

CURRICULUM VITAE

BARRY PHILIP ROSEN

10 June 2021

EDUCATION

- B.S.-Trinity College, Hartford, CT, 1965
- M.S.-University of Connecticut, 1968
- Ph.D.- University of Connecticut, 1969

PROFESSIONAL HISTORY

- Distinguished University Professor, Department of Cellular Biology and Pharmacology, 2009-present, Florida International University Herbert Wertheim College of Medicine.
- Associate Dean for Basic Research and Graduate Programs, 2009-2016, Florida International University Herbert Wertheim College of Medicine.
- Distinguished Professor and Chairman, 1987-2009, Professor Emeritus, 2009-present, Department of Biochemistry and Molecular Biology, Wayne State University, School of Medicine
- Professor of Biochemistry, 1982-1987, Associate Professor of Biochemistry, 1975-1982, Assistant Professor of Biochemistry, 1972-1975, University of Maryland School of Medicine
- Visiting Professor, Department of Microbiology, Okayama University, Okayama, Japan, 3/80-6/80, 5/81-6/81
- Visiting Professor, Department of Physiology, Yale University Medical School, New Haven, Connecticut, 9/80-5/81
- Public Health Service NIH Fellow, Cornell University, Ithaca, NY (with Leon A. Heppel), 1969-1971

MEMBERSHIPS

- American Society of Biological Chemists
- American Academy of Microbiology
- American Society for Microbiology
- American Association for the Advancement of Science
- Karmanos Comprehensive Cancer Center
- Wayne State University Academy of Scholars

REVIEW BOARDS

- Journal of Bacteriology, 1978-1989
- Journal of Bioenergetics and Biomembranes, 1987-1992
- Microbiological Reviews, 1980-1982
- National Science Foundation, Metabolic Biology Panel, 1978-1981
- Member, Cell Transport and Metabolism Research Study Committee,
- National American Heart Association, 1988-1991

- Member, Microbial Physiology and Genetics Study Section, NIH, 1991-1995
- NIH Reviewers Reserve, 1995-2005
- Canadian Foundation for Innovation, 2000- 2005
- Journal of Biochemistry, 1995-2005
- Drug Resistance Updates, 1997-2002
- Biometals, 2000-2005
- Journal of Biological Chemistry, 1995-2000, 2001-2006
- Cobra NIH External Advisory Committee, University of Kansas, 2003-present
- External program reviewer, Uniformed Services University of the Health Sciences (2006), Wright State University School of Medicine (2006), Ottawa Health Research Institute (2006), Temple University (2010).
- Ad hoc Member, Microscopic Imaging Study Section, NIH, 2005
- EPA Scientific Advisory Board Arsenic Review Panel, 2005-2006.
- Ad hoc Member, Macromolecular Structure and Function Study Section A, 2007.
- Ad hoc Member, NIEHS Outstanding New Environmental Scientist (ONES) Study Section, 2008.
- External Advisory Committee, NIEHS Advanced Research Cooperation in Environmental Health Research (ARCH), Florida International Univ., 2008-2009.
- Editorial Board of Metallobiology, Royal Society of Chemistry, London, 2012-2014
- External Reviewer, FDA proposed limit for inorganic arsenic in infant rice cereal, 2015
- Ad hoc Member, NIEHS Outstanding New Environmental Scientist (ONES) Study Section, 2016, 2017
- Ad hoc Member, NIH CounterACT Study Section, 2018
- Ad hoc Member, NIEHS XNDA Study Section, 2019

NATIONAL OFFICES

- Vice Chairman, Physiology and Metabolism Section
- American Society for Microbiology, 1977-1978
- Chairman, Physiology and Metabolism Section
- American Society for Microbiology, 1978-1979
- Alternate Counselor, Physiology and Metabolism Section,
- American Society for Microbiology, 1986-88
- Counselor, Physiology and Metabolism Section,
- American Society for Microbiology, 1988-90
- International Organizing Committee, FEBS Advanced Lecture Course on Multidrug Resistance, 1997-2000
- Vice Chair, Bacterial Cell Surface Gordon Conference, 2002
- International Organizing Committee, 3rd International Conference of Comparative Physiology and Biochemistry in Africa, 2004
- Chair, Bacterial Cell Surface Gordon Conference, 2004
- International Organizing Committee, 12th International Conference on Biological Inorganic Chemistry (ICBIC), 2005

- Chair, Education Committee, American Association of Medical and Graduate Departments of Biochemistry, 2006-08
- President, American Association of Medical and Graduate Departments of Biochemistry, 2009

AWARDS AND HONORS

- USPHS Postdoctoral Fellowship, 1969-1971
- Basil O'Connor Awardee, March of Dimes, 1974-1976
- Maryland Distinguished Young Scientist Award, 1979
- Josiah Macy, Jr. Faculty Scholar, 1980-1981
- Fellow, American Academy of Microbiology (ASM), 1980
- Gershenson Distinguished Faculty Fellow, Wayne State University, 1997
- Outstanding Graduate Mentor Award, Wayne State University, 1999
- Academy of Scholars, Wayne State University, 2000
- NIH MERIT Award, 2005
- Lawrence Weiner Award, Wayne State University Medical Alumni, 2007
- Wayne State University Distinguished Professorship, 2007
- Florida International University Distinguished Professorship, 2014
- Fellow, American Association for the Advancement of Science (AAAS), 2014
- Newly identified arsenic hypermethylating bacterium named *Arsenicibacter rosenii* in honor of Barry P. Rosen
- FIU Faculty Award for Excellence in Research and Creative Activities, 2017
- FIU Top Scholar Award 2020
- NIH MIRA Award, 2020

PATENTS

- US patent 7,524,229. Transgenic *Saccharomyces cerevisiae* and method for bioremediation.
- US patent 9,976,169. Biosensors for organic and inorganic arsenic
- US patent 10,640,802. AfArsR gene and prokaryotic host cell
- US patent 10,934,318. Synthesis of the organoarsenical antibiotic arsinothricin and derivatives thereof.
- US patent pending, 2021 Arsinothricin and methods of treating infections using arsinothricin.

