

# Natividad Ruiz, Ph.D.

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## EDUCATION AND TRAINING

- 1998 – 2006 *Postdoctoral Research Associate*, Princeton University. Advisor: Professor Thomas J. Silhavy
- 1998 *Doctor of Philosophy* in Molecular Microbiology and Microbial Pathogenesis, Washington University in St. Louis. Advisor: Professor Michael G. Caparon
- 1993 *Bachelor of Arts with Highest Distinction* in Microbiology and Chemistry, University of Kansas
- 1990 – 1993 *Undergraduate Research Assistant*, University of Kansas. Advisor: Professor John C. Brown

## ACADEMIC POSITIONS

- 2015 – *Associate Professor*, Department of Microbiology, The Ohio State University
- 2010 – 2015 *Assistant Professor*, Department of Microbiology, The Ohio State University
- 2006 – 2010 *Research Molecular Biologist*, Princeton University

## TEACHING EXPERIENCE

- M4130 (Microbial Genetics), Ohio State University (course director, 100%), Sp14-Sp18
- M4120 (Microbial Physiology and Diversity), Ohio State University, Au13 (2 lectures), Au14 (2 lectures), Au16 (3 lectures), Au17 (4 lectures)
- M4130 (Microbial Genetics), Ohio State University (course co-director, 70%), Sp13
- M7724 (Molecular Pathogenesis), Ohio State University, Sp13 and Sp14 (2 lectures)
- M8899 (Seminar in Microbiology), Ohio State University (course co-director, 50%), Au12 & Sp13
- M4120 (Microbial Physiology and Diversity), Ohio State University, Au12 (3 lectures)
- M6010 (Principles of Microbiology), Ohio State University, Au12-15 (2 lectures), Au16-16 (1 lecture)
- M581.01 (Microbial Genetics), Ohio State University (course director, 100%), Sp12
- M880 (Seminar in Microbiology), Ohio State University (course co-director, 50%), Au11, Wn12 & Sp12
- OSBP796 (Interdisciplinary Seminar in Advanced Biochemistry), Ohio State University (course co-director, 50%), Au11
- M724 (Molecular Pathogenesis), Ohio State University, Sp11 (2 lectures)
- M661 (Bacterial Physiology), Ohio State University (guest lecturer), Au10
- MCO506 (Prokaryotic and Eukaryotic Cell Biology and Genetics), Uniformed Services University of the Health Sciences, Bethesda, MD (guest lecturer), 2010

MOL380A (Modern Microbiology and Disease), Princeton University (course co-director, 33%), Sp08

FRS166 (Microbes: Menace and Marvels), Princeton University (course director, 100%), Sp06

MOL545 (Advanced Microbial Genetics), Princeton University (seminar course co-director, 50%), 2001

MOL350 (Laboratory in Molecular Biology), Princeton University (lecturer), Sp01

HHMI Undergraduate Research Summer Program, Princeton University (summer instructor), Su00

MOL505 (Molecular Biology of Prokaryotes), Princeton University (teaching assistant), Au99

Junior Tutorial, Princeton University (instructor), 1998

Instructor for the Young Scientist Program in St. Louis (instructor), 1997 - 1998

BIO100 (Introduction to Biology), Washington University in St. Louis (teaching assistant), 1994

MCRB507 (Pathogenic Microbiology Laboratory), University of Kansas (teaching assistant), 1993

