Amy C. Rosenzweig

EDUCATION

Amherst College, B. A. in Chemistry, *Summa Cum Laude*, 1988
Massachusetts Institute of Technology, Ph. D. in Inorganic Chemistry, 1994

PROFESSIONAL APPOINTMENTS

Weinberg Family Distinguished Professor of Life Sciences, Northwestern University, 2012-present
Professor, Departments of Molecular Biosciences and of Chemistry, Northwestern University, 2005-present
Irving M. Klotz Research Professor, Northwestern University, 2004-2006
Associate Professor, Departments of Biochemistry, Molecular Biology, and Cell Biology and of Chemistry, Northwestern University, 2002-2005
Assistant Professor, Departments of Biochemistry, Molecular Biology, and Cell Biology and of Chemistry, Northwestern University, 1997–2002
Harvard Medical School and Dana Farber Cancer Institute, NIH Postdoctoral Fellowship, 1994–1997

RESEARCH INTERESTS

Structural biology and bioinorganic chemistry, metal uptake and transport, oxygen activation by metalloenzymes, membrane proteins

HONORS AND AWARDS

Elected Fellow, American Academy of Arts and Sciences, 2014
Royal Society of Chemistry Joseph Chatt Award, 2014
Ivano Bertini Award, 2014
Fletcher Undergraduate Research Faculty Award, 2014
Elected Fellow, American Association for the Advancement of Science, 2007
American Chemical Society Nobel Laureate Signature Award for Graduate Education, 2006
Honorary Degree, Doctor of Science, Amherst College, 2005
MacArthur Fellow, 2003
Camille Dreyfus Teacher Scholar Award, 2001
David and Lucile Packard Fellow, 1999
National Institutes of Health Postdoctoral Fellowship, 1994-1997
General Electric Predoctoral Fellowship, 1988-1989
Howard Waters Doughty Prize for best thesis in Chemistry, 1988
White Prize for excellence in Chemistry, 1987

PROFESSIONAL ACTIVITIES

Societies

American Chemical Society
American Crystallographic Association
Society of Biological Inorganic Chemistry
American Association for the Advancement of Science
American Society for Biochemistry and Molecular Biology

Other Professional Activities

Co-organizer, Dioxygen Activation Chemistry of Metalloenzymes and Models Symposium, Pacifichem 2015, December 15-20, 2015
Member, Stanford Synchrotron Radiation Light Source Structural Molecular Biology Advisory

Committee (SMBAC), 2014-present
Scientific Advisory Board of the Cluster of Excellence "Unifying Concepts in Catalysis, UniCAT," Berlin, Germany, 2013-2017
Elected Councilor, Society for Biological Inorganic Chemistry, 2013-2017
Founding Member and Contributor, Methanotroph Commons Website (www.methanotroph.org)
Chair, Metals in Biology Gordon Research Conference, 2013
Vice Chair, Metals in Biology Gordon Research Conference, 2012
Editorial Advisory Board of the *Journal of Inorganic Biochemistry*, 2010-2014
Editorial Advisory Board of the *Journal of Biological Inorganic Chemistry*, 2009-2011
Editorial Advisory Board of *Inorganic Chemistry*, 2009-2012
Scientific Organizing Committee for the 8th International Copper Meeting, Alghero, Sardinia, September 30-October 5, 2012
Co-organizer, Dioxygen Activation Chemistry and Catalytic Oxidation Reactions Symposium, Pacifichem 2010, December 15-20, 2010
Co-editor, *Methods in Enzymology* volumes 494 and 495, *Methods in Methane Metabolism*, 2011
Elected Chair, Bioinorganic Subdivision, American Chemical Society, 2009
Scientific Organizing Committee for the 6th International Copper Meeting, Alghero, Sardinia, October 11-15, 2008
Co-Editor, Bioinorganic Chemistry section of *Current Opinion in Chemical Biology*, April 2006 issue
Elected Councilor, Division of Biological Chemistry, American Chemical Society, 2005-2008
Editorial Advisory Board of the *Journal of Biological Inorganic Chemistry*, 2004-2006
Scientific Organizing Committee for the 4th International Meeting on Copper Homeostasis and its Disorders: Molecular and Cellular Aspects, Ischia, Italy, October 22-28, 2004
Co-organizer, Bader Award Symposium, 227th National Meeting of the American Chemical Society, Anaheim, CA, March 28 – April 1, 2004
Elected member, Advanced Photon Source Users Organization Steering Committee (APSUO), 2000-2003
Local chair, Midwest Enzyme Chemistry Conference, 2002
Co-organizer, Biological Crystallography Workshop, 2001 APS Users Meeting

Peer-Review

Member, Proposal Review Panel, Stanford Synchrotron Radiation Light Source, 2010-2015
Ad hoc reviewer for MSFA Study Section, Center for Scientific Review, National Institutes of Health, February 2015
Ad hoc reviewer for MBBP Study Section, Center for Scientific Review, National Institutes of Health, October 2013
Member, NSF CLP Review Panel, March 2013
Member, Special Emphasis Panel, Center for Scientific Review, National Institutes of Health, May 2012
Ad hoc reviewer, Program Project Special Emphasis Panel, Center for Scientific Review, National Institutes of Health, November 2011
Member, MFSA Study Section, Center for Scientific Review, National Institutes of Health, 2006-2010
Ad hoc reviewer for Roadmap Initiative for Membrane Proteins, Center for Scientific Review, National Institutes of Health, June 2005
Ad hoc reviewer for the Metallobiochemistry Study Section, Center for Scientific Review, National Institutes of Health, February 2004, October 2004, February 2006
Ad hoc reviewer for the Nutritional Chemistry Study Section, Center for Scientific Review, National Institutes of Health, October 2003
Grant proposal review for the National Science Foundation, Department of Energy, Department of Agriculture, American Chemical Society Petroleum Research Fund, Research Corporation, Biotechnology and Biological Sciences Research Council (BBSRC, UK), Marsden Fund (Royal Society of New Zealand), Alberta Heritage Foundation for Medical Research (Canada), Nebraska EPSCoR
Macromolecular crystallography proposal review panel (MC PRP) at the Advanced Photon Source,

