

Zachary T. Ball

Department of Chemistry, MS 60, Rice University
 6100 Main St., Houston, TX 77005
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EDUCATION AND TRAINING

- 1999–2004 Ph.D. in Chemistry, Stanford University, 2004. Thesis adviser: Prof. Barry M. Trost.
 1995–1999 A.B. with highest honors in Chemistry, Harvard University, 1999. Adviser: Prof. Gregory L. Verdine.

APPOINTMENTS

- | | | |
|--------------|--|-------------------|
| 2014– | Associate Chair for Undergraduate Studies | Houston, TX |
| 2013– | Associate Professor of Chemistry, Rice University | Houston, TX |
| 2008– | Institute of Biosciences and Bioengineering, Rice University | Houston, TX |
| 2008– | Center for Biological and Environmental Nanotechnology, Rice University | Houston, TX |
| 2008– | Smalley Institute for Nanoscale Science and Technology, Rice University | Houston, TX |
| 2006–2013 | Assistant Professor of Chemistry, Rice University | Houston, TX |
| 2006–2008 | Norman Hackerman–Welch Young Investigator, Rice University | Houston, TX |
| 2004–2006 | Miller Research Fellow, Miller Institute for Basic Research in Science, UC–Berkeley. Adviser: Prof. Jean M. J. Fréchet | Berkeley, CA |
| Mar–Apr 2004 | Visiting Researcher, Mahidol University | Bangkok, Thailand |
| 1999–2004 | Graduate Research and Teaching Assistant, Stanford University | Stanford, CA |
| 1997–1999 | Undergraduate Research, Harvard University | Cambridge, MA |
| Summer 1998 | Research Intern, Schering-Plough Research Institute | Kenilworth, NJ |

HONORS AND AWARDS

- | | |
|-----------|---|
| 2017 | Thieme Chemistry Journal Awardee |
| 2011–2016 | NSF CAREER award |
| 2006–2009 | Norman Hackerman–Welch Young Investigator Award |
| 2004–2006 | Miller Research Fellow, Miller Institute for Basic Research in Science, University of California, Berkeley. |
| 2001–2004 | Althouse Family Fellow, Stanford Graduate Fellowship |
| 1996–1999 | Undergraduate Research Fellowship, Harvard College Research Program |
| 1996–1999 | John Harvard Honorary Scholarship, Harvard University |

