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Research Interests

Sequence and conformation specific reactions of nucleic acids; enzyme-mediated activation of substrates and coenzymes; halogenation and dehalogenation reactions in biology; aromatic substitution and quinone methide generation in bioorganic chemistry; copper- and nickel-mediated reactions in bioinorganic chemistry, electron transfer in biopolymers.

Education

B.S. Chemistry (1979), College of Chemistry, University of California, Berkeley, CA
Ph.D. Biological Chemistry (1983), Department of Chemistry, MIT, Cambridge, MA

Professional Experience and Appointments

1979 - 83 *Doctoral student* with Prof. Christopher T. Walsh at MIT.
1983-85 *N.I.H. post-doctoral fellow* with the late Prof. E. Thomas Kaiser at Rockefeller University.
1986-91 *Assistant Professor of Chemistry*, University at Stony Brook
1993 *Visiting Associate Professor of Chemistry*, Johns Hopkins University
1991-95 *Associate Professor of Chemistry*, University at Stony Brook
1995-98 *Associate Professor of Chemistry*, University of Maryland, College Park, MD
1998-2012 *Professor of Chemistry*, University of Maryland, College Park, MD
2007-2012 Member, University of Maryland Greenebaum Cancer Center
2007-2012 Member, Maryland Nanocenter
2012- Professor, Department of Chemistry, Johns Hopkins University
2014- Joint appointment, Department of Biology, Johns Hopkins University

Teaching Experience

Undergraduate Organic Chemistry Laboratory; Introductory Organic Chemistry (lecture); Biochemistry (metabolism); Survey of Biochemistry
Graduate Mechanistic Organic Chemistry; Chemistry of Biological Catalysis; Nucleic Acid Chemistry; Enzyme Mechanisms; Literature Seminars

Awards/Honors

1979 Phi Beta Kappa, University of CA at Berkeley
1979 Summa Cum Laude, University of CA at Berkeley
1983 Sigma Xi, Massachusetts Institute of Technology
1983-85 NIH Postdoctoral Fellowship
1988 Catosinos Young Investigator in Cancer Research
1987-90 University Exploratory Research Investigator (sponsored by The Procter and Gamble Company)
1994 Pfizer Lecturer, University of Michigan (Department of Med. Chem.)
2001 Outstanding Invention (Novel Copper Complexes), Univ. of Maryland
2002 John Albert Southern Lecturer, Furman University
2005 Faculty Excellence in Research, College of Life Science, University of MD
2005 Graduate Research Board (Univ. of MD) Semester Research Award
2006 Faculty Excellence in Service, College of Life Sciences, University of MD
2009 Honorary Fellow of the Indian Society of Chemists and Biologists
2011 Fellow of the AAAS

Consulting

1992 - 1993	Lifecodes Corporation, CT
1993 - 1995	Garnett McKeen Laboratory, NY
1999 - 2001	ChemAnswers.com
2006 - 2008	Foley & Lardner, LLP
2012	Enzo Life Sciences, Inc.

Professional Activities

1992 (June)	Ad Hoc reviewer for Bioorganic and Natural Products Study Section (NIH)
1992 (October)	Ad Hoc reviewer for Metallobiochemistry Study Section (NIH)
1993 (June)	Ad Hoc member of Bioorganic and Natural Products Study Section (NIH)
1993 - 1997	Member, Molecular Biochemistry Advisory Panel (NSF)
1997 - 1999	Advisory Board, <i>Bioconjugate Chemistry</i>
1997 - 2001	Member, Bioorganic and Natural Products Study Section (NIH)
1998 - 1999	Vice Chair & Chair, Bioorganic Chemistry Gordon Conference
1999 - 2000	Nominating Committee, Biological Chemistry Division, ACS
2002 - 2004	Alternative Councilor, Biological Chemistry Division, ACS
2004	Ad Hoc member of Physical Biochemistry Study Section (NIH)
2007	Program Review (Site Visit), Food and Drug Administration
2007- 2012	Founder and co-organizer of a regional symposium (annual) on chemical biology
2007-	Founder and co-organizer of an international workshop of nucleic acids (biennial)
2008 - 2009	Scientific Advisory Board to the Indian Society of Chemists and Biologists
2010	Ad Hoc member of MSFE Study Section (NIH)
2011 - 2012	Vice Chair & Chair, Enzymes, Coenzymes... Pathways Gordon Conference
2011 -	International Advisory Board for the journal <i>Chemistry & Biology Interface</i>
2014 - 2016	Alternative Councilor, Toxicology Division, ACS
2015 -	Editorial Board, <i>Signal Transduction and Targeted Therapy</i>
2016, 2018	Panel review, Chemistry Life Processes (NSF)
2017	Ad Hoc member of SBCA Study Section (NIH)