2003-2005

Manuscript review for *Science, Nature, Nature Chem.*, *Nature Chem. Biol.*, *Structure*, *Proc. Natl. Acad. Sci. USA, J. Am. Chem. Soc., Biochemistry, Nature Struct. Molec. Biol, Cell, J. Biol. Inorg. Chem., Inorg. Chem., Structure, J. Mol. Biol.*, *J. Biol. Chem.*, *Acc. Chem. Res., J. Bacteriol., Metallomics, FEBS Lett., FEMS Microbiol. Rev., FEMS Microbiol. Lett., Eur. J. Inorg. Chem., Molecular Cell, EMBO J., Environ. Microbiol., PLoS ONE, Biochem. Biophys. Acta, Biochem. J., J. Inorg. Biochem., TIBS, Proteins, Nat. Prod. Rep., Trends Microbiol., Dalton Trans., PloS One, Biochimie, Frontiers Microbiol.*

PUBLICATIONS (117 total)

Rosenzweig, A. C. Breaking methane. *Nature* **2015**, *518*, 309-310.

Culpepper, M. A.; Rosenzweig, A. C. Structure and protein-protein interactions of methanol dehydrogenase from *Methylococcus capsulatus* (Bath). *Biochemistry* **2014**, *53*, 6211-6219.

Sirajuddin, S.; Rosenzweig, A. C. Protocols for structural and functional analysis of particulate methane monooxygenase from *Methylocystis* species strain Rockwell (ATCC 49242). *Hydrocarbon and Lipid Microbiology Protocols* (T. J. McGenity et al, eds.) **2014**, Berlin: Springer-Verlag,10.1007/8623_2014_22.

Culpepper, M. A.; Cutsail, G. E., III; Gunderson, W. A.; Hoffman, B. M.; Rosenzweig, A. C. Identification of the valence and coordination environment of the particulate methane monooxygenase copper centers by advanced EPR characterization. *J. Am. Chem. Soc.* **2014**, *136*, 11767-11775.

Sirajuddin, S.; Barupala, D.; Helling, S.; Marcus, K.; Stemmler, T. L.; Rosenzweig, A. C. Effects of zinc on particulate methane monooxygenase activity and structure. *J. Biol. Chem.* **2014**, *289*, 21782-21794.

Silakov, A.; Grove, T. L.; Radle, M. I.; Bauerle, M. R.; Green, M. T.; Rosenzweig, A. C.; Boal, A. K.; Booker, S. J. Characterization of a cross-linked protein-nucleic acid substrate radical in the reaction catalyzed by RlmN. *J. Am. Chem. Soc.* **2014**, *136*, 8221-8228.

Smith, A. T.; Smith, K. P.; Rosenzweig, A. C. Diversity of the metal-transporting P_{1B}-type ATPases. *J. Biol. Inorg. Chem.* **2014**, *6*, 947-960.

Austin, R. N.; Kenney, G. E.; Rosenzweig, A. C. Perspective: what is known, and not known, about the connections between alkane oxidation and metal uptake in alkanotrophs in the marine environment. *Metallomics* **2014**, *6*, 1121-1125.

Lawton, T. J.; Ham, J.; Sun, T.; Rosenzweig, A. C. Structural conservation of the B subunit in the ammonia monooxygenase/ particulate methane monooxygenase superfamily. *Proteins* **2014**, *82*, 2263-2267.

Chang, W.-C.; Guo, Y.; Wang, C.; Butch, S. E.; Rosenzweig, A. C.; Boal, A. K.; Krebs, C.; Bollinger, J. M., Jr. Mechanism of the C5 stereoinversion reaction in the biosynthesis of carbapenam antibiotics. *Science* **2014**, *343*, 1140-1144.

Makhlynets, O.; Boal, A. K.; DeLacy, V. R.; Kitten, T.; Rosenzweig, A. C.; Stubbe, J. *Streptococcus sanguinis* class Ib ribonucleotide reductase: high activity with both iron and manganese cofactors and structural insights. *Biochemistry* **2014**, *289*, 6259-6272.

Zielazinski, E. L.; González-Guerrero, M.; Subramanian, P.; Stemmler, T. L.; Argüello, J. M.; Rosenzweig, A. C. *Sinorhizobium meliloti* Nia is a P_{1B-5}-ATPase expressed in the nodule during plant symbiosis and is involved in Ni and Fe transport. *Metallomics* **2013**, *5*, 1614-1623.

Dassama, L. M. K.; Krebs, C.; Bollinger, Jr., J. M.; Rosenzweig, A. C.; Boal, A. K. Structural basis for

assembly of the Mn/Fe cofactor in the class Ic ribonucleotide reductase from *Chlamydia trachomatis*. *Biochemistry* **2013**, *52*, 6424-6436.

Lawton, T. J.; Bowen, K. E.; Sayavedra-Soto, L. A.; Arp, D. J.; Rosenzweig, A. C. Characterization of a nitrite reductase involved in nitrifier denitrification. *J. Biol. Chem.* **2013**, *288*, 25575-25583.

