

Prof. Julia Brumaghim Publications

*indicates undergraduate coauthor

59. Murphy, J., Gaertner, A. A. E.; Owen, A. M.*; Studer, S.*; McMillen, C. D.; Brumaghim, J. L. "Coordination Complexes of Methimazole with Copper: Controlling Redox Reactions and Sulfur Extrusion," *Inorg. Chim. Acta* **2020**, *507*, 119568 (DOI: 10.1016/j.ica.2020.119568; invited for a special issue).
58. Murphy, J. M.; Powell, B. A.; Brumaghim, J. L. "Stability Constants of Bio-Relevant, Redox-Active Metals with Amino Acids: The Challenges of Weakly Binding Ligands," *Coord. Chem. Rev.* **2020**, *412*, 213253 (DOI: 10.1016/j.ccr.2020.213253).
57. Stadelman, B. S.; Murphy, J. M.; Owen, A. M.*; Castro-Ramírez, R.; Smith, H.C.*; Cohen, C. A.*; Zhang, L. X.; Bayse, C. A.; McMillen, C. D.; Barba-Behrens, N.; Brumaghim, J. L. "Zinc(II) Thione and Selone Complexes: The Effect of Metal Redox Activity on Ligand Oxidation," *Inorg. Chim. Acta* **2020**, *502*, 119379 (DOI: 10.1016/j.ica.2019.119379; invited for a special issue).
56. Murphy, J. M.; Gaertner, A. A. E.; Williams, T.; McMillen, C. D.; Powell, B. A.; Brumaghim, J. L. "Stability Constant Determination of Sulfur and Selenium Amino Acids with Cu(II) and Fe(II)," *J. Inorg. Biochem.* **2019**, *195*, 20-30.
55. Peng, C. A.; Gaertner, A. A. E.; Henriquez, S. A.; Fang, D.; Brumaghim, J. L.; Kozubowski, L. "Fluconazole Resistance in *Cryptococcus neoformans* Involves Metallothionein-Independent Protection against Fluconazole-Induced Oxidative Stress," *PLoS One* **2018**, *13*, e0208471.
54. Patel, U.; Abbas, M. A.; McMillen, C. D.; Brumaghim, J. L. "Selective Cation and Anion Guest Binding in Host Selenazamacrocycles," *Dalton Trans.* **2018**, *47*, 12066-12070.53.
Castro-Ramírez, R.; Ortiz-Pastrana, N.; Caballero, A. B.; Zimmerman, M. T.; Stadelman, B. S.; Gaertner, A. A. E.; Brumaghim, J. L.; Korrodi-Gregório, L.; Pérez-Tomás, R.; Gamez, P.; Barba-Behrens, N. "DNA Interactions of Non-Chelating Tinidazole-Based Coordination Compounds and Their Structural, Redox and Cytotoxic Properties," *Dalton Trans.* **2018**, *47*, 7551-7560.
52. Abbas, M. A.; McMillen, C. D.; Brumaghim, J. L. "Synthesis, Characterization, and Structures of Ruthenium(II) Complexes with Multiple Solvato Ligands," *Inorg. Chim. Acta* **2017**, *468*, 308-315.
51. Angelé-Martínez, C.; Nguyen, K. V. T.; Ameer, F. S.; Anker, J. N.; Brumaghim, J. L. "Reactive Oxygen Species Generation by Copper(II) Oxide Nanoparticles Determined by DNA Damage Assays and EPR Spectroscopy," *Nanotoxicology* **2017**, *11*, 278-288.
50. Summers, J. S.; Hickman, B.; Arrington, M. E.; Stadelman, B. S.; Brumaghim, J. L.; Yost, M. R.; Schmitt, J. D.; Hornby, M.; Sprague, S. "Reaction of Oxidized CuZnSOD with Polyphenols," *Natural Sci.* **2016**, *8*, 359-379.
