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education

University of Virginia (Charlottesville, VA)
B.S. in Chemistry with Highest Honors, May 1993

Massachusetts Institute of Technology (Cambridge, MA)
Ph.D. in Chemistry, September 1998
Thesis in Inorganic Chemistry with Stephen J. Lippard
Title: Bioinorganic Hydrocarbon Oxidation: Mechanistic and Kinetic Studies of the Soluble Methane Monooxygenase from *Methylococcus capsulatus* (Bath)

Pennsylvania State University (University Park, PA)
Postdoctoral Fellowship 1998-2001 with Stephen J. Benkovic
Title: Structure and Mechanism of the Bacteriophage T4 Primosome

appointments

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

awards

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
2005	Fellow, Whitney Humanities Center at Yale
2004	National Science Foundation CAREER award
2003	Research Corporation Research Innovation Award
2002	DuPont Corporation Aid to Education Award
1998	NIH Postdoctoral Fellowship
1994	Award for Outstanding Teaching, Chemistry Department, MIT
1993	Phi Beta Kappa, University of Virginia

publications

Tinoco, A. D.; Thomas, H. R.; Incarvito, C. D.; Saghatelian, A.; Valentine, A. M. "Cytotoxicity of a Ti(IV) Compound is Independent of Serum Proteins" *Proc. Natl. Acad. Sci. USA* **2012**, *109*, 5016-5021.

Buettner, K. M.; Valentine, A. M. "Bioinorganic Chemistry of Titanium" *Chemical Reviews* **2012**, *112*, 1863-1881.

Gaffney, J. P.; Valentine A. M. "Beyond Bilobal: Transferrin Homologs Having Unusual Domain Architectures" *Biochimica et Biophysica Acta,* **2012,** *1820*, 212-217.

Buettner, K. M.; Valentine, A. M. "Pharmaceutical Formulation Affects Titanocene Transferrin Interactions" *Dalton Transactions* **2011**, 40, 9580-9588.

Gaffney, J. P.; Valentine A. M. "The Challenges of Trafficking Hydrolysis Prone Metals and Ascidians as an Archetype" *Dalton Transactions* **2011**, 40, 5827-5835.

Parker Siburt, C. J.; Lin, E. M.; Brandt, S. J., Tinoco, A. T.; Valentine, A. M.; Crumbliss, A. L. "Redox Potentials of Ti(IV) and Fe(III) Complexes Provide Insights Into Titanium Biodistribution Mechanisms" *J. Inorg. Biochem.* **2010**, *104*, 1006-1009.

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

Uppal, R.; Israel, H. P.; Incarvito, C. D.; Valentine, A. M. "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.

Tinoco, A. D.; Eames, E. A.; Incarvito, C. D.; Valentine, A. M. "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.

Tinoco, A. D.; Eames, E. A.; Valentine, A. M. "Reconsideration of Serum Ti(IV) Transport: Albumin and Transferrin Trafficking of Ti(IV) and Its Complexes" *J. Am. Chem. Soc*. **2008**, *130*, 2262-2270.

Tinoco, A. D.; Peterson, C. W.; Lucchese, B.; Doyle, R. P.; Valentine, A. M. "On the Evolutionary Significance and Metal-binding Characteristics of a Monolobal Transferrin from *Ciona intestinalis*" *Proc. Natl. Acad. Sci. USA* **2008**, *105*, 3268-3273.

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

Cole, K. E.; Valentine, A. M. "Spermidine and Spermine Catalyze the Formation of Nanostructured Titanium Oxide" *Biomacromolecules* **2007**, *8*, 1641-1647.

Tinoco, A. T.; Incarvito, C. D.; Valentine, A. M. "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.

Cole, K. E.; Ortiz, A. N.; Schoonen, M. A., Valentine, A. M. "Peptide- and Long-Chain Polyamine-Induced Synthesis of Micro- and Nanostructured Titanium Phosphates" *Chem. Mater.* **2006,** *18*, 4592-4599.

Uppal, R.; Incarvito, C. D.; Lakshmi, K. V.; Valentine, A. M. "Aqueous Spectroscopy and Redox Properties of Carboxylate-Bound Titanium" *Inorg. Chem.* **2006**, *45*, 1795-1804.

Cole, K. E.; Valentine, A. M. "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.

Collins, J. M.; Uppal, R.; Incarvito, C. D.; Valentine, A. M. "Titanium(IV) Citrate Speciation and Structure under Environmentally and Biologically Relevant Conditions" *Inorg. Chem.* **2005**, *44*, 3431-3440.

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

Trakselis, M. A.; Roccasecca, R. M.; Yang J.; Valentine A. M.; Benkovic S. J. "Dissociative Properties of the Proteins Within the Bacteriophage T4 Replisome" *J. Biol. Chem.* **2003**, *278*, 49839 - 49849.

Smoukov, S.; Kopp, D. A.; Valentine, A. M.; Davydov, R.; Lippard, S. J.; Hoffman, B. M. "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.

Valentine, A. M.; Ishmael, F. T.; Shier, V. K.; Benkovic, S. J. "A Zinc Ribbon Protein in DNA Replication: Primer Synthesis and Macromolecular Interactions by the Bacteriophage T4 Primase" *Biochemistry* **2001**, *40*, 15074-15085.

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

Benkovic, S. J.; Valentine, A. M.; Salinas, F. G. "Replisome-Mediated DNA Replication" *Annu. Rev. Biochem.* **2001**, *70*, 181-208.

Wang, Z.; Fast W.; Valentine, A. M.; Benkovic, S. J. "Metallo-beta-lactamase: Structure and Mechanism" *Curr. Opin. Chem. Biol.* **1999**, *3*, 614-622.

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

Valentine, A. M.; LeTadic-Biadatti, M. H.; Toy, P.; Newcomb, M. E.; Lippard, S. J. "Oxidation of Ultrafast Radical Clock Substrate Probes by the Soluble Methane Monooxygenase from *Methylococcus capsulatus* (Bath)" *J. Biol. Chem.* **1999**, *274,* 10771-10776.

Davydov, R.; Valentine, A. M.; Komar-Panicucci, S.; Hoffman, B. M.; Lippard, S. J. "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.

Willems, J.-P.; Valentine, A. M.; Gurbiel, R.; Lippard, S. J.; Hoffman, B. M. "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.

Whittington, D. A.; Valentine, A. M.; Lippard, S. J. "Substrate Binding and C-H Activation in the Soluble Methane Monooxygenase Hydroxylase" *J. Biol. Inorg. Chem.* **1998**, *3*, 307-313

Valentine, A. M.; Tavares, P.; Pereira, A. C.; Davydov, R.; Krebs, C.; Hoffman, B. M.; Edmondson, D. E.; Huynh, B. H.; Lippard, S. J. "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.

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

Valentine, A. M.; Wilkinson, B.; Liu, K. E.; Komar-Panicucci, S.; Priestley, N.; Williams, P. G.; Morimoto, H.; Floss, H. G.; Lippard, S. J. "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.

Liu, K. E.; Valentine, A. M.; Wang, D.; Huynh, B. H.; Edmondson, D. E.; Salifoglou, A.; Lippard, S. J. "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.

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