CURRENT RESEARCH SUPPORT

- NIH MIRA R35 GM136211, *Mechanisms of arsenic biotransformations and transport*, Barry P. Rosen, PI, 7/1/20 - 6/31/25 \$2,655,070 total cost.

PUBLICATIONS

1. **Rosen, B.P.**, Basic amino acid transport in *Escherichia coli*. J. Biol. Chem. **246**,3653-3662(1971).
2. **Rosen, B.P.** and Vasington, F.D., Purification and characterization of a histidine binding protein from *Salmonella typhimurium*. J. Biol. Chem. **246**,5351-5360(1971).

3. **Rosen, B.P.** and Hackette, S.L., The effects of fatty acid substitution on the release of enzymes by osmotic shock. *J. Bacteriol.* **110**,1181-1189(1972).
4. Furlong, C.E., Morris, R.G., Kandrach, M. and **Rosen, B.P.**, A multichambered equilibrium dialysis apparatus. *Anal. Biochem.* **47**,514-526(1972).
5. **Rosen, B.P.**, Basic amino transport in *Escherichia coli*. II. Purification and properties of an arginine-specific binding protein. *J. Biol. Chem.* **248**,1211-1218(1973).
6. **Rosen, B.P.**, Basic amino acid transport in *Escherichia coli*. III. Properties of canavanine-resistant mutants. *J. Bacteriol.* **116**,627-635(1973).
7. **Rosen, B.P.**, β -Galactoside transport and proton movements in an adenosine triphosphatase deficient mutant of *Escherichia coli*. *Biochem. Biophys. Research Commun.* **53**,1289-1296(1973).
8. **Rosen, B.P.**, Restoration of active transport in a Mg^{2+} -adenosine triphosphatase deficient mutant of *Escherichia coli*. *J. Bacteriol.* **116**,1124-1129(1973).
9. **Rosen, B.P.** and McClees, J.S., Active transport of calcium in inverted membrane vesicles of *Escherichia coli*. *Proc. Natl. Acad. Sci. USA*, **71**,5042-5046(1974).
10. **Rosen, B.P.** and Adler, L.W., The maintenance of the energized membrane state and its relation to active transport in *Escherichia coli*. *Biochim. Biophys. Acta* **387**,23-26(1975).
11. Tsuchiya, T. and **Rosen, B.P.**, Restoration of active calcium transport in vesicles of an Mg^{2+} -ATPase Mutant of *Escherichia coli* by wild-type Mg^{2+} -ATPase. *Biochem. Biophys. Res. Commun.* **63**,832-838(1975).
12. Tsuchiya, T. and **Rosen, B.P.**, Characterization of an active transport system for calcium in inverted membrane vesicles of *Escherichia coli*. *J. Biol. Chem.* **250**,7687-7692(1975).
13. Tsuchiya, T. and **Rosen, B.P.**, Energy transduction in *Escherichia coli*. The role of the Mg^{2+} -ATPase, *J. Biol.Chem.* **250**,8049-8415(1975).
14. Tsuchiya, T. and **Rosen, B.P.**, ATP synthesis by an artificial proton gradient in right-side-out vesicles of *Escherichia coli*. *Biochem. Biochem. Res. Commun.* **68**,497-502(1976).
15. Tsuchiya, T. and **Rosen, B.P.**, Calcium transport driven by an artificially-imposed proton gradient in inverted membrane vesicles of *Escherichia coli*. *J. Biol. Chem.* **251**,962-967(1976).
16. Tsuchiya, T. and Rosen, B.P., ATP synthesis driven by an artificially-imposed membrane potential in right-side-out vesicles of *Escherichia coli*. *J. Bacteriol.* **127**,154-161(1976).
17. Adler, L.W. and **Rosen, B.P.**, Properties of mutants of *Escherichia coli* with alterations in the Mg^{2+} -adenosine triphosphatase. *J. Bacteriol.* **128**,248-256(1976).
18. Hasan, S.M. and **Rosen, B.P.**, Energy transduction in *Escherichia coli*: The effect of chaotropic agents on energy coupling in membranes from aerobic and anaerobic cultures. *Biochim. Biophys. Acta.* **459**,225-240(1977).
19. Adler, L.W. and **Rosen, B.P.**, Functional mosaicism of membrane proteins in vesicles of *Escherichia coli*. *J. Bacteriol.* **129**,959-966(1977).