Publications

1. Steven E. Rokita, Paul Srere and Christopher T. Walsh* "3-Fluoro-3-deoxycitrate: A Probe for the Mechanistic Study of Citrate Utilizing Enzymes" *Biochemistry* **1982**, *21*, 3765 - 3774.
2. Steven E. Rokita and Christopher T. Walsh* "Turnover and Inactivation of Bacterial Citrate Lyase with 2-Fluorocitrate and 2-Hydroxycitrate Stereoisomers" *Biochemistry* **1983**, *22*, 2821 - 2828.
3. Steven E. Rokita* and Christopher T. Walsh "Flavin and 5-Deazaflavin Photosensitized Cleavage of Thymine Dimer: A Model of in Vivo Light-Requiring DNA Repair" *J. Am. Chem. Soc.* **1984**, *106*, 4589 - 4595.
4. E. T. Kaiser*, David S. Lawrence and Steven E. Rokita "The Chemical Modification of Enzymatic Specificity" *Ann. Rev. in Biochemistry* **1985**, *54*, 565 - 595.
5. Soumitra S. Ghosh, Susan C. Bock, Steven E. Rokita and E. T. Kaiser* "Modification of the Active Site of Alkaline Phosphatase by Site-Directed Mutagenesis" *Science* **1986**, *231*, 145 - 148.
6. Steven E. Rokita and E. T. Kaiser* "Flavolysozyme, a New Semi-Synthetic Enzyme" *J. Am. Chem. Soc.* **1986**, *108*, 4984 - 4987.
7. Xiaoyan Ma and Steven E. Rokita* "Role of Oxygen During Horseradish Peroxidase Turnover and Inactivation" *Biochem. Biophys. Res. Commun.* **1988**, *157*, 160 - 165.
8. Elisa M. Woolridge and Steven E. Rokita* "Synthesis and Reactivity of 6-(Fluoromethyl)indole and 6-(Difluoromethyl)indole" *Tet. Lett.* **1989**, *30*, 6117 - 6120.
9. Steven E. Rokita* and Lorraine Romero-Fredes "Facile Interconversion of Duplex Structures Formed by Copolymers of d(CG)" *Biochemistry* **1989**, *28*, 9674 - 9679.

Publications continued

10. Steven E. Rokita*, Bernard Lau and Lorraine Romero-Fredes "Structural Dependence of Oligonucleotide Photooxidation" *Biopolymers* **1990**, 29, 69 - 77.
11. Steven E. Rokita*, Stacey Prusiewicz and Lorraine Romero-Fredes "The Effect of Ionic Strength on the Photosensitized Oxidation of d(CG)₆" *J. Am. Chem. Soc.* **1990**, 112, 3616 - 3621.
12. Moneesh Chatterjee and Steven E. Rokita* "A Quinone Based Method for Inducible Alkylation of DNA at Predetermined Sequences" *J. Am. Chem. Soc.* **1990**, 112, 6397 - 6399.
13. Elisa M. Woolridge and Steven E. Rokita* "6-(Difluoromethyl)tryptophan as a Probe for Substrate Activation During the Catalysis of Tryptophanase" *Biochemistry* **1991**, 30, 1852-1857.
14. Elisa M. Woolridge and Steven E. Rokita* "The Use of 6-(Difluoromethyl)indole to Study the Activation of Indole by Tryptophan Synthase" *Arch. Biochem. Biophys.* **1991**, 286, 473 - 480.
15. Moneesh Chatterjee and Steven E. Rokita* "Sequence Specific Alkylation of DNA Activated by an Enzymatic Signal" *J. Am. Chem. Soc.* **1991**, 113, 5116 - 5117.
16. Xiaoying Chen, Steven E. Rokita* and Cynthia J. Burrows* "DNA Modification: Intrinsic Selectivity of Nickel(II)-Complexes" *J. Am. Chem. Soc.* **1991**, 113, 5884 - 5886.
17. Tianhu Li and Steven E. Rokita* "Selective Modification of DNA Controlled by an Ionic Signal" *J. Am. Chem. Soc.* **1991**, 113, 7771 - 7773.
18. John E. Butler-Ranshoff, Steven E. Rokita, Debra A. Kendall, Jennifer A. Banzon, Kristin S. Carano, Emil Thomas Kaiser and Albert R. Matlin* "Active-Site Mutagenesis of *E. coli* Alkaline Phosphatase: Replacement of Serine-102 with Non-Nucleophilic Amino Acids" *J. Org. Chem.* **1992**, 57, 142 - 145.
19. Xiaoying Chen, Cynthia J. Burrows* and Steven E. Rokita* "Conformation Specific Detection of Guanosine in DNA: Ends, Mismatches, Bulges and Loops" *J. Am. Chem. Soc.* **1992**, 114, 322 - 325.
20. James G. Muller, Xiaoying Chen, Adonis C. Dadiz, Steven E. Rokita* and Cynthia J. Burrows* "Ligand Effects Associated with the Intrinsic Selectivity of DNA Oxidation Promoted by Nickel(II) Macrocyclic Complexes" *J. Am. Chem. Soc.* **1992**, 114, 6407 - 6411.
21. Steven E. Rokita* and Lorraine Romero-Fredes "The Ensemble Reactions of Hydroxyl Radical Exhibit No Specificity for Primary or Secondary Structure of DNA" *Nucleic Acids Res.* **1992**, 20, 3069 - 3072.
22. Chien-Chung Cheng, Steven E. Rokita* and Cynthia J. Burrows* "Nickel(III)-Promoted DNA Scission Using Ambient Dioxide" *Angew. Chem. Int. Ed.* **1993**, 32, 277-278.
23. James G. Muller, Xiaoying Chen, Adonis C. Dadiz, Steven E. Rokita* and Cynthia J. Burrows* "Macrocyclic Nickel Complexes in DNA Recognition and Oxidation" *Pure and Applied Chem.* **1993**, 65, 545-550.
24. Xiaoying Chen, Sarah A. Woodson, Cynthia J. Burrows* and Steven E. Rokita* "A Highly Sensitive Probe for Guanine N7 in Folded Structures of RNA: Application to tRNA^{phe} and *Tetrahymena* Group I Intron" *Biochemistry* **1993**, 32, 7610-7616.
25. Ute Hänslér and Steven E. Rokita* "Electrostatics Rather Than Conformation Control the Oxidation of DNA by the Anionic Reagent Permanganate" *J. Am. Chem. Soc.* **1993**, 115, 8554-8557.
26. Sarah A. Woodson,* James G. Muller, Cynthia J. Burrows and Steven E. Rokita "A Primer Extension Assay for Modification of Guanine by Ni(II) Complexes" *Nucleic Acids Res.* **1993**, 21, 5524-5525.
27. Moneesh Chatterjee and Steven E. Rokita* "The Role of a Quinone Methide in the Sequence Specific Alkylation of DNA" *J. Am. Chem. Soc.* **1994**, 116, 1690-1697.
28. James G. Muller, Sari J. Paikoff, Steven E. Rokita* and Cynthia J. Burrows* "DNA Modification Promoted by Water-Soluble Nickel(II) Salen Complexes: A Switch to DNA Alkylation" *J. Inorg. Biochem.* **1994**, 54, 199-206.
29. Tianhu Li, Qingping Zeng and Steven E. Rokita* "Target Promoted Alkylation of DNA" *Bioconj. Chem.* **1994**, 5, 497-500.

