Ann M. Valentine

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education

University of Virginia (Charlottesville, VA)
BS in Chemistry with Highest Honors, May 1993

Massachusetts Institute of Technology (Cambridge, MA)
PhD in Chemistry, September 1998

Pennsylvania State University (University Park, PA)
Postdoctoral Fellowship 1998-2001

appointments

2015-current	**Vice Chair** Temple University, Department of Chemistry, Philadelphia, PA
2011-current	**Associate Professor** Temple University, Department of Chemistry, Philadelphia, PA
2007-2011	**Associate Professor** Yale University, Department of Chemistry, New Haven, CT
2001-2007	**Assistant Professor** Yale University, Department of Chemistry, New Haven, CT
1998-2001	**National Institutes of Health Postdoctoral Fellow** Pennsylvania State University, University Park, PA
1994-1998	**Research Assistant** Massachusetts Institute of Technology, Cambridge, MA
1993-1994	**Teaching Assistant** Massachusetts Institute of Technology, Cambridge, MA
1991-1993	**Howard Hughes Undergraduate Research Fellow** University of Virginia, Charlottesville, VA

selected awards

2016	Dean's Distinguished Teaching Award, Temple University
2015	Professor of the Year, Temple University Honors Program
2014	Chemical Pioneer Award, American Institute of Chemists
2009	Paul Saltman Award, Metals in Biology Gordon Conference
2007	American Chemical Society PROGRESS/Dreyfus Lectureship Award
2006	American Cancer Society Research Scholar Award
2006-2007	Junior Faculty Fellowship, Yale University
2004	National Science Foundation CAREER award
2003	Research Corporation Research Innovation Award
2002	DuPont Corporation Aid to Education Award
1994	Award for Outstanding Teaching, Chemistry Department, MIT
1993	Phi Beta Kappa, University of Virginia

publications

KE Jones, KE Batchler, C Zalouk, AM Valentine "Ti(IV) and the Siderophore Desferrioxamine B: A Tight Complex Has Biological and Environmental Implications" *Inorg. Chem.* **2017**, *56*, 1264-1272.

X Zhu, M Fryd, C Barrero, S Merali, C Fecchio, AM Valentine, BB Wayland "Kinetic-Mechanistic Studies of *P. cepacia* Lipase Catalyzed Corona Charge Selective Micelle Degradation" *Journal of Molecular Catalysis. B, Enzymatic* **2016**, *133*, 187-195.

MR Zierden, AM Valentine "Contemplating a Role for Titanium in Organisms" *Metallomics* **2016***, 8*, 9-16.

AM Valentine "Exploring a Role for Titanium in Bioinorganic Chemistry" *The Chemist* **2015**, *88,* 7-10.

X Zhu, M Fryd, AM Valentine, BB Wayland "Detection of *P. cepacia* Lipase Isoforms by Corona Charge Selective Block Copolymer Micelle Degradation" *Chemical Communications* **2014**, *50*, 964-967.

FF Amos, KE Cole, RL Meserole, JP Gaffney, AM Valentine "Titanium Mineralization in Ferritin: A Room Temperature Non-Photochemical Preparation and Biophysical Characterization" *J. Biol. Inorg. Chem.* **2013,** *18*, 145-152.

KM Buettner, JM Collins, AM Valentine "Titanium(IV) and Vitamin C: Aqueous Complexes of a Bioactive Form of Ti(IV)" *Inorg. Chem.* **2012**, *51*, 11030-11039.

AD Tinoco, HR Thomas, CD Incarvito, A Saghatelian, AM Valentine "Cytotoxicity of a Ti(IV) Compound is Independent of Serum Proteins" *Proc. Natl. Acad. Sci. USA* **2012**, *109*, 5016-5021.

KM Buettner, AM Valentine "Bioinorganic Chemistry of Titanium" *Chemical Reviews* **2012**, *112*, 1863-1881.

JP Gaffney, AM Valentine "Beyond Bilobal: Transferrin Homologs Having Unusual Domain Architectures" *Biochimica et Biophysica Acta,* **2012,** *1820*, 212-217.

KM Buettner, RC Snoeberger III, VS Batista, AM Valentine "Pharmaceutical Formulation Affects Titanocene Transferrin Interactions" *Dalton Transactions* **2011**, *40*, 9580-9588.

JP Gaffney, AM Valentine "The Challenges of Trafficking Hydrolysis Prone Metals and Ascidians as an Archetype" *Dalton Transactions* **2011**, *40*, 5827-5835.