1995 National Merit Scholar

PUBLICATIONS

- (56) Ascorbate as a pro-oxidant: mild N-terminal modification with vinylboronic acid
Ohata, J., Ball, Z.T. *Chem. Commun.*, **2017**, ASAP. DOI: 10.1039/C6CC09955F.
- (55) Designing selectivity in dirhodium metalloprotein catalysts for protein modification
Martin, S.C.; Vohidov, F.; Wang, H.; Knudsen, S.; Marzec, A.A.; Ball, Z.T. *Bioconj. Chem.*, **2017**, ASAP. DOI: 10.1021/acs.bioconjchem.6b00716.
- (54) Histidine-directed arylation/alkenylation of backbone N–H bonds mediated by copper(II)
Jun Ohata, Matthew B. Minus, Morgan E. Abernathy, Zachary T. Ball; *J. Am. Chem. Soc.*, **2016**, *138*, 7472–7475. doi: 10.1021/jacs.6b03390.
- (53) Assessing the intracellular fate of rhodium(II) complexes.
Minus, M. B.; Kang, M. K.; Knudsen, S. E.; Liu, W.; Krueger, M. J.; Smith, M. L.; Redell, M. S.; Ball, Z. T. *Chem. Commun.* **2016** DOI:10.1039/C6CC05192H.
- (52) Chemical post-translational modification with designed rhodium(II) catalysts
Samuel C. Martin, Zachary T. Ball; *submitted (Methods in Enzymology)*
- (51) Rhodium(II) proximity-labeling identifies a novel target site on STAT3 for inhibitors with potent anti-leukemia activity.
Minus, M. B.; Liu, W.; Vohidov, F.; Kasembeli, M. M.; Long, X.; Krueger, M.; Stevens, A.; Kolosov, M. I.; Tweardy, D. J.; Redell, M. S.; Ball, Z. T. *Angew. Chem. Int. Ed.* **2015**, *54*, 13085-13089. doi:10.1002/anie.201506889R1.
- (50) Designing enzyme-like catalysts: A rhodium(II) metalloprotein case study.
Vohidov, F.; Popp, B. V.; Ball, Z. T. In *Proceedings of the 24th American Peptide Symposium*; Srivastava, V., Yudin, A., Lebl, M., Eds.; American Peptide Society: 2015, p 24-26.
- (49) Convenient analysis of protein modification by chemical blotting with fluorogenic “click” reagents.
Ohata, J.; Vohidov, F.; Ball, Z. T. *Mol. Biosyst.* **2015**, *11*, 2846-2849. doi:10.1039/c5mb00510h.
- (48) Luminogenic iridium azide complexes.
Ohata, J.; Vohidov, F.; Aliyan, A.; Huang, K.; Marti, A. A.; Ball, Z. T. *Chem. Commun.* **2015**, *51*, 15192-15195. doi:10.1039/C5CC06099K.
- (47) Potent and selective inhibition of SH3 domains with dirhodium metalloinhibitors.
Vohidov, F.; Knudsen, S. E.; Leonard, P. G.; Ohata, J.; **Wheadon, M. J.**; Popp, B. V.; Ladbury, J. E.; Ball, Z. T. *Chem. Sci.* **2015**, *6*, 4778-4783. doi:10.1039/c5sc01602a.
- (46) Molecular recognition in protein modification with rhodium metalloproteins.
Ball, Z. T. *Curr. Opin. Chem. Biol.* **2015**, *25*, 98-102. doi:10.1016/j.cbpa.2014.12.017.
- (45) Rhodium(II) Metalloprotein Catalyst Design Enables Fine Control in Selective Functionalization of Natural SH3 Domains.
Vohidov, F.; Coughlin, J. M.; Ball, Z. T. *Angew. Chem. Int. Ed.* **2015**, *54*, 4587-4591. doi:10.1002/anie.201411745.
- (44) Inhibiting prolyl isomerase activity by hybrid organic-inorganic molecules containing rhodium(II) fragments.
Coughlin, J. M.; Kundu, R.; **Cooper, J. C.**; Ball, Z. T. *Bioorg. Med. Chem. Lett.* **2014**, *24*, 5203-5206. doi:10.1016/j.bmcl.2014.09.068.