MCRB505 (Immunology Laboratory), University of Kansas (teaching assistant), 1992

## REFEREED PUBLICATIONS

1. Bertani, B.R. Taylor, R.J, Nagy, E., Kahne, D\*. and **Ruiz, N\***. A cluster of residues in the lipopolysaccharide exporter that selects substrate variants for transport to the outer membrane. *Mol Microbiol* (in press) doi: 10.1111/mmi.14059. PMID: 29995974.
2. Bertani, B. R. and **Ruiz, N.** (2018) Function and biogenesis of lipopolysaccharides. *Eco Sal Plus* 2018; doi:10.1128/ecosalplus.esp-0001-2018 (in press). PMID: 30066669.
3. Rubino, F.A., Kumar, S., **Ruiz, N.**, Walker, S., Kahne, D. (2018) Membrane potential is required for MurJ function. *J Am Chem Soc.* 140(13):4481-4484. PMID: 29558128.
4. May, J.M., Owens, T., Mandler, M., Simpson, B.W., Lazarus, M., Sherman, D.J., Davis, R.M., Okuda, S., Masefski, W., **Ruiz, N.\***, Kahne, D\*. (2017) The antibiotic novobiocin binds and activates the ATPase that powers lipopolysaccharide transport. *J Am Chem Soc* 139(48):17221-17224. PMID: 29135241 \* **Co-corresponding authors.**
5. Chamakura, K.R., Sham, L.T., Davis, R.M., Min, L., Cho, H., **Ruiz, N.**, Bernhardt, T.G., Young, R. (2017) A viral protein antibiotic inhibits lipid II flippase activity. *Nature Microbiol* 2(11):1480-1484. PMID: 28894177.
6. Qiao, Y., Srisuknimit, V., Rubino, F., Schaefer, K., **Ruiz, N.**, Walker, S., Kahne, D. (2017) Lipid II overproduction allows direct assay of transpeptidase inhibition by  $\beta$ -lactams. *Nat Chem Biol.* 13(7):793-798. PMID: 28553948
7. Elhenawy, W., Davis, R.M., Fero, J, Salama, N.R., Feldman, M.F., **Ruiz, N.** (2016) The O-antigen flippase Wzk can substitute for MurJ in peptidoglycan synthesis in *Helicobacter pylori* and *Escherichia coli*. *PLoS ONE.* 11(8):e0161587. PMID: 27537185.
8. Simpson, B.W., Owens, T.W., Orabella, M.J., Davis, R.M., May, J.M., Trauger, S.A., Kahne, D.\*, **Ruiz, N.\*** (2016) Identification of residues in the lipopolysaccharide ABC transporter that coordinate ATPase activity with extractor function. *mBio* 7(5): e01729-16. PMID: 27795402 \* **Co-corresponding authors.**

