

Kristin Jansen Labby

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PROFESSIONAL APPOINTMENTS

2016-present Assistant Professor of Chemistry – Beloit College, Beloit, WI
2014- 2016 Visiting Assistant Professor of Chemistry – Beloit College, Beloit, WI
2013-2014 Lecturer I – Department of Chemistry, University of Michigan, Ann Arbor, MI

EDUCATION AND TRAINING

2013-2014 Postdoctoral Research Fellow - Department of Chemistry, University of Michigan
Research advisor: Prof. Brent Martin
2012-2013 Postdoctoral Fellow - Life Sciences Institute, University of Michigan, Ann Arbor, MI
Research advisor: Prof. Sylvie Gameau-Tsodikova
2007-2012 Ph.D. (Organic Chemistry), Northwestern University, Evanston, IL
Research advisor: Prof. Richard B. Silverman
2003-2007 B.S. (Chemistry, Biochemistry), University of Wisconsin, Madison, WI
Research advisors: Prof. Andrew F. Bent, Prof. Hans J. Reich, Prof. Martin T. Zanni

HONORS AND AWARDS

2013 Spring 2013 CIBA Young Scientist Travel Award presented by the ACS Younger Chemists Committee
2012 Spring 2012 ACS Biological Chemistry Division Travel Award
2011-2012 National Science Foundation (NSF) GK-12 Fellowship (Reach for the Stars, Northwestern University)
2011 Sigma Aldrich Award for Outstanding Poster Presentation, 16th Annual Drug Discovery Symposium, Chicago, IL
2011 Guiding Green Graduate Student Award for the 15th Annual Green Chemistry & Engineering Conference
2006 UW-Madison Hilldale Undergraduate Research Fellowship
2006 UW-Madison Department of Plant Pathology Summer Symbiosis Program Participant
2006 UW-Madison Department of Chemistry Margaret McLean-Bender Scholarship for Undergraduate Academic Achievement

TEACHING EXPERIENCE**BELOIT COLLEGE:****CHEM 117: Chemistry**

- Fall 2014, Spring 2015, Fall 2015, Spring 2016, Spring 2017, Spring 2018
- Workshop (integrated lab and lecture) course that explores chemical principles in the context of climate change. (approx. 25 students).

CHEM 230: Organic Chemistry-I

- Fall 2014, Fall 2015, Fall 2016, Fall 2017
- POGIL curriculum, weekly 3 hour lab (approx. 30 students).

CHEM 232: Organic Chemistry with a Biological Emphasis

- Spring 2018, 14 students, new, one-semester organic chemistry course for non-majors.

CHEM 280/CHEM380: Professional Tools for Scientific Careers

- Spring 2016, Fall 2017
- Seminar course focusing on career preparation and scientific literacy and communication.

CHEM 370: Chemistry in Art

- Spring 2016
- Pigments and fibers, metals and redox reactions, and the chemistry behind art restoration and conservation. Lab component and museum collaborations. (14 students).

UNIVERSITY OF MICHIGAN:

CHEMISTRY 130: General Chemistry

- Summer 2013, Postdoctoral Lecturer, 50 students.

CHEMISTRY 210: Structure & Reactivity

- Fall 2013, Postdoctoral Lecturer (Lecturer for 1 of 4 sections, 380 students).
- Spring 2014, Postdoctoral Lecturer (Lecturer for 1 of 2 sections, 160 students).

CENTER FOR TALENT DEVELOPMENT, NORTHWESTERN UNIVERSITY:

Accelerated Weekend Experience: *Biotechnology*, Mar. 1-2, 2015, Grades 6-8, 18 students.

Accelerated Weekend Experience: *Outbreak! Exploring Epidemiology*, Nov. 7-8, 2014, Grades 6-8, 14 students

Accelerated Weekend Experience: *The Architecture of Molecules: Building 3-D Visualizations of Biological Structures*, Dec 7-8, 2013 (12 students) and Dec 8-9, 2012 (6 students), Grades 5-8.