- (43) Stabilization and Functionalization of Single-Walled Carbon Nanotubes with Polyvinylpyrrolidone Copolymers for Applications in Aqueous Media. Popp, B. V.; **Miles, D. H.**; **Smith, J. A.**; Fong, I. M.; Pasquali, M.; Ball, Z. T. *J. Polym. Sci., Part A: Polym. Chem.* **2014**, *53*, 337-343. doi:10.1002/pola.27365.
- (42) Mixed Bioengineering–Chemical Synthesis Approach for the Efficient Preparation of Δ^7 -Dafachronic Acid. Kinzurik, M. I.; **Hristov, L. V.**; Matsuda, S. P. T.; Ball, Z. T. *Org. Lett.* **2014**, *16*, 2188-2191. doi:10.1021/ol5006642.
- (41) A tripodal peptide ligand for asymmetric Rh(II) catalysis highlights unique features of on-bead catalyst development Sambasivan, R.; Zheng, W.; Burya, S. J.; Popp, B. V.; Turro, C.; Clementi, C.; Ball, Z. T. *Chem. Sci.* **2014**, *5*, 1401–1407. doi:10.1039/C3SC53354A.
- (40) Studies of asymmetric styrene cyclopropanation with a rhodium(II) metallopeptide catalyst developed with a high-throughput screen. Sambasivan, R.; Ball, Z. T. *Chirality* **2013**, *25*, 493-497. doi:10.1002/Chir.22144.
- (39) Rhodium-catalyzed cysteine modification with diazo reagents. Kundu, R.; Ball, Z. T. *Chem. Commun.* **2013**, *49*, 4166-4168. doi:10.1039/c2cc37323h.
- (38) Designing enzyme-like catalysis with rhodium (II) metallopeptides. Ball, Z. T. *Accts. Chem. Res.*, **2013**, *46*, 560–570. doi:10.1021/ar300261h.
- (37) Determination of orientational isomerism in rhodium(II) metallopeptides by pyrene fluorescence. Sambasivan, R.; Ball, Z. T. *Org. Biomol. Chem.* **2012**, *10*, 8203–8206. doi:10.1039/C2OB26667A.
- (36) Screening rhodium metallopeptide libraries “on bead”: Asymmetric cyclopropanation and a solution to the enantiomer problem. Sambasivan, R.; Ball, Z. T. *Angew. Chem. Int. Ed.* **2012**, *51*, 8568–8572. doi:10.1002/anie.201202512.
- (35) Sequence-specific inhibition of a designed metallopeptide catalyst. Popp, B. V.; Chen, Z.; Ball, Z. T. *Chem. Commun.* **2012**, *48*, 7492-7494. doi:10.1039/C2CC33808D.
- (34) Hybrid Organic–Inorganic Inhibitors of a PDZ Interaction that Regulates the Endocytic Fate of CFTR. Kundu, R.; Cushing, P. R.; Popp, B. V.; Zhao, Y.; Madden, D. R.; Ball, Z. T. *Angew. Chem. Int. Ed.* **2012**, *51*, 7217–7220. doi:10.1002/anie.201202291.
- (33) Catalytic Protein Modification with Dirhodium Metallopeptides: Specificity in Designed and Natural Systems. Chen, Z.; Vohidov, F.; Coughlin, J. M.; Stagg, L. J.; Arold, S. T.; Ladbury, J. E.; Ball, Z. T. *J. Am. Chem. Soc.* **2012**, *134*, 10138–10145. doi:10.1021/ja302284p.
- (32) Organometallics Roundtable 2011. Gladysz, J. A.; Ball, Z. T.; Bertrand, G.; Blum, S. A.; Dong, V. M.; Dorta, R.; Hahn, F. E.; Humphrey, M. G.; Jones, W. D.; Klosin, J.; Manners, I.; Marks, T. J.; Mayer, J. M.; Rieger, B.; Ritter, J. C.; Sattelberger, A. P.; Schomaker, J. M.; Yam, V. W.-W. *Organometallics* **2012**, *31*, 1. doi:10.1021/om201234x.
- (31) A general synthesis of dirhodium metallopeptides as MDM2 ligands. Zaykov, A. N.; Ball, Z. T. *Chem. Commun.* **2011**, *47*, 10927. doi:10.1039/c1cc13169a.