49. Stadelman, B.S; Kimani, M. M.; Bayse, C. A.; McMillen, C. D.; Brumaghim, J. L. "Synthesis, Characterization, DFT Calculations, and Electrochemical Comparison of Novel Iron(II) Complexes with Thione and Selone Ligands," *Dalton Trans.* **2016**, *45*, 4697-4711.

48. McCoy, C. R.; Stadelman, B. S.; Brumaghim, J. L.; Liu, J.-T.; Bain, L. J. "Arsenic and Its Methylated Metabolites Inhibit the Differentiation of Neural Plate Border Specifier Cells," *Chem. Res. Toxicol.* **2015**, *28*, 1409-1421.
47. Kimani, M. M.; Watts, D.; Graham, L. A.; Rabinovich, D.; Yap, G. P. A.; Brumaghim, J. L. "Dinuclear Copper(I) Complexes with *N*-heterocyclic Thione and Selone Ligands: Synthesis, Characterization, and Electrochemical Studies," *Dalton Trans.* **2015**, *44*, 16313-16324.
46. Zimmerman, M. T.; Bayse, C. A.; Ramoutar, R. R.; Brumaghim, J. L. "Sulfur and Selenium Antioxidants: Challenging Radical Scavenging Mechanisms and Developing Structure-Activity Relationships Based on Metal Binding," *J. Inorg. Biochem.* **2015**, *145*, 30-40 (invited review).
45. Betanzos-Lara, S.; Chmel, N. P.; Zimmerman, M. T.; Barrón-Sosa, L. R.; Garino, C.; Salassa, L.; Rodger, A.; Brumaghim, J. L.; Gracia-Mora, I.; Barba-Behrens, N. "Redox-Active and DNA-Binding Coordination Complexes of Clotrimazole," *Dalton Trans.* **2015**, *44*, 3673- 3675 (invited paper for a special issue on metal complex binding to nucleic acids).
44. Angelé-Martínez, C.; Goodman, C.; Brumaghim, J. L. "Metal-Mediated DNA Damage and Cell Death: Mechanisms, Detection Methods, and Cellular Consequences," *Metallomics* **2014**, *6*, 1358-1381 (invited review).
43. Gross, C. L.; Brumaghim, J. L.; Jefferis, J. M. Dickinson, P. W.; Girolami, G. S.; Gribble, C. W.; Tilley, T. D. "Mono(η^5 -Pentamethylcyclopentadienyl) Complexes of Osmium," *Inorg. Synth.* **2014**, *36*, 74-78 (DOI: 10.1002/9781118744994.ch15).
42. Kimani, M. M.; Bayse, C. A.; Stadelman, B. S.; Brumaghim, J. L. "Oxidation of Biologically Relevant Chalcogenones and Their Cu(I) Complexes: Insights into Selenium and Sulfur Antioxidant Activity," *Inorg. Chem.* **2013**, *52*, 11685-11687.
41. Stadelman, B. S.; Brumaghim, J. L. "Thione- and Selone-Containing Compounds, Their Late First Row Transition Metal Coordination Chemistry, and Their Biological Potential," In *Biochalcogen Chemistry: The Biological Chemistry of Sulfur, Selenium, and Tellurium*; Bayse, C. A.; Brumaghim, J. L. Eds.; ACS Symposium Series; American Chemical Society: Washington, DC, 2013, pp. 33-70 (DOI: <http://dx.doi.org/10.1021/ic401366c>).
40. Underwood, C. C.; Stadelman, B. S.; Sleeper, M. L.*; Brumaghim, J. L. "Synthesis and Electrochemical Characterization of $[\text{Ru}(\text{NCCH}_3)_6]^{2+}$, Tris(pyrazolyl)borate, and Tris(acetonitrile) Tris(pyrazolyl)methane Ruthenium(II) Complexes," *Inorg. Chim. Acta* **2013**, *405*, 470-476.
39. García, C. R.; Angelé-Martínez, C.; Wilkes, J. A.*; Wang, H. C.; Battin E. E.; Brumaghim, J. L. "Prevention of Iron- and Copper-Mediated DNA Damage by Catecholamine and Amino Acid Neurotransmitters, L-DOPA, and Curcumin: Metal Binding as a General Antioxidant Mechanism," *Dalton Trans.* **2012**, *41*, 6458 - 6467.