CJ Parker Siburt, EM Lin, SJ Brandt, AD Tinoco, AM Valentine, AL Crumbliss "Redox Potentials of Ti(IV) and Fe(III) Complexes Provide Insights Into Titanium Biodistribution Mechanisms" *J. Inorg. Biochem.* **2010**, *104*, 1006-1009.

JP Gaffney, AM Valentine "Contrasting Synergistic Anion Effects in Vanadium (V) Binding to Nicatransferrin Versus Human Serum Transferrin" *Biochemistry* **2009**, *48*, 11609-11611.

R Uppal, HP Israel, CD Incarvito, AM Valentine "Titanium(IV) Complexes with N,N'-dialkyl-2,3-dihydroxyterephthalamides and 1-hydroxy-2(1H)-pyridinone as Siderophore and Tunichrome Analogues" *Inorg. Chem.* **2009**, *48*, 10769-10779.

AD Tinoco, EA Eames, CD Incarvito, AM Valentine "Hydrolytic Metal with a Hydrophobic Periphery: Titanium(IV) Complexes of Naphthalene-2,3-diolate and Interactions with Serum Albumin" *Inorg. Chem*. **2008**, *47*, 8380-8390.

AD Tinoco, EA Eames, AM Valentine "Reconsideration of Serum Ti(IV) Transport: Albumin and Transferrin Trafficking of Ti(IV) and Its Complexes" *J. Am. Chem. Soc*. **2008**, *130*, 2262-2270.

AD Tinoco, CW Peterson, B Lucchese, RP Doyle, AM Valentine "On the Evolutionary Significance and Metal-binding Characteristics of a Monolobal Transferrin from *Ciona intestinalis*" *Proc. Natl. Acad. Sci. USA* **2008**, *105*, 3268-3273.

R Uppal, KV Lakshmi, AM Valentine "Isolation and Characterization of the Primitive Monolobal Transferrin from *Ciona intestinalis*" *J. Biol. Inorg. Chem.* **2008**, *13*, 873-885.

KE Cole, AM Valentine "Spermidine and Spermine Catalyze the Formation of Nanostructured Titanium Oxide" *Biomacromolecules* **2007**, *8*, 1641-1647

AD Tinoco, CD Incarvito, AM Valentine "Calorimetric, Spectroscopic, and Model Studies Provide Insight Into the Transport of Ti(IV) by Human Serum Transferrin" *J. Am. Chem. Soc.* **2007**, *129*, 3444-3454.

KE Cole, AN Ortiz, MA Schoonen, AM Valentine "Peptide- and Long-Chain Polyamine-Induced Synthesis of Micro- and Nanostructured Titanium Phosphates" *Chem. Mater.* **2006,** *18*, 4592-4599.

R Uppal, CD Incarvito, KV Lakshmi, AM Valentine "Aqueous Spectroscopy and Redox Properties of Carboxylate-Bound Titanium" *Inorg. Chem.* **2006**, *45*, 1795-1804.

KE Cole, AM Valentine "Titanium Biomaterials: Titania Needles in the Test of the Foraminiferan *Bathysiphon argenteus*" *Dalton Trans.* **2006**, *3*, 430-432.

Tinoco, A. D.; Valentine, A. M. "Ti(IV) Binds to Human Serum Transferrin More Tightly Than Does Fe(III)" *J. Am. Chem. Soc.* **2005**, *127*, 11218-11219.

JM Collins, R Uppal, CD Incarvito, AM Valentine "Titanium(IV) Citrate Speciation and Structure under Environmentally and Biologically Relevant Conditions" *Inorg. Chem.* **2005**, *44*, 3431-3440.

AM Valentine "Titanium: Inorganic and Coordination Chemistry" in Encyclopedia of Inorganic Chemistry, 2nd ed., R.B. King, ed. Chichester: John Wiley and Sons, 2005.

MA Trakselis, RM Roccasecca, J Yang, AM Valentine, SJ Benkovic "Dissociative Properties of the Proteins Within the Bacteriophage T4 Replisome" *J. Biol. Chem.* **2003**, *278*, 49839 - 49849.

S Smoukov, DA Kopp, AM Valentine, R Davydov, SJ Lippard, BM Hoffman "Product Binding to the Diiron(III) and Mixed-Valence Diiron Centers of Methane Monooxygenase Hydroxylase Studied by ^{1,2}H and ^{19}F ENDOR Spectroscopy" *J. Am. Chem. Soc.* **2002**, *124*, 2657-2663.

AM Valentine, FT Ishmael, VK Shier, SJ Benkovic "A Zinc Ribbon Protein in DNA Replication: Primer Synthesis and Macromolecular Interactions by the Bacteriophage T4 Primase" *Biochemistry* **2001**, *40*, 15074-15085.