Rosenzweig, A. C. Put a ring on it. *Nature Chem. Biol.* **2013**, *9*, 220-221.

Kenney, G. E.; Rosenzweig, A. C. Genome mining for methanobactins. *BMC Biol.* **2013**, *11*, 17.

Smith, S. M.; Rosenzweig, A. C. Particulate methane monooxygenase. In *Encyclopedia of Metalloproteins* (V.N. Uversky, R.H. Kretsinger, E.A. Permyakov, eds.), **2013**, Springer, Heidelberg, Germany,1663-1669.

Boal, A. K.; Rosenzweig, A. C. A radical route for nitrogenase carbide insertion. *Science* **2012**, *337*, 1617-1618.

Zielazinski, E. L.; Cutsail, G. E., III; Hoffman, B. M.; Stemmler, T. L.; Rosenzweig, A. C. Characterization of a cobalt-specific P_{1B}-ATPase, *Biochemistry*, **2012**, *51*, 7891-7900.

Rosenzweig, A. C.; Argüello, J. M. Toward a molecular understanding of metal transport by P_{1B}-type ATPases. *Curr. Top. Membr.* **2012**, *69*, 113-136.

Culpepper, M. A.; Rosenzweig, A. C. Architecture and active site of particulate methane monooxygenase. *Crit. Rev. Biochem. Mol. Biol.* **2012**, *47*, 483-492.

Culpepper, M. A.; Cutsail, G. E., III; Hoffman, B. M.; Rosenzweig, A. C. Evidence for oxygen binding at the active site of particulate methane monooxygenase. *J. Am. Chem. Soc.* **2012**, *134*, 7640-7643.

Boal, A. K.; Cotruvo, J. A., Jr.; Stubbe, J.; Rosenzweig, A. C. The dimanganese(II) site of *Bacillus subtilis* class Ib ribonucleotide reductase. *Biochemistry* **2012**, *51*, 3861-3871.

Dassama, L. M. K.; Boal, A. K.; Krebs, C.; Rosenzweig, A. C.; Bollinger, J. M., Jr. Evidence that the β subunit of *Chlamydia trachomatis* ribonucleotide reductase is active with the manganese ion of its manganese(IV)/iron(III) cofactor in site 1. *J. Am. Chem. Soc.* **2012**, *134*, 2520-2523.

Kenney, G. E.; Rosenzweig, A. C. Chemistry and biology of the copper chelator methanobactin. *ACS Chem. Biol.* **2012**, *7*, 260-268.

Smith, S. M.; Rawat, S.; Telser, J.; Hoffman, B. M.; Stemmler, T. L.; Rosenzweig, A. C. Crystal structure and characterization of particulate methane monooxygenase from *Methylocystis* species strain M. *Biochemistry* **2011**, *50*, 10231-10240.

Balasubramanian, R.; Kenney, G. E.; Rosenzweig, A. C. Dual pathways for copper uptake by methanotrophic bacteria. *J. Biol. Chem.* **2011**, *286*, 37313-37319.

Lawton, T. J.; Rosenzweig, A. C. Detection and characterization of a multicopper oxidase from *Nitrosomonas europaea*. *Methods Enzymol.* **2011**, *496*, 423-433.

Boal, A. K.; Grove, T. L.; McLaughlin, M. I.; Yennawar, N. H.; Booker, S. J.; Rosenzweig, A. C. Structural basis for methyl transfer by a radical SAM enzyme. *Science* **2011**, *332*, 1089-1092.

Rosenzweig, A. C. Particulate methane monooxygenase. In *Handbook of Metalloproteins Volumes 4 and 5* (A. Messerschmidt, ed.), **2011,** John Wiley & Sons, Chichester, UK, 615-622, originally published online September 2008.

Lawton, T. J.; Rosenzweig, A. C. Two-domain multicopper oxidase. In *Handbook of Metalloproteins Volumes 4 and 5* (A. Messerschmidt, ed.), **2011,** John Wiley & Sons, Chichester, UK, 591-599.

Smith, S. M.; Balasubramanian, R.; Rosenzweig, A. C. Metal reconstitution of particulate methane monooxygenase and heterologous expression of the pmoB subunit. *Methods Enzymol.* **2011**, *495*, 195-210.

Benítez, J. J.; Keller, A. M.; Huffman, D. L.; Yatsunyk, L. A.; Rosenzweig, A. C.; Chen, P. Relating dynamic protein interactions of metallochaperones with metal transfer at the single-molecule level. *Faraday Dis*. **2011**, *148*, 71-82.

Balasubramanian, R.; Levinson, B. T.; Rosenzweig, A. C. Secretion of flavins by three species of methanotrophic bacteria. *Appl. Environ. Microbiol.* **2010**, *76*, 7356-7358.

Boal, A. K.; Cotruvo, J. A., Jr.; Stubbe, J.; Rosenzweig, A. C. Structural basis for activation of class Ib ribonucleotide reductase. *Science* **2010**, *329*, 1526-1530.

Traverso, M. E.; Subramanian, P.; Davydov, R.; Hoffman, B. M.; Stemmler, T. L.; Rosenzweig, A. C. Identification of a hemerythrin-like domain in a P_{1B}-type transport ATPase. *Biochemistry* **2010**, *49*, 7060-7068.

Balasubramanian, R.; Smith, S. M.; Rawat, S.; Yatsunyk, L. A.; Stemmler, T. L.; Rosenzweig, A. C. Oxidation of methane by a biological dicopper center. *Nature* **2010**, *465*, 115-119.

