthen the envelope permeability barrier during stationary phase. *J Bacteriol*. 199(2): e00708-16.
 8. Konovalova A, **Mitchell AM**, & Silhavy TJ. (2016) A lipoprotein/ β -barrel complex monitors lipopolysaccharide integrity transducing information across the outer membrane. *eLife*. 5: e15276.
 - *Responsible for design, data acquisition, and data analysis for quantitative PCR experiments*
 7. Xiao PJ, **Mitchell AM**, Haung L, Li C, & Samulski RJ. (2016) Disruption of microtubules post virus entry enhances adeno-associated virus vector transduction. *Hum Gene Ther*. 27(4): 309-24.
 - *Responsible for aiding in interpretation data and writing and editing of manuscript*
 6. **Mitchell AM**, Moser R, Samulski RJ, & Hirsch ML. (2016) Stimulation of AAV gene editing via DSB repair. In Hirsch ML, Cathomen T, & Porteus MH (Eds.), *Genome Editing: The Next Step in Gene Therapy* (pgs. 125-137). ISBN: 978-1-4939-3507-9.
 5. Vance MA, **Mitchell AM**, & Samulski RJ. (2015) AAV biology, infectivity and therapeutic use from bench to clinic. In Hashad ID (Ed.), *Gene Therapy - Principles and Challenges*. ISBN: 978-953-51-4380-2
 - *Responsible curating data on clinical use of rAAV vectors in gene therapy*
 4. **Mitchell AM**, Hirsch ML, Li C, & Samulski RJ. (2014) Promyelocytic leukemia protein is a cell-intrinsic factor inhibiting parvovirus DNA replication. *J Virol*. 88(2): 925-36.
 3. **Mitchell AM** & Samulski RJ. (2013) Mechanistic insights into the enhancement of adeno-associated virus transduction by proteasome inhibitors. *J Virol*. 87(23): 13035-41.
 2. **Mitchell AM**, Li C, & Samulski RJ. (2013) Arsenic trioxide stabilizes accumulations of adeno-associated virus virions at the perinuclear region, increasing transduction *in vitro* and *in vivo*. *J Virol*. 87(8): 4571-83.
 1. **Mitchell AM***, Nicolson SC*, Warischalk JK*, & Samulski RJ. (2010) AAV's Anatomy: Roadmap for Optimizing Vectors for Translational Success. *Curr Gene Ther*. 10(5): 319-340.

- *Writing of article, figure production, and editing were split between the first authors*

PRESENTATIONS AND POSTERS

Invited Seminars and Presentations:

| | |
|--|------|
| Bacterial Cell Surfaces Gordon Research Conference | 2024 |
| Rutgers NJ Medical School, Microbiology, Biochemistry and Molecular Genetics Department | 2024 |
| The University of Chicago, Committee on Microbiology | 2023 |
| Elizabethtown College, Department of Biology and Environmental Sciences | 2023 |
| The Ohio State University, Department of Microbiology | 2023 |
| McGovern Medical School, UTHealth, Department of Microbiology and Molecular Genetics | 2023 |
| American Society for Microbiology Texas Branch Fall Meeting | 2022 |
| Texas A&M University, College of Veterinary Medicine and Biomedical Sciences | 2021 |
| Texas A&M University, College of Medicine | 2020 |
| Texas Protein Folders and Function Meeting (<i>canceled for public health reasons</i>) | 2020 |
| University of Texas Health Science Center at Houston (UTHealth) | 2018 |

Conference Presentations:

| | |
|--|------|
| Microbial Stress Responses Gordon Research Conference | 2024 |
| Bacterial Cell Biology and Development Gordon Research Conference | 2023 |
| Genetic Approaches to Understanding Complex Biological Problems VI Meeting (Talk) | 2023 |
| Microbial Stress Responses Gordon Research Conference (Talk) | 2022 |
| Bacterial Cell Surfaces Gordon Research Conference | 2022 |
| American Society for Microbiology Microbe Meeting (Poster Talk) | 2022 |
| World Microbe Forum | 2021 |
| Bacterial Locomotion and Signal Transduction XVI Conference | 2021 |
| Microbial Stress Response Gordon Research Conference (Talk) | 2018 |
| Genetic Approaches to Understanding Complex Biological Problems V Meeting (Talk) | 2018 |
| Microbial Adhesion & Signal Transduction Gordon Research Conference | 2017 |
| Microbial Stress Response Gordon Research Seminar and Conference | 2016 |
| American Society for Virology Annual Meeting (Talk) | 2013 |
| American Society for Virology Annual Meeting (Talk) | 2012 |
| The 14 th Biannual International Parvovirus Workshop (Talk) | 2012 |
| American Society of Gene and Cell Therapy Annual Meeting | 2012 |
| American Society for Virology Annual Meeting (Talk) | 2011 |
| Pennsylvania Academy of Science Annual Meeting (Talk) | 2008 |
| Tri-Beta Northeast District 2 Research Convention (Talk) | 2007 |
| Pennsylvania Academy of Science Annual Meeting | 2007 |