9. **Ruiz, N.** (2016) Filling holes in peptidoglycan biogenesis of *Escherichia coli*. *Curr Opin Microbiol* 34:1-6. PMID: 27449418.
10. Lee, J., Xue, M., Wzorek, J.S., Wu, T., Grabowicz, M., Gronenberg, L.S., Sutterlin, H.A., Davis, R.M., **Ruiz, N.** \*, Silhavy, T.J. \*, Kahne, D.E. \* (2016) Characterization of a stalled complex on the  $\beta$ -barrel assembly machine. *Proc Natl Acad Sci U S A*. 113:8717-22. PMID: 27439868\* **Co-corresponding authors.**
11. Okuda, S., Sherman, D.J., Silhavy, T.J., **Ruiz, N.**, Kahne, D. (2016) Lipopolysaccharide transport and assembly at the outer membrane: the PEZ model. *Nat Rev Microbiol* 14:337-45. PMID: 27026255.
12. **Ruiz, N.** (2016) Lipid flippases for bacterial peptidoglycan biosynthesis. *Lipid Insights* 8(s1) 21–31. PMID: 26792999
13. Simpson, B.W., May, J.M., Sherman, D.J., Kahne, D.\* **Ruiz, N.\*** (2015) Lipopolysaccharide transport to the cell surface: biosynthesis and extraction from the inner membrane. *Phil Trans R Soc B* 370:20150029. PMID: 26370941 \* **Co-corresponding authors.**
14. May, J.M., Sherman, D.J., Simpson, B.W., **Ruiz, N.\***, Kahne, D.\* (2015) Lipopolysaccharide transport to the cell surface periplasmic transport and assembly into the outer membrane. *Phil Trans R Soc B* 370:20150027. PMID: 26370939 \* **Co-corresponding authors.**
15. Laguna, R., Young, S.J., Chen, C.C; **Ruiz, N.**, Yang, S.T., and Tabita, F.R. (2015) Development of a plasmid addicted system that is independent of co-inducers, antibiotics and specific carbon source additions for bioproduct (1-butanol) synthesis in *Escherichia coli*. *Metab Eng Commun* 2: 6-12.
16. Butler, E.K., Tan, W.B., Joseph, H., and **Ruiz, N.** (2014) Charge requirements of lipid II flippase activity in *Escherichia coli*. *J Bacteriol* 196:4111-4119. PMID: 25225268.
17. Sham, L. T., Butler, E. K., Lebar, M. D., Kahne, D., Bernhardt, T.G.\* , and **Ruiz, N.\*** (2014) MurJ is the flippase of lipid-linked precursors for peptidoglycan biogenesis. *Science* 345:220-222. PMID: 25013077. \* **Co-corresponding authors.** Highlighted in *Nat Rev Microbiol* (July 2014), *Chemical & Engineering News* (July 2014), *Faculty of 1000* (July 2014), and *Scientific American* (July 2014).
18. Malojčića, G., Andresa, D., Grabowicz, M., **Ruiz, N.**, Silhavy, T. J., and Kahne, D. (2014) LptE binds to and alters the physical state of LPS to catalyze its assembly at the cell surface. *Proc Natl Acad Sci U S A* 111:9467-9472. PMID: 24938785.
19. Sherman, D.J., Lazarus, M.B., Murphy, L., Liu, C., Walker, S. **Ruiz, N.\***, and Kahne, D.\* (2014) Decoupling catalytic activity from biological function of the ATPase that powers lipopolysaccharide transport. *Proc Natl Acad Sci U S A* 111:4982-4987. PMID:24639492 \* **Co-corresponding authors.**
20. Nicolaes, V., El Hajjaji, H., Davis, R., Van der Henst, C., Depuydt, M., Leverrier, P., Aersten, A., Haufroid, V., Ollagnier, S., De Bolle, X., **Ruiz, N.**, and Collet, J.F. (2013) Insights into the function of YciM, a heat-shock membrane protein required to maintain envelope integrity in *Escherichia coli*. *J Bacteriol* 196:300-309. PMID:24187084.
21. Butler, E.K., Davis, R.M., Bari, V., Nicholson, P.A., and **Ruiz, N.** (2013) Structure-function analysis of MurJ reveals a solvent-exposed cavity containing residues essential for peptidoglycan biogenesis in *Escherichia coli*. *J Bacteriol* 195:4639-4649. PMID:23935042.