- (30) Site-Specific Protein Modification with a Dirhodium Metallopeptide Catalyst.
Chen, Z.; Popp, B. V.; Bovet, C. L.; Ball, Z. T. *ACS Chem. Biol.* **2011**, *6*, 920. doi:10.1021/cb2001523.
- (29) Kinetic and stereoselectivity effects of phosphite ligands in dirhodium catalysis
Zaykov, A. N.; Ball, Z.T., *Tetrahedron*, **2011**, *67*, 4397–4401. doi:10.1016/j.tet.2011.01.059.
- (28) Proximity-Driven Metallopeptide Catalysis: Remarkable Side-Chain Scope Enables Modification of the Fos bZip Domain.
Popp, B.V.; Ball, Z.T., *Chem. Sci.* **2011**, *2*, 690–695. doi:10.1039/C0SC00564A.
- (27) Metallopeptides for Asymmetric Dirhodium Catalysis.
Sambasivan, R.; Ball, Z.T., *J. Am. Chem. Soc.*, **2010**, *132*, 9289–9291. doi:10.1021/ja103747h.
- (26) Copper-Catalyzed Remote sp^3 C–H Chlorination of Alkyl-Hydroperoxides
Kundu, R.; Ball, Z. T., *Org. Lett.* **2010**, *12*, 2460–2463. doi:10.1021/ol100472t.
- (25) Structure-Selective Modification of Aromatic Side Chains with Dirhodium Metallopeptide Catalysts
Popp, B. V.; Ball, Z. T., *J. Am. Chem. Soc.* **2010**, *132*, 6660–6662. doi:10.1021/ja101456c.
- (24) Helix Induction by Dirhodium: Access to Biocompatible Metallopeptides with Defined Secondary Structure.
Zaykov, A. N.; Popp, B. V.; Ball, Z. T., *Chem. Eur. J.* **2010**, *132*, 6651–6659. doi:10.1002/chem.200903092.
- (23) Allylcopper Intermediates with N-Heterocyclic Carbene Ligands: Synthesis, Structure, and Catalysis
Russo, V.; Herron, J. R.; Ball, Z. T., *Org. Lett.* **2009**, *12*, 220–223. doi:10.1021/ol902458v.
- (22) Catalytic Organocopper Chemistry from Organosiloxane Reagents
Herron, J. R.; Russo, V.; Valente, E. J.; Ball, Z. T., *Chem. Eur. J.* **2009**, *15*, 8713–8716. doi:10.1002/chem.200901438.
- (21) Asymmetric Total Synthesis of Soraphen A: A Flexible Alkyne Strategy
Trost, B. M.; Sieber, J. D.; Qian, W.; Dhawan, R.; Ball, Z. T., *Angew. Chem. Int. Ed.* **2009**, *48*, 5478–5481. doi:10.1002/anie.200901907.
- (20) Controlling Peptide Structure with Coordination Chemistry: Robust and Reversible Peptide-Dirhodium Ligation
Zaykov, A. N.; MacKenzie, K. R.; Ball, Z. T., *Chem. Eur. J.* **2009**, *15*, 8961–8965. doi:10.1002/chem.200901266.
- (19) Synthesis and isotopic labeling of a naturally occurring alkyl-thiadiamondoid
Russo, V.; Allen, J.; Ball, Z. T. *Chem. Commun.*, **2009**, 595–596. doi:10.1039/B818399F.
- (18) Synthesis and Reactivity of Functionalized Arylcopper Compounds by Transmetalation of Organosilanes
Herron, J. R.; Ball, Z. T. *J. Am. Chem. Soc.* **2008**, *130*, 16486–16487. doi:10.1021/ja8070804.
- (17) C–E Bond Formation Through Hydrosilylation of Alkynes
Ball, Z. T., In *Comprehensive Organometallic Chemistry*, 3rd ed.; Mingos, M.; Crabtree, R., Eds. Elsevier Ltd.: London, 2007; Vol. 10, pp 789–814.
- (16) Amphiphilic Diblock Copolymer Compatibilizers and Their Effect on the Morphology and Performance of P3HT:PCBM Solar Cells
Sivula, K.; Ball, Z. T.; Watanabe, N.; Fréchet, J. M. J. *Adv. Mater.* **2006**, *18*, 206.