Walker, C. B.; de la Torre, J. R.; Urakawa, H.; Klotz, M. G.; Lawton, T. J.; Pinel, N.; Arp, D. J.; Brochier-Armanet, C.; Chain, P. S. G.; Chan, P. P.; Golabgir, A.; Hemp, J.; Hügler, M.; Karr, E. A.; Könneke, M.; Shin, M.; Lawton, T. J.; Martens-Habbena, W.; Sayavedra-Soto, L. A.; Lang, D.; Sievert, S. M.; Rosenzweig, A. C.; Manning, G.; Stahl, D. A. The *Nitrosopumilus maritimus* genome reveals unique mechanisms for nitrification and autotrophy in globally distributed marine crenarchaea. *Proc. Natl. Acad. Sci. USA* **2010**, *107*, 8818-8823.

Agarwal, S.; Hong, D.; Desai, N. K.; Sazinsky, M. H., Argüello, J. M.; Rosenzweig, A. C. Structure and interactions of the C-terminal metal binding domain of *Archaeoglobus fulgidus* CopA. *Proteins* **2010**, *78*, 2450-2458.

Ukaegbu, U. E.; Kantz, A.; Beaton, M.; Gassner, G. T.; Rosenzweig, A. C. Structure and ligand binding properties of the epoxidase component of styrene monooxygenase. *Biochemistry* **2010**, *49*, 1678-1688.

Rosenzweig, A. C. Zeroing in on a new copper site. *Nature Chem.* **2009**, *1*, 684-685.

Barker, K. D.; Eckermann, A. L.; Sazinsky, M. H.; Hartings, M. R.; Abajian, C.; Georganopoulou, D. G.; Ratner, M. A.; Rosenzweig, A. C.; Meade, T. J. Protein binding and the electronic properties of iron(II) complexes: an electrochemical and optical investigation of outer sphere effects. *Bioconjugate Chem.* **2009**, *20*, 1930-1939.

Boal, A. K.; Rosenzweig, A. C. Crystal structures of cisplatin bound to a human copper chaperone. *J. Am. Chem. Soc.* **2009**, *131*, 14196-14197.

Boal, A. K.; Rosenzweig, A. C. Structural biology of copper trafficking. *Chem. Rev.* **2009**, *109*, 4760-4779.

Lawton, T. J.; Sayavedra-Soto, L. A.; Arp, D. J.; Rosenzweig, A. C. Crystal structure of a two-domain multicopper oxidase: implications for the evolution of multicopper blue proteins. *J. Biol. Chem*. **2009**, 284, 10174-10180.

Ukaegbu, U. E.; Rosenzweig, A. C. Structure of the redox sensor domain of *Methylococcus capsulatus* (Bath) MmoS. *Biochemistry* **2009**, *48*, 2207-2215

Rosenzweig, A. C. The metal centers of particulate methane monooxygenase. *Biochem. Soc. Trans.* **2008**, 36, 1134-1137.

Banci, L.; Bertini, I.; Cantini, F.; Rosenzweig, A. C.; Yatsunyk, L. A. Metal binding domains 3 and 4 of the Wilson disease protein: solution structure and interaction with the copper(I) chaperone HAH1. *Biochemistry* **2008**, *47*, 7423-7429.

Hakemian, A. S.; Kondapalli, K. C.; Telser, J.; Hoffman, B. M.; Stemmler, T. L.; Rosenzweig, A. C. The metal centers of particulate methane monooxygenase from *Methylosinus trichosporium* OB3b. *Biochemistry* **2008**, *47*, 6793-6801.

Balasubramanian, R. ; Rosenzweig, A. C. Copper methanobactin: a molecule whose time has come. *Curr. Op. Chem. Biol.* **2008**, *12*, 245-249.

Benítez, J. J.; Keller, A. M.; Huffman, D. L.; Yatsunyk, L. A.; Rosenzweig, A. C.; Chen, P. Probing transient copper-chaperone-Wilson disease protein interactions at the single-molecule level with nanovesicle trapping. *J. Am. Chem. Soc.* **2008**, *130*, 2446-2447.

Yatsunyk, L. A., Easton, J. A., Kim, L. R., Sugarbaker, S. A., Bennett, B., Breece, R. M., Vorontsov, I. I., Tierney, D. L., Crowder, M. W., & Rosenzweig, A. C. Structure and metal binding properties of ZnuA, a periplasmic zinc transporter from *Escherichia coli*. *J. Biol. Inorg. Chem.* **2008**, *13*, 271-288.

Sazinsky, M. H., LeMoine, B., Orofino, M., Davydov, R., Bencze, K. Z., Stemmler, T. L., Hoffman, B. M., Argüello, J. M., & Rosenzweig, A. C. Characterization and structure of a Zn^{2+} and [2Fe-2S]-containing copper chaperone from *Archaeoglobus fulgidus*. *J. Biol. Chem.* **2007,** *282*, 25950-25959.

Balasubramanian, R. ; Rosenzweig, A. C. Structural and mechanistic insights into methane oxidation by particulate methane monooxygenase. *Acc. Chem. Res.* **2007**, *40*, 573-580.

Hakemian, A. S.; Rosenzweig, A. C. The biochemistry of methane oxidation. *Ann. Rev. Biochem.* **2007**, *76*, 223-241.

Wheeler, K. E.; Nocek, J. M.; Cull, D. A.; Yatsunyk, L. A.; Rosenzweig, A. C.; Hoffman, B. M. Dynamic docking of cytochrome b_5 with myoglobin and α-hemoglobin: heme-neutralization 'squares' and the binding of electron-transfer-reactive configurations. *J. Am. Chem. Soc.* **2007**, *129*, 3906-3917.

