SEAN J. ELLIOTT

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Academic and Professional Experience

2002 – present
- Assistant Professor of Chemistry, Boston University
- Assistant Professor, Molecular Biology, Cell Biology and Biochemistry Program, Boston University

2000 – 2002
- European Molecular Biology Organization Long-term Post-doctoral Fellow, University of Oxford, Inorganic Chemistry Laboratory
  Advisor: Professor Fraser A. Armstrong

2000
- Ph.D., Bioinorganic Chemistry, Caltech
  "The C- and E-clusters of particulate methane monooxygenase of *Methylococcus capsulatus* (Bath): Differentiation and Characterization"
  Thesis Advisor: Professor Sunney I. Chan

1994
- B.A. in Chemistry and English, Amherst College, Amherst, MA
  summa cum laude, Phi Beta Kappa
  Undergraduate Advisor: Professor Joan B. Broderick

Honors and Awards

2006	NSF CAREER Award
2005 - 2007	Smith Family Young Investigator Award
2000 – 2002	EMBO Long-term Postdoctoral Fellow
1997 – 2000	National Research Service Award (NIH)
1998 – 1999	Forris Jewett Moore Fellowship
1994	Doughty Award for Chemistry
1994	Phi Beta Kappa

Publications *(undergraduate authors noted with an asterisk)*

1. Chobot, S.E.*; Hernandez, H.H.; Drennan, C.L.; Elliott, S.J. "Direct Electrochemical Characterization of Archaeal Thioredoxins," *in review at Angewandte Chemie.*
2. Vacca, L.R.; Ye, T.; Levin, B.D.*; Hahn, M.A.; Russell, B.S. Elliott, S.J.; Bren, K.L. "The Role of Heme Pocket Mobility in Tuning Cytochrome *c* Redox Potential", *in preparation*.
3. Pulcu, G.S.; Elmore, B.L.; Arciero, D.M.; Hooper, A.B.; Elliott, S.J. "Direct Electrochemistry of Tetraheme Cytochrome c_{554} from *Nitrosmonas europaea*: Redox cooperativity and conformational gating", *Journal of the American Chemical Society*,129 (7), **2007**, 1838 – 1839.
4. Bradley, A.L.; Arciero, D.M.; Hooper, A.B.; Elliott, S.J. "Protonation and Inhibition of Cyt *c* Perdoxidase from *Nitrosomonas europaea,"* *Journal of Inorganic Biochemistry*, 101(1), **2007**, 1733 - 1739.
5. Tarasev, M.; Pinto, A.: Kim, D.*; Elliott, S.J.; Ballou, D.P. "The 'Bridging' Aspartate 178 in Phthalate Dioxygenase Facilitates Interactions between the Rieske Center and the Iron (II)- Mononuclear Center", *Biochemistry*, 45(34), **2006**, 10208-10216
6. Ye, T.; Wen, X.; Kaur, R.; Bren, K.L.; Elliott, S.J. "The redox properties of wild-type and heme-binding loop mutants of bacterial cytochromes *c* measured by direct electrochemistry," *Inorganic Chemistry*, 44(24), **2005**, 8999 - 9006.
7. di Bernardo, D.; Thompson, M.J.; Gardner, T.S.; Chobot, S.E.*; Eastwood, E.L.; Wojtovich, A.P.; Elliott, S.J.; Schaus, S.E.; Collins, J.J. "Chemogenomic Profiling on a Genome-wide Scale Using Reverse-Engineered Gene Networks," *Nature-Biotechnology*, 23(3), **2005**, 377-383.
8. Bradley, A.M.; Chobot, S.E.*; Arciero, D.M.; Hooper, A.B.; Elliott, S.J. "A Distinctive Electrocatalytic Response From the Cytochrome *c* Peroxidase of *Nitrosomonas europaea*," *Journal of Biological Chemistry*, 297, **2004**, 13297-13300.
9. Chen, K.H.C.; Chen, C.L.; Tseng, C.F.; Yu, S.S.F.; Ke, S.C.; Lee, J.F., Nguyen, H.T.; Elliott, S.J., Alben, J.O.; Chan, S.I., "The Copper Clusters in the Particulate Methane Monooxygenase (pMMO) from *Methylococcus capsulatus* (Bath)," *Journal of the Chinese Chemical Society*, 51(5B), **2004**, 1081-1089.
10. Elliott, S.J.; Hoke, K.; Palak, M.; Heffron, K.; Rothery, R.A.; Weiner, J.A.; Armstrong, F.A. "Voltammetric Studies of the Catalytic Mechanism of the Respiratory Nitrate Reductase from *E. coli*," *Biochemistry*, 43 (3), **2004**, 799-807.
11. Léger, C.; Elliott, S.J.; Hoke, K.; Jones, A.J.; Jeuken, L.J.C.; Armstrong, F. A., "Enzyme electrokinetics: Using Protein Film Voltammetry to Investigate Redox Enzymes and their Mechanisms," *Biochemistry*, 42, 29, **2003**, 8653-8662.