doi:10.1002/adma.200501787

- (15) Well-Defined, Living Polymers with High Fullerene Content and Their Use in Block Copolymers for Solution-Phase and Bulk Organization
Ball, Z. T.; Sivula, K.; Fréchet, J. M. J. *Macromolecules* **2006**, *39*, 70–72. doi:10.1021/ma052325b
- (14) Alkyne Hydrosilylation Catalyzed by a Cationic Ruthenium Complex: Efficient and General Trans Addition
Trost, B. M.; Ball, Z. T. *J. Am. Chem. Soc.* **2005**, *127*, 17644–17655. doi:10.1021/ja0528580.
- (13) Selective synthesis of functionalized, tertiary silanes by diastereoselective rearrangement-addition
Trost, B., M.; Ball, Z., T.; Kang, E.-J. *Org. Lett.* **2005**, *7*, 4911–4913. doi:10.1021/ol0518636.
- (12) An Alkyne Hydrosilylation-Oxidation Strategy for the Selective Installation of Oxygen Functionality
Trost, B. M.; Ball, Z. T.; Laemmerhold, K. M. *J. Am. Chem. Soc.* **2005**, *127*, 10028–10038. doi:10.1021/ja051578h.
- (11) Addition of Metalloid Hydrides to Alkynes: Hydrometallation with Boron, Silicon, and Tin
Trost, B. M.; Ball, Z. T. *Synthesis* **2005**, 853–887. doi:10.1055/s-2005-861874.
- (10) Synthetic Stitching with Silicon: Geminal Alkylation-Hydroxylation of Alkynyl Carbonyl Compounds
Trost, B. M.; Ball, Z. T. *J. Am. Chem. Soc.* **2004**, *126*, 13942–13944. doi:10.1021/ja045971j.
- (9) A Theoretical Study on the Mechanism, Regiochemistry, and Stereochemistry of Hydrosilylation Catalyzed by Cationic Ruthenium Complexes.
Chung, L. W.; Wu, Y.-D.; Trost, B. M.; Ball, Z. T. *J. Am. Chem. Soc.* **2003**, *125*, 11578–11582. doi:10.1021/ja034833b.
- (8) Regioselective Hydrosilylation of Propargylic Alcohols: An Aldol Surrogate.
Trost, B. M.; Ball, Z. T.; Jöge, T. *Angew. Chem., Int. Ed. Engl.* **2003**, *42*, 3415–3418. doi:10.1002/anie.200351587.
- (7) Ruthenium-catalyzed vinylsilane synthesis and cross-coupling as a selective approach to alkenes: Benzyldimethylsilyl as a robust vinylmetal functionality.
Trost, B. M.; Machacek, M. R.; Ball, Z. T. *Org. Lett.* **2003**, *5*, 1895–1898. doi:10.1021/ol034463w.
- (6) Intramolecular endo-dig hydrosilylation catalyzed by ruthenium: Evidence for a new mechanistic pathway.
Trost, B. M.; Ball, Z. T. *J. Am. Chem. Soc.* **2003**, *125*, 30–31. doi:10.1021/ja028766h.
- (5) A Stereospecific Ruthenium-Catalyzed Allylic Alkylation.
Trost, B. M.; Fraise, P. L.; Ball, Z. T. *Angew. Chem., Int. Ed. Engl.* **2002**, *41*, 1059–1061. doi:10.1002/1521-3773(20020315)41:6<1059::AID-ANIE1059>3.0.CO;2-5.
- (4) A Chemoselective Reduction of Alkynes to (*E*)-Alkenes
Trost, B. M.; Ball, Z. T.; Joege, T. *J. Am. Chem. Soc.* **2002**, *124*, 7922–7923. doi:10.1021/ja026457l.
- (3) Markovnikov Alkyne Hydrosilylation Catalyzed by Ruthenium Complexes
Trost, B. M.; Ball, Z. T. *J. Am. Chem. Soc.* **2001**, *123*, 12726–12727. doi:10.1021/ja0121033
- (2) A synthetic library of cell-permeable molecules
Koide, K.; Finkelstein, J. M.; Ball, Z.; Verdine, G. L. *J. Am. Chem. Soc.* **2001**, *123*, 398–408. doi:10.1021/ja0023377.
- (1) The Design and Synthesis of Novel NK1/NK2 Dual Antagonists

Reichard, G. A.; Ball, Z. T.; Aslanian, R.; Anthes, J. C.; Shih, N. Y.; Piwinski, J. J. *Bioorg. Med. Chem. Lett.* **2000**, *10*, 2329–2332. doi:10.1016/S0960-894X(00)00463-7.

PATENTS

- (2) Ball, Z. T.; Madden, D. R.; Kundu, R.; Popp, B. V.; Cushing, P. R., Small Molecule Conjugates with Dimetal Species for Protein Inhibition. U.S. Patent: US9045527 B2, Jun 2, 2015.
- (1) Ball, Z. T.; Popp, B. V.; Zaykov, A. N., Metallopeptide Catalysts. U.S. Patent: US8476407, Jul 02, 2013.