20. **Rosen, B.P.**, Adler, L.W., Hasan, S.M. and Ichikawa, T., Orientation of the proton motive force in membrane vesicles of *Escherichia coli*. J. Supramolec. Struct. **7**,15-27(1977).
21. Hasan, S.M., **Rosen, B.P.** and Tsuchiya, T., Energy transduction in *Escherichia coli*: Physiological and biochemical effects of mutation in the *uncB* locus. J. Bacteriol. **133**, 108-113(1978).
22. **Rosen, B.P.**, Brey, R.N. and Hasan, S.M., Energy transduction in *Escherichia coli*: new mutation affecting the F₀ portion of the ATP synthetase complex. J. Bacteriol. **134**,1030-1038(1978).
23. Brey, R.N., Beck, J.C. and **Rosen, B.P.**, Cation/proton antiport systems in *Escherichia coli*. Biochem. Biophys. Res. Commun. **83**,1588-1594(1978).
24. **Rosen, B.P.** and Brey, R.N., The calcium/proton antiport of *Escherichia coli*. in *Microbiology 1979*, pp. 62-66(1979).
25. **Rosen, B.P.** and Tsuchiya, T., Preparation and uses of everted membrane vesicles from *Escherichia coli*. Meth. Enzymol. **56**,233-240(1979).
26. Beck, J.C. and **Rosen, B.P.**, Cation/proton antiport systems in *E. coli*. Properties of the sodium/proton antiporter. Arch. Biochem. Biophys. **194**,208-214(1979).
27. Brey, R.N. and **Rosen, B.P.**, Cation/proton antiport systems in *Escherichia coli*. Properties of the calcium/proton antiporter. J. Biol. Chem. **254**,1957-1963(1979).
28. Damper, D., Epstein, W., **Rosen, B.P.** and Sorensen, E.N., Thallous ion is accumulated by potassium transport systems in *E. coli*. Biochemistry **18**,4165-4169(1979).
29. **Rosen, B.P.** and Hasan, S.M., Purification of a N,N'-dicyclohexyl- carbodiimide-sensitive ATPase from *E. coli*. FEBS Lett. **104**,339-343(1979).
30. Brey, R.N. and **Rosen, B.P.**, Cation/proton antiporter in *E. coli*. Properties of mutants altered in calcium/proton antiporter activity. J. Bacteriol. **139**,824-834(1979).
31. Hasan, S.M. and Rosen, B.P., Properties and function of the proton translocating ATPase of *Clostridium perfringens*. J. Bacteriol. **140**,745-747(1979).
32. Brey, R.N., **Rosen, B.P.** and Sorensen, E.N., Cation/proton antiport systems in *E. coli*. Properties of the Potassium/Proton Antiporter. J. Biol. Chem. **255**,39-45(1980).
33. Sorensen, E.N. and **Rosen, B.P.**, Effects of Na⁺ and Li⁺ on the K⁺ transport systems of *Escherichia coli*. J. Biol. Chem. **19**,1458-1462(1980).
34. Plack, R.H. and **Rosen, B.P.**, Cation/proton antiport systems in *E. coli*. Absence of K⁺/H⁺ antiporter in a pH sensitive mutant. J. Biol. Chem. **255**,3824-3825(1980).
35. **Rosen, B.P.** and Futai, M., Sodium/proton antiporter of rat liver mitochondria. FEBS Lett. **117**,39-43(1980).
36. Tsuchiya, T. and **Rosen, B.P.**, Respiratory control in *Escherichia coli*. FEBS Lett. **120**,128-130(1980).
37. Slonczewski, J., **Rosen, B.P.**, Alger, J. and Macnab, R.M., pH homeostasis in *Escherichia coli*. Measurement by ³¹P nuclear magnetic resonance of phosphate and methylphosphonate, Proc. Natl. Acad. USA, **78**,6271-6275(1981).

38. Mobley, H.L.T. and Rosen, B.P., Energetics of plasmid-mediated arsenate resistance in *Escherichia coli*. Proc. Natl. Acad. Sci. USA, **79**,6119-6122(1982).
39. Tsujibo, H. and Rosen, B.P., Energetics of calcium efflux from cells of *Escherichia coli*. J. Bacteriol. **154**,854-858(1983).
40. Mobley, H.L.T., Chen, C.-M., Silver, S. and **Rosen, B.P.**, Cloning and expression of R-factor mediated arsenate resistance in *E. coli*. Mol. Gen. Genet. **191**,421-426(1983).
41. Ambudkar, S.V., Zlotnick, G.W. and **Rosen, B.P.**, Calcium efflux from *Escherichia coli*. Evidence for two systems. J. Biol. Chem. **259**,6142-6146 (1984).
42. Borbolla, M.G. and Rosen, B.P., Energetics of sodium efflux from *Escherichia coli*. Arch. Biochem. Biophys. **229**,98-103(1984).
43. Mobley, H.L.T., Silver, S., Porter, F.D. and **Rosen, B.P.**, Homology among arsenate resistance determinants of R factors in *E. coli*. Anti. Ag. Chemo. **25**,157-161(1984).
44. **Rosen, B.P.** and Borbolla, M.G., A plasmid-encoded arsenite pump produces arsenite resistance in *Escherichia coli*. Biochem. Biophys. Res. Commun. **124**,760-765(1984).
45. Chen, C.-M., Mobley, H.L.T. and Rosen, B.P., Separate resistances to arsenate and arsenite(antimonate) encoded by the arsenical resistance operon of R-factor R773. J. Bacteriol. **161**,758-763(1985).
46. Kanazawa, H., Hama, H., **Rosen, B.P.** and Futai, M., Deletion of seven amino acid residues from the γ -subunit of *Escherichia coli* H⁺-ATPase causes total loss of F₁ assembly on membranes. Arch. Biochem. Biophys. **241**,364-370(1985).
47. Nakamura, T., Hsu, C.-m., and **Rosen, B.P.**, Cation/Proton Antiport Systems in *Escherichia coli*. Solubilization and reconstitution of pH gradient-coupled Na⁺/H⁺ and Ca²⁺/H⁺ antiporters. J. Biol. Chem. **261**,678-683(1986).
48. Perlin, D., Slayman, C.W., San Francisco, M.J.D., and **Rosen, B.P.**, H⁺/ATP stoichiometries of the proton-translocating ATPases of *Neurospora crassa* and *Escherichia coli*. Arch. Biochem. Biophys., **248**,53-61(1986).
49. Fronticelli, C., Bucci, E., Zachary, A., and **Rosen, B.P.** Conformational properties of membrane bound fumarate reductase of *Escherichia coli*. Arch. Biochem. Biophys. **249**,579-587(1986).
50. Chen, C.-m., Misra, T., Silver, S., and **Rosen, B.P.**, Nucleotide sequence of the structural genes for an anion pump: the plasmid-encoded arsenical resistance operon. J. Biol. Chem. **261**,15030-15038(1986).
51. Houg, H.-s., Lynn, A.R., and **Rosen, B.P.**, ATP-driven calcium pump in membrane vesicles of *S. sanguis* and *S. faecalis*, J. Bacteriol. **168**,1040-1044(1986).
52. Ambudkar, S.V., Lynn, A.R., Maloney, P.C. and **Rosen, B.P.**, Reconstitution of ATP-dependent calcium transport from streptococci. J. Biol. Chem. **261**, 15596-15600(1986).
53. Gangola, P., and **Rosen, B.P.**, Maintenance of intracellular calcium in *Escherichia coli*. J. Biol. Chem. **262**,12570-12574(1987).