Publications continued

30. Cynthia J. Burrows* and Steven E. Rokita* "Probing Guanine Structure in Nucleic Acid Folding using Nickel Complexes" *Acc. Chem. Res.* **1994**, *27*, 295-301.
31. Steven E. Rokita,* Ping Zheng, Ning Tang, Chien-Chung Cheng, Ren-Hwa Yeh, James G. Muller, and Cynthia J. Burrows "Nickel Complexes in Modification of Nucleic Acids" in *Genetic Response to Metals* (B. Sarkar, Ed.), Marcel Dekker, New York, 1995, pp 201-216.
32. Cynthia J. Burrows,* James G. Muller, Hui-Chen Shih and Steven E. Rokita "Recognition of B vs Z-Form DNA Using Nickel and Cobalt Complexes" in *Supramolecular Stereochemistry* (J. S. Siegel, ed.), Kluwer, Dordrecht, 1995, 57-62.
33. Cynthia J. Burrows* and Steven E. Rokita "Nickel Complexes as Probes of Guanine Sites in Nucleic Acid Folding" in *Metal Ions in Biological Systems* (H. Sigel, ed.) Marcel Dekker, New York, 1996, Ch. 18, pp. 537-560.
34. Cynthia J. Burrows,* James G. Muller, Gregory T. Poulter, and Steven E. Rokita "Nickel-Catalyzed Oxidations: From Hydrocarbons to DNA" *Acta Chem. Scand.* **1996**, *50*, 337-344.
35. James G. Muller, Ping Zheng, Steven E. Rokita and Cynthia J. Burrows* "DNA Modification Promoted by $[\text{Co}(\text{H}_2\text{O})_6]\text{Cl}_2$: Probing Temperature-Dependent Conformations" *J. Am. Chem. Soc.* **1996**, *118*, 2320-2325.
36. Chien-Chung Cheng, Julia Gulia, Steven E. Rokita and Cynthia J. Burrows* "Dioxygen Chemistry of Nickel(II) Dioxopentaazamacrocyclic Complexes: Substituent and Medium Effects" *J. Mol. Catal.* **1996**, *113*, 379-391.
37. Grant A. McLachlan, James G. Muller, Steven E. Rokita and Cynthia J. Burrows* "Metal-Mediated Oxidation of Guanines in DNA and RNA: A Comparison of Cobalt(II), Nickel(II) and Copper(II) Complexes" *Inorg. Chim. Acta* **1996**, *251*, 193-199.
38. Hyunmin Kang and Steven E. Rokita* "Site-Specific and Photo-Induced Alkylation of DNA by a Dimethylantraquinone-Oligodeoxynucleotide Conjugate" *Nucleic Acids Res.* **1996**, *24*, 3896-3902.
39. Qingping Zeng and Steven E. Rokita* "Tandem Quinone Methide Generation for Cross-linking DNA" *J. Org. Chem.* **1996**, *61*, 9080-9081.
40. Gurpreet Gill, Angelika Richter-Rusli, Madhushree Ghosh, Cynthia J. Burrows and Steven E. Rokita* "Nickel-Dependent Oxidative Cross-linking of a Protein" *Chem. Res. Toxicol.* **1997**, *10*, 302-309.
41. Steven E. Rokita*, Jianhong Yang, Praveen Pande, William A. Greenberg "Quinone Methide Alkylation of Deoxycytidine" *J. Org. Chem.* **1997**, *62*, 3010-3012.
42. Nicholas Delihias,* Steven E. Rokita, and Ping Zheng "Natural Antisense RNA/target RNA interactions--possible models for antisense oligonucleotide drug design" *Nature Biotechnology* **1997**, *15*, 751-753.
43. Cynthia J. Burrows,* Ronelito J. Perez, James G. Muller and Steven E. Rokita "Oxidative DNA Damage Mediated by Metal-Peptide Complexes" *Pure and Applied Chem.* **1998**, *70*, 275-278.
44. Ping Zheng, Cynthia J. Burrows and Steven E. Rokita* "Nickel- and Cobalt-Dependent Reagents Identify Structural Features of RNA that are not Detected by Dimethyl Sulfate or RNase T1" *Biochemistry* **1998**, *37*, 2207-2214.
45. Hui-Chen Shih, Ning Tang, Cynthia J. Burrows and Steven E. Rokita* "Nickel-based Probes of Nucleic Acid Structure Bind to Guanine but do not Perturb a Dynamic Equilibrium of Extrahelical Guanine Residues" *J. Am. Chem. Soc.* **1998**, *120*, 3284-3288.
46. Robyn Hickerson, Victor Duarte, J. David Van Horn, Ronelito Perez, James Muller, Steven E. Rokita, and Cynthia J. Burrows* "DNA Cleavage vs. Cross-linking using Nickel Peptides: Mechanistic Aspects" in *Metals and Genetics* (B. Sarkar, Ed.), Plenum: New York, 1999, 183-196.
47. Jason M. Shearer and Steven E. Rokita* "Diamine Preparation for Synthesis of a Water Soluble Ni(II) Salen Complex" *Bioorg. Med. Chem. Lett.* **1999**, *9*, 510-504.