Yatsunyk, L. A.; Rosenzweig, A. C. Copper binding and transfer by the N-terminus of the Wilson disease protein. *J. Biol. Chem.* **2007**, *282*, 8622-8631.

Sommerhalter, M.; Zhang, Y.; Rosenzweig, A. C. Solution structure of the COMMD1 N-terminal domain. *J. Mol. Biol.* **2007**, *365*, 715-721.

Rosenzweig, A. C.; Sazinsky, M. H. Structural insights into dioxygen-activating copper enzymes. *Curr. Op. Struct. Biol.* **2006**, *16*, 729-735

Lieberman, R. L.; Kondapalli, K. C.; Shrestha, D. B.; Hakemian, A. S.; Smith, S. M.; Telser, J.; Kuzelka, J.; Gupta, R.; Borovik, A. S.; Lippard, S. J.; Hoffman, B. M.; Rosenzweig, A. C.; Stemmler, T. L. Characterization of the particulate methane monooxygenase metal centers in multiple redox states by X-ray absorption spectroscopy. *Inorg. Chem.* **2006**, *45*, 8372-8381.

Ukaegbu, U. E.; Henery, S.; Rosenzweig, A. C. Biochemical characterization of MmoS, a sensor

protein involved in copper-dependent regulation of soluble methane monooxygenase. *Biochemistry* **2006**, *45*, 10191-10198.

Sazinsky, M. H.; Agarwal, S.; Argüello, J. M.; Rosenzweig, A. C. Structure of the actuator domain from the *Archaeglobus fulgidus* Cu^{1+}-ATPase. *Biochemistry* **2006**, *45*, 9949-9955.

Abajian, C.; Rosenzweig, A. C. Crystal structure of yeast Sco1. *J. Biol. Inorg. Chem*. **2006**, *11*, 459-456.

Sazinsky, M. H.; Mandal, A. L; Argüello, J. M.; Rosenzweig, A. C. Structure of the ATP binding domain from the *Archaeglobus fulgidus* Cu^{1+}-ATPase. *J. Biol. Chem*. **2006**, *281*, 11161-11166.

Hakemian, A. S.; Tinberg, C. E.; Kondapalli, K. C.; Telser, J.; Hoffman, B. M.; Stemmler, T. L.; Rosenzweig, A. C. The copper chelator methanobactin from *Methylosinus trichosporium* OB3b binds Cu(I). *J. Am. Chem. Soc.,* **2005***, 127,* 17142-17143.

Sommerhalter, M.; Saleh, L.; Bollinger, J. M., Jr.; Rosenzweig , A. C. Structure of *Escherichia coli* ribonucleotide reductase R2 in space group $P6_122$. *Acta cryst.* **2005**, *D61*, 1649-1654.

Lieberman, R. L.; Rosenzweig, A. C. The quest for the particulate methane monooxygenase active site. *Dalton Trans.* **2005**, *21*, 3390-3396.

Lieberman, R. L.; Rosenzweig, A. C. Crystal structure of a membrane-bound metalloenzyme that catalyses the biological oxidation of methane, *Nature* **2005**, *434*, 177-182.

Sommerhalter, M.; Lieberman, R. L.; Rosenzweig, A. C. X-ray crystallography and biological metal centers: is seeing believing?, *Inorg. Chem*. **2005**, *44*, 770-778.

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Lieberman, R. L.; Rosenzweig, A. C. Crystallographic trapping of a precatalytic enzyme complex provides new insight into dioxygen activation at a mononuclear copper center. *Chemtracts* **2004**, *17*, 562-568.

Sommerhalter, M.; Voegtli, W. C.; Perlstein, D. L.; Ge, J.; Stubbe, J.; Rosenzweig, A. C. Structures of the yeast ribonucleotide reductase Rnr2 and Rnr4 homodimers. *Biochemistry* **2004**, *43*, 7736-7742.

Lieberman, R. L. ; Rosenzweig, A. C. Biological methane oxidation: regulation, biochemistry, and active site structure of particulate methane monooxygenase. *Crit. Rev. Biochem. Mol. Biol.* **2004**, *39*, 147-164.

Wernimont, A. K.; Yatsunyk, L. A.; Rosenzweig, A. C. Binding of copper(I) by the Wilson disease protein and its copper chaperone. *J. Biol. Chem.* **2004**, *269*, 12269-12276.

Voegtli, W. C.; Sommerhalter, M.; Saleh, L.; Baldwin, J.; Bollinger, J. M., Jr.; Rosenzweig, A. C. Variable coordination geometries at the diiron(II) active site of ribonucleotide reductase R2. *J. Am. Chem. Soc*. **2003**, *125*, 15822-15830.

Miller, M. T.; Gerratana, B.; Stapon, A.; Townsend, C. A.; Rosenzweig, A. C. Crystal structure of carbapenam synthetase (CarA). *J. Biol. Chem*. **2003**, *278*, 40996-41002.

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Lieberman, R. L.; Rosenzweig, A. C. Metal ion homeostasis. In *Comprehensive Coordination Chemistry II: From Biology to Nanotechnology* (J. McCleverty, T. J. Meyer, eds.), **2003**, Oxford:Pergamon, pp. 195-211.

Wernimont, A. K.; Huffman, D. L.; Finney, L. A.; Demeler, B.; O'Halloran, T.V.; Rosenzweig, A. C. Crystal structure and dimerization equilibria of PcoC, a methionine-rich copper resistance protein from *Escherichia coli*. *J. Biol. Inorg. Chem.* **2003**, *8,* 185-194.

