

Stephen E. Leonard

Assistant Professor of Chemistry

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Department of Chemistry

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Education

2002 – 2006 Indiana Wesleyan University, Marion, IN– B.S. in Chemistry
2006 – 2011 University of Michigan, Ann Arbor, Michigan – Ph.D. in Chemical Biology

Research Experience

2004 – 2006 **Indiana Wesleyan University Marion, IN**
Research Advisor: Professor John Lakanen

2007 – 2011 **University of Michigan Ann Arbor, MI**
Research Advisor: Professor Kate S. Carroll

- Design and synthesis of new antimalarial drugs

2011 – 2014 **University of Washington Seattle, WA**
Research Advisor: Professor Dustin J. Maly

- Developing small molecule probes to investigate protein sulfenylation in living cells.

2014 – Present **Indiana Wesleyan University Marion, IN**

- Design of selective bivalent inhibitors of the protein tyrosine phosphatase Shp2

Teaching Experience

2005-2006 Organic Chemistry Laboratory Teaching Assistant, Indiana Wesleyan University
2007 Organic Chemistry Discussion Course Leader, Chem 210, University of Michigan
2008 Organic Chemistry Laboratory Instructor, Chem 211, University of Michigan
2009 Chemical Biology Teaching Assistant, ChemBiol 502, University of Michigan
2014-2015 Visiting Assistant Professor of Chemistry, CHE110, CHE125 and CHE236,
Indiana Wesleyan University
2015-Present Assistant Professor of Chemistry, CHE 125L, CHE126L CHE236 and CHE350

University Service

2007 – 2011 Life Sciences Institute NMR Core Committee – supervision and maintenance of
400 and 500 MHz NMR
2015-Present Program Director of NSF S-STEM Scholarship Program

Awards

Ruth L. Kirschstein National Research Service Award Postdoctoral Fellow 2012-2014
Hodson Summer Research Institute Investigator Summer 2015 and 2016

Peer-Reviewed Publications and Reviews

Research papers:

1. KG Reddie, YH Seo, WB Muse III, *SE Leonard*, KS Carroll 2009 A chemical approach for detecting sulfenic acid-modified proteins in living cells **Mol. BioSyst.** 4 (6), 521-531
2. *SE Leonard*, KG Reddie, KS Carroll 2009 Mining the thiol proteome for sulfenic acid modifications reveals new targets for oxidation in cells **ACS Chemical Biology** 4 (9), 783-799
3. M Depuydt, *SE Leonard*, D Vertommen, K Denoncin, P Morsomme, K Wahni, Joris Messens, Kate S Carroll, Jean-François Collet 2009 A periplasmic reducing system protects single cysteine residues from oxidation **Science** 326 (5956), 11092009
4. *SE Leonard*, FJ Garcia, DS Goodsell, KS Carroll 2011 Redox Based Probes for Protein Tyrosine Phosphatases **Angewandte Chemie International Edition** 50 (19), 4423-44272011
5. CE Paulsen, TH Truong, FJ Garcia, A Homann, V Gupta, *SE Leonard*, KS Carroll 2012 Peroxide-dependent sulfenylation of the EGFR catalytic site enhances kinase activity **Nature Chemical Biology** 8 (1), 57-64
6. TJ Barrett, DI Pattison, *SE Leonard*, KS Carroll, MJ Davies, CL Hawkins 2012 Inactivation of thiol-dependent enzymes by hypothiocyanous acid: role of sulfenyl thiocyanate and sulfenic acid intermediates **Free Radical Biology and Medicine** 52(6):1075-85
7. R Kishnamurthy, JL Brigham, *SE Leonard*, P Ranjitkar, ET Larson, EJ Dale, EA Merritt, DJ Maly 2013 Active site profiling reveals coupling between domains in SRC-family kinases. **Nature Chemical Biology** 9 (1), 43-50.
8. SB Hari, BGK Perera, *SE Leonard* DJ Maly 2013 Investigating inactive conformations of protein kinases **The FASEB Journal** 27, 042.1
9. RSR Vidadala, KK Ojo, SM Johnson, ZZ Zhang, *SE Leonard*, A Mitra, AC Reid, KR Keyloun, AMW Fox, M Kennedy T Silver-brace JCC Hume, S Kappe C Verlidine, E Fan, EA Merrit, WC Van Voorhis, DJ Maly 2014 Development of potent and selective Plasodium falciparum calcium-dependent protein kinase 4 (pfCDPK4) inhibitors that block the transmission of malaria to mosquitoes. **European Journal of Medicinal Chemistry** 74 (3) 562-573.
10. *SE Leonard*, AC Register, R Krishnamurthy, GJ Brighty, DJ Maly 2014 Divergent Modulation of Src-Family Kinase Regulatory Interactions with ATP-Competitive Inhibitors. **ACS Chemical Biology** 9 (8), 1894-1905.
11. AC Register, *SE Leonard*, DJ Maly 2014 SH2-Catalytic Domain Linker Heterogeneity Influences Allosteric Coupling Across the SFK Family. **Biochemistry** 53 (44), 6910-6923
12. GJ Crowther HK Hillesland KR Keyloun MC Reid JM Lafuente-Monasterio, S Ghidelli-Disse, *SE Leonard* ... 2016 Biochemical Screening of Five Protein Kinases from Plasmodium falciparum against 14,000 Cell-Active Compounds **PloS one** 11 (3), e0149996

Reviews

12. *SE Leonard*, KS Carroll 2011 Chemical 'omics' approaches for understanding protein cysteine oxidation in biology **Current Opinion in Chemical Biology** 15 (1), 88-102.

Selected Presentations

1. "Mining the Thiol Proteome for Sulfenic Acid Modifications Reveals New Targets for Oxidation in Cells." SE Leonard, KG Reddie, KS Carroll; Poster; Gordon Research Conference: Thiol-Based Redox Regulation & Signaling, Lucca, Italy May 2010.
2. Investigation of the catalytic and non-catalytic roles of Src family kinases in oncogenic cells. SE Leonard, AC Register DJ Maly. Poster; Gordon Research Conference: Bioorganic Chemistry, Andover, NH June 2012