PRESENTATIONS BY TRAINEES

Oral Presentations:

| | |
|--|------|
| Microbial Stress Responses Gordon Research Seminar: David Bautista | 2024 |
| • <i>David Bautista received the Carl Storm Underrepresented Minority (CSURM) Fellowship</i> | |
| Bacterial Locomotion and Signal Transduction Conference: Ashutosh Rai | 2023 |
| • <i>Received Burroughs Wellcome Fund Travel Award</i> | |
| TAMU Biology Student Postdoc Research Conference: Ashutosh Rai | 2021 |

Poster Presentations:

| | |
|---|------|
| Microbial Stress Responses GRS and GRC: David Bautista; Haley Bennett | 2024 |
| Bacterial Cell Surfaces GRS and GRC: Joseph Carr | 2024 |

- *Joseph Carr received the Carl Storm Underrepresented Minority (CSURM) Fellowship*
- TAMU 2024 Diversity in Science Showcase and Symposium: David Bautista 2024
- TAMU Biology Student Postdoc Research Conference (SPRC): Haley Bennett, David Bautista 2024
- The NIH Diversity Supplement Professional Development Workshop: Haley Bennett 2023
- Molecular Genetics of Bacteria and Phage Meeting: Joseph Carr, David Bautista 2023
- Bacterial Cell Biology and Development Gordon Research Conference: Haley Bennett 2023
- American Society for Microbiology Microbe: Joseph Carr, David Bautista, Haley Bennett 2023
- *David Bautista received ASM Future Leaders Mentoring Fellowship*
- TAMU Biology SPRC: Joseph Carr, David Bautista, Haley Bennett 2023
- Molecular Genetics of Bacteria and Phage Meeting: Joseph Carr 2022
- Bacterial Cell Surfaces Gordon Research Conference: Ashutosh Rai 2022
- American Society for Microbiology Microbe: David Bautista 2022
- American Society for Microbiology Texas Branch Fall Meeting: Kinsey Morris 2021
- TAMU Biology SPRC: Kinsey Morris 2021
- ASBMB Annual Meeting/Experimental Biology: Ashutosh Rai 2021
- *Received ASBMB 2021 Graduate/Postdoctoral Annual Meeting Travel Award*
- Bacterial Locomotion and Signal Transduction Conference: Ashutosh Rai 2021
- American Society for Microbiology Texas Branch Fall Meeting: Ashutosh Rai 2020
- *Received second place for the S. Mattingly Award for postdocs*
- TAMU Biology SPRC: Ashutosh Rai, Joseph Carr, David Bautista 2020

TEACHING**Texas A&M University, College Station, TX 77843**

- Co-instructor for Graduate Microbial Genetics (BIOL 606; Spring) 2021-current
- *Designed as a new, discussion-based class with co-instructor, Dr. Daniel Paredes-Sabja*
- Instructor for Undergraduate Bacterial Genetics (BIOL/GENE 406; Fall) 2020-current
- *Converted class to a flipped format with project-based learning component*

Delaware Valley University, Doylestown, PA 18901

- Adjunct Faculty for BY-1116L Biological Sciences I Lab (2 sections) 2016
- Adjunct Faculty for BY-1115 Natural Sciences I 2015

Princeton University, Princeton, NJ 08544

- Preceptor for MOL340 Molecular and Cellular Immunology 2014
- Instructor for Summer Undergraduate Research Program Discussion Group 2014

The University of North Carolina at Chapel Hill, Chapel Hill, NC 27510

- Teaching Assistant for BIOL422 and BIOL421L General Microbiology 2013
- New Module Design for North Carolina DNA Day 2012
- Teaching Assistant for BIOL422 and BIOL421L General Microbiology 2010
- Teaching Assistant for MCRO251L Medical Microbiology Lab 2009