Miller, M. T.; Bachmann, B. O.; Townsend, C. A.; Rosenzweig, A. C. The catalytic cycle of β-lactam synthetase observed by x-ray crystallographic snapshots. *Proc. Natl. Acad. Sci. USA* **2002**, *99*, 14752-14757.

Rosenzweig, A. C. Metallochaperones: bind and deliver. *Chem. Biol.* **2002**, *9*, 673-677.

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Voegtli, W. C.; Ge, J.; Perlstein, D. L.; Stubbe, J.; Rosenzweig, A. C. Structure of the yeast ribonucleotide reductase Y2Y4 heterodimer. *Proc. Natl. Acad. Sci. USA* **2001**, *98*, 10073-10078.

Miller, M. T.; Bachmann, B. O.; Townsend, C. A.; Rosenzweig, A. C. Structure of β-lactam synthetase reveals how to synthesize antibiotics instead of asparagine. *Nature Struct. Biol.* **2001**, *8*, 684-689.

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INVITED PRESENTATIONS

Conferences

Dioxygen Activation Chemistry of Metalloenzymes and Models Symposium, Pacifichem 2015, December 15-20, 2015
Cell Biology of Metals Gordon Research Conference, West Dover, VT, July 26-31, 2015
Metals in Biology in Wako Conference, Tokyo, Japan, June 16-18, 2015
19th International Conference on Cytochrome P450, Tokyo, Japan, June 12-15, 2015
5th Georgian Bay International Conference on Bioinorganic Chemistry (CanBIC-5), Parry Sound, Canada, May 19-23, 2015
Frontiers in Membrane Protein Structural Dynamics Conference, Chicago, IL, April 29-May 1, 2015
2015 Benjamin Franklin Medal Symposium in Honor of Stephen Lippard, Newark, DE, April 23, 2015
Inorganic Reaction Mechanisms Gordon Research Conference, Galveston, TX, March 1-6, 2015
9th International Copper Meeting, Vico Equense, Italy, October 5-10, 2014
Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Waterville Valley, NH, July 13-18, 2014
Iron-Sulfur Enzymes Gordon Research Conference, Easton, MA, June 15-20, 2014

Plenary Lecture, Swedish Chemical Society Symposium, Lund, Sweden, May 22, 2014
Baker Symposium, Department of Chemistry and Chemical Biology, Cornell University, May 3, 2014
Priestley Award Symposium, 247th National Meeting of the American Chemical Society, Dallas, TX, March 16-20, 2014
Panel, Survival Skills for Female Graduate Students and Junior Faculty, Northwestern University Women's Center, February 5, 2014
Symposium in Honor of Professor David M. Dooley, Montana State University, Bozeman, MT, October 11-12, 2013
Sixteenth International Conference in Bioinorganic Chemistry (ICBIC16), Grenoble, France, July 14-19, 2013
C-H Activation Symposium, 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, 2013
UniCat biocatalysis workshop, Free University of Berlin, Berlin, Germany, March 17-19, 2013
Suddath Symposium, The Inorganic Face of Life: From Metalloproteins to Cells and Whole Organisms, Georgia Institute of Technology, Atlanta, GA, February 21-22, 2013
ARPA-E Workshop: Bio-technologies for methane to liquids conversion, Washington, DC, December 5, 2012
Plenary Lecture, International Symposium on Activation of Oxygen and Homogeneous Catalytic Oxidation, Jerusalem, Israel, September 2-7, 2012
Molecular Basis of Microbial One-carbon Metabolism Gordon Research Conference, Lewiston, ME, August 5-10, 2012
Protein Cofactors, Radicals, and Quinones Gordon Research Conference, South Hadley, MA, July 29-August 3, 2012
Keynote Lecture, 16th Annual Conference of the Swedish Structural Biology Network (SBNet), Tällberg, Sweden, June 15-18, 2012
Plenary Lecture, International Symposium on Relations between Homogeneous and Heterogeneous Catalysis, Berlin, Germany, September 11-16, 2011
Structure, Mechanism and Regulation in Enzyme Catalysis Symposium, 2011 ASBMB Meeting, Washington, D. C., April 9-13, 2011
Dioxygen Activation Chemistry of Metalloenzymes and Models Symposium, Pacifichem 2010, Honolulu, HI, December 15-20, 2010
Plenary Lecture, UniCat biocatalysis workshop, Technical University of Berlin, Berlin, Germany, November 17-19, 2010
7th International Copper Meeting, Alghero, Sardinia, October 16-20, 2010
Goodman Award Symposium, American Chemical Society Fall 2010 Meeting, Boston, MA, August 22-26, 2010
Bioinorganic Chemistry Symposium, American Chemical Society Fall 2010 Meeting, Boston, MA, August 22-26, 2010
Molecular Basis of Microbial One-carbon Metabolism Gordon Research Conference, Lewiston, ME, August 1-6, 2010
FASEB Summer Research Conference on Trace Element Micronutrients: Basic and Applied Research, Snowmass, CO, June 13-18, 2010
Frontiers in Metallobiochemistry Summer Symposium in Molecular Biology, The Pennsylvania State University, University Park, PA, June 2-5, 2010
Metals in Biology Gordon Research Conference, Ventura, CA, January 30-February 5, 2010
Fourteenth International Conference in Bioinorganic Chemistry (ICBIC14), Nagoya, Japan, July 25-30, 2009
Panel, The Future of Science Education in the Liberal Arts, Amherst College, Amherst, MA, October 25, 2008
6th International Copper Meeting, Alghero, Sardinia, October 11-15, 2008
Biochemical Society Focused Meeting: Transition Metals in Biochemistry, University of East Anglia, UK, June 24-26, 2008
Pre-ICBIC14 Special Symposium: Dioxygen Activation by Metalloenzymes and Models, Nagoya University, Nagoya, Japan, March 20-21, 2008
Mini-Symposium on Metals in Biological Systems, Duquesne University, Pittsburgh, PA,