INVITED LECTURES

- Nov 2016 "Polypeptides as substrates for homogenous catalysis" ACS Regional Meeting, Galveston, TX
- Jun 2016 Plenary lecture, PERCH - CIC Congress IX, Bangkok Thailand
- May 2016 UC–San Diego, Department of Chemistry, San Diego CA
- Aug 2015 *In Role of the Outer Coordination Sphere on the Activity of Enzymes and Molecular Catalysts*, ACS National Meeting, Boston, MA
- Jul 2015 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," American Peptide Symposium, Orlando, FL
- Nov 2014 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," Tufts University, Department of Chemistry, Medford, MA
- Jun 2014 "Peptides ligands and biological inspiration for selective chemical catalysis, "The Future of Asymmetric Catalysis Workshop, Telluride CO
- Apr 2014 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," University of New Mexico, Albuquerque, NM
- Sep 2013 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," University of Georgia, Athens, GA
- Apr 2013 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," Trinity University, Department of Chemistry, San Antonio, TX
- Feb 2013 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," The Ohio State University, Department of Chemistry, Columbus, OH
- Feb 2013 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," University of Virginia, Department of Chemistry, Charlottesville, VA
- Feb 2013 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," Purdue University, Department of Medicinal Chemistry and Molecular Pharmacology, West Lafayette, IN
- Nov 2012 "Catalysis with rhodium metallopeptides," *The Twelfth International Conference on New Aspects of Organic Chemistry (IKCOC-12)*, Kyoto, Japan
- Nov 2012 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," *2nd International Symposium on Molecular Activation* (plenary lecture, ISMA-2), Nara, Japan

- Nov 2012 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," Osaka University, Department of Applied Chemistry, Osaka, Japan
- Oct 2012 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," Rice University, Department of Chemistry, Houston, TX
- Oct 2012 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," University of Delaware, Department of Chemistry, Newark, DE
- Sep 2012 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," University of Texas–San Antonio, Department of Chemistry, San Antonio, TX
- Sep 2012 "Designing enzyme-like catalysts: A rhodium(II) metallopeptide case study," University of West Virginia, Department of Chemistry, Morgantown, WV
- Jun 2012 "Rhodium(II) metallopeptides for asymmetric catalysis," Chirality 2012 Conference, *Young Investigators Symposium*, Fort Worth, TX
- Apr 2012 "Catalysis with rhodium metallopeptides," Texas A&M University, Department of Chemistry, College Station, TX
- Apr 2012 "Catalysis with rhodium metallopeptides," Texas Christian University, Department of Chemistry, Fort Worth, TX
- Apr 2012 "Catalysis with rhodium metallopeptides," University of Texas–Austin, Department of Chemistry, Austin, TX
- Mar 2012 "Catalysis with rhodium metallopeptides," University of Houston, Department of Chemistry, Houston, TX
- Mar 2012 "Catalysis with rhodium metallopeptides," Brigham Young University, Department of Chemistry, Provo, UT
- Mar 2012 "Catalysis with rhodium metallopeptides," University of Wisconsin–Madison, School of Pharmacy, Madison, WI
- Feb 2012 "Catalysis with rhodium metallopeptides," University of Wisconsin–Madison, Dept. of Chemistry, Madison, WI
- Feb 2012 "Catalysis with rhodium(II) metallopeptides," Gordon Research Conference, Chemistry & Biology of Peptides, Ventura, CA
- Nov 2011 "Catalysis with rhodium(II) metallopeptides," ACS Southwest Regional Meeting, Austin, TX
- Nov 2011 "Catalysis with rhodium(II) metallopeptides," University of Illinois at Urbana–Champaign, Champaign, IL
- Oct 2011 "Catalysis with rhodium(II) metallopeptides," University of Illinois at Chicago, Chicago, IL
- Oct 2011 "Catalysis with rhodium(II) metallopeptides," University of Pittsburgh, Pittsburgh, PA
- Sep 2011 "Catalysis with rhodium(II) metallopeptides," University of Arizona, Tucson, AZ
- Sep 2011 "Catalysis with rhodium(II) metallopeptides," Arizona State University, Tucson, AZ
- Sep 2011 "Structures and functions of dirhodium metallopeptides," *Young Academic Investigators Symposium*, ACS National Meeting, Denver, CO