PROFESSIONAL DEVELOPMENT**Texas A&M University, College Station, TX 77843**

- Completed the 2024 Mobile Summer Institute (MoSI) for Scientific Teaching 2024

Princeton University, Princeton, NJ 08544

- Completed An Introduction to Evidence-Based Undergraduate STEM Teaching, from the Center for the Integration of Research, Teaching, and Learning 2014

The University of North Carolina at Chapel Hill, Chapel Hill, NC 27510

| | |
|---|------|
| Completed a Research Mentoring Certificate (6 week workshop) | 2013 |
| Completed the Summer Teaching and Pedagogy Series Certificate, from the UNC Center for Faculty Excellence and the UNC Training Initiative in Biomedical and Biological Sciences | 2011 |

MENTORING**Texas A&M University, College Station, TX 77843**Current Graduate Students:

| | |
|--|--------------|
| Shivani Bhut (Ph.D. student, Microbiology) | 2023-current |
| Jenny Rudolf (Ph.D. student, Microbiology) | 2023-current |
| Haley Bennett (Ph.D. student, Microbiology) | 2021-current |
| Joseph Carr (Ph.D. student, Microbiology) | 2020-current |
| David Bautista (Ph.D. student, Microbiology) | 2020-current |

Current Undergraduate Researchers:

| | |
|---|--------------|
| Elizabeth Ponder (Biology, Class of 2026) | 2024-current |
| Daniel Warzecha (Microbiology, Class of 2025, Honors student) | 2024-current |
| Cassidy Whitehead (Molecular & Cell Biology, Class of 2025) | 2023-current |
| Hannah Fuhrman (Molecular & Cellular Neuroscience, Class of 2026) | 2023-current |

Former Mitchell Lab Trainees:

| | |
|---|-----------|
| Kaitlin Casanova Hampton (Postdoctoral Associate) | 2022-2024 |
| <ul style="list-style-type: none"> <i>Working in science communication and investor relations at a startup company</i> | |
| Robert Wei (Undergraduate, Business Administration, Class of 2024) | 2022-2024 |
| <ul style="list-style-type: none"> <i>Currently applying to medical school</i> | |
| Ashutosh Kumar Rai (Postdoctoral Associate) | 2020-2023 |
| <ul style="list-style-type: none"> <i>Completing a postdoc at the University of Texas at El Paso</i> | |
| Ashley Vargo (Undergraduate, Molecular & Cell Biology, Class of 2023) | 2023 |
| <ul style="list-style-type: none"> <i>Completed the AAAS Mass Media Science and Engineering Fellowship after graduating</i> <i>Currently working in science communication</i> | |
| Radwa Emam (Undergraduate, Biomedical Sciences, Class of 2023) | 2022-2023 |
| <ul style="list-style-type: none"> <i>Attending TAMU Medical School starting in Summer 2024</i> | |
| Iris Yang (Undergraduate, Biology, Class of 2023) | 2021-2023 |
| <ul style="list-style-type: none"> <i>Currently attending Columbia University's Biostatistic M.S. Program</i> | |
| Kinsey Morris (Undergraduate, R.A., Biology, Class of 2021) | 2020-2022 |
| <ul style="list-style-type: none"> <i>First author on Mitchell lab paper</i> <i>Attended American Society for Microbiology Texas Branch Fall Meeting</i> <i>Currently attending an Anesthesiologist Assistant M.S. program</i> | |
| Nicholas Lugo (Undergraduate, Biochemistry, Class of 2021) | 2020-2021 |
| <ul style="list-style-type: none"> <i>Completed a senior thesis</i> <i>Attending TAMU Medical School starting in Summer 2024</i> | |

Faculty Mentoring:

| | |
|------------------------------------|--------------|
| Jolene Ramsey, Assistant Professor | 2022-current |
|------------------------------------|--------------|

Princeton University, Princeton, NJ 08544

| | |
|---|-----------|
| Jessica Sheng (Senior thesis research; co-mentor) | 2018-2019 |
| Angela Kim (Senior thesis research) | 2016-2017 |

The University of North Carolina at Chapel Hill, Chapel Hill, NC 27510

Alison Flanagan (Meredith College Cooperative Mentored Research Program) 2012
Peer Mentor for first year Biological and Biomedical Sciences Program graduate students 2011, 2012