38. Kimani, M. M.; Wang, H. C.; Brumaghim, J. L. "Investigating the Coordination, Electrochemistry, and Cu(II) Reduction Kinetics of Biologically Relevant Selone and Thione Compounds," *Dalton Trans.* **2012**, *41*, 5248-5259.
37. Wang, H. C.; Brumaghim, J. L. "Polyphenol Compounds as Antioxidants for Disease Prevention: Reactive Oxygen Species Scavenging, Enzyme Regulation, and Metal

- Chelation Mechanisms in *E. coli* and Human Cells,” In *Oxidative Stress: Diagnostics, Prevention, and Therapy*; Andreescu, S.; Hepel, M., eds.; ACS Symposium Series; American Chemical Society: Washington, DC, 2011, pp. 99-175 (DOI: 10.1021/bk-2011-1083.ch005).
36. Wang, H. C.; Riahi, M.*; Pothen, J.; Bayse, C. A.; Riggs-Gelasco, P.; Brumaghim, J. L., “Interactions of Cu(I) with Selenium-Containing Amino Acids Determined by NMR, XAS, and DFT Studies,” *Inorg. Chem.* **2011**, *50*, 10893-10900.
 35. Quarles, C. D.; Marcus, R. K.; Brumaghim, J. L. “Metal Retention in Human Transferrin: Consequences of Solvent Composition in Analytical Sample Preparation Methods,” *Metallomics* **2011**, *3*, 1027-1034.
 34. Verdan, A. M.; García, C. R.; Wang, H. C.; Henry, W. P.; Brumaghim, J. L. “Fe(II) Binding of 3-Hydroxychromone, 5-Hydroxychromone, and Sulfonated Morin: Implications for the Antioxidant Activity of Flavonols with Competing Metal Binding Sites,” *J. Inorg. Biochem.* **2011**, *105*, 1314-1322.
 33. Quarles, C. D.; Marcus, R. K.; Brumaghim, J. L. “Competitive Binding of Fe³⁺, Cr³⁺, and Ni²⁺ to Transferrin,” *J. Biol. Inorg. Chem.* **2011**, *16*, 913-921.
 32. Kimani, M. M.; VanDerveer, D.; Brumaghim, J. L. “The Diselanylbis(1,3-dimethyl-1*H*-imidazol-3-ium) Dication Stabilized by the Polymeric *catena*-Pentachloridotricuprate(I) Anion,” *Acta Crystallogr.* **2011**, *C67*, m208-m210.
 31. Grimland, J.; Wu, C.; Ramoutar, R. R.; Brumaghim, J. L.; McNeill, J. “Photosensitizer-doped Conjugated Polymer Nanoparticles with High Cross-sections for One- and Two-Photon Excitation,” *Nanoscale*, **2011**, *3*, 1451-1455.
 30. Kimani, M. M.; Bayse, C. A.; Brumaghim, J. L. “Synthesis, Characterization, and DFT Studies of Thione and Selenone Cu(I) Complexes with Variable Coordination Geometries,” *Dalton Trans.* **2011**, *40*, 3711-3723.
 29. Perron, N. P.; García, C. R.; Pinzón, J. R.; Chaur, M. N.; Brumaghim, J. L. “Antioxidant and Prooxidant Effects of Polyphenol Compounds on Copper-Mediated DNA Damage,” *J. Inorg. Biochem.* **2011**, *105*, 735-743.
 28. Battin, E. E.; Zimmerman, M. T.; Ramoutar, R. R.; Quarles, C. E.; Brumaghim, J. L. “Preventing Metal-Mediated Oxidative DNA Damage with Selenium Compounds,” *Metallomics* **2011**, *3*, 503-512.