- Aug 2011 "Designing enzyme-like reactivity with dirhodium metalloptides," International Conference on Biological Inorganic Chemistry, Vancouver, CA
- May 2011 "Diverse structures and functions of dirhodium metalloptides," *Stone Symposium*, Baylor University, Waco, TX
- May 2011 "Diverse structures and functions of dirhodium metalloptides," Univ. of Maryland, College Park, MD
- May 2011 "Diverse structures and functions of dirhodium metalloptides," Georgetown University, Washington, DC
- Apr 2011 "Diverse structures and functions of dirhodium metalloptides," SUNY–Buffalo, Buffalo, NY
- Apr 2011 "Diverse structures and functions of dirhodium metalloptides," Syracuse University, Syracuse, NY
- Mar 2011 "Diverse structures and functions of dirhodium metalloptides," Ohio State University, Columbus, OH
- Nov 2010 "Proteins as substrates: Selective catalysis in complex environments," *Keith Fagnou Memorial Lectureship*, Ottawa University, Ottawa, ON, CA
- Oct 2010 "Proteins as substrates: Selective catalysis in complex environments," Gonzaga University, Spokane WA
- Sep 2010 "Proteins as substrates: Selective catalysis in complex environments," University of South Florida, Tampa, FL
- Jul 2010 "Proteins as substrates: Selective catalysis in complex environments," NSF workshop on Organic Synthesis and Natural Products Chemistry. Squam Lake, NH
- Dec 2009 "Dirhodium Metalloptides," Mesa State College, Grand Junction, CO
- Nov 2009 "Dirhodium Metalloptides: Synthesis, Structure, and Function," University of Houston, Houston, TX
- Apr 2008 "Synthesis and Reactivity of Organocopper Complexes from Organosilane Transmetalation," Southwest Catalysis Society Spring Meeting, Houston TX
- July 2008 "Copper Complexes for Carbon-Silicon Bond Activation," short talk, Gordon Research Conference on Organometallic Chemistry, Newport, RI

ADVISING AND POSTGRADUATE-SCHOLAR SPONSOR

Graduate Students:

Jessica Herron (PhD 2006–2012)
 Alexander Zaykov (PhD 2006–2011)
 Vincenzo Russo (MS 2007–2010)
 Rituparna Kundu (PhD 2008–2012)
 Cara Bovet (2008–2009)
 Ramya Sambasivan (PhD 2009–2015)

Postdoctoral Fellow:

Brian Popp (2008–2011)
 Jane Coughlin (2011–2013)
 Olbelina Ulloa (2015–)
Undergraduates:
 Eric Silberman (2007–2008)
 Stephen Ahn (2007)

Zhen Chen	(MS 2009–2012)	Jake Smith	(2008)
Farrukh Vohidov	(2010–)	Dillon Miles	(2009–2011)
Matthew Minus	(2011–)	Jeremy Larus-Stone	(2010–2011)
Robert Ferguson	(2011–2013)	Rejnal Tushe	(2010)
Sarah Knudsen	(2012–)	Enrique Vazquez	(2011)
Cody Martin	(2013–)	Michael Yu	(2011–2012)
Jun Ohata	(2013–)	Fei Tang	(2011–2012)
Alicia Mangubat	(2014–)	Matthew Stampfl	(2012–2013)
		Julian Cooper	(2012–2014)
		Lachezar Hristov	(2013–2015)
		Nikita Petukhov	(2013–2015)
		Kaleb Carmel	(2013–2015)
		Michael Wheadon	(2014 REU)
		Morgen Smith	(2014)
		Alex Marzec	(2014–2015)
		Morgan Abernathy	(2015–)

RESEARCH SUPPORT (funded 100% to Z.T.B. unless otherwise indicated)

Current & Pending Research Support

Aug 2014–July 2017	“New Strategies for Catalytic Bond Formation,” \$225,000, The Welch Foundation.
Jun 2016–May 2019	“Catalytic methods for site-specific modification of natural proteins,” \$510,000, NSF.