December 7, 2007
Plenary Lecture, Thirteenth International Conference in Bioinorganic Chemistry (ICBIC13), Vienna, Austria, July 15-20, 2007
Molecular Basis of Microbial One-carbon Metabolism Gordon Research Conference, Oxford, UK, August 6-11, 2006
Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Biddeford, ME, July 16-21, 2006
Environmental Bioinorganic Chemistry Gordon Research Conference, Andover, NH, June 18-23, 2006
Frontiers in Metallobiochemistry Summer Symposium in Molecular Biology, The Pennsylvania State University, University Park, PA, June 7-10, 2006
Plenary Lecture, Advanced Photon Source Users Meeting, May 3, 2006
Thursday night talk, Metals in Biology Gordon Research Conference, Ventura, CA, January 30-February 3, 2006
Dioxygen Activation Chemistry of Metalloenzymes and Models Symposium, Pacifichem 2005, Honolulu, HI, December 15-20, 2005
Keynote Speaker, Royal Society of Chemistry Dalton Discussion Meeting, Nottingham, UK, September 7-9, 2005
Twelfth International Conference in Bioinorganic Chemistry (ICBIC12), Ann Arbor, MI, July 31-August 5, 2005
Fourth International Meeting on Copper Homeostasis and its Disorders: Molecular and Cellular Aspects, Ischia, Italy, October 23-28, 2004
Environmental Bioinorganic Chemistry Gordon Research Conference, Lewiston, ME, June 20-25, 2004
Metals in Biology Symposium in Honor of Jenny P. Glusker, Fox Chase Cancer Institute, Philadelphia, PA, December 12, 2003
International Symposium on Copper in Biology: From Novel Structures to New Cellular Functions, Konstanz, Germany, September 21-24, 2003
Metalloenzyme Symposium, 226th National Meeting of the American Chemical Society, New York, NY, September 7-11, 2003
The Impact of Genomics on Chemical Biology: a PRF Supported Summer School Program, Cornell University, Ithaca, NY, July 5-11, 2003
Bioinorganic Chemistry Symposium, 58th Northwest Regional Section Meeting of the American Chemical Society, Bozeman, MT, June 12-14, 2003
Washington College Women in Science-Sigma XI Symposium in Bioinorganic Chemistry, Chestertown, MD, April 8, 2003
Graduate Research Seminar in Metals in Biology, Ventura, CA, February 6-9, 2003
Enzyme Mechanisms Conference XVIII, Galveston Island, TX, January 4-7, 2003
Third International Meeting on Copper Homeostasis and its Disorders: Molecular and Cellular Aspects, Ischia, Italy, October 6-8, 2002
Coordination Chemistry of Metal Metabolism Symposium, 224th National Meeting of the American Chemical Society, Boston, MA, August 18-22, 2002
American Society for Microbiology, 102nd General Meeting, Salt Lake City, UT, May 19-23, 2002
Midwest Metals Meeting, Chicago, IL, May 11-12, 2002
Tenth International Conference in Bioinorganic Chemistry (ICBIC10), Florence, Italy, August 26-31, 2001
ALS Association Workshop for Young Investigators, Philadelphia, PA, October 26-27, 2000
Lippard 2000: Inorganic Chemistry at the Beginning of the New Millennium, Cambridge, MA, October 6-8, 2000
Annual Meeting of the Packard Fellows, Monterey, CA, September 6-9, 2000
Metals in Biology Gordon Research Conference, Ventura, CA, January 23-28, 2000
Ninth International Conference in Bioinorganic Chemistry (ICBIC9), Minneapolis, MN, July 11-16, 1999
Quinone and Redox Active Amino Acid Cofactors Gordon Research Conference, Meriden, NH, June 13-18, 1999
Chemical Crystallographic Analysis Symposium, Massachusetts Institute of Technology,

Cambridge, MA, January 9, 1999
Biological Electron Transfer Symposium, Northeast Regional Section Meeting of the American Chemical Society, Rochester, NY, October 22-25, 1995
Eighth International Symposium on Microbial Growth on C1 Compounds, San Diego, CA, August 27-September 1, 1995
Metal Carboxylates and Synthetic Models Symposium, 209th National Meeting of the American Chemical Society, Anaheim, CA, April 2-5, 1995
Alkane Functionalization in Natural and Unnatural Systems Symposium, 207th National Meeting of the American Chemical Society, San Diego, CA, March 13-18, 1994