Publications continued

48. James Muller, Lou Anne Kayser, Sari Paikoff, Victor Duarte, Ning Tang, Ronelito Perez, Steven E. Rokita and Cynthia J. Burrows* "Formation of DNA Adducts Using Nickel(II) Complexes of Redox-Active Ligands: A comparison of salen and peptide complexes" *Coord. Chem. Rev.* **1999**, *186*, 761-774.
49. Munetaka Kunishima, Jessica E. Friedman and Steven E. Rokita* "Transition-State Stabilization by a Mammalian Reductive Dehalogenase" *J. Am. Chem. Soc.* **1999**, *121*, 4722-4723.
50. Praveen Pande, Jason M. Shearer, Jianhong Yang, William A. Greenberg and Steven E. Rokita* Alkylation of Nucleic Acids by a Model Quinone Methide" *J. Am. Chem. Soc.* **1999**, *121*, 6773 -6779.
51. Ning Tang, James G. Muller, Cynthia J. Burrows and Steven E. Rokita* "Nickel and Cobalt Reagents Promote Selective Oxidation of Z-DNA" *Biochemistry* **1999**, *38*, 16648-16654.
52. Hui-Chen Shih, Helina Kassahun, Cynthia J. Burrows and Steven E. Rokita* "Selective Association between a Macrocyclic Nickel Complex and Extrahelical Guanine Residue" *Biochemistry* **1999**, *38*, 15034-15042.
53. Steven E. Rokita* and Cynthia J. Burrows "Structural Studies of Nucleic Acids Using Nickel and Cobalt Based Reagents" in *Current Protocols in Nucleic Acid Chemistry* (G. Glick, Ed.) Wiley, New York, 2000, 6.4.1-6.4.7.
54. Xiang Zhou, Jason M. Shearer, and Steven E. Rokita* "A Ni(Salen)-Biotin Conjugate for Rapid Isolation of Accessible DNA" *J. Am. Chem. Soc.* **2000**, *122*, 9046-9047.
55. Steven E. Rokita* and Cynthia J. Burrows "Nickel- and Cobalt-Dependent Oxidation and Cross-Linking of Proteins" in *Metal Ions in Biological Systems* vol. 38 (H. Sigel, ed.) Marcel Dekker, New York, 2001, ch. 10, 289-311.
56. Steven E. Rokita* "Chemical Reagents for Investigating the Major Groove of DNA" in *Current Protocols in Nucleic Acid Chemistry* (G. Glick, Ed.) Wiley, New York, 2001, 6.6.1-6.6.16.
57. Willem F. Veldhuyzen, Yui-Fai Lam and Steven E. Rokita* "2-Deoxyguanosine Reacts with a Model Quinone Methide at Multiple Sites" *Chem. Res. Toxicol.* **2001**, *14*, 1345-1351.
58. Kristi J. Humphreys, Kenneth D. Karlin* and Steven E. Rokita* "Recognition and Strand Scission at Junctions between Single- and Double-Stranded DNA by a Trinuclear Copper Complex" *J. Am. Chem. Soc.* **2001**, *123*, 5588-5589.
59. Qibing Zhou, Praveen Pande, Anne E. Johnson and Steven E. Rokita* "Sequence-Specific Delivery of a Quinone Methide Intermediate to the Major Groove of DNA" *Bioorg. Med. Chem.* **2001**, *9*, 2347-2354.
60. Willem F. Veldhuyzen, Anthony J. Shalloo, Roger A. Jones and Steven E. Rokita* "Thermodynamic versus Kinetic Products of DNA Alkylation as Modeled by Reaction of Deoxyadenosine" *J. Am. Chem. Soc.* **2001**, *123*, 11126-11132.
61. Kristi J. Humphreys, Kenneth D. Karlin* and Steven E. Rokita* "Efficient and Specific Strand Scission of DNA by a Binuclear Copper Complex: Comparative Reactivity of the Complexes with Linked Tris(2-pyridylmethyl)amine Moieties" *J. Am. Chem. Soc.* **2002**, *124*, 6009-6019.
62. Kristi J. Humphreys, Anne E. Johnson, Kenneth D. Karlin* and Steven E. Rokita* "Oxidative Strand Scission of Nucleic Acids by a Multinuclear Copper(II) Complex" *J. Biol. Inorg. Chem.* **2002**, *7*, 835-842.
63. Kristi J. Humphreys, Kenneth D. Karlin* and Steven E. Rokita* "Targeted Strand Scission of DNA Substrates by a Tricopper(II) Coordination Complex" *J. Am. Chem. Soc.* **2002**, *124*, 8055-8066.
64. Steven E. Rokita and Cynthia J. Burrows "Salen Metal Complexes" in *Small Molecule DNA and RNA Binders; From Synthesis to Nucleic Acid Complexes* (Demeunynck, Bailly, Wilson, Eds), Wiley-VCH, Weinheim, 2003, ch. 6, pp. 126-145.
65. William H. Walker IV and Steven E. Rokita* "Use of a Boroxazolidone Complex of 3-Iodo-L-Tyrosine for Palladium-Catalyzed Cross-Coupling" *J. Org. Chem.* **2003**, *68*, 1563-1566.