Completed Research Support (last five years only)

Jan 2010–Jan 2013	Upgrade of High Performance Digital NMR Spectrometers, \$416,135 (co-PI, departmental instrumentation grant), NSF.
Oct 2010–Feb 2012	“Metallopeptide catalysts for protein modification and elucidation of protein-protein interactions,” \$100,000 (PI 51% ,with co-PI John Ladbury), John S. Dunn Gulf Coast Consortium for Chemical Genomics.
Apr 2011–Mar 2016	“CAREER: Structure-selective Protein Modification with Dirhodium Metallopeptide Catalysts,” \$550,000, NSF CAREER award.
Aug 2011–July 2014	“New Strategies for Catalytic Bond Formation,” \$160,000, The Welch Foundation.
Feb 2012–Jan 2013	“Potent organometallic inhibitors of Signal Transducer and Activator of Transcription 3 (STAT3),” \$160,000 (PI 42%, with co-PIs David Tweardy and Michele Redell), Simmons Family Foundation Collaborative Research Fund.
Jan 2013–Jan 2014	“CAREER: Structure-selective Protein Modification with Dirhodium

	Metallopeptide Catalysts," \$47,680, NSF AGEP–GRS supplement.
Aug 2011–July 2014	"New Strategies for Catalytic Bond Formation," \$160,000, The Welch Foundation.
Sep 2012–Sep 2014	Potent organometallic inhibitors of Signal Transducer and Activator of Transcription 3 (STAT3)" \$381,486 (PI 38%, with co-PIs David Tweardy and Michele Redell), NIH/NCI 1R21CA170625-01.
Apr 2011–Mar 2016	"CAREER: Structure-selective Protein Modification with Dirhodium Metallopeptide Catalysts," \$550,000, NSF CAREER award. No-fund extension until 2017.

DEPARTMENTAL AND UNIVERSITY ACTIVITIES

Chemistry Department:	Undergraduate Studies Committee (chair, 2014–)
	Undergraduate Curriculum Committee (2008–2014)
	Undergraduate Advising Committee (2006–2007, 2008–2014)
	Graduate Admissions Committee (2006–2009, 2011–2014)
	Graduate Recruitment Committee (2006–2009, 2011–2014)
	Graduate Curriculum Committee (2008–2015)
	Student Awards Committee (2006–2008)
	Seminar Committee (2007–)
	Faculty advisor, Student-Hosted Seminar Series (2007–)
University:	Faculty Associate, Lovett College (2007–2015)
	Faculty Associate, Brown College (2015–)
	Shared Equipment Authority (SEA) (2007–)
	Committee on Undergraduate Curriculum (CUC) (2014–2015)

RELATED ACTIVITIES

Reviewing:	During my time at Rice, I have served as a reviewer for <i>ACS Catalysis</i> , <i>ACS Chemical Biology</i> , <i>Applied Organometallics</i> , <i>Biopolymers</i> , <i>Catalysis Science & Technology</i> , <i>Chemical Communications</i> , <i>Chemical Reviews</i> , <i>Chemical Science</i> , <i>Chemistry: a European Journal</i> , <i>Chemistry of Materials</i> , <i>Chirality</i> , <i>Inorganic Chemistry</i> , <i>Journal of Organic Chemistry</i> , <i>Journal of Physical Chemistry</i> , <i>Journal of the American Chemical Society</i> , <i>Langmuir</i> , <i>MedChemComm</i> , <i>Organic and Biomolecular Chemistry</i> , <i>Organic Letters</i> , <i>Tetrahedron</i> , and <i>Tetrahedron Letters</i> . In addition, I have served as a reviewer for the ACS Petroleum Research Fund, the John S. Dunn Gulf Coast Consortium for Chemical Genomics, the Leverhulme Trust, the Netherlands Organisation for Scientific Research, the Israel Science Foundation, the NSF (USA), the Shota Rustaveli National Science Foundation (Georgia), and the Swiss National Science Foundation.
Collaborators:	Prof. Michael Diehl, Rice University; Prof. John Ladbury, M.D. Anderson Cancer Center; Prof. Dean Madden, Dartmouth University Medical School; Prof. Frank

Orson, Baylor College of Medicine; Prof. Matteo Pasquali, Rice University; Prof. Michele Redell, Baylor College of Medicine; Prof. Joff Silberg, Rice University; David Tweardy, Baylor College of Medicine.