12. Elliott, S. J.; McElheny, A.E.; Feng, C.; Enemark, J.H.; Armstrong, F.A., "A study of Interdomain Electron Transfer with Sulfite Oxidase," *Journal of the American Chemical Society*, 124, 39, **2002**, 11612-11613.
13. Elliott, S.J.; Léger, C.; Pershad, H.R.; Hirst, J.; Heffron, K.; Ginet, N.; Blasco, F.; Rothery, R.A.; Weiner, J.H.; Armstrong, F.A. "Detection and Intrepretation of Redox Poential Optima in the Catalytic Activity of Enzymes," *BBA-Bioenergetics*, 1555(1-3), **2002**, 54-59.
14. Elliott, S.J.; Randall, D.W.; Britt, R.D.; Chan, S.I., "Pulsed EPR Studies of Particulate Methane Monooxygenase from *Methylococcus capsulatus* (Bath): Evidence for Histidine Ligation," *Journal of the American Chemical Society*, 120(13), **1998**, 3247-3248.
15. Nguyen, H.H.T.; Elliott, S.J., Yip, J.H.K.; Chan, S.I., "The Particulate Methane Monooxygenase from *Methylococcus capsulatus* (Bath) is a Novel Copper-containing Three-subunit Enzyme – Isolation and Characterization," *Journal of Biological Chemistry*, 273(14), **1998**, 7957-7966.
16. Elliott, S.J.; Zhu, M.; Tso, L.; Nguyen, H.-H.T.; Yip, J.H.K.; Chan, S.I., "Regio- and Stereoselectivity of Particulate Methane Monooxygenase from *Methylococcus capsulatus* (Bath)," *Journal of the American Chemical Society*, 119(42), **1997**, 9949-9955.
17. Nguyen, H.H.T.; Nakagawa, K.H.; Hedman, B.; Elliott, S.J.; Lidstrom, M.E.; Hodgson, K.O.; Chan, S.I., "X-ray Absorption and EPR Studies on the Copper Ions Associated with the Particulate Methane Monooxygenase from *Methylococcus capsulatus* (Bath). Cu(I) Ions and Their Implications," *Journal of the American Chemical Society*, 118(50), **1996**, 12766-12776.

Professional Memberships

- American Chemical Society
- Society of Biological Inorganic Chemistry
- American Society for Biochemistry and Molecular Biology

Professional Activities and Outreach

2004-present	Board member of the Boston Regional Inorganic Chemists
2002-present	Reviewer for *Journal of the American Chemical Society*, *Biochemistry*, *Nature Structural Biology*, *Inorganic Chemistry*, *Journal of Biological Inorganic Chemistry*, and *Biochemical Journal*.
2006-2007	Ad hoc reviewer for National Science Foundation proposals.
2006-2007	Moderator, Boston Regional Department of Energy SciBowl competition for high-school students

Departmental Service

2002 – present	Colloquium Committee
2002 – present	Graduate Admissions Committee
2004 – 2005	Biochemistry Search Committee (resulted in hiring Prof. Pinghua Liu)
2005 – 2006	Inorganic Search Committee (resulted in hiring Prof. Linda Doerrer)
2005 – present	Member of Chair's Advisory Committee
2005 – 2006	Space Committee
2006 – present	Biological Chemistry Search Committee

University Service

2003 – present	Member of Molecular and Cellular Biology and Biochemistry (MCBB) Board, Boston University.
2004 – present	Member of Pre-Medical Advisory Board
2004 – 2006	Faculty Facilitator in Responsible Conduct in Research program, directed by the Provost's Office
2005	Discussion Leader in Center of Excellence in Teaching workshop, "Mentoring Undergraduates in Research"
2005 – present	Member of the Biochemistry and Molecular Biology Program Board
2006 – 2007	Participant in Admissions Office Recruiting
2007	Panel member in Multicultural Weekend for Undergraduate Recruiting

Teaching Experience

1. Taught CH110, *General and Quantitative Analytical Chemistry* for undergraduates at Boston University. Spring 2004-2007
2. Developed and taught CH 633, *Physical Methods for Inorganic Chemistry* for graduate students and advanced undergraduates at Boston University. Fall 2003, 2005.
3. Participated in the development and teaching of CH 801, *Graduate Research Methods and Writing*, a new course for graduate student training within the Chemistry Department of Boston University. Fall 2003-present
4. Developed and taught, CH731a (now CH634), *Metallobiochemistry* for graduate students at Boston University. Fall 2002, 2004, 2006.
5. Gave first year tutorials in *Biological Chemistry* for Chemistry Students at St. John's College, St. Catherine's College and Christchurch College, University of Oxford.
6. Head Teaching Assistant for Prof. Sunney I. Chan and Prof. Stephen Mayo's *Physical Chemistry for the Biological Sciences* (1998-1999) at the California Institute of Technology.