Annual Family Conference, June 30, 2013, Courses: *Molecules to Medicines, How can we see what goes on inside cells?*; and June 23, 2012 Course: *Science Innovation and the Human Body*

ADDITIONAL TEACHING EXPERIENCES:

- 2011-2012 **NSF GK-12 Fellowship (Reach for the Stars), Northwestern University**, Partnership with Pamela Sims, 6th and 7th grade science teacher, serving as "Scientist in Residence" at Nettelhorst Middle School, Chicago Public School system. Implemented weekly lessons corresponding to class curriculum, tying in university level research, and introducing concepts of computational thinking. Hosted field trip visit to Silverman Hall science facility at Northwestern University.
- March 29, 2010 **Northwestern University SPLASH Workshop *Molecules to Medicines***
Developed a one-hour, medicinal chemistry workshop for high school students.
- 2007-2008 **Northwestern University Organic Chemistry: Teaching Assistant**
Instructed laboratory sections for the Northwestern University *Organic Chemistry* course sequence as well as assisted with *Advanced Organic Mechanisms* lectures and assignments.
- 2005-2006 **UW-Madison Chemistry Learning Center: Science Scholars Fellow**
Instructed supplementary evening sessions concurrent with UW-Madison *General Chemistry* courses.

UNDERGRADUATE RESEARCH STUDENTS SUPERVISED

BELOIT COLLEGE:

Jenna Nordin '20 Spring 2018 (CHEM 390).

Melissa Pelkey '19 Summer 2017 (Biomedical Scholars)

Leah Mellett '18 Summer 2017 – Fall 2017 (Summer Science Scholars, CHEM390)

Zachary Cole '17 Summer 2017 (Summer Science Scholar)

Miranda Simes '17 Spring 2015 – Fall 2017 (CHEM390, Biomedical Scholars, Honors Term).

Larkin Miers '17, Spring 2015 - Fall 2016 (CHEM390).

UNIVERSITY OF MICHIGAN:

Jasmine Palakurthi '16, Martin Lab Fall 2013- Spring 2014

Mackenzie Ellsberry '15 Martin Lab Spring-Summer 2014

NORTHWESTERN UNIVERSITY:

Jigar Patel '11, Silverman Lab Fall 2010-Spring 2011.

Stephanie Choing '10, Silverman Lab Fall 2008 – Spring 2010.

SEMINARS AND POSTER PRESENTATIONS**SEMINARS:**

1. **Labby, K.J.** Scientists vs. Bacteria Part 2: Mechanisms of Resistance to Antibiotics, Beloit College Science Friday, Beloit, WI Feb. 5, 2016.
2. **Labby, K.J.** Scientists vs. Bacteria Part 1: Natural Products, Beloit College Science Friday Seminar Series, Beloit, WI Sep. 11, 2015.
3. **Labby, K. J.** Putting Your Best Foot Forward in the Lab- Lab Expectations. Michigan Health Sciences Undergraduate Research Academy, University of Michigan, Ann Arbor, MI, Jun. 3, **2014**.
4. **Labby, K. J.** and Hernandez, J.L Introduction to Cancer Research. Undergraduate Research Opportunity Program (UROP), University of Michigan, Ann Arbor, MI, USA, Mar. 13, **2014**.
5. **Labby, K. J.** Protein Visualization Workshop: Interactive Biochemistry using PyMOL and the PDB. 246th Conference of the American Chemical Society, Indianapolis, IN, USA, Sept. 11, **2013**. *CHED 381*.
6. **Labby, K. J.**, Paulsen, M. Introducing medicinal chemistry research to middle school students: a multi-faceted approach from a GK-12 experience. 245th Conference of the American Chemical Society, New Orleans, LA, USA, Apr. 10, **2013**. *CHED 1655*.
7. Part of the Northwestern University Materials Research Science and Engineering (MRSEC) Science Speakers Core program:
 - a. Illinois Institute of Technology, Chemistry and Careers Class, Chicago, IL, Nov. 9, **2011**.
 - b. DePaul University, Department of Chemistry, Chicago, IL, May 19, **2011**.
 - c. Neuqua Valley High School, Advanced Genetics Class, Naperville, IL, May 2, **2011**.
 - d. Oakton Community College, STEM Club, Des Plaines, IL, Apr. 27, **2011**.
 - e. Harry S. Truman City College, Department of Chemistry, Chicago, IL, Oct. 13, **2010**.
 - f. Evanston Township High School, AP Chemistry Class, Evanston IL, Jun. 1, **2010**.