22. Yao, Z., Davis, R.M., Kishony, R., Kahne, D., and **Ruiz, N.** (2012) Regulation of cell size in response to nutrient availability by fatty acid biosynthesis in *Escherichia coli*. *Proc Natl Acad Sci U S A* 109:E2561-E2568. PMID:22908292. Highlighted in Nature Reviews in Microbiology (October 2012), Nature Chemical Biology (October 2012), and Faculty of 1000 (September 2012).
23. Freinkman, E., Okuda, S., **Ruiz, N.**, and Kahne, D. (2012) Regulated assembly of the transenvelope protein complex required for lipopolysaccharide export. *Biochemistry* 51:4800-4806. PMID:22668317.
24. Karamoko, M., Cline, S., Redding, K., **Ruiz, N.**, and Hamel, P. P. (2011) Lumen Thiol Oxidoreductase1, a disulfide bond-forming catalyst, is required for the assembly of photosystem II in *Arabidopsis*. *Plant Cell* 23:4446-4461. PMID: 22209765
25. Chimalakonda, G., **Ruiz, N.**, Chng, S.-S., Garner, R. A., Kahne, D., and Silhavy, T. J. (2011) Lipoprotein LptE is required for the assembly of LptD by the  $\beta$ -barrel assembly machine in the outer membrane of *Escherichia coli*. *Proc Natl Acad Sci U S A* 108:2492-2497. PMID: 21257909
26. **Ruiz, N.**, Chng, S.-S., Hiniker, A., Kahne, D., Silhavy, T.J. (2010) Nonconsecutive disulfide bond formation in an essential integral outer membrane protein. *Proc Natl Acad Sci U S A* 107:12245-12250. PMCID: PMC2901483.
27. Chng, S.-S., **Ruiz, N.**, Chimalakonda, G., Silhavy, T. J., and Kahne, D. (2010) Characterization of the two-protein complex in *Escherichia coli* responsible for lipopolysaccharide assembly at the outer membrane. *Proc Natl Acad Sci U S A* 107:5363-5368. PMCID: PMC2851745.
28. **Ruiz, N.**, Kahne, D., and Silhavy, T. J. (2009) Transport of lipopolysaccharide across the cell envelope: the long road of discovery. *Nature Rev Microbiol* 7: 677-683. PMCID: PMC2790178.
29. **Ruiz, N.** (2009) *Streptococcus pyogenes* YtgP (Spy\_0390) complements *Escherichia coli* strains depleted of the putative peptidoglycan flippase MurJ. *Antimicrob Agents Chemother* 53(8): 3604-3605. PMCID: PMC2715597.
30. Vertommen, D.\* , **Ruiz, N.** \* , Leverrier, P. \* , Silhavy, T.J., and Collet, J.F. (2009) Characterization of the role of the *Escherichia coli* periplasmic chaperone SurA using differential proteomics. *Proteomics* 9: 2432-2443 (\* **authors contributed equally**).
31. **Ruiz, N.** (2008) Bioinformatics identification of MurJ (MviN) as the peptidoglycan lipid II flippase in *Escherichia coli*. *Proc Natl Acad Sci U S A* 105: 15553-15557. PMCID: PMC2563115.
32. **Ruiz, N.**, Gronenberg, L.S., Kahne, D., and Silhavy, T.J. (2008) Identification of two inner-membrane proteins required for the transport of lipopolysaccharide to the outer membrane of *Escherichia coli*. *Proc Natl Acad Sci U S A* 105: 5537-5542. PMCID: PMC2291135.
33. Button, J.E., Silhavy, T.J, and **Ruiz, N.** (2007) A suppressor of cell death caused by the loss of  $\sigma^E$  downregulates extracytoplasmic stress responses and outer membrane vesicle production in *Escherichia coli*. *J Bacteriol* 189: 1523-1530. PMCID: PMC1855761.
34. **Ruiz, N.**, Wu, T., Kahne, D., and Silhavy, T.J. (2006) Probing the barrier function of the outer membrane with chemical conditionality. *ACS Chem Biol* 1:385-395.
35. **Ruiz, N.**, Kahne, D., and Silhavy, T. J. (2006) Advances in understanding bacterial outer membrane biogenesis. *Nature Rev Microbiol* 4: 57-66.
36. **Ruiz, N.**, Falcone, B., Kahne, D., and Silhavy, T.J. (2005) Chemical conditionality: A genetic strategy to probe organelle assembly. *Cell* 121: 307-317.

37. Wu, T., Malinverni, J., **Ruiz, N.**, Kim, S., Silhavy, T. J., and Kahne, D. (2005) Identification of a multi-component complex required for outer membrane biogenesis in *Escherichia coli*. *Cell* 121: 235-245.
38. **Ruiz, N.** and Silhavy, T.J. (2005) Sensing external stress: watchdogs of the *Escherichia coli* cell envelope. *Curr Opin Microbiol* 8: 122-126.
39. Peterson, C. N., **Ruiz, N.**, and Silhavy, T.J. (2004) RpoS proteolysis is regulated by a mechanism that does not require the SprE (RssB) response regulator phosphorylation site. *J Bacteriol* 186: 7403-7410. PMID: PMC523208
40. **Ruiz, N.** and Silhavy, T.J. (2003) Constitutive activation of the *Escherichia coli* PHO regulon upregulates *rpoS* translation in an Hfq-dependent fashion. *J Bacteriol* 185: 5984-5992. PMID: PMC225030.
41. **Ruiz, N.**, Peterson, C. N., and Silhavy, T.J. (2001) RpoS-dependent transcriptional control of *sprE*: regulatory feedback loop. *J Bacteriol* 183: 5974-5981. PMID: PMC99676.
42. Eggert, U. S., **Ruiz, N.**, Falcone, B. V., Branstrom, A. A., Goldman, R. C., Silhavy, T. J., and Kahne, D. (2001) Genetic basis for activity differences between vancomycin and glycolipid derivatives of vancomycin. *Science* 294: 361-364.
43. Madden, J. C., **Ruiz, N.**, and Caparon, M. (2001) Cytolysin-mediated translocation (CMT): A functional equivalent of Type III secretion in Gram-positive bacteria. *Cell* 104: 143-152 and cover illustration.
44. **Ruiz, N.**, Wang, B., Pentland, A., and Caparon, M. (1998) Streptolysin O and adherence synergistically modulate proinflammatory responses of keratinocytes to group A streptococci. *Mol Microbiol* 27: 337-346.
45. Wang, B., **Ruiz, N.**, Pentland, A., and Caparon, M. (1997) Keratinocyte proinflammatory responses to adherent and nonadherent group A streptococci. *Infect Immun* 65: 2119-2126.