SERVICE**Texas A&M University, College Station, TX 77843**Ph.D. Student Committee Member

Veerakit Vanitshavit (Biomedical Sciences), Theresa Ariri (Microbiology), Luca Henze (Genetics) 2024-current

Issam Ismail (Microbiology), Zil Modi (Biology), Jessie Reed (Biology), Ahmed Yusuf (Microbiology), Farhana Haque (Microbiology), Tahmina Pervin (Microbiology), Alice Archuleta-Ochoa (Microbiology) 2023-current

A. Riley Buhrow (Microbiology), Andrew Cothrell (Microbiology), Goke Adegbite (Microbiology) 2022-current

Joshua Pettibon (Microbiology), Jeanette Pina (Chemistry), Javier Sanchez (Biology) 2021-current
Marilyn Beebe (Microbiology) 2020-current

Former: McKinley Williams (Microbiology, 2024), Srutha Venkatesan (Microbiology, 2024), Nopakorn Hansanant (Microbiology, 2024)

M.S. Student Committee Member

Gillian Ampah (Thesis, Microbiology), Stevie Wallace (Thesis, Microbiology) 2024-current

Former: (Non-thesis, Microbiology) Briana Garcia (2022); Laura Cercone (Chair, 2022), Ismael Morales (Chair, 2022); Zachary Albers (Chair, 2021); Tammy Oh (2020)

- *Ismael Morales is working in industry at Lonza; Laura Cercone will attend the University of Texas at Tyler Medical School in Fall, 2024*

Departmental Service

Member, Department of Biology Graduate Program Committee 2022-current

Member, Department of Biology Seminar Committee 2021-current

Member, SOAR Mechanisms of Biological Resilience Committee 2021-current

Member, Department of Biology ACES (Accountability, Climate, Equity, and Scholarship) Fellows Search Committee 2021-2022

Member, Faculty Search Committee, Department of Biology 2021-2022

Co-chair, Student Postdoc Research Conference Committee, Department of Biology 2021

Member, Student Postdoc Research Conference Committee, Department of Biology 2020

Member, Faculty Search Committee, Department of Biology 2019-2020

Award Judge, Student Postdoc Research Conference, Department of Biology 2019-2023

College, University, and Field Service

Mentor for *mBio* Early Career Editorial Board members 2024-current

Member, Review Committee for Goldschmidt Graduate Student Award (Texas ASM Branch) 2023-current

Mentor, American Society for Microbiology Future Leaders Mentoring Fellowship Program 2023-current

mBio Junior Editorial Board Member 2022-2024

Session Convener, American Society for Microbiology Microbe (Annual Meeting) 2022

Abstract Reviewer, American Society for Microbiology Microbe (Annual Meeting) 2022

Award Judge, World Microbe Forum 2021

Award Judge, American Society for Microbiology Texas Branch Fall Meeting 2020-2022

Grant reviewer 2020-current

NIH Drug Discovery and Molecular Pharmacology A Study Section (Temporary Member, June 2024), NIH Anti-Infective Resistance and Targets Study Section (Temporary Member, Mar 2023), NIH Prokaryotic Cellular and Molecular Biology

Study Section (Temporary Member, Feb 2022), NSF Division of Molecular and Cellular Biosciences (*Ad hoc*, 2020, 2023), US Army Research Office (*Ad hoc*, 2021), UK Research and Innovation Funding Service (*Ad hoc*, 2024), Texas A&M University Innovation[X] Grant (2022)

Ad hoc manuscript reviewer

2019-current

Nat Commun, Proc Natl Acad Sci U S A, Nucleic Acids Res, eLife, EMBO J, BMC Biol, mBio, Commun Biol, PLoS Genet, Mol Microbiol, Emerg Microbes & Infect, Antibiotics, EcoSal Plus, Virulence, mSystems, Microbiol Spectr, Arch Microbiol, Front Microbiol, Pharmaceuticals, Molecules, Int J Mol Sci

Previous Universities

Academic Policy Chair, UNC Graduate and Professional Student Federation Cabinet

2012-2013

Member, UNC Chapel Hill Chancellor's Committee on Copyright

2012-2013

Chair of Judging & Speaker Committee for βββ Northeast District 2 Conference

2006-2007

CURRENT MEMBERSHIPS

American Association for the Advancement of Science, American Society for Microbiology, ASM Texas Branch, American Society for Virology