POSTERS:

1. Mellett, L., Pelkey, M., Simes, M.L. Cole, Z., **Labby, K.J.** Synthesis of potential AAC(6')-Ib inhibitors to combat bacterial resistance to aminoglycoside antibiotics. 255th ACS, New Orleans, LA, USA (*CHED 1175*) Mar 18-22, **2018**.
2. Simes, M. L., Miers, L., **Labby, K. J.** Synthesis of potential AAC(6')-Ib inhibitors to combat bacterial resistance to aminoglycoside antibiotics.
 - a. 253rd ACS, San Francisco, CA, USA (*CHED 1211*) Apr 2-6, **2017**.
 - b. ASBMB Annual Meeting, Chicago, IL, USA Apr 22-26, **2017**.
3. **Labby, K. J.**, Palakurthi, J., Martin, B.R. Structure and inhibition of acyl protein thioesterases.
 - a. 249th ACS, Denver, CO, USA, Mar. 22-25, **2015**. *BIOL 51*.
 - b. 34th Midwest Enzyme Chemistry Conference, Evanston, IL. Sep. 27, **2014**.
4. **Labby, K. J.**, Paulsen, M. Introducing medicinal chemistry research to middle school students: a multi-faceted approach from a GK-12 experience. 245th ACS, New Orleans, LA, USA, Apr. 7-11, **2013** (*Invited to SCI-MIX poster session*).
5. **Labby, K. J.**, Davydov, R., Li, H., Hoffman, B. M., Poulos, T. L., Silverman, R. B. Substrate analogs as mechanistic probes of nitric oxide synthase. (MEDI-104) 243rd ACS, San Diego, CA, USA, Mar. 25-29, **2012**.
6. **Labby, K. J.**, Xue, F., Kraus, J. M., Ji, H., Li, H., Poulos T. L., Silverman, R. B. Intramolecular hydrogen bonding: A strategy for more bioavailable inhibitors of neuronal nitric oxide synthase.
 - a. 16th Annual Drug Discovery Symposium, Chicago, IL, Oct. 12, **2011**. (*Awarded Outstanding Graduate Student Presentation*)
 - b. 31st Midwest Enzyme Chemistry Conference, Chicago, IL, Oct. 15, **2011**.
 - c. Novartis Lecture in Organic Chemistry, Evanston, IL Nov. 17, **2011**.

PUBLICATIONS

ARTICLES:

