

BIOGRAPHICAL SKETCH

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NAME: GROVES, JOHN T.

eRA COMMONS USER NAME (credential, e.g., agency login): jtgroves

POSITION TITLE: Hugh Stott Taylor Chair of Chemistry

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Massachusetts Institute of Technology, Cambridge, MA	BS	06/1965	Chemistry
Columbia University, New York, NY	PHD	06/1969	Chemistry

A. Personal Statement

The major thrust of our research program is at the interface of organic, inorganic, and biological chemistry. We are particularly focused on metalloenzymes and biomimetic redox catalysts, especially those containing iron and manganese that can transform C-H bonds into hydroxyl groups. Our studies, built on the traditions of physical organic chemistry, have defined the oxygen rebound mechanism of oxygen activation and transfer by cytochrome P450 enzymes and has become a central paradigm in the field of bioinorganic chemistry. Our laboratories moved into a completely new facility in the fall of 2010 with space for 16 coworkers that has greatly facilitated our research effort.

B. Positions, Scientific Appointments, and Honors**Positions and Scientific Appointments**

1991 - Hugh Stott Taylor Chair of Chemistry, Princeton University
 1985 - Professor, Department of Chemistry, Princeton University
 2006 - Board of Editors, Journal of Inorganic Biochemistry
 1984 - International Advisory Board, Symposium on Homogeneous Catalysis
 2021 - Founder and scientific advisory board member, Sólíome Inc.
 2009 - Founder and Principal Scientist, HepatoChem LLC
 2015 - Founder and Principal Scientist, Fluoromic Technologies LLC
 2022 - 2022 Nichols Distinguished Lecturer, ACS
 2019 - 2019 Ritter Memorial, Miami University Ohio
 2018 - 2018 Kolthoff Lectureship, University of Minnesota
 2018 - 2018 Ross Distinguished Lecturer, Dartmouth College
 2015 - 2015 Sigma-Aldrich Award in Inorganic Chemistry, Northwestern University
 2015 - 2015 Rayson Huang Prize and Lectureship in Chemistry, University of Hong Kong
 2008 - 2011 National Science Foundation Extension Award for Special Creativity, NSF
 2007 - 2007 Cady Distinguished Lecturer, University of Washington
 2005 - 2005 Chair, Synthetic & Bioorganic Special Emphasis Panel, NIH
 2004 - 2005 Co-chair, ACS-NSF Committee and Workshop on the Molecular Basis of Life Processes
 1999 - 1999 Ad hoc Member, Metallobiochemistry Study Section, NIH
 1998 - 2002 Member, Council of the Society for Biological Inorganic Chemistry
 1996 - 1996 Co-chair, 10th International Symposium on Homogeneous Catalysis
 1995 - 1998 Editorial Board, Journal of Biological Inorganic Chemistry

1995 - 1997 Editorial Board, Inorganic Chemistry
1994 - 1994 Chair, Metals in Biology Gordon Research Conference
1993 - 2005 Board of Editors, Bioorganic and Medicinal Chemistry (and Letters)
1989 - 1989 Nichols Distinguished Lecturer, ACS
1988 - 1993 Chair, Department of Chemistry, Princeton University
1986 - 1986 Ad hoc Consultant, National Advisory General Medical Council
1983 - 1993 Board of Editors, Bioorganic Chemistry
1983 - 1985 Director, Michigan Center for Catalysis and Surface Science
1979 - 1985 Professor, Department of Chemistry, University of Michigan
1979 - 1983 Member, Metallobiochemistry Study Section, National Institutes of Health
1969 - 1979 Assistant/Associate Professor, Department of Chemistry, University of Michigan
1965 - 1969 Faculty Fellow, Columbia University

Honors

2015 - 2015 American Chemical Society Award in Inorganic Chemistry, ACS
2012 - 2018 Merit Award, National Institute of General Medical Sciences, NIH
2012 Member, National Academy of Sciences
2010 - 2010 Ira Remsen Award, American Chemical Society
2010 - 2010 Hans Fischer Career Award in Porphyrin Chemistry, Hans Fischer Gesellschaft, Munich
2009 - 2009 Frontiers in Biological Chemistry Award, Max Planck Institute, Mülheim
2009 Fellow, Royal Society of Chemistry
2008 - 2011 Extension Award for Special Creativity, NSF
2008 - 2008 Grand Prix, Maison de la Chimie, laureate (for contributions to mankind & nature)
2003 - 2003 Distinguished Visiting Professor, University of Hong Kong
2000 - 2000 Distinguished Lecturer in Inorganic Chemistry, Northwestern University
2000 - 2000 Abbott Distinguished Lecturer in Organic Chemistry, Colorado State University
1996 - 1996 Alfred Bader Award in Bioorganic and Bioinorganic Chemistry, ACS
1993 - 1993 Morris Kharash Visiting Professor, University of Chicago
1993 Fellow, American Academy of Arts and Sciences
1991 - 1991 Arthur C. Cope Scholar Award, American Chemical Society
1990 - 1992 National Science Foundation Extension Award for Special Creativity, NSF
1987 - 1987 Fellow, Japan Society for the Promotion of Science
1984 Fellow, American Association for the Advancement of Science
1978 - 1978 Phi Lambda Upsilon Award, for Graduate Teaching and Leadership
1969 - 1969 L. P. Hammett Fellowship, for Outstanding Graduate Research
1966 - 1969 National Institute of Health Pre-doctoral Fellow, Columbia University

C. Contributions to Science

1.