## NON-REFEREED PUBLICATIONS

1. **Ruiz, N.** A Bird's Eye View of the Bacterial Landscape. (2013) *Methods Mol Bio* 966:1-14.

## INVITED SEMINARS

1. Molecular & Cellular Biology Graduate Program, University of Massachusetts Amherst (MA), December 5, 2017.
2. Department of Medicinal Chemistry and Pharmacognosy, University of Illinois at Chicago (IL), October 27, 2017.
3. Department of Biology, Hofstra University, Hempstead (NY), October 21, 2016.
4. Department of Biochemistry, Duke University School of Medicine, Durham (NC), October 14, 2016.
5. Department of Biochemistry and Molecular Biology, Rosalind Franklin University of Medicine and Science, North Chicago (IL), June 2, 2016.
6. Institute of Plant Biochemistry and Photosynthesis, CSIC, Sevilla (Spain), December, 18, 2015.
7. Christian De Duve Institute of Cellular Pathology, Universite Catholique de Louvain, Brussels (Belgium), September 25, 2015.

8. Genentech, South San Francisco (CA), March 18, 2015.
9. Department of Biochemistry and Molecular Biology, Penn State University, University Park (PA), November 10, 2014.
10. Department of Molecular Biology, Princeton University, Princeton (NJ), October 22, 2014.
11. Department of Molecular Genetics, Ohio State University, Columbus (OH), March 6, 2014.
12. Department of Biological Sciences, University of Alberta, Edmonton (Canada), November 28, 2013.
13. Department of Microbiology, Universidad de Chile, Santiago de Chile (Chile), November 5, 2013.
14. Department of Microbiology, University of Illinois at Urbana-Champaign, Urbana (IL), October 17, 2013.
15. Genentech, South San Francisco (CA), July 23, 2013.
16. OSU Chemistry-Biology Interface Training Program, Ohio State University, Columbus (OH), February 19, 2013.
17. Department of Biology, Kenyon College, Gambier (OH), February 7, 2013.
18. The Child Health Research Center Speaker Series at The Research Institute at Nationwide Children's Hospital, Columbus (OH), January 31, 2013.
19. Cold Spring Harbor Laboratory Advanced Bacterial Genetics Course, Cold Spring Harbor (NY), June 16, 2012.
20. Department of Biology, Microbiology Seminar Series, Indiana University, Bloomington (IN), March 6, 2012.
21. Department of Microbiology, Miami University, Oxford (OH), February 8, 2012.
22. Novartis Institutes for Biomedical Research, Emeryville (CA), September 28, 2011.
23. Department of Biochemistry, Ohio State University, Columbus (OH), May 6, 2011.
24. Center for Microbial Pathogenesis, The Research Institute at Nationwide Children's Hospital, Columbus (OH), March 2, 2011.
25. Center for Microbial Interface Biology, Ohio State University Medical Center, Columbus (OH), February 14, 2011.
26. Department of Microbiology and Immunology, Uniformed Services University of the Health Sciences, Bethesda (MD), March 29, 2010. Seminar and class lecture.
27. Department of Microbiology, University of Pennsylvania, Philadelphia (PA), January 16, 2009.
28. Department of Medical Microbiology & Immunology, University of Wisconsin, Madison (WI), December 5, 2008.
29. Christian De Duve Institute of Cellular Pathology, Universite Catholique de Louvain, August 30, 2007. Brussels, Belgium.