54. **Rosen, B.P.**, Weigel, U., Karkaria, C., and Gangola, P. Molecular characterization of an anion pump. The *arsA* gene product is an arsenite(antimonate)-stimulated ATPase. *J. Biol. Chem.* **263**,3067-3070(1988).
55. San Francisco, M.J.D., Tisa, L.T., and **Rosen, B.P.** Identification of the membrane component of the anion pump encoded by the arsenical resistance operon of R-factor R773. *Molec. Microbiol.* **3**,15-21(1989).
56. Hsu, C.M. and **Rosen, B.P.**, Characterization of the catalytic subunit of an anion pump, *J. Biol. Chem.*, **264**,17349-17354(1989).
57. **Rosen, B.P.**, Hsu, C.M., Karkaria, C.E., Owolabi, J.B., and Tisa, L.S., Molecular analysis of an anion pump. *Phil. Trans. Royal Society Lond. B* **326**, 455-463(1990).
58. Tisa, L.S. and **Rosen, B.P.**, Molecular characterization of an anion pump: the ArsB protein is the membrane anchor for the ArsA protein, *J. Biol. Chem.* **265**,190-194(1990).
59. San Francisco, M.J.D., Hope, C.L., Owolabi, J.B., Tisa, L.S. and **Rosen, B.P.**, Identification of the metalloregulatory element of the plasmid-encoded arsenical resistance operon. *Nucl. Acid. Res.* **18**,619-624(1990).
60. Owolabi, J.B. and **Rosen, B.P.**, Differential mRNA stability controls relative gene expression within the plasmid-encoded arsenical resistance operon. *J. Bacteriol.* **172**,2367-2371(1990).
61. Karkaria, C.E., Chen, C.M. and **Rosen, B.P.**, Mutagenesis of a nucleotide binding site of an anion-translocating ATPase. *J. Biol. Chem.*, 265,7832-7836(1990).
62. **Rosen, B.P.**, Hsu, C.-M., Karkaria, C.E., Kaur, P., Owolabi, J.B. and Tisa, L.S., A plasmid-encoded anion-translocating ATPase. *Biochem. Biophys. Acta* **1018**,203-205(1990).
63. Tisa, L.S. and **Rosen, B.P.** Plasmid-encoded transport mechanisms, *J. Bioenerg. Biomemb.*, **22**,493-507(1990).
64. **Rosen, B.P.**, Weigel, U., Monticello, R.A., and Edwards, B.P.F. Molecular Characterization of an anion pump: purification of the ArsC protein. *Arch. Biochem. Biophys.* **284**,381-385(1991).
65. Hsu, C.M., Kaur, P., Karkaria, C.E., Steiner, R.F., and **Rosen, B.P.** Substrate-induced dimerization of the ArsA protein, the catalytic component of an anion-translocating ATPase. *J. Biol. Chem.* **266**,2327-2332(1991).
66. Karkaria, C.E., Steiner, R.F., and **Rosen, B.P.** Ligand interactions in the ArsA protein, the catalytic component of an anion-translocating adenosinetriphosphatase. *Biochemistry* **30**,2625-2628(1991).
67. Karkaria, C.E. and **Rosen, B.P.** Trinitrophenyl-ATP binding to the wild type and mutant ArsA proteins. *Arch. Biochem. Biophys.* **288**,107-111(1991).
68. Wu, J.H. and **Rosen, B.P.** Regulation of the *ars* operon: the *arsR* gene product is a negative regulatory protein. *Molecular Microbiology* **5**,1331-1336(1991).
69. Wu, J.H., Tisa, L.S. and **Rosen, B.P.** Membrane topology of the ArsB protein, the membrane subunit of an anion-translocating ATPase. *J. Biol. Chem.* **267**,12570-12576(1992).
70. Steffes, C., Ellis, J., Wu, J.H. and **Rosen, B.P.** The *lysP* gene encodes the lysine specific permease. *J. Bacteriol.* **174**, 3242-3249(1992).