Publications continued

66. Takeo Ito and Steven E. Rokita* "Excess Electron Transfer from An Internally-Conjugated Aromatic Amine to 5-Bromo-2'-Deoxyuridine in DNA" *J. Am. Chem. Soc.* **2003**, *125*, 11480-11481.
67. Qibing Zhou and Steven E. Rokita* "A General Strategy for Target-Promoted Alkylation in Biological Systems" *Proc. Natl. Acad. Sci. (USA)* **2003**, *100*, 15452-15457. [<http://dx.doi.org/10.1073/pnas.2533112100>]
68. Willem F. Veldhuyzen, Praveen Pande and Steven E. Rokita* "A Transient Product of DNA Alkylation Can Be Stabilized by Binding Localization" *J. Am. Chem. Soc.* **2003**, *125*, 14005-14013. [<http://dx.doi.org/10.1021/ja036943o>]
69. Takeo Ito and Steven E. Rokita* "Criteria for Efficient Transport of Excess Electrons in DNA" *Angew. Chem. Int. Ed.* **2004**, *43*, 1839-1842.
70. Dalip Kumar and Steven E. Rokita* "Synthesis of a Hairpin Pyrrole-Imidazole Polyamide Conjugate Containing a Quinone Methide Precursor and Vinyl Linking Group" *Tet. Lett.* **2004**, *45*, 2887-2889.
71. Dalip Kumar, Willem F. Veldhuyzen, Qibing Zhou and Steven E. Rokita* "Conjugation of a Hairpin Pyrrole-Imidazole Polyamide to a Quinone Methide for Control of DNA Cross-linking" *Bioconj. Chem.* **2004**, *15*, 915-922.
72. Takeo Ito and Steven E. Rokita* "Reductive Electron Injection into Duplex DNA by Aromatic Amines" *J. Am. Chem. Soc.* **2004**, *126*, 15552-15559.
73. Steven E. Rokita and Takeo Ito "Chemical Probing of Reductive Electron Transfer in DNA" in *Charge Transfer in DNA* (Wagenknecht, H.-A., Ed), Wiley-VCH, Weinheim, 2005, Ch. 6, 133-151.
74. Lei Li, Kenneth D. Karlin* and Steven E. Rokita* "Changing Selectivity of DNA Oxidation from Deoxyribose to Guanine by Ligand Design and a New Binuclear Copper Complex" *J. Am. Chem. Soc.* **2005**, *127*, 520-521.
75. Emily E. Weinert, Kristen N. Frankenfield and Steven E. Rokita* "Time-dependent Evolution of Adducts Formed Between Deoxynucleosides and a Model Quinone Methide" *Chem. Res. Toxicol.* **2005**, *18*, 1364-1370. [<http://dx.doi.org/10.1021/tx0501583>]
76. Takeo Ito, Sunita Thyagarajan, Kenneth D. Karlin and Steven E. Rokita* "Recognition of Guanines at a Double Helix-Coil Junction in DNA by a Trinuclear Copper Complex" *Chem. Commun.* **2005**, 4812-4814.
77. Jessica E. Friedman, James A. Watson Jr., David W.-H. Lam and Steven E. Rokita* "Iodotyrosine Deiodinase is the First Mammalian Member of the NADH Oxidase/Flavin Reductase Superfamily" *J. Biol. Chem.* **2006**, *281*, 2812-2819.
78. Sunita Thyagarajan, N. N. Murthy, Amy Sargeant, Kenneth D. Karlin* and Steven E. Rokita* "Selective DNA Strand Scission with Binuclear Copper Complexes: Implications for the Involvement of a Cu₂-O₂ Active Species" *J. Am. Chem. Soc.* **2006**, *128*, 7003-7008.
79. Lei Li, Narasimha N. Murthy, Joshua Telser, Lev. N. Zakharov, Glenn P. A. Yap, Arnold L. Rheingold, Kenneth D. Karlin* and Steven E. Rokita* "Targeted Guanine Oxidation by a Dinuclear Copper(II) Complex a Single Stranded/Double Stranded DNA Junctions" *Inorg. Chem.* **2006**, *45*, 7144-7159.
80. Emily E. Weinert, Ruggero Dondi, Stefano Colloredo-Melz, Kristen N. Frankenfield, Charles H. Mitchell, Mauro Freccero* and Steven E. Rokita* "Substituents on Quinone Methides Strongly Modulate Formation and Stability of Their Nucleophilic Adducts" *J. Am. Chem. Soc.* **2006**, *128*, 11940-11947. [<http://dx.doi.org/10.1021/ja062948k>]
81. Matthew R. Holman, Takeo Ito, Steven E. Rokita* "Self-repair of Thymine Dimer in Duplex DNA" *J. Am. Chem. Soc.* **2007**, *129*, 6-7.
82. Huan Wang, Manvinder S. Wahi and Steven E. Rokita* "Immortalizing a Transient Electrophile for DNA Cross-linking" *Angew. Chem. Int. Ed.* **2008**, *47*, 1291-1293. [[10.1002/anie.200704137](http://dx.doi.org/10.1002/anie.200704137)]