 27. Quarles, C. D.; Brumaghim, J. L.; Marcus, R. K. “Instrumental Comparison of the Determination of Cr³⁺ Uptake by Human Transferrin,” *Metallomics* **2010**, *2*, 792-799 (cover article).
 26. Perron, N. R.; Wang, H. C.; DeGuire, S. N.*; Jenkins, M.*; Lawson, M.*; Brumaghim, J. L. “Kinetics of Iron Oxidation upon Polyphenol Binding,” *Dalton Trans.* **2010**, *39*, 9982-9987.
 25. Kimani, M. M.; Brumaghim, J. L.; VanDerveer, D. “Probing the Antioxidant Action of Selenium and Sulfur Using Cu(I)-Chalcogenone Tris(pyrazolyl)methane and -borate Complexes,” *Inorg. Chem.* **2010**, *49*, 9200-9211.

24. Ramoutar, R. R.; Brumaghim, J. L. "A Review of the Antioxidant and Anticancer Properties and Mechanisms of Inorganic Selenium, Oxo-Sulfur, and Oxo-Selenium Compounds," *Cell Biochem. Biophys.* **2010**, *58*, 1-23
23. Quarles, C. D., Jr.; Brumaghim, J. L.; Marcus, R. K. "Simultaneous Multiple Element Detection by Particle Beam/Hollow Cathode-Optical Emission Spectroscopy as a Tool for Metallomic Studies: Determinations of Metal Binding with Apo-Transferrin," *Metallomics* **2010**, *2*, 154-161.
22. Battin, E. E.; Brumaghim, J. L. "Antioxidant Activity of Sulfur and Selenium: A Review of Reactive Oxygen Species Scavenging, Glutathione Peroxidase, and Metal Binding Antioxidant Mechanisms," *Cell Biochem. Biophys.* **2009**, *55*, 1-23 (invited review).
21. Battin, E. E.; Lawhon, A.*; Hamilton, D. H.; Brumaghim, J. L. "Using Proteins in a Bioinorganic Laboratory Experiment: Iron Loading and Removal from Transferrin," *J. Chem. Ed.* **2009**, *86*, 969-972.
20. Perron, N. R.; Brumaghim, J. L. "A Review of the Iron-Binding Mechanism for Polyphenol Antioxidant Activity," *Cell Biochem. Biophys.* **2009**, *53*, 75-100 (invited review).
19. Battin, E. E.; Brumaghim, J. L. "Metal Specificity in DNA Damage Prevention by Sulfur Antioxidants," *J. Inorg. Biochem.* **2008**, *102*, 2036-2042 (awarded Best Paper by a Young Investigator).
18. Perron, N. R.; Hodges, J. N.*; Jenkins, M.*; Brumaghim, J. L. "Predicting How Polyphenol Antioxidants Prevent DNA Damage by Binding to Iron," *Inorg. Chem.* **2008**, *47*, 6153-6161.
17. Ramoutar, R. R.; Brumaghim, J. L. "Investigating the Antioxidant Properties of Oxo-Sulfur Compounds on Metal-Mediated DNA Damage," *Main Group Chem.* **2007**, *101*, 1028-1035.
16. Ramoutar, R. R.; Brumaghim, J. L. "Effects of Inorganic Selenium Compounds on Oxidative DNA Damage," *J. Inorg. Biochem.* **2007**, *101*, 1028-1035.
15. Gross, C. L.; Brumaghim, J. L.; Girolami, G. S. "Synthesis and Reactivity of the Osmium(III) Pentamethylcyclopentadienyl Complex (C₅Me₅)₂Os₂Br₄. X-ray Crystal Structures of (C₅Me₅)₂Os₂Br₄, (C₅Me₅)₂Os₂(μ-O)Br₄, and (C₅Me₅)₂Os₂(μ-NPh)₂Br₂," *Organometallics* **2007**, *26*, 2258-2265.
14. Sathyamurthy, R.; Brumaghim, J. L. "Structure of 'Bis(methoxymagnesium)diselenide': A Reagent for the Introduction of Selenium into Organic Molecules," *J. Chem. Cryst.* **2007**, *37*, 109-117.