1. Tom, C. T. M. B., Crellin, J. E., Motiwala, H. F., Stone, M. B., Davda, D., Walker, W., Kuo, Y-H., Hernandez, J.L., **Labby, K.J.**, Gomez-Rodriguez, L., Jenkins, P.M., Veatch, S.L., Martin, B.R. Chemoselective ratiometric imaging of protein S-sulfenylation. *Chem Comm*, **2017**, 53(53), 7385–7388.
2. Majmudar, J.D., Konopko, A.M., **Labby, K.J.**, Tom, C.T.M.B., Crellin, J.E., Prakash, A., Martin, B.R., Harnessing redox cross-reactivity to profile distinct cysteine modifications. *J Am Chem Soc* **2016**, 138(6), 1852-1859.
3. Won, S.J., Davda, D., **Labby K.J.**, Hwang, S.Y., Pricer, R., Majmudar, J.D., Armacost, K.A., Rodriguez, L.A., Rodriguez, C.L., Chong, F.S., Torossian, K.A., Palakurthi, J., Hur, E.S., Meagher, J.L., Brooks, C.L., Stuckey, J.A., Martin, B.R. Molecular Mechanism for Isoform-Selective Inhibition of Acyl Protein Thioesterases 1 and 2 (APT1 and APT2), *ACS Chem Biol* **2016**, 11(12), 3374-3382.
4. Garneau-Tsodikova, S, **Labby, K.J.** Mechanisms of Resistance to Aminoglycoside Antibiotics: Overview and Perspectives, *Invited submission for Antibiotic Resistance issue of Medicinal Chemistry Communications* **2016**, 7, 11-27.
5. **Labby, K. J.**, Watsula, S. G., Garneau-Tsodikova, S. Interrupted adenylation domains: unique bifunctional enzymes involved in nonribosomal peptide biosynthesis. *Natural Product Reports* **2015**, 32, 641-653.
6. Davydov, R., **Labby, K. J.**, Chobot, S. E., Lukoyanov, D. A., Crane, B. R., Silverman, R. B., Hoffman, B. M. Enzymatic and cryoreduction EPR studies of the hydroxylation of methylated N^ω-hydroxy-L-arginine analogues by nitric oxide synthase from *Geobacillus stearothermophilus*. *Biochemistry* **2014**, 53, 6511–6519.
7. Jennings, B.C.*, **Labby, K. J.***, Garneau-Tsodikova, S. Redesign of substrate specificity and identification of aminoglycoside binding residues of Eis from *Mycobacterium tuberculosis*. *Biochemistry*, **2013**, 52(30), 5125-5132. (* denotes equal author contribution)
8. **Labby, K. J.**, Garneau-Tsodikova, S., Strategies to overcome the action of aminoglycoside-modifying enzymes for treating resistant bacterial infections. *Future Med. Chem.* **2013**, 5(11), 1285-1309.
9. Zrihen-Berkov, Y., Green, K. D., **Labby, K. J.**, Feldman, M., Garneau-Tsodikova, S., Fridman, M. Synthesis and evaluation of hetero- and homodimers of ribosome-targeting antibiotics: Antimicrobial activity, in vitro inhibition of translation, and drug resistance. *J. Med. Chem.* **2013**, 56(13), 5613-5625.
10. **Labby, K. J.**, Li, H., Roman, L. J., Martásek, P., Poulos, T. L., Silverman, R. B. Methylated N^ω-hydroxy-L-arginine analogues as mechanistic probes for the second step of the nitric oxide synthase-catalyzed reaction. *Biochemistry*. 2013, 52(18), 3062-3073.
11. Trippier, P., **Labby, K. J.**, Hawker, D. D., Mataka, J., Silverman, R. B. Target- and mechanism-based therapeutics for neurodegenerative diseases: Strength in numbers. *J. Med. Chem. (Perspective)*, **2013**, 56(8), 3121-3147.
12. Li, H., Xue, F., Kraus, J.M. Ji, H., **Labby, K. J.** Mataka, J., Delker, S. Martásek, P., Roman, L. J., Poulos, T. L., Silverman, R.B. Cyclopropyl- and methyl-containing inhibitors of neuronal nitric oxide synthase. *Bioorg. Med. Chem.* **2013**, 21(5), 1333-1343.
13. Huang, H., Ji, H., Li, H., Jing, Q., **Labby, K. J.**, Martásek, P., Roman, L. J., Poulos, T. L., Silverman, R.B. Selective monocationic inhibitors of neuronal nitric oxide synthase. Binding mode insights from molecular dynamics simulations. *J. Am. Chem. Soc.* **2012**, 134(28), 11559-11572.
14. **Labby, K. J.**, Xue, F., Kraus, J. M., Ji, H., Mataka, J., Li, H., Martásek, P., Roman, L. J., Poulos, T. L., Silverman, R. B. Intramolecular hydrogen bonding: a potential strategy for more bioavailable inhibitors of neuronal nitric oxide synthase. *Bioorg. Med. Chem.* **2012**, 20(7), 2435-2443.