Publications continued

83. James A. Watson, Jr., Patrick M. McTamney, Jennifer M. Adler, and Steven E. Rokita* “The Flavoprotein Iodotyrosine Deiodinase Functions without Cysteine Residues” *ChemBioChem* **2008**, *9*, 504-506.
84. Qing Zhu, Sunita Thyagarajan, Steven E. Rokita, Kenneth D. Karlin* and Neil V. Blough* “Hydrogen Peroxide and Dioxygen Activation by Dinuclear Copper Complexes in Aqueous Solution: Hydroxyl Radical Production Initiated by Internal Electron Transfer” *J. Am. Chem. Soc.* **2008**, *130*, 6304-6305.
85. Steven E. Rokita “Reversible Alkylation of DNA by Quinone Methides” in volume 1, *Quinone Methides in Chemistry and Biology of the Wiley Series on Reactive Intermediates in Chemistry and Biology* (Rokita, S.E., Ed.) Wiley, New York, 2009, p.297-327.
86. Seth R. Thomas, Patrick M. McTamney, Jennifer M. Adler, Nicole LaRonde-LeBlanc* and Steven E. Rokita* “Crystal Structure of Iodotyrosine Deiodinase, A Novel Flavoprotein Responsible for Iodide Salvage in Thyroid Glands” *J. Biol. Chem.* **2009**, *284*, 19659-19667. (doi: 10.1074/jbc.M109.013458; PMID: PMC2740591)
87. Patrick M. McTamney, and Steven E. Rokita* “A Mammalian Reductive Deiodinase has Broad Power to Dehalogenate Chlorinated and Brominated Substrates” *J. Am. Chem. Soc.* **2009**, *131*, 14212–14213. (doi: 10.1021/ja906642n, PMID: 19777994) (PMCID: PMC2758933)
88. Neil P. Campbell, Amethyst S. Finch and Steven E. Rokita* “Modulating the Ground and Excited State Oxidation Potentials of Diaminonaphthalene by Sequential N-Methylation” *ChemPhysChem* **2010**, *11*, 1768 – 1773. (<http://dx.doi.org/10.1002/cphc.200900969>, PMID: 20376874).
89. Steven E. Rokita,* Jennifer M. Adler, Patrick M. McTamney and James A. Watson, Jr “Efficient Use and Recycling of the Micronutrient Iodide in Mammals” *Biochimie* **2010**, *92*, 1227-1235. [<http://dx.doi.org/10.1016/j.biochi.2010.02.013>, PMID: 20167242]
90. Huan Wang and Steven E. Rokita* “Dynamic Cross-linking is Retained in Duplex DNA After Multiple Exchange of Strands” *Angew. Chem. Int. Ed.* **2010**, *49*, 5957-5960. [<http://dx.doi.org/10.1002/anie.201001597>]
91. Clifford S. Rossiter, Emilia Modica, Dalip Kumar, and Steven E. Rokita* “Few Constraints Limit the Design of Quinone Methide-Oligonucleotide Self-Adducts for Directing DNA Alkylation”, *Chem. Commun.* **2011**, *47*, 1476-1478. (DOI:10.1039/C0CC03317K).
92. Seung Jae Lee, Jamie L. Michalek, Angelique N. Besold, Steven E. Rokita, Sarah L. J. Michel* “Classical Cys₂His₂ Zinc Finger Peptides are Rapidly Oxidized by either H₂O₂ or O₂ Irrespective of Metal Coordination” *Inorg. Chem.* **2011**, *50*, 5442–5450. (DOI: 10.1021/ic102252a).
93. Abulfazl Fakhari M. and Steven E. Rokita* “A New Solvatochromic Fluorophore With High Sensitivity for Studying Biopolymers” *Chem. Commun.* **2011**, *47*, 4222 - 4224. (DOI: 10.1039/c0cc04917d)
94. Michael P. McCrane, Emily E. Weinert, Ying Lin, Eugene P. Mazzola, Yiu-Fai Lam, Peter F. Scholl, and Steven E. Rokita* “Trapping a Labile Adduct Formed between an *ortho*-Quinone Methide and 2'-Deoxycytidine” *Org. Lett.* **2011**, *13*, 1186–1189. (DOI: 10.1021/ol200071p).
95. Yang Liu and Steven E. Rokita* “Inducible Alkylation of DNA by a Quinone Methide-Peptide Nucleic Acid Conjugate” *Biochemistry* **2012**, *51*, 1020-1027. [<http://dx.doi.org/10.1021/bi201492b>]
96. Jennifer M. Buss, Patrick M. McTamney and Steven E. Rokita* “Expression of a Soluble Form of Iodotyrosine Deiodinase for Active Site Characterization by Engineering the Native Membrane Protein from *Mus musculus*” *Protein Science* **2012**, *21*, 351-361.
97. Steven E. Rokita “Flavoprotein Dehalogenases” in *Handbook of Flavoproteins*, vol. 1 (R. Hille, S. M. Miller, B. Palfey eds.) DeGruyter, Berlin, 2013. p. 337-350.
98. Amethyst S. Finch, William B. Davis and Steven E. Rokita* “Accumulation of the Cyclobutane Thymine Dimer in Defined Sequences of Free and Nucleosomal DNA” *Photochem. Photobiol. Sci.* **2013**, *12*, 1474–1482. (<http://xlink.rsc.org/?doi=C3PP50147G>)