71. Kaur, P. and **Rosen, B.P.** Mutagenesis of the second putative nucleotide binding site of an anion-translocating ATPase. *J. Biol. Chem.* **267**, 19272-19277(1992).
72. Dou, D., Owolabi, J.B., Dey, S. and **Rosen, B.P.** Construction of a chimeric ArsA-ArsB protein for overexpression of the oxyanion-translocating ATPase. *J. Biol. Chem.* **267**,25768-25775(1992).
73. Wu, J.H. and **Rosen, B.P.** Metalloregulated expression of the *ars* operon. *J. Biol. Chem.* **268**,52-58(1993).
74. Kaur, P. and **Rosen, B.P.** Complementation between nucleotide binding domains in an anion translocating ATPase. *J. Bacteriol.*, **175**,351-357(1993).
75. Wu, J.H. and **Rosen, B.P.** The *arsD* gene encodes a second *trans*-acting regulatory protein of the plasmid-encoded arsenical resistance operon. *Molec. Microbiol.*, **8**,615-623(1993).
76. Ksenzenko, M.Y., Kessel, D.H. and **Rosen, B.P.** Reaction of the ArsA ATPase with 2-(4'-maleimidylanilino)naphthalene-6-sulfonate. *Biochemistry*, **32**, 13362-13368(1993).
77. Kaur, P. and **Rosen, B.P.** In vitro assembly of an anion-stimulated ATPase from peptide fragments. *J. Biol. Chem.* **269**, 9698-9704(1994).
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79. Dey, S. Dou, D., Tisa, L.S. and **Rosen, B.P.** Interaction of the catalytic and the membrane subunits of an oxyanion-translocating ATPase. *Arch. Biochem. Biophys.* **311**,418-424(1994).
80. Dou, D., Dey, S. and B.P. Rosen. A functional chimeric membrane subunit of an ion-translocating ATPase. *Antonie van Leeuwenhoek* **65**,359-368(1994).
81. Kaur, P. and **Rosen, B.P.** Identification of the site of $-[^{32}\text{P}]\text{ATP}$ adduct formation in the ArsA protein. *Biochemistry* **33**,6456-6461(1994).
82. Gladysheva, T.B., Oden, K.L. & **Rosen, B.P.** Properties of the arsenate reductase of plasmid R773. *Biochemistry* **33**,7287-7293(1994).
83. Shi, W.P., Wu, J.H. and **Rosen, B.P.** Identification of a putative metal binding site in a new family of metalloregulatory proteins. *J. Biol. Chem.* **269**,19826-19829(1994).
84. Doyle, M.A., deMel, V.S.J., Oden, K.L., Martin, P.D., **Rosen, B.P.** and Edwards, B.F.P., Preliminary X-ray diffraction analysis of crystals of the ArsC protein from the *E. coli* arsenic resistance plasmid R773, *J. Mol. Biol.* **242**,701-702 (1994).
85. Dey, S., Dou, D. and **Rosen, B.P.** ATP-dependent transport in everted membrane vesicles of *Escherichia coli*. *J. Biol. Chem.* **269**,25442-25446(1994).
86. Dey, S., Papadopoulou, B. Roy, G., Grondin, K., Dou, D., **Rosen, B.P.** and Ouellette, M. High level arsenite resistance in *Leishmania tarentolae* is mediated by an active extrusion system. *Molec. Biol. Parasitol.* **67**,49-57(1994).
87. Papadopoulou, B., Roy, G., Dey, S., **Rosen, B.P.** and Ouellette, M. Contribution of *Leishmania* P-glycoprotein related *ltgppA* to oxyanion resistance. *J. Biol. Chem.* **269**,11980-11986 (1994).
88. Dey, S. and **Rosen, B.P.** Dual mode of energy coupling by the oxyanion-translocating ArsB protein. *J. Bacteriol.* **177**,385-389(1995).

89. Carlin, A., Shi, W., Dey, S. and **Rosen, B.P.** The *ars* operon of *Escherichia coli* confers arsenical and antimonial resistance. *J. Bacteriol.* **177**,981-986(1995).
90. Bhattacharjee, H., Ksenzenko, M.Y., Li, J. and **Rosen, B.P.** The role of cysteinyl residues in metalloactivation of an oxyanion-translocating ATPase. *J. Biol. Chem.* **270**,11245-11250(1995).
91. Ellis, J., Carlin, A., Steffes, C., Wu, J., Liu, J. and **Rosen, B.P.** Topological analysis of the lysine specific permease. *Microbiology* **141**,1927-1935(1995).
92. Liu, J., Gladysheva, T.B., Lee, L. and **Rosen, B.P.** Identification of an essential cysteinyl residue in the ArsC arsenate reductase of plasmid R773. *Biochemistry* **34**, 13572-13476(1995).
93. Zhou, T, Liu, S. and **Rosen, B.P.** Interaction of substrate and effector binding sites in the ArsA ATPase. *Biochemistry* **34**,13622-13626(1995).
94. Xu, C., Shi, W. and **Rosen, B.P.** The chromosomal *arsR* gene of *Escherichia coli* encodes a trans-acting metalloregulatory protein. *J. Biol. Chem.*, **271**,2427-2432(1996).
95. Chen, Y., Dey, S. and **Rosen, B.P.** Soft metal-thiol chemistry is not involved in transport of arsenite by the Ars pump. *J. Bacteriol.* **178**,911-913(1996).
96. Shi, W.P., Dong, J., Scott, R.A. and **Rosen, B.P.** The role of arsenic-thiol interactions in metalloregulation of the *ars* operon. *J. Biol. Chem.* **271**,9291-9297(1996).
97. Wang, Z., Dey, S., **Rosen, B.P.** and Rossman, T.G. Efflux mediated resistance to arsenicals in arsenic-resistant and -hypersensitive Chinese hamster cells. *Toxicol. Appl. Pharmacol.* **137**,112-119 (1996).
98. Dey, S., Ouellette, M., Lightbody, J., Papadopoulou B. and **Rosen, B.P.** An ATP-dependent As(III)-glutathione transport system in membrane vesicles of *Leishmania tarentolae*. *Proc. Natl. Acad. Sci. USA* **93**,2192-2197(1996).
99. Mukhopadhyay, R., Dey, S. Xu, N., Gage, D., Lightbody, J., Ouellette, M. and **Rosen, B.P.** Trypanothione overproduction and resistance to antimonials and arsenicals in *Leishmania*. *Proc. Natl. Acad. Sci. USA* **93**,10383-10387(1996).
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101. Bhattacharjee, H. and **Rosen, B.P.** Spatial proximity of Cys113, Cys172 and Cys422 in the metalloactivation domain of the ArsA ATPase. *J. Biol. Chem.*, **271**,24465-24470(1996).
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103. Gladysheva, T., Liu, J. and **Rosen, B.P.** His8 lowers the pKa of the essential Cys12 residue of the ArsC arsenate reductase of plasmid R773 *J. Biol. Chem.* **271**,33256-33260(1996).
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71. Liu, Z., Rensing, C. and **Rosen, B.P.** Transport systems for arsenic, antimony, cadmium, lead and zinc, in *Metals and Cells, Encyclopedia of Inorganic and Bioinorganic Chemistry*, ed. V. Culotta and R.A. Scott, pp. 429-442 (2013).
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86. Li, Y.P., Ben Fekih, I, Fru, E.C., Moraleda-Munoz, A., Li, X., **Rosen, B.P.**, Yoshinaga, M. and Rensing, C. Antimicrobial activity of metals and metalloids. *Annu. Rev. Microbiol.* in press (2021).