## **INVITED PRESENTATIONS AT SCIENTIFIC MEETINGS**

1. New Antibacterial Discovery and Development Gordon Research Conference, March 2018. Ventura, CA. Invited speaker.

2. 7<sup>th</sup> FEBS Special Meeting on ABC Proteins – ABC2018: From Multidrug Resistance to Genetic Disease, March 2018. Innsbruck, Austria. Invited speaker.
3. Society for Glycobiology Meeting, November 2017. Portland, OR. Invited speaker.
4. “Building and tearing down the wall: peptidoglycan dynamics” Symposium. ASM Microbe, June 2017. New Orleans, LA. Invited speaker and convener of symposium.
5. Microbial Genetics and Genomics VII, May 2017. Asilomar, CA. Invited speaker.
6. “The bacterial cell wall takes center stage”. 5th International Symposium of the SFB 766, 2017. Tubingen, Germany. Invited speaker.
7. Great Wall Symposium, 2015. Villa Finaly, Florence, Italy. Invited speaker.
8. CMIB Symposium, 2014. The Ohio State University Wexner Medical Center, OH. Invited speaker.
9. Midlands Microbiology Meeting, 2014. Birmingham University, Birmingham (UK). Invited speaker.
10. Protein Transport Across Cell Membranes Gordon Conference, 2014. Hotel Galvez, Galveston, TX. Invited speaker.
11. XII Pan-American Biochemistry and Molecular Biology Congress, 2013. Puerto Varas, Chile. Invited speaker.
12. Molecular Genetics of Bacteria and Phages Meeting, 2013. University of Wisconsin, Madison, WI. Invited speaker and chair of “Life Beyond the Cytosol” session.
13. Midwest Microbial Pathogenesis Conference, 2011. University of Michigan, Ann Arbor, MI. Invited speaker.
14. “Biogenesis of the Bacterial Cell Surface” Symposium, ASM General Meeting, 2011. New Orleans, LA. Invited speaker and co-chair of symposium.
15. Ohio Branch of the American Society for Microbiology Annual Meeting, 2011. Ohio University, Athens, OH. Invited speaker.
16. Microbial Stress Response Gordon Research Conference, 2010. Mount Holyoke College, South Hadley, MA. Invited speaker.
17. Bacterial Cell Surfaces Gordon Research Conference, 2010. Colby-Sawyer College, New London, NH. Invited chair for the *Outer Membrane* section.
18. FASEB Summer Research Conference: Transport ATPases: From Molecules to Maladies, 2010. Snowmass Village, CO. Invited speaker.
19. Cellular Lipid Transport - Connecting Fundamental Membrane Assembly Processes to Human Disease, 2008. Canmore, Alberta, Canada. Invited speaker.
20. ASBMB General Meeting, *Membrane Biogenesis* Symposium, 2007. Washington D.C. Invited speaker.

## **ADDITIONAL PRESENTATIONS AT SCIENTIFIC MEETINGS**

1. Bacterial Cell Surfaces Gordon Conference, 2018. West Dover, VT. Substrate-binding domain in the LPS extractor LptB<sub>2</sub>FG. Poster presenter.