Publications continued

99. Fazel Fakhari, Yun-Yun K. Chen and Steven E. Rokita* “Enhancing Excess Electron Transport in DNA” *Chem. Commun.* **2013**, 49, 7073-7075. (<http://xlink.rsc.org/?doi=C3CC43887B>)
100. Steven E. Rokita “Synthetic Thyroid Hormone” in *Iodine: Chemistry and Application* (T. Kaiho, ed.) Wiley, 2014, Ch. 21. pp. 411-420.
101. Abhishek Phatarphekar, Jennifer M. Buss, and Steven E. Rokita* "Iodotyrosine Deiodinase: A Unique Flavoprotein Present in Organisms of Diverse Phyla” *Mol. BioSyst.* **2014**, 10, 86-92. (<http://xlink.rsc.org/?doi=C3MB70398C>) [Highlighted in *Nat. Chem. Biol.* **2014**, 10, 2.]
102. Neil P. Campbell and Steven E. Rokita* “Electron Transport in DNA Initiated by Diaminonaphthalene Donors Alternatively Bound by Non-Covalent and Covalent Association” *Org. Biomol. Chem.* **2014**, 12, 1143 - 1148 (<http://xlink.rsc.org/?doi=C3OB42433B>).
103. Michael P. McCrane, Mark A. Hutchinson, Omer Ad, and Steven E. Rokita* “Oxidative Quenching of Quinone Methide Adducts Reveals Transient Products of Reversible Alkylation in Duplex DNA” *Chem. Res. Toxicol.* **2014**, 27, 1282–1293 (<http://dx.doi.org/10.1021/tx500152d>).
104. Fazel Fakhari and Steven E. Rokita* “A Walk Along DNA Using Bipedal Migration of a Dynamic and Covalent Cross-linker” *Nature Commun.* **2014**, 5 5591 (doi: 10.1038/ncomms6591)
105. Jimin Hu, Watchalee Chuenchor, and Steven E. Rokita* “A Switch Between One- and Two-Electron Chemistry of the Human Flavoprotein Iodotyrosine Deiodinase is Controlled by Substrate” *J. Biol. Chem.* **2015**, 290, 590-600 (doi:10.1074/jbc.M114.605964).
106. Shalini Saha*, Wei Li, Barbara Gerratana, and Steven E. Rokita* “Identification of the Dioxygenase-Generated Intermediate Formed During Biosynthesis of the Dihydropyrrole Moiety Common to Anthramycin and Sibiromycin” *Bioorg. Med. Chem.* **2015**, 23, 449-454 (doi:10.1016/j.bmc.2014.12.024).
107. Kostyantyn D. Bobyk, David P. Ballou and Steven E. Rokita* “Rapid Kinetics of Dehalogenation Promoted by Iodotyrosine Deiodinase from Human Thyroid” *Biochemistry* **2015**, 54, 4487–4494. (<http://dx.doi.org/10.1021/acs.biochem.5b00410>). [PMCID# PMC4938124]
108. Tuomas Lönnberg,* Mark A. Hutchinson and Steven E. Rokita “Selective Alkylation of C-Rich Bulge Motifs in Nucleic Acids by Quinone Methide Derivatives” *Chem. Eur. J.* **2015**, 21, [13127-13186](https://doi.org/10.1002/chem.201502014). (<http://dx.doi.org/10.1002/chem.201502014>)
109. Arnab Mukherjee and Steven E. Rokita “A Single Amino Acid Switch Between a Flavin-Dependent Dehalogenase and Nitroreductase” *J. Am. Chem. Soc.* **2015**, 137, [15342–15345](https://doi.org/10.1021/ja51134a001). [PMCID# PMC4684082]
110. Chengyun Huang and Steven E. Rokita* “Promoting the Rate of DNA Alkylation with an Electron Rich Quinone Methide Intermediate” *Front. Chem. Sci. Eng.* **2016**, 10, 213-221.
111. Chengyun Huang, Yang Liu and Steven E. Rokita* “Targeting Duplex DNA with the Reversible Reactivity of Quinone Methides” *Signal Transduct Target Ther.* **2016**, 1, [16009](https://doi.org/10.1038/sigtrans.2016.9). (doi:10.1038/sigtrans.2016.9, <http://www.nature.com/articles/sigtrans20169>)
112. Shalini Saha* and Steven E. Rokita* “An activator of an Adenylation Domain Revealed by Activity but not Sequence Homology” *ChemBioChem* **2016**, 17, [1818-1823](https://doi.org/10.1002/cbic.201600182).
113. Abhishek Phatarphekar, and Steven E. Rokita* "Functional Analysis of Iodotyrosine Deiodinase From *Drosophila melanogaster*" *Protein Science* 2016, 25, [2187-2195](https://doi.org/10.1002/pro.3044). (10.1002/pro.3044)
114. Nattha Ingavat, Jennifer M. Kavran, Zuodong Sun, and Steven E. Rokita* “Active Site Binding is not Sufficient for Reductive Deiodination by Iodotyrosine Deiodinase” *Biochemistry* **2017**, 56, [1130-1139](https://doi.org/10.1021/acs.biochem.6b01308). (DOI: 10.1021/acs.biochem.6b01308)
115. Qi Su, Petrina A. Boucher, and Steven E. Rokita* “Conversion of a Dehalogenase to a Nitroreductase by Swapping its Flavin Cofactor with a 5-Deazaflavin Analog.” *Angew. Chem. Int. Ed.* **2017**, 56, 10862-10866 (DOI: [10.1002/anie.201703628](https://doi.org/10.1002/anie.201703628)).
116. Zuodong Sun, Qi Su, Steven E Rokita* “The Distribution and Mechanism of Iodotyrosine Deiodinase Defied Expectations” *Arch. Biochem. Biophys.* **2017**, 632, 77-87. (DOI: [10.1016/j.abb.2017.07.019](https://doi.org/10.1016/j.abb.2017.07.019))