Research Mentoring

Ph. D. Students: Daniel Bak (MCBB program, 1st year)
Clinton Becker (Chemistry, 3rd year)
Katie Ellis (Chemistry, 1st year)
Mackenzie Firer-Sherwood (Chemistry, 2nd year)
Michael Hamill (Chemistry, 2nd year)
Gökçe Su Pulcu (Chemistry4th year)
James Wright (Chemistry, 1st year, joint with Prof. Pinghua Liu)
Tao Ye (Chemistry, 5th year)

M.A. Students: Phillipp Anwer (Chemistry)
Abigail E. Gay (Chemistry)

Undergraduates: Sarah Chobot, Jessie Hsu, Connie Wu, Victoria Polimeni, Justin Tackney, Laura Wong, Rachel Beard, Uyen Nhi Le, Olivia Grebler, Katherine Shinopolous, Duke Kim, Jessica Davison

Invited Presentations

2007
- Division of Chemistry, Caltech, May 17
- *Misfires and Hardwires – the redox chemistry of oxidative stress enzymes.* Department of Biochemistry and Molecular Biophysics, UPenn, April 11
- *When one heme is not enough: redox enzymology of multiheme proteins.* Deparment of Chemistry and Biochemistry, University of Maryland, March 1

2006
- *Redox Enzymology of Multiheme Cytochromes: when one heme is not enough* Yale University, Department of Chemistry, October 2
- *Voltammetric Tales: using electrochemistry to learn about enzymes* University of Michigan, Department of Biological Chemistry, October 10
- *Voltammetric Tales: using electrochemistry to learn about enzymes* Montana State University, Department of Chemistry and Biochemistry, October 19
- *Behind the Voltammograms: using electrochemistry to learn about enzymes* University of Montana, Department of Chemistry, October 16, 2006
- *Voltammetric studies of proteins and enzymes: from redox cooperativity to enzymatic mechanism,* University of Wisconsin, Department of Chemistry, October 23
- *Redox Enzymology of Multiheme Cytochromes: when one heme is not enough* University of Minnesota, Department of Chemistry, October 25
- *Voltammetric Tales: using electrochemistry to learn about enzymes* Duke University, Department of Chemistry, November 14
- University of North Carolina, Department of Chemistry, November 15
- University of Rochester, Department of Chemistry, November 20

- University of Illinois, Department of Chemistry, December 5
- *Electrochemical Enzymology: Probing Dynamics and Mechanism at an Electrode.* Frontiers in Metallobiochemistry Symposium in Molecular Biology, The Pennsylvania State University, June 10
- *Probing the Flow of Redox Equivalents in Biological Mn Redox Cycling.* Environmental Bioinorganic Chemistry Gordon Conference, June
- *When one heme is not enough*, Department of Chemistry, University of Iowa, April
- *Direct Electrochemistry of Redox Active Flavoproteins.* University of Texas Health Science Center – San Antonio, April

2005
- *Direect Electrochemistry of Redox Active Proteins.* Department of Chemistry, UMass-Dartmouth, November 2005
- *Electrochemical Studies of Heme Enzymes and Proteins*, 12th International Conference of Biological Inorganic Chemistry, Ann Arbor, MI, August 3
- *Redox Metallobiochemistry at an Electrode*, Michigan State University, Inorganic Chemistry Seminar, April 18
- *Redox Metallobiochemistry at an Electrode*, UMass-Boston, April 13
- *Redox biochemistry at an Electrode*, 18th Enzyme Mechanisms Meeting, Asilomar, CA, January 7

2004
- *Microbial Metallomics: A Bioinorganic Perspective*, American Geophysical Union, Fall Meeting, December
- *Investigating Redox Biochemistry at an Electrode*, Redox Signaling in Biology and Disease, ASBMB Special Symposium, October.
- *Electrochemical characterization of a bacterial peroxidase*, Electron Donors and Acceptor Interactions Gordon Conference, August.
- *Adventures in Protein Electrochemistry*, Third German-American Symposium, Frontiers in Chemistry, July.

2003
- *Interplay between redox species and biological systems*, NESACS Undergraduate Day, November.
- *Research Experiences and Graduate Life at BU*, Ithaca Colllege, 2003.
- *Moving electrons through Enzymes*, Tufts University, Department of Chemistry,
- *Moving electrons into proteins*, Amherst College, Department of Chemistry,

2002
- *Toxic Transition Metals and the Organisms that Love Them*, BU Biomolecules seminar series, January, 2002.

Research Support *(continuing)*

9/1/02 - present	Boston University Start-up funds to establish laboratory and investigate multi-electron enzymes using protein film voltammetry. Role: P.I. $350,000
5/1/05 - 4/30/07	Richard Allan Barry Fund of the Boston Foundation, Smith Family New Investigator Award "Thioredoxin, thioredoxin reductase, and the molecular mechanisms of oxidative stress." Role: P.I. $200,000 total costs
9/1/05 - 8/31/07	Petroleum Research Fund (PRF # 42428-G3) "Electrochemical studies of CueO, a multicopper oxidase." Role: P.I. $35,000 total costs
3/1/06 - 2/28/11	National Science Foundation (MCB 0546323) "CAREER: Redox Bioinorganic Chemistry and Protein-protein Interactions at an Electrode" Role: P.I. $839,958 projected total costs
9/1/06 - 8/30/11	National Institutes of Health (NIGMS, R01-GM0726663) "The Electrochemistry of Diheme Peroxidases" Role: P.I. $1,051,877 projected total costs