- a. Nelp M, Zheng V, Davis K, Stiefel W, Groves J. Potent Activation of Indoleamine 2,3-Dioxygenase by Polysulfides. *Journal of the American Chemical Society*. 2019 August 22; 141(38):15288-15300. Available from: <https://pubs.acs.org/doi/10.1021/jacs.9b07338> DOI: 10.1021/jacs.9b07338
- b. Nelp M, Kates P, Hunt J, Newitt J, Balog A, Maley D, Zhu X, Abell L, Allentoff A, Borzilleri R, Lewis H, Lin Z, Seitz S, Yan C, Groves J. Immune-modulating enzyme indoleamine 2,3-dioxygenase is effectively inhibited by targeting its apo-form. *Proceedings of the National Academy of Sciences*. 2018 March 12; 115(13):3249-3254. Available from: <https://pnas.org/doi/full/10.1073/pnas.1719190115> DOI: 10.1073/pnas.1719190115
- c. Huang X, Groves J. Oxygen Activation and Radical Transformations in Heme Proteins and Metalloporphyrins. *Chemical Reviews*. 2017 December 29; 118(5):2491-2553. Available from: <https://pubs.acs.org/doi/10.1021/acs.chemrev.7b00373> DOI: 10.1021/acs.chemrev.7b00373
- d. Chan KH, Groves JT. Concise Modular Synthesis and NMR Structural Determination of Gallium Mycobactin T. *J Org Chem*. 2021 Nov 5;86(21):15453-15468. PubMed PMID: 34699221.

2.

- a. Li G, Kates P, Dilger A, Cheng P, Ewing W, Groves J. Manganese-Catalyzed Desaturation of N-Acyl Amines and Ethers. *ACS Catalysis*. 2019 September 18; 9(10):9513-9517. Available from: <https://pubs.acs.org/doi/10.1021/acscatal.9b03457> DOI: 10.1021/acscatal.9b03457
- b. Tang L, Zhu L, Ener ME, Gao H, Wang Y, Groves JT, Spiro TG, Fang C. Photoinduced charge flow inside an iron porphyrine complex. *Chem Commun (Camb)*. 2019 Nov 7;55(90):13606-13609. PubMed PMID: 31657387.
- c. Coutard N, Goldberg JM, Valle HU, Cao Y, Jia X, Jeffrey PD, Gunnoe TB, Groves JT. Aerobic Partial Oxidation of Alkanes Using Photodriven Iron Catalysis. *Inorg Chem*. 2022 Jan 17;61(2):759-766. PubMed PMID: 34962799.
- d. Coutard N, Musgrave C, Moon J, Liebov N, Nielsen R, Goldberg J, Li M, Jia X, Lee S, Dickie D, Schinski W, Wu Z, Groves J, Goddard W, Gunnoe T. Manganese Catalyzed Partial Oxidation of Light Alkanes. *ACS Catalysis*. 2022 April 19; 12(9):5356-5370. Available from: <https://pubs.acs.org/doi/10.1021/acscatal.2c00982> DOI: 10.1021/acscatal.2c00982

3.

- a. Nichole A. Schwartz, Shunyan Gu, Bradley A. McKeown, Xiongyi Huang, Nicholas C. Boaz, T. Brent Gunnoe, John T. Groves, Studies of C-H Activation and Functionalization: Combined Computational and Experimental Efforts to Elucidate Mechanisms, Principles and Catalysts, Ch. 34 in *Computational Materials, Chemistry, and Biochemistry: From Bold Initiatives to the Last Mile*, Sadasivan Shankar, Richard Muller, Thom Dunning, Guan Hua Chen, Eds., Springer Series in Materials Science, Springer Nature Switzerland AG, **2021**, Vol. 284, pp 767-806. doi.org/10.1007/978-3-030-18778-1_34
- b. Courtney F. McQueen, John T. Groves, Toxicity of the Iron Siderophore Mycobactin J in Mouse Macrophages: Evidence for a Hypoxia Response, *Journal of Inorganic Biochemistry*, **2022**, 227, 111669. doi.org/10.1016/j.jinorgbio.2021.111669
- c. Dong Wang and John T. Groves, An Energy Landscape for Electrocatalytic Oxidation of Water by a Single-site Oxomanganese(V) Porphyrin. *Inorganic Chemistry*, **2022**, 61, <https://doi.org/10.1021/acs.inorgchem.2c02284>
- d. Charles B. Musgrave III, Kaeleigh Olsen, Nichole S. Liebov, John T. Groves, William A. Goddard III, T. Brent Gunnoe, Partial Oxidation of Methane Enabled by Decatungstate Photocatalysis Coupled to Free Radical Chemistry, *ACS Catalysis* 2023, in press.