Publications continued

117. Abhishek Phatarphekar, Qi Su, Suk Ho Eun, Xin Chen, and Steven E. Rokita* "The Importance of a Halotyrosine Dehalogenase for Drosophila Fertility" *J. Biol. Chem.* **2018**, 293, 10314–10321. (DOI 10.1074/jbc.RA118.003364)
118. Zuodong Sun and Steven E. Rokita* "Towards a Halophenol Dehalogenase from Iodotyrosine Deiodinase via Computational Design" *ACS Catalysis* **2018**, 8, 11783–11793 ([DOI: 10.1021/acscatal.8b03587](https://doi.org/10.1021/acscatal.8b03587))
119. Jimin Hu, Qi Su, Jamie Schlessman and Steven E. Rokita* "Redox Control of Iodotyrosine Deiodinase" *Protein Science* **2019**, 28, 68-78. (<https://doi.org/10.1002/pro.3479>)
120. Shane R. Byrne, Kun Yang and Steven E. Rokita* "Effect of Nucleosome Assembly on Alkylation by a Dynamic Electrophile" *Chem. Res. Toxicol.*, submitted.

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Editor, *Quinone Methides* as Vol. 1 of the *Wiley Series on Reactive Intermediates in Chemistry and Biology*. Wiley: Hoboken, 2009, pp. 431. [ISBN: 978-0-470-19224-5]

Patents, Patent Applications and Invention Disclosures

1. Steven E. Rokita and Moneesh Chatterjee "Sequence Specific Modification of Nucleic Acids Formed Through the Activation of Quinones," U.S. patent no. 5,292,873 issued 3/8/94.
2. Steven E. Rokita and Tianhu Li "Ion Triggered Alkylation of Biological Targets by Silyloxy Aromatic agents," U.S. patent no. 5,296,350 issued 3/22/94.
3. Cynthia J. Burrows, Steven E. Rokita and Xiaoying Chen "Cleavage of DNA and Oligonucleotides Using Macrocyclic Nickel (II) Complexes," U.S. patent no. 5,272,076 issued 12/21/93.
4. Steven E. Rokita, Qingping Zeng and Tianhu Li "Chemotherapeutic Alkylation Promoted Within the Environment Formed by Duplex DNA," patent no. 5,493,012 issued 2/20/96.
5. Steven E. Rokita and Hyunmin Kang "Reactive Appendages for Triplex Inhibition of Gene Expression," patent no. 5,650,399 issued 7/22/97.
6. Cynthia J. Burrows, Steven E. Rokita and Xiaoying Chen "Therapeutic Use of Macrocyclic Nickel (II) Complexes," U.S. patent no. 5,504,075 issued 4/2/96.
7. Steven E. Rokita, Qingping Zeng & Tianhu Li "Aromatic Alkylating Agents Activated Within the Environment Formed by Duplex DNA," U. S. patent no 5,831,073 issued 11/3/98.
8. Steven E. Rokita & Cynthia J. Burrows "Nickel-based Reagents for Detecting DNA and DNA-protein Contacts," Patent # 7,371,579, issued May 13, 2008.
9. Steven E. Rokita, Kristi J. Humphreys, & Ken D. Karlin "Copper-Based Probes for Determining Nucleic Acid Structure in Vitro and In Vivo," International Publication No. WO 02/095050. (abandoned).
10. Steven E. Rokita, Ken D. Karlin, Kristi J. Humphreys, Lei Li & Narasimha N. Murthy "Dinuclear Copper-based Compound and Ligand for Nucleic Acid Scission and Anticancer Treatment" U. S. patent no. 7,365,060, issued April 29, 2008.
11. Steven E. Rokita, Ken D. Karlin, Lei Li & Narasimha N. Murthy "Dinuclear Copper-based Compound and Ligand for Nucleic Acid Scission and Anticancer Treatment," U. S. Patent no. 7,390,832 issued June 24, 2008.
12. Steven E. Rokita & Qibing Zhou "Recognition-Driven Alkylation of Biopolymers", patent application filed June 6, 2003. (prior provisional: No. 60/387,061; abandoned Jan. 2012)
13. Steven E. Rokita, Abhishek Phatarphekar, Suk Ho Eun and Xin Chen "A New Biological Target for Controlling Insect Proliferation" disclosure filed with JHU, July 28, 2014. Patent application filed July 28, 2015. (PCT/US2015/042522)