*C&E News* as a Starting Point for Bioinorganic Literature Discussions

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The references given in red on the following pages have been collected from C&E News over the past 15 years (1999-2014); many come from the Science and Technology Concentrates, some from News of the Week, others are full articles, and a few are letters to the editor. They cover a wide variety of topics in bioinorganic chemistry. Where appropriate, a reference for the primary literature paper which was referred to in the C&E News article is included. I typically have students read the article from C&E News prior to reading the literature paper; this provides them with an introduction to the paper and helps them focus on its important aspects. Some of the articles listed do not refer to a specific article from the primary literature, but still make for good introductions to the given topic.

The list is given in reverse chronological order (most recent first). It is not intended to be exhaustive and I encourage the sharing of other examples.

At a later point in the semester I give the students a paper from the primary literature and ask them to write a summary article as if for C&E News. This gets them to think about communicating chemistry to a wider audience.

I have used the first two articles (about and by Stephen J. Lippard) as the basis for an exercise following the first day of class. In addition to reading both articles, each student is given one or two note cards with the name of an individual, a technique, or a bioinorganic system mentioned in the C&E News articles. They have until the next class to put whatever information they deem important on the notecard; this information is shared at the beginning of the next class session. This usually engenders a good discussion and I have found it to be a good introduction to the topic and a great way to show the diversity and the interconnectedness of bioinorganic chemistry.

*C&E News* as a Starting Point for Bioinorganic Literature Discussions

“Carbon Monoxide-Bound Nitrogenase Structure Solved,” C&E News, September 29, 2014, p. 30.

Spatzal, *et al.*, “Ligand Binding to the FeMo-cofactor: Structures of CO-bound and Reactivated Nitrogenase,” Science, 345, 1620-1623 (2014).

[DOI: 10.1126/science.1256679]

“Natural Product Ferries Antibiotic into Bacteria,” C&E News, July 14, 2014, p 32.

Zheng & Nolan, “Enterobactin-Mediated Delivery of β-Lactam Antibiotics Enhances Antibacterial Activity Against Pathogenic *Escherichia coli*,” J. Am. Chem. Soc., 136, 9677-9691 (2014).

[DOI:10.1021/ja503911p]

“Trail Blazer and Mentor,” C&E News, March 17, 2014, p 10-13.

Biography of Stephen J. Lippard.

“The Life of a Professor,” C&E News, March 17, 2014, p 14-18.

Text of Stephen J. Lippard Priestly Medal Address.

“Targeting Cisplatin to Mitochondria” C&E News, November 18, 2013, p 26.

[DOI:10.1021/cen-09146-scicon]

# Wisnovsky, *et al.*, “Targeting Mitochondrial DNA with a Platinum-Based Anticancer Agent,” Chem. Biol, 20, 1323-1328 (2013).

[DOI: 10.1016/j.chembiol.2013.08.010]

“Unmasking Nitrogenase,” C&E News, October 1, 2012, p 13.

[DOI:10.1021/cen-09040-notw8]

“Nitrogenase Cofactor Centers on Carbon,” C&E News, November 21, 2011, p 30.

[DOI:10.1021/cen-v089n047.p030]

Lancaster, *et al.*, “X-Ray Emission Spectroscopy Evidences a Central Carbon in the Nitrogenases Iron-Molybdenum Cofactor,” Science, 334, 974-977 (2011).

[DOI:10.1126/science.1206445]

“Dark Side of Manganese” (letter by John A. Simms) C&E News, September 12, 2011, p 4.

[DOI:10.1021/cen-v089n037.p004]

Bouchard, *et al.*, “Intellectual Imparment in School-Age Children Exposed to Manganese from Drinking Water,” Environ. Health Perspect.,119, 138-143 (2010).

[DOI; 10.1289/ehp.1002321]

# Jiang, *et al.*, “Effective treatment of manganese-induced occupational Parkinsonism with p-aminosalicylic acid: a case of 17-year follow-up study,” J. Occup. Environ. Med., 48, 644-649 (2006).

# [DOI: 10.1097/01.jom.0000204114.01893.3e]

“Model Cluster Yields Clues on Calcium’s Water-Splitting Role,” C&E News, August 8, 2011, p 39.

[DOI:10.1021/cen-v089n032.p038]

Kanady *et al*., “A Synthetic Model of the Mn3Ca Subsite of the Oxygen-Evolving Complex in Photosystem II”, Science, 333, 733-736 (2011).

[DOI: 10.1126/science.1206036]

“Cells Take Up Plutonium”, C&E News, July 4, 2011, p 11.

[DOI:10.1021/cen-v089n027.p011]

Kosman, “Transport: Plutonium’s Trojan Horse,” Nat. Chem. Bio., 7, p 498-499 (2011).

[DOI: 10.1038/nchembio.594]

“Spinning Improves NMR of Large Proteins,” C&E News, June 20, 2011, p 32.

[DOI:10.1021/cen-v089n025.p032]

Bertini, “Solid-state NMR of Proteins Sedimented by Ultracentrifugation, Proc. Nat. Acad. Sci., 108, 10396-10399 (2011).