INVITED PRESENTATIONS (2009-2021)

1. ***Pathways of arsenic uptake and detoxification.*** Hong Kong University, 2/8-13/09.
2. ***Aquaglyceroporins: ancient channels for metalloids.*** Environmental Health Research Group and the Cancer Institute, Queens University, Kingston, ON, Canada, 4/2/09.
3. ***Biotransformation of arsenic by a Yellowstone thermoacidophilic eukaryotic alga,*** American Society for Microbiology Annual Meeting, Philadelphia, PA, 5/17-21/09.
4. ***Aquaglyceroporins: ancient channels for metalloids.*** 2nd Georgian Bay International Conference on Bioinorganic Chemistry (CanBIC-II), Parry Sound, Ontario, Canada, 5/26-29/09.
5. ***Biotransformation of arsenic by a Yellowstone thermoacidophilic eukaryotic alga,*** 10th International Conference on the Biogeochemistry of Trace Elements, Chihuahua, Mexico, 7/22-25/09.
6. ***Evolution of metal(loid) binding sites in transcriptional regulators of resistance ATPases.*** Japan Biochemical Society Symposium on ATPases, Morioka, Japan, 7/ 25-30/09. Plenary Lecturer.

7. **Structure of the ArsD arsenic chaperone.** Session chair, International Congress of Bioinorganic Chemistry (ICBIC14), Nagoya, Japan, 7/ 25-30/09.
8. **Evolution of metal(loid) binding sites in transcriptional repressors.** Gordon Conference on Cell Biology of Metals, Salve Regina University, Newport, RI, 08/9-14/09.
9. **Pathways of arsenic uptake and detoxification.** Institute of Urban Environment, Chinese Academy of Sciences, Xiamen, China, 10/28/09.
10. **Pathways of arsenic uptake and detoxification.** Institute of Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China, 10/30/09.
11. **Structure and function of the ArsD As(III) metallochaperone.** FASEB Conference on Transport ATPases, Snowmass, CO, 6/6 – 6/11/10.
12. **Structure and function of the ArsD As(III) metallochaperone.** FASEB Conference on Transport ATPases, Biometals 2010, Tuscon, AZ 7/25 – 7/30/10.
13. **Pathways of arsenic uptake and detoxification.** Department of Biological Sciences, Florida International University, 9/27/10.
14. **ArsD: an arsenic chaperone for the As(III)-translocating ArsAB ATPase.** Department of Medical Technology, Chung Shan Medical University, Taichung, Taiwan, 10/29/10.
15. **ArsD: an arsenic chaperone for the As(III)-translocating ArsAB ATPase..** Department of Biology, National Sun-Yat Sen University, Kaohsiung, Taiwan, 11/01/10.
16. **Structure and function of the ArsD As(III) metallochaperone.** AsBIC V, Kaohsiung, Taiwan, 11/3 – 11/10/10.
17. **ArsD: an arsenic chaperone for the As(III)-translocating ArsAB ATPase.** Taiwan Medical University, 11/05/10.
18. **Biochemistry of arsenic metabolism.** Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, 4/2/11.
19. **Parallel pathways of arsenic detoxification.** Institute of Urban Environment, Chinese Academy of Sciences, Xiamen, 4/7/11.
20. **The arsenic biogeochemistry: microbial pathways of metalloid transport, metabolism and detoxification.** 11th International Conference on the Biogeochemistry of Trace Elements, Florence, Italy, 7/3 -7/11. Plenary Lecturer.
21. **Structure and function of the As(III) S-adenosylmethionine methyltransferase.** 3rd Georgian Bay International Conference on Bioinorganic Chemistry (CanBIC-II), Parry Sound, Ontario, Canada, 5/31-6/04/11.
22. **Pathways of antimony uptake, efflux and detoxification.** Society for Industrial Microbiology Annual Meeting, New Orleans, 7/24/28/11.
23. **The arsenic biogeochemistry: microbial pathways of metalloid transport, metabolism and detoxification.** Institut für Mikrobiologie, Martin Luther University, Halle, Germany, 8/19/11.
24. **Biochemistry of antimony detoxification.** 2nd International Workshop on Antimony in the Environment, Jena, Germany, 8/21-24/11, Keynote speaker.
25. **The arsenic biogeochemistry: pathways of metalloid transport, metabolism and detoxification.** 17th Arsenic Symposium of Japan. Tsukuba, Japan, 11/19-21/11. Plenary Lecturer.