2. Genetic Approaches to Understanding Complex Cellular Processes Conference, 2018. Powering LPS transport with ABCs. Princeton, NJ. Speaker and co-organizer.
3. Bacterial Cell Surfaces Gordon Conference, 2016. West Dover, VT. Structure-function studies of the ABC transporter that powers lipopolysaccharide transport in *E. coli*. Poster presenter.
4. Bacterial Cell Surfaces Gordon Conference, 2014. West Dover, VT. MurJ is the flippase of lipid-linked precursors for peptidoglycan biogenesis in *E. coli*. Speaker (talk selected from poster abstracts) and poster presenter.
5. Genetic Approaches to Understanding Complex Cellular Processes Conference, 2013. Understanding MurJ function through a SCAM. Sedona, AZ. Speaker.
6. Bacterial Cell Surfaces Gordon Conference, 2012. West Dover, VT. Regulation of cell size in response to nutrient availability by fatty acid biosynthesis in *Escherichia coli*. Poster presenter.
7. Bacterial Cell Surfaces Gordon Conference, 2008. Colby-Sawyer College, New London, NH. Identification of two inner-membrane proteins required for the transport of lipopolysaccharide to the outer membrane of *Escherichia coli*. Poster presenter.
8. Bacterial Cell Surfaces Gordon Conference, 2006. Colby-Sawyer College, New London, NH. A suppressor of lethality in *rpoE* mutants downregulates extracytoplasmic stress responses and outer membrane vesicle production. Poster presenter.
9. Protein Transport Across Cell Membranes Gordon Conference, 2005. Colby-Sawyer College, New London, NH. A chemical genetics approach to study outer membrane biogenesis. Speaker.
10. Microbial Genetics and Genomics III, 2005. Moab, UT. Outer membrane biogenesis in *Escherichia coli*. Speaker.
11. Princeton University Department of Molecular Biology Retreat, 2004. Avalon, NJ. Coordination of outer membrane biogenesis in *Escherichia coli*. Speaker.
12. Bacterial Cell Surfaces Gordon Conference, 2004. New London, NH. Suppressor analysis of *Escherichia coli* mutants with increased outer membrane permeability. Poster presenter.
13. Molecular Genetics of Bacteria and Phages Meeting, 2003. Madison, WI. Constitutive activation of the *Escherichia coli* PHO regulon upregulates *rpoS* translation in an Hfq-dependent fashion. Poster presenter.
14. Molecular Genetics of Bacteria and Phages Meeting, 2000. Cold Spring Harbor, NY. Studies on the transcription of the RpoS regulator SprE. Poster presenter.
15. Molecular Genetics of Microbial Systems Meeting, 1999. Amalfi, Italy. The role of the *crl* locus in the post-translational regulation of RpoS. Poster presenter.

## **DISTINCTIONS**

- 2022 Co-chair elect (with Jean-Francois Collet), “Bacterial Cell Surfaces Gordon Conference”, West Dover, VT. (June 2022; vice-chair for 2020 Conference)
- 2018 Session chair, “Stress and the Cell Envelope” session, Microbial Stress Response Gordon Conference. Mount Holyoke College, South Hadley, MA (July 2018).
- 2018 Co-organizer of the “Genetic Approaches to Understanding Complex Cellular Processes Conference” Princeton, NJ, 2018 (45 attendees; co-organizer: Dr. Nathaniel Rigel, Hofstra University).



- 2017 Convener of the “Building and tearing down the wall: peptidoglycan dynamics” Symposium. ASM Microbe. New Orleans, LA.
- 2016 Semifinalist for the Howard Hughes Medical Institute Faculty Scholars Program (2015 competition).
- 2013 Chair, “Life Beyond the Cytosol” session, Molecular Genetics of Bacteria and Phages Meeting, Madison, WI.
- 2012 Distinguished Undergraduate Research Mentor Award Nominee, Ohio State University.
- 2011 Co-chair, “Biogenesis of the Bacterial Cell Surface Symposium”, American Society for Microbiology 111<sup>th</sup> Annual General Meeting, New Orleans, LA.
- 2010 Chair, “Outer Membrane” session, Bacterial Cell Surfaces Gordon Conference. Colby-Sawyer College, New London, NH.
- 2006 Postdoctoral Teaching Award in Molecular Biology, Princeton University
- 2004 Postdoctoral Talk Award at the Molecular Biology Department Retreat, Princeton University
- 2002 Postdoctoral Poster Award at the Molecular Biology Department Retreat, Princeton University
- 1993 B.A. in Microbiology and Chemistry, Highest Distinction, University of Kansas
- 1993, 1992, and 1991 Cassandra Ritter Award for undergraduate academic and research excellence in Microbiology
- 1993 Taft Award for excellence in Physical Chemistry
- 1993 Cora M. Downs Award for outstanding woman student based on laboratory participation and academic performance in Microbiology
- 1993 Phi Kappa Phi
- 1993 Sigma Xi
- 1992 C. E. Spahr Sciences Scholarship
- 1991 Clark E. Bricker Award for outstanding second-year student in Chemistry
- 1991 Golden Key National Honor Society
- 1990 Sorg Scholarship for outstanding beginning students in Chemistry