SJ Benkovic, AM Valentine "Enzyme Kinetics" in Encyclopedia of Physical Science and Technology, 3rd ed., vol. 5, R. A. Meyers, ed., New York: Academic Press, 2001.

SJ Benkovic, AM Valentine, FG Salinas "Replisome-Mediated DNA Replication" *Annu. Rev. Biochem.* **2001**, *70*, 181-208.

Z Wang, W Fast, AM Valentine, SJ Benkovic "Metallo-beta-lactamase: Structure and Mechanism" *Curr. Opin. Chem. Biol.* **1999**, *3*, 614-622.

AM Valentine, SS Stahl, SJ Lippard "Mechanistic Studies of the Reaction of Reduced Methane Monooxygenase Hydroxylase with Dioxygen and Substrates" *J. Am. Chem. Soc.* **1999**, *121*, 3876-3887.

AM Valentine, MH LeTadic-Biadatti, P Toy, ME Newcomb, SJ Lippard "Oxidation of Ultrafast Radical Clock Substrate Probes by the Soluble Methane Monooxygenase from *Methylococcus capsulatus* (Bath)" *J. Biol. Chem.* **1999**, *274,* 10771-10776.

R Davydov, AM Valentine, S Komar-Panicucci, BM Hoffman, SJ Lippard "An EPR Study of the Dinuclear Iron Site in the Soluble Methane Monooxygenase Reduced by One Electron at 77 K. The Effects of Component Interactions and the Binding of Small Molecules to the Diiron(III) Center" *Biochemistry* **1999**, *38*, 4188-4197.

J-P Willems, AM Valentine, R Gurbiel, SJ Lippard, BM Hoffman "Small Molecule Binding to the Mixed-Valent Diiron Center of Methane Monooxygenase Hydroxylase from *Methylococcus capsulatus* (Bath) as Revealed by ENDOR Spectroscopy" *J. Am. Chem. Soc.***1998**, *120*, 9410-9416.

DA Whittington, AM Valentine, SJ Lippard "Substrate Binding and C-H Activation in the Soluble Methane Monooxygenase Hydroxylase" *J. Biol. Inorg. Chem.* **1998**, *3*, 307-313

AM Valentine, P Tavares, AC Pereira, R Davydov, C Krebs, BM Hoffman, DE Edmondson, BH Huynh, SJ Lippard "Generation of a Mixed-Valent Fe(III)Fe(IV) Form of Intermediate Q in

the Reaction Cycle of Soluble Methane Monooxygenase; an Analog of Intermediate X in Ribonucleotide Reductase R2 Assembly" *J. Am. Chem. Soc.* **1998**, *120*, 2190-2191.

AM Valentine, SJ Lippard "Principles of Small Molecule Activation by Metalloproteins as Exemplified by the Soluble Methane Monooxygenase" *J. Chem. Soc., Dalton Trans.* **1997**, *21*, 3925-3931.

AM Valentine, B Wilkinson, KE Liu, S Komar-Panicucci, N Priestley, PG Williams, H Morimoto, HG Floss, SJ Lippard "Tritiated Chiral Alkanes as Substrates for Soluble Methane Monooxygenase from *Methylococcus capsulatus* (Bath): Probes for the Mechanism of Hydroxylation" *J. Am. Chem. Soc.* **1997**, *119*, 1818-1827.

KE Liu, AM Valentine, D Wang, BH Huynh, DE Edmondson, A Salifoglou, SJ Lippard "Kinetic and Spectroscopic Characterization of Intermediates and Component Interactions in Reactions of Methane Monooxygenase from *Methylococcus capsulatus* (Bath)" *J. Am. Chem. Soc.* **1995**, *117*, 10174-10185.

KE Liu, AM Valentine, D Qiu, DE Edmondson, EH Appelman, TG Spiro, SJ Lippard "Characterization of a Diiron(III) Peroxo Intermediate in the Reaction Cycle of Methane Monooxygenase from *Methylococcus capsulatus* (Bath)" *J. Am. Chem. Soc.* **1995**, 117, 4997-4998; Correction **1997**, *119*, 11134.

invited lectures

2018 (scheduled) Christopher Newport University

2017 (given or scheduled) American Chemical Society National Meeting (San Francisco, CA) (invited talk), Canadian Society of Chemistry (CSC) National Meeting (Toronto) (invited talk), American Chemical Society Mid-Atlantic Regional Meeting (Hershey, PA) (invited talk), Emory University, Gettysburg College