26. ***The arsenic methylation pathway.*** 95th Canadian Chemistry Conference and Exhibition, Calgary, Canada, 5/26-30/12.
27. ***The arsenic methylation pathway.*** 8th International Biometals Symposium, Brussels, Belgium in 7/15-19/12.
28. ***The arsenic methylation pathway.*** 4th International Congress on Arsenic in the Environment, *Understanding the Geological-Medical Interface of Arsenic*, Cairns, Australia, 7/22-27/12. Keynote Speaker.
29. ***The arsenic methylation pathway.*** Institute of Urban Environment, Chinese Academy of Sciences, Xiamen, China, 08/07/12.
30. ***The arsenic biogeochemistry: microbial pathways of metalloid transport, metabolism and detoxification.*** Taiwan Medical University, 08/013/12.
31. ***The arsenic biogeochemistry: microbial pathways of metalloid transport, metabolism and detoxification.*** Chang Gung Medical University, 08/014/12.
32. ***The arsenic methylation pathway.*** 6th Asian Biological Inorganic Chemistry Conference (AsBIC-VI), Hong Kong, 11/5-8/12.
33. ***The arsenic methylation pathway.*** 9th International Symposium on Persistent Toxic Substances (9th ISPTS), Miami, FL, 10/23-27/12.
34. ***The arsenic methylation pathway.*** Metals Symposium, Duquesne University, Pittsburgh, PA, 12/7/12.
35. ***The arsenic biogeochemistry.*** 12th International Conference on the Biogeochemistry of Trace Elements (ICOBTE). Athens, GA, 6/16-20/13.
36. ***Biochemistry and structural biology of arsenic biotransformations.*** Department of Microbiology, University of Georgia, 6/17/13.
37. ***Biochemistry and structural biology of arsenic biotransformations.*** Department of Environmental Microbiology and Biotechnology, University of Copenhagen, Denmark, 7/19/13.
38. ***Biochemistry and structural biology of arsenic biotransformations.*** 16th International Congress of Bioinorganic Chemistry (ICBIC16), Grenoble, France, 7/22-26/13.
39. ***The arsenic biogeochemistry.*** 10th International Symposium on Persistent Toxic Substances (ISPTS), University of Alberta, Edmonton, Alberta, Canada, 8/13-17/13. Keynote speaker.
40. ***The arsenic biogeochemistry.*** 12th International Federação das Sociedades de Biologia Experimental, Caxambu, Brazil, 8/21-24/13.
41. ***The arsenic biogeochemistry.*** Departamento de Fisiologia e Biofísica, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil, 8/15/13.
42. ***The arsenic biogeochemistry.*** 21st International Symposium on Environmental Biogeochemistry (ISEB21), Wuhan, China, 10/13-18/13. Keynote speaker.
43. ***The arsenic biogeochemistry.*** Institute of Urban Environment, Chinese Academy of Sciences, Xiamen, China, 10/18/13.
44. ***The arsenic biogeochemistry.*** Chung Shan Medical University, Taichung, Taiwan, 10/21/13.
45. ***The arsenic biogeochemistry.*** Taiwan Medical University, Taipei, Taiwan, 10/22/13.
46. ***Molecular mechanisms of arsenic biotransformations,*** Department of Biochemistry, University of Miami Miller School of Medicine, 2/21/14.

47. ***Molecular mechanisms of arsenic biotransformations***, Arsenic workshop, NIEHS, 3/4/14.
48. ***The arsenic biogeochemical cycle***. 5th International Congress on Arsenic in the Environment, Buenos Aires, Argentina, 5/12/14.
49. ***Arsenic and antibiotics***. 4th International Meeting on Pharmacy and Pharmaceutical Sciences, Istanbul, Turkey, 9/18-21/14,
50. ***Molecular mechanisms of arsenic biotransformations***, Department of Biology, Oakland University, Rochester, MI 10/7/14.
51. ***My life with arsenic***. Barry Rosen, Guest of Honor, 70th Birthday symposium, Institute of Urban Environment, Chinese Academy of Sciences, Xiamen, China, 12/3/5/14.
52. ***Pathways of organoarsenic biosynthesis and detoxification***. 13th International Conference on the Biogeochemistry of Trace Elements (ICOBTE). Fukuoka, Japan, 7/12-18/15.
53. ***Pathways of organoarsenic biosynthesis and detoxification***. 1st Annual Meeting of the Argentine Society for Biochemistry and Molecular Biology. Mar del Plata, Argentina, 11/3-8/15.
54. ***Pathways of organoarsenic biosynthesis and detoxification***. Department of Biochemistry, Dartmouth University, 5/7/16.
55. ***The mechanism of human arsenic methylation***. 6th International Congress on Arsenic in the Environment, Stockholm, Sweden, 6/19-23/16. Keynote lecturer.
56. ***Pathways of organoarsenic biosynthesis and detoxification***. Institute of Urban Environment, Chinese Academy of Sciences, Xiamen, China, 09/13/16.
57. ***Pathways of organoarsenic biosynthesis and detoxification***. Fujian Agriculture and Forestry University, Fuzhou, China, 09/16/16.
58. ***Pathways of organoarsenic biosynthesis and detoxification***. Nanjing Agricultural University, Nanjing, China, 09/20/16.
59. ***The mechanism of human arsenic methylation***. Department of Biochemistry, University of Miami, 9/23/16.
60. ***The mechanism of human arsenic methylation***. 9th Metal Toxicity and Carcinogenesis Meeting. Lexington, KY, 10/16/16. Keynote lecturer.
61. ***Arsenic biotransformations and new arsenic antibiotics***. Department of Pharmaceutical Sciences, Wayne State University School of Pharmacy, 01/11/17.
62. ***Arsenic biotransformations and new arsenic antibiotics***. Department of Biology, Oakland University State University School of Pharmacy, 01/11/17.
63. ***Molecular mechanism of human arsenic methylation***. Taipei Medical University, Taipei, Taiwan. 6/25/18.
64. ***Molecular mechanism of human arsenic methylation***. Yuanpei University of Medical Technology, Taipei, Taiwan. 6/27/18.
65. ***Mechanism of As(III) S-adenosylmethionine methyltransferase and the consequences of human polymorphisms***. Chung Shan Medical University, Taichung, Taiwan, 6/28/18.
66. ***Mechanism of As(III) S-adenosylmethionine methyltransferase and the consequences of human polymorphisms***. National Sun Yat-Sen University, Kaohsiung, Taiwan, 6/29/18.