15. Sun, W., Cao, Y., **Labby, K. J.**, Bittel, P., Boller, T., Bent, A. F. Probing the Arabidopsis flagellin receptor: FLS2-FLS2 association and the contributions of specific domains to signaling function. *Plant Cell* **2012**, *24*(3), 1096-1113.
16. Xue, F., Kraus, J. M., **Labby, K. J.**, Ji, H., Mataka, J., Xia, G., Li, H., Delker, S. L., Roman, L. J., Martásek, P., Poulos, T. L., Silverman, R. B. Improved synthesis of chiral pyrrolidine inhibitors and their binding properties to neuronal nitric oxide synthase. *J. Med. Chem.* **2011**, *54*(18), 6399-6403.
17. Jones, A. C., Sanders, A. W., Sikorski, W. H., **Jansen, K. L.**, Reich, H. J. Reactivity of the triple ion and separated ion pair of tris(trimethylsilyl)methyl lithium with aldehydes: a RINMR study. *J. Am. Chem. Soc.* **2008**, *130*(19), 6060-6061.
18. Dunning, F. M., Sun, W., **Jansen, K. L.**, Helft, L., Bent, A. F. Identification and mutational analysis of Arabidopsis FLS2 leucine-rich repeat domain residues that contribute to flagellin perception. *Plant Cell* **2007**, *19*(10), 3297-3313.

WORKSHOPS ATTENDED

- July 31-Aug4 2017 **NSF cCWCS Advanced Chemistry in Art Workshop**, Villanova University
Lectures, labs, field trip to Philadelphia Museum of Art conservation labs and Chemical Heritage Foundation. Art conservation and restoration and instrumental analysis of artworks.
- July 19-24, 2015 **NSF CWCS Chemistry and Art Workshop**, Bismarck State College
Lectures, labs, activities and field trips in topics of chemistry and art: light and color, paints and pigments, metals, fiberarts and papermaking, conservation science and museum studies.
- July 14-16, 2014 **Midwest Regional POGIL Workshop**, University of St. Thomas, St. Paul, MN
Introductory/Intermediate workshop for Process Oriented Guided inquiry Learning
- Jun 18-29, 2012 **Dissertation Boot Camp**, Northwestern University
- Mar 16-18, 2012 **GK-12 Annual Meeting**, Washington DC
Updates from other GK-12 programs, networking, preparations for the future of the NSF GK-12 Program.
- May 31, 2011 **Improving Your Skills as a Research Mentor**, Chris Pfund, Northwestern U
- Jun 21-23, 2011 **15th Annual Green Chemistry & Engineering Conference** Washington, DC
Seminars and perspectives in green chemistry, workshop for graduate students to learn outreach activities in green chemistry and sustainability.

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Chemical Society (ACS)
Phi Lambda Upsilon (PLU), The National Chemistry Honor Society

RELEVANT VOLUNTEER WORK

<i>Beloit College Family Discovery Night Volunteer</i>	2014-2016
Developed "Chemistry in Ancient Arts", "Fibers and dyes" activities	
<i>Girls and Women in Science, Beloit College</i>	March 22, 2015
Led the parent and faculty activity (DNA extraction).	
<i>Beloit College Family Discovery Night Volunteer</i>	October 24, 2014
<i>UW-Madison Discovery Center Volunteer</i>	2014-present
Volunteer for various K-12 outreach events at the Wisconsin Institutes for Discovery, including: Wisconsin Science Festival, Middle School Science Symposium, Engineering Expo.	
<i>Materials Research Science and Engineering Center (MRSEC) Outreach Associate, Northwestern University</i>	2009-2010
Led weekly after-school science club at Nichols Middle School, Evanston, IL.	