13. Brumaghim, J. L. Gross, C. L., Girolami, G. S. "Synthesis, Characterization, and Crystal Structures of the Osmium Triflate Complexes Cp*Os(P-P)(OTf) and [Cp*Os(P-P)(OH₂)]-[OTf]," *J. Organomet. Chem.* **2006**, *691*, 3874-3880.
12. Battin, E. E.; Perron, N. R.; Brumaghim, J. L. "The Central Role of Metal Ion Coordination in Selenium Antioxidant Activity," *Inorg. Chem.* **2006**, *45*, 499-501.
11. Brumaghim, J. L.; Michels, M.; Pagliero, D.; Raymond K. N. "Encapsulation and Stabilization of Reactive Aromatic Guests Inside Supramolecular Hosts," *Eur. J. Org. Chem.* **2004**, 5115-5118.

10. Brumaghim, J. L.; Michels, M.; Raymond, K. N. "Hydrophobic Chemistry in Aqueous Solution: Stabilization and Stereoselective Encapsulation of Phosphonium Guests in a Supramolecular Host," *Eur. J. Org. Chem.* **2004**, 4552-4559.
9. Fiedler, D.; Pagliero, D.; Brumaghim, J. L.; Bergman, R. G.; Raymond, K. N. "Encapsulation of Cationic Ruthenium Complexes into a Chiral Self-Assembled Cage," *Inorg. Chem.* **2004**, *43*, 846-848.
8. Brumaghim, J. L.; Li, Y.; Henle, E.; Linn, S. "Effects of Hydrogen Peroxide upon Nicotinamide Nucleotide Metabolism in *Escherichia coli*: Changes in Enzyme Levels and Nicotinamide Nucleotide Pools and Studies of the Oxidation of NAD(P)H by Fe(III)," *J. Biol. Chem.* **2003**, *278*, 42495-42504.
7. Brumaghim, J. L.; Raymond, K. N. "What Should Be Impossible: Resolution of the Mononuclear Gallium Coordination Complex, Tris(benzohydroxamato)gallium(III)," *J. Am. Chem. Soc.* **2003**, *125*, 12066-12067.
6. Ziegler, M.; Brumaghim, J. L.; Raymond, K. N. "Stabilization of a Reactive Cationic Species by Supramolecular Encapsulation," *Angew. Chem. Int. Ed. Engl.* **2000**, *39*, 4119-4121.
5. Brumaghim, J. L.; Girolami, G. S. "An Unusual Norbornadiene Coupling Product. Synthesis, Characterization, and Structure of the Ruthenocene (C₅Me₅)Ru(η⁵-C₅H₄C₉H₁₁)," *J. Organomet. Chem.* **1999**, *586*, 258-262.
4. Mui, H. D.; Brumaghim, J. L.; Gross, C. L.; Girolami, G. S. "Synthesis of Hydride and Alkyl Compounds Containing the Cp*Os(η³-allyl) Fragment. Crystal Structures of Cp*Os(η³-C₈H₁₃)Br₂ and [Cp*Os(η³-C₄H₇)Me(OH₂)] [BF₄]," *Organometallics* **1999**, *18*, 3264-3272.
3. Brumaghim, J. L.; Girolami, G. S. "Synthesis and Reactivity of the Osmium Methylidene Complex [(C₅Me₅)Os(dppm)(=CH₂)] [OTf]," *Chem. Commun.* **1999**, 953-954.
2. Brumaghim, J. L.; Priepot, J.* G.; Girolami, G. S. "Synthesis of Hydride and Alkyl Compounds Containing the Cp*Os(NO) Fragment. Crystal Structure of [Cp*Os(μ-NO)]₂," *Organometallics* **1999**, *18*, 2139-2144.
1. Brumaghim, J. L.; Girolami, G. S. "Ring-Opening Metathesis Polymerization of Norbornene by Cp*₂Os₂Br₄ and Related Compounds," *Organometallics* **1999**, *18*, 1923-1929.