## **ADMINISTRATIVE SERVICE**

### **Department of Microbiology:**

- 2018: Member, Graduation Ceremony Committee
- 2017 – present: Member, Undergraduate Curriculum Committee
- 2016: Member, Faculty Search (Rod Sharp Chair in Microbiology) Committee
- 2015 – present: Microbiology Honors Advisor
- 2014 – 2017: Member, Graduate Studies Committee
- 2014 – 2016: Organizer of Annual Department of Microbiology Symposium
- 2013 – 2014: Member, OAA Unit Review Committee
- 2013: Member, Departmental Chair Search Committee

2010 – 2013: Member, Graduate Admission Committee

**Non-departmental Committees:**

2013 – 2016: Member, Ohio State Biochemistry Program Recruiting Committee member

2013 CMIB T32 Postdoctoral Fellowship Review Committee member

2012 – 2016: CMIB Host-Pathogen Seminar Series Committee member

**University Service:**

2014 – present: Member, Committee on Academic Misconduct

2015 – present: Member, College of Arts and Sciences Honors Committee

2016– present: Member, College of Arts and Sciences Honors Curriculum and Assessment Subcommittee

2015: Member, College of Arts and Sciences Curriculum Committee Honors Panel

2015: Member, College of Arts and Sciences Curriculum Committee

**PROFESSIONAL SERVICE**

**Service to Societies and Networks:**

2016: Member, ASM Nominating Committee for President-Elect

2016: Member, International Advisory Board for the International Microbiology Congresses of the International Union of Microbiological Societies (IUMS 2017)

2015 –present: Member, Scientific Advisory Board of the Train2Target in the European Training Network

**Reviewer for Journals:**

2004 – present: Journal of Bacteriology, Molecular Microbiology, Journal of Biological Chemistry, EMBO Journal, Molecular Genetics and Genomics, Biotechnology Progress, Proteomics, Biochemistry, Journal of the American Chemical Society, BMC Microbiology, Proceedings of the National Academy of Sciences of the USA, Chemistry and Biology, PLoS ONE, Frontiers in Cellular and Infection Microbiology, DNA Repair, PLoS Pathogens, mBio, BBA Molecular Cell Research, PLoS Genetics, Microbiology, Marine Drugs, Glycobiology, Genes and Development, eLife, FEBS Journal, FEBS Letters, BBA Proteins and Proteomics, Microbial Drug Resistance, Scientific Reports, Science, Nature, BBA Molecular and Cell Biology of Lipids, Nature Microbiology, Nature Structural & Molecular Biology, Nature Communications, ACS Chemical Biology

2016: Guest editor for mBio

2015 – present: Editorial Board Member of Journal of Bacteriology

2012 – present: Editorial Advisory Board Member of Molecular Microbiology

**Grant Reviewer:**

February 2018: Ad Hoc reviewer, NIH (mail-in reviewer for 1 grant).

June 2016 – present: Member, NIH, PCMB Study Section

2016: Ad-hoc scientific reviewer, Wellcome Trust/DBT India Alliance Fellowship

- 2014: Ad-hoc scientific reviewer, Wellcome Trust Research New Investigator Award
- 2014: Ad-hoc reviewer, Netherlands Organisation for Scientific Research Division for Earth and Life Sciences
- 2013: Ad hoc member, NIH, Special Emphasis Panel (March 19, 2013)
- 2013: Ad hoc member, NIH, PCMB Study Section (February 21, 2013)
- 2012: Ad-hoc reviewer, Portuguese Foundation for Science and Technology
- 2010: Ad-hoc reviewer, Wellcome Trust Research Career Development Fellowship
- 2010: Ad-hoc reviewer, Netherlands Organisation for Scientific Research, ALW Open Programme Grant
- 2007: Ad-hoc reviewer, NSF's merit review

## **MEMBERSHIPS**

- 2011 – present: Ohio State Biochemistry Program
- 2011 – present: OSU Infectious Diseases Institute (formerly Center for Microbial Interface Biology Center, 2011-2017)
- 2000 – present: American Society for Microbiology

## **LANGUAGES**

- English
- Spanish