67. ***Mechanism of As(III) S-adenosylmethionine methyltransferase and the consequences of human polymorphisms.*** 7th International Congress on Arsenic in the Environment, Beijing, China, 7/1-6/18. Plenary lecturer.
68. ***Molecular mechanism of human arsenic methylation.*** Research Center for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences. 7/3/18.
69. ***Mechanism of As(III) S-adenosylmethionine methyltransferase and the consequences of human polymorphisms.*** Institute of Botany, Chinese Academy of Sciences, Beijing, China, 7/5/18.
70. ***Mechanism of As(III) S-adenosylmethionine methyltransferase and the consequences of human polymorphisms.*** NIEHS International Workshop of Arsenic and the Microbiome, Bozeman, MT, 7/17-21/18.
71. ***ArsI, a C-Ar lyase for degradation of environmental organoarsenicals.*** 256th American Chemical Society (ACS) National Meeting, Boston, MA, 8/19-23/18. (Symposium organizer)
72. ***Novel biosensor for organoarsenical herbicides and antimicrobial growth promoters.*** 256th American Chemical Society (ACS) National Meeting, Boston, MA, 8/19-23/18.
73. ***The antibiotic action of methylarsenite is an emergent property of microbial communities.*** Department of Biology/Microbiology, South Dakota State University, 3/30/19.
74. ***Arsenic antibiotics: old and new.*** 15th International Conference on the Biogeochemistry of Trace Elements (ICBOTE), Nanjing, China, 5/5-9/19. (Keynote Speaker).
75. ***Arsenic antibiotics: old and new.*** Department of Environmental Medicine, NYU Langone Health, NYU School of Medicine, 10/11/19.
76. ***Arsenic antibiotics: old and new.*** Department of Biochemistry and Molecular Biology, Uniformed Services University of the Health Sciences, the F. Edward Hébert School of Medicine, 12/2/19.
77. ***Arsenic antibiotics: old and new.*** Department of Environmental Health Sciences, Columbia University Superfund Research Program, Mailman School of Public Health, Columbia University, 12/9/19.
78. ***Arsinothricin, an arsenic-containing non-proteinogenic amino acid analog of glutamate, is a broad-spectrum antibiotic.*** 8th International Congress & Exhibition on Arsenic in the Environment (As2020), Wageningen, The Netherlands, 6/15-18/20. (Keynote Speaker) (postponed until 2021 due to pandemic).

UNIVERSITY SERVICE

At University of Maryland:

- Chairman, Graduate School Committee on New Programs and Courses
- Chairman, School of Medicine Biostatistics Review Committee
- Chairman, University-Wide Biochemistry Coordinating Committee
- Chairman, Life & health insurance Award Selection Committee
- Genetics/Immunology/Microbiology Study Panel
- Departmental Review Committee, Department of Microbiology

- Elected Member, Graduate Council
- Elected Member, Faculty Senate
- Alternate Member, School of Medicine Council
- Task Force for Funding Medical Curriculum Change
- Search Committees:
 - Grollman Chair of Molecular Biology
 - Baltimore Cancer Center, Molecular Biology Faculty
- Department of Biological Chemistry, Molecular Biology Faculty
- Departmental Committees
 - Chairman, Graduate Program Committee
 - Promotions and Tenure Committee
 - Budget Committee

At Wayne State University:

- Chairman, Basic Science Chairmen Group, 1989-90
- Medical Student Promotions Review Committee, 1987-89, 93-94
- Review Committee, ACS Institutional Grants, 1989, 1990
- Department of Psychiatry Internal Review Committee, 1990
- Steering Committee, Program in Molecular Oncology, 1990-1991
- Review Committee, Molecular Oncology Seed Grants, 1990-1991
- Cancer Institute Program Advisory Committee, 1990-1991
- Dean's Committee, Veterans Affairs Medical Center, 1990-1994
- Liaison Committee on Medical Education Review Committee, 1991
- Internal Review Committee, Department of Surgery, 1992
- Internal Review Committee, Department of Internal Medicine, 1992
- Chairman, Internal Review Committee, Department of Biology, 1992
- Research Committee, Department of Internal Medicine, 1992-1994
- AIDS Research Advisory Committee, School of Medicine, 1992-1994
- Strategic Planning Committee, School of Medicine, 1994
- Department of Physiology, Review Advisory Panel, 1994
- Department of Neurology, Review Advisory Panel, 1996
- Department of Surgery, Review Advisory Panel, 1998
- Research Committee, Veterans Affairs Medical Center, 1997-1999
- WSU Distinguished Faculty Fellowship Committee, 1998
- Department of Pediatrics, Review Advisory Panel, 1998
- Library Committee, WSU Sch.Medicine Faculty Senate, 1999-present.
- Advisory Committee, WSU Institute for Drug Design, 2000-2003.
- Research Advisory Committee, WSU School of Medicine, 2000-present.
- Chairman, Basic Science Chairmen Group, 2002-2003.
- Wayne State Representative to China-United States Biochemistry Admissions (CUSBA) Program, Beijing, China, 2004.
- Advisory Board, Center for Molecular Medicine and Genetics, 2004- present.
- Board Member, University Physician Group, 2007
- Vice President, Wayne State University Academy of Scholars, 2007

- Chairman, Basic Science Chairs Group, 2007-08
- President, Wayne State University Academy of Scholars, 2008-09

At Florida International University:

- Search Committee, Department of Chemistry and Biochemistry, 2010
- Sabbatical Committee, 2010, 2011
- University Strategic Planning Committee, 2010
- University Research Advisory Council, 2010 –
- Faculty Search Committee, HWCOM 2010 -
- Biochemistry Graduate Program Advisory Committee, 2010 -
- Search Committee, Graduate School Dean, 2011
- Search Committee, Director, Environmental Health and Safety, 2011
- University Graduate School Advisory Committee, 2011 – 2016
- Chair, Search Committee, Chair of Human and Molecular Genetics, 2013
- Associate Dean for Basic Research and Graduate Programs, 2009-2016
- APT Subcommittee for Promotions and Tenure, 2017-
- Dean's Research Task Force, HWCOM 2020-