Seminars

Divison of Biology Colloquium, Illinois Institute of Technology, April 27, 2015
Royal Society of Chemistry Joseph Chatt Award Lecture and Inorganic Biochemistry Discussion Group, University of York, York, UK, April 9, 2015
Royal Society of Chemistry Joseph Chatt Award Lecture, Kings College, London, UK, April 8, 2015
Royal Society of Chemistry Joseph Chatt Award Lecture, University of East Anglia, Norwich, UK, April 7, 2015
Science Salon & Humanities Hour, Lectures at Lunch for Staff, Northwestern University, February 26, 2015
Molecular Discovery Seminar, National Cancer Institute, December 4, 2014
Department of Structural Biology, University of Buffalo, and Hauptmann Woodward Institute, April 24, 2014
Department of Chemistry and Biochemistry, University of Notre Dame, December 6, 2013
Department of Chemistry, University of Akron, Akron, OH, October 22, 2013
Department of Chemistry and Biochemistry, Worcester Polytechnic Institute, December 12, 2012
Department of Chemistry, California Institute of Technology, April 23, 2012
Department of Chemistry and Biochemistry, University of California, San Diego, April 20, 2012
Department of Chemistry, University of California, Irvine, April 19, 2012
Department of Pharmacology, Case Western Reserve University, Cleveland, OH, October 17, 2011
Department of Chemistry, Duke University, Durham, NC, April 26, 2011
Department of Biochemistry, Molecular Biology, and Biophysics, University of Minnesota, Minneapolis, MN, March 23, 2011
Pollard Memorial Lecture, Department of Biochemistry and Molecular Biology, The Pennsylvania State University, University Park, PA, March 14, 2011
UOP/Honeywell Invitational Lecturer, UOP LLC, Des Plaines, IL, February 17, 2011
Vanderbilt Institute of Chemical Biology, Vanderbilt University, Nashville, TN, December 1, 2010
Biomolecular Student Seminar, Department of Chemistry, Emory University, Atlanta, GA, April 26, 2010
Biophysics Colloquium, Cornell University, Ithaca, NY, April 7, 2010
Department of Chemistry and Biochemistry, University of South Carolina, Columbia, SC, October 2, 2009
Department of Biochemistry, The University of Texas Health Science Center, San Antonio, TX, August 28, 2009
Department of Chemistry, Texas A&M University, College Station, TX, May 14, 2009
Department of Chemistry, Yale University, New Haven, CT, April 22, 2009
Departments of Molecular and Cell Biology and of Chemistry, University of California, Berkeley, November 3, 2008
Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL, September 30, 2008
Molecular Biophysics Program, University of Colorado, Boulder, CO, April 23, 2008
Department of Chemistry, University of Chicago, Chicago, IL, October 15, 2007
Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA, June 6, 2007
Department of Biochemistry and Molecular Biophysics, University of Arizona, Tucson, AZ, March 23, 2007
Department of Chemistry, Oberlin College, Oberlin, OH, November 15, 2006
Department of Biochemistry, University of Nebraska, Lincoln, NE, September 19, 2006
Department of Molecular Sciences, University of Kansas, Lawrence, KS, April 24, 2006
Membrane Protein Interest Groups (MPIG), National Institutes of Health, Bethesda, MD, April 12, 2006
Department of Chemistry and Biochemistry, Miami University of Ohio, Oxford, OH, December 1, 2005
Department of Chemistry, SUNY Buffalo, Buffalo, NY, October 14, 2005

Hauptmann-Woodward Medical Research Institute, Buffalo, NY, October 13, 2005
Biosciences Division, Argonne National Laboratory, September 29, 2005
Department of Chemistry, Williams College, Williamstown, MA, April 8, 2005
Keynote Address, Northwestern University Center for Talent Development Award Ceremony, June 5, 2004
Department of Chemistry, Inaugural Dow Lecturer, Amherst College, Amherst, MA, February 20, 2004
Department of Biochemistry and Molecular Biology, Michigan State University, East Lansing, MI, October 23, 2003
Center for Biochemical and Biophysical Studies, Northern Illinois University, DeKalb, IL, October 17, 2003
Department of Biochemistry, Medical College of Wisconsin, Milwaukee, WS, May 21, 2003
Departments of Biochemistry and Biology, Brandeis University, Waltham, MA, April 30, 2003
Department of Chemistry, University of Notre Dame, South Bend, IN, March 27, 2003
Department of Biological Sciences, Purdue University, West Lafayette, IN, September 18, 2002
Department of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL, April 24, 2002
Department of Chemistry, University of Minnesota, Minneapolis, MN, March 11, 2002
Department of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, February 25, 2002
Department of Chemistry, Stanford University, Stanford, CA, February 12, 2002
Department of Chemistry, Massachusetts Institute of Technology, Cambridge MA, June 5, 2001
Department of Chemistry, Indiana University, Bloomington, IN, April 27, 2001
Department of Biochemistry and Molecular Biology, Wayne State University School of Medicine, Detroit, MI, April 24, 2001
Protein Engineering Centre of Excellence, Department of Biochemistry and Structural Biology, University of Toronto, Toronto, Canada, March 15, 2001
Department of Chemistry, University of Michigan, Ann Arbor, MI, March 9, 2001
Department of Biochemistry and Molecular Biology, Mayo Clinic and Foundation, Rochester, MN, February 13, 2001
Department of Biological Sciences, University of Illinois at Chicago, Chicago, IL, April 18, 2000
Department of Chemistry and Biochemistry, Utah State University, Logan, UT, February 9, 2000
Department of Biochemistry, University of Utah Health Sciences Center, Salt Lake City, UT, February 7, 2000
Department of Biochemistry, University of Wisconsin, Madison, Madison, WI, December 13, 1999
Department of Biochemistry and Molecular Biology, Finch University of Health Sciences/The Chicago Medical School, North Chicago, IL, December 2, 1999
Department of Molecular Biology, The Scripps Research Institute, La Jolla, CA, November 4, 1999
Department of Biological and Chemical Sciences, Illinois Institute of Technology, Chicago, IL, April 19, 1999
Department of Chemistry, Loyola University, Chicago, IL, October 15, 1998
Department of Chemistry, Amherst College, Amherst, MA, April 17, 1995
Department of Chemistry, University of Rochester, Rochester, NY, April 7, 1995
Department of Biology, Brookhaven National Laboratory, Upton, NY, March 16, 1995