2016 Philadelphia Inorganic Colloquium, International Symposium on Solubility Products (ISSP)-17 (Geneva, Switzerland) (invited talk), American Chemical Society National Meeting (Philadelphia, PA)

2015 American Chemical Society National Meeting (Denver, CO) (invited talk), Northeast Regional American Chemical Society Meeting (Ithaca, NY) (invited talk), University of Pennsylvania, Colgate University

2014 American Chemical Society National Meeting (Dallas, TX) (invited talk), Moravian College, Haverford College, American Institute of Chemists Annual Meeting (Chemical Pioneers Award Lecture)

2013 Villanova University, Lebanon Valley College, Temple University Department of Biomedical Engineering

2012 Ithaca College, Drexel University, St. Joseph's University, American Chemical Society National Meeting (Philadelphia, PA: 2 talks), Temple University Department of Biology

2011 University of Pittsburgh, Brandeis University

2010 University of Toronto, Canadian Society for Chemistry National Meeting, American Chemical Society Northeast Regional Meeting, American Chemical Society National Meeting (Stephen Lippard symposium invited talk), Brooklyn

College, Temple University, University of Iowa, University of Utah, City College of New York, Johns Hopkins University, University of Maryland, University of Virginia, George Washington University

2009 Gordon Conference on Metals in Biology (Paul Saltman Award Lecture), University of Rochester, Syracuse University, Gordon Conference on Inorganic Chemistry, American Chemical Society National Meeting (New Faces of Biomimetic Coordination Chemistry Symposium invited talk), American Chemical Society Regional Meeting (invited talk on K-12 science outreach programs), Wesleyan University, Notre Dame University, Arizona State University

2008 Boston University, Yale Institute for Nanoscience and Quantum Engineering, Lafayette College, Electrochemical Society National Meeting, Gordon Conference on Environmental Bioinorganic Chemistry, University of California Berkeley, University of North Carolina (Charlotte), University of Georgia, Brown University, Swarthmore College, Northeastern University

2007 Boston Regional Inorganic Chemistry Colloquium, University of Massachusetts (Dartmouth), University of Massachusetts (Amherst), University of Wisconsin, University of Pittsburgh, Bucknell University, California Institute of Technology

2006 Yale Chemical Biology Symposium (featured in *Chemistry and Biology* 2006 *13* 685-687), University of Virginia, Carnegie Mellon University, Rensselaer Polytechnic Institute

2005 Barnard College, University of Connecticut, Dartmouth College

2004 Yale University, American Chemical Society National Meeting (Anaheim), Bryn Mawr, University of Virginia, Crompton Corporation, Trinity College, Colby College, Bates College, Bowdoin College

2003 Wesleyan University, Penn College, Union College

2002 DuPont Corporation, Hunter College

former PhD students/postdocs

graduate students

Joseph Collins (PhD 2006) GDMS Analytical Chemist, H.C. Starck, Newton, MA
Arthur Tinoco (PhD 2007) Associate Professor, University of Puerto Rico
Ritika Uppal (PhD 2007) Research Scientist, GE Biosciences, India
Kathryn Cole (PhD 2009) Assistant Professor, Christopher Newport University
Jean Gaffney (PhD 2011) Assistant Professor, Baruch College of CUNY
Kathleen Batchler (PhD 2011) High School Teacher, East Catholic High School, CT
Katherine Buettner (PhD 2012) Assistant Professor, Gettysburg College
Mark Zierden (PhD 2016) Postdoc, University of Pennsylvania
Kayleigh Jones (PhD 2017) Analytical Scientist, Frontida BioPharm, Philadelphia, PA

postdocs

Bindu Meprathu (2001-2002) Adjunct Professor of Chemistry, Santa Rosa Junior College
Baldo Lucchese (2003-2005) Associate Editor, Nature Publishing Group
Robert Doyle (2003-2005) Professor of Chemistry, Syracuse University
Akira Iinishi (2010-2011) Research Scientist, Rohto Pharmaceuticals, Japan
Fairland Amos (2010-2011) Process Engineer, Cleanpart East, Boston, MA

other significant activities

Advisory Board Member and Mentor, Minority Access to Research Careers (MARC) (2012-)
Presenter, Philadelphia Area Girls Enjoying Science (PAGES) (2012-)
Provost's Teaching Academy, Temple University (2012)
Mentor, Retention and Success Initiative, Temple Teaching and Learning Center (2013)
Discussion Leader, Annual Teaching and Learning Center Conference (2013, 2017)
Advisory Committee Member, Resnick Academic Support Center, Temple University (2014-)
Alternate Councilor, American Chemical Society Division of Inorganic Chemistry (2017-)