[DOI: 10.1073/pnas.1103854108]

“Mycobacteria Have a System for Acquiring Iron From Heme,” C&E News, March 14, 2011, p 38-39.

[DOI:10.1021/cen-v089n011.p038]

Tullius *et al.,* “Discovery and Characterization of a Unique Mycobacterial Heme Acquisition System”, Proc. Natl. Acad. Sci., 108, 5051-5056 (2011).

[DOI: 10.1073/pnas.1009516108]

“Iron(V) Nitride Mimics Nitrogenase Activity,” C&E News, February 28, 2011, p. 48.

[DOI:10.1021/cen-v089n009.p048]

Blank *et al*., “Structural Models of the [Fe4S4] Clusters of Homologous Nitrogenases Fe Proteins” Inorg. Chem., 50, 7123-7128 (2011).

[DOI:10.1021/ic200636k]

“Metalproteins Made to Order,” C&ENews, December 7, 2009, p 9.

[DOI:10.1021/cen-v087n049.p009]

Yeung, *et al.*, “Rational Design of a Structural and Functional Nitric Oxide Reductase,” Nature, 462, 1079-1082 (2009).

[DOI:10.1038/nature08620]

“New Complex Turns H2O to O2,” C&E News, June 14, 2004, p 31.

[DOI:10.1021/cen-v082n024.p031]

Sens, *et al.*, “A New Ru Complex Capable of Catalytically Oxidizing Water to Molecular Dioxygen,” JACS, 126, p 7798-7799 (2004).

[DOI:10.1021/ja0486824]

“Nitrogenase Application a Stretch,” (letter by J.P. Collman) C&E News, November 19, 2002, p 8-9.

[DOI:10.1021/cen-v080n046.p006]

“Nitrogenase Keeps Surprising,” C&E News, Sept 9, 2002, p 9.

[DOI:10.1021/cen-v080n036.p009]

Einsle *et al.,* “Nitrogenase MoFe-Protein at 1.16Å Resolution: A Central Ligand in the FeMo-Cofactor”, Science, 297, 1696-1699 (2002).

[DOI:10.1126/science.1073877]

"Can We Exploit Hydrogenases?" C&E News, July 22, 2002, p 35-39.

[DOI:10.1021/cen-v080n029.p035]

Zhao, *et al*., “H/D Exchange Reactions in Dinuclear Iron Thiolates as Activity Assay Models of Fe-H2ase,” JACS, 123, 9710-9711 (2001).

[DOI:10.1021/ja0167046]

Fan and Hall, “A Capable Bridging Ligand for Fe-Only Hydrogenase,” JACS, 123, 3828 (2001).

[DOI:10.1021/ja004120i]

"Iron Chelator Prevents Bacterial Biofilm Formation," C&E News, June 3, 2002, p 31.

[DOI:10.1021/cen-v080n022.p031]

Singh, *et al.,* “A Component of Innate Immunity Prevents Bacterial Biofilm Development”, Nature, 417, 552-555 (2002).

[DOI:10.1038/417552a]

“Women in Chemistry,” C&E News, May 6, 2002, p 56.

[DOI:10.1021/cen-v080n018.p056]

“Strong and healthy, the bioinorganic field provides supportive environment.”

"Pumping Iron, Bacteria-style," C&E News, March 4, 2002, p 13.

[DOI:10.1021/cen-v080n009.p013a]

Ferguson, *et al*., "Structural Basis of Gating by the Outer Membrane Transporter FecA," Science, 295, 1715-1719 (2002).

[DOI:10.1126/science.1067313]

"Sunlight Affects Iron Cycles in the Ocean," C&E News, Oct. 1, 2001, p 17.

[DOI:10.1021/cen-v079n040.p017a]

Barbeau, *et al*., "Photochemical Cycling of Iron in the Surface Ocean Mediated by Microbial Iron(III)-binding Ligands," Nature, 413, 409-413 (2001).

[DOI:10.1038/35096545]

"Iron-Sulfur Proteins," C&E News, November 20, 2000, p 43-51.

[DOI:10.1021/cen-v078n047.p043]

"Iron-oxidizing Organism Passes an Acid Test," C&E News, March 13, 2000, p 41.

[DOI:10.1021/cen-v078n011.p041]

Edwards *et al*., "An Archael Iron-Oxidizing Extreme Acidophile Important in Acid Mine Drainage," Science, 287, 1796-1799 (2000).

[DOI:10.1126/science.287.5459.1796]

"Iron Binding Causes Biomolecules to Reassemble," C&E News, February 21, 2000, p 26.

[DOI:10.1021/cen-v078n008.p026]

Martinez, *et al*., "Self-Assembling Amphiphilic Siderophores from Marine Bacteria," Science, 287, 1245-1247 (2000).

[DOI:10.1126/science.287.5456.1245]

“A Mechanism Essential to Life,” C&E News, December 6, 1999, p 31-36.

[DOI:10.1021/cen-v077n049.p031]