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PROFESSIONAL EXPERIENCE AND TRAINING

University of California, Davis (July 2017 – Present) **Davis, CA**
Assistant Professor, Department of Chemistry
CAMPOS Faculty Scholar

University of California, Berkeley (January 2015 – June 2017) **Berkeley, CA**
UC President's Postdoctoral Fellow, Department of Chemistry
Advisor: Christopher J. Chang

Northwestern University (December 2009 – November 2014) **Evanston, IL**
NSF Graduate Research Fellow, Department of Chemistry
Advisor: Prof. Thomas J. Meade

University of Southern California (January 2008 – May 2009) **Los Angeles, CA**
WiSE Undergraduate Research Fellow, Department of Chemistry
Advisor: Prof. Richard L. Brutchey

EDUCATION

Ph.D. Northwestern University (June 2014)
Inorganic Chemistry, Subfield: Life Processes (June 2014)
Thesis: "Cobalt(III) Schiff Base Complexes as Inhibitors of Proteins Involved in Disease Progression"

B.S./B.A., University of Southern California (May 2009)
Dual Degree: Chemistry, B.S.; Religion, B.A.; Ancient Religions and Classical Languages, Minor

PUBLICATIONS

<http://tinyurl.com/MCHscholar>

† Denotes equal contribution, * Denotes corresponding authorship

Maiden Name – Cuevas, M. A.

26. Harder, N. H. O., Hieronimus, B., Stanhope, K. L., Shibata, N. M., Lee, V., Nunez, M. V., Keim, N. L., Bremer, A., Havel, P. J., **Heffern, M. C.***[†], Medici, V.*[†] Effects of Dietary Glucose and Fructose on Copper, Iron, and Zinc Metabolism Parameters in Humans. *Nutrients* 2020, 12(9), 2581.
25. Olugbeminiyi, O. F., **Heffern, M. C.**, Sanders Johnson, S., Townsend, S. D. What Comes Next? Simple Practices to Improve Diversity in Science. *ACS Cent. Sci.* 2020, 6, 1231-1240.
24. O'Sullivan, J. J., Harder, N. H. O., **Heffern, M. C.*** Detecting liver disease via an endogenous pigment. *Nat. Biomed. Eng.* 2020, 4, 761–762.
23. Stevenson, M. J., Janisse, S. E., Tao, L., Neil, R. L., Pham, Q. D., Britt, R. D., **Heffern, M. C.*** Elucidation of a Copper Binding Site in Proinsulin C-peptide and Its Implications for Metal-Modulated Activity. *Inorg. Chem.* 2020, 59, 9339–9349.
22. Stevenson, M. J., Farran, I. C., Uyeda, K. S., San Juan, J. A. **Heffern, M. C.*** Analysis of metal effects on C-peptide structure and internalization. *ChemBioChem*, 2019, 20, 2447 -2453.

21. Baldari, S., Di Rocco, G., **Heffern, M. C.**, Su, T. A., Chang, C. J., Toietta, G. Effects of Copper Chelation on BRAFV600E Positive Colon Carcinoma Cells. *Cancer*, 2019, 11, 659.
20. Stevenson, M. J. †; Uyeda, K. S. †; Harder, N. H.; **Heffern, M. C.*** Metal-dependent hormone function: the emerging interdisciplinary field of metalloendocrinology. *Metallomics*, 2019, 11, 85-110.
19. Juttukonda, L. J.; Green, E. R.; Lonergan, Z. R.; **Heffern, M. C.**; Chang, C. J.; Skaar, E. P. Acinetobacter baumannii OxyR regulates the transcriptional response to hydrogen peroxide. *ASAP*.
18. Su, T. A.; Shihadih, D.; Cao, W.; Detomasi, T. C.; **Heffern, M. C.**; Stahl, A.; Chang, C. J. A Modular Ionophore Platform for Liver-Directed Copper Supplementation in Cells and Animals. *J. Am. Chem. Soc.*, 2018, 140, 13764-13774.
17. Stevenson, M. J., **Heffern, M. C.*** Sounding out dysfunctional oxygen metabolism: a small-molecule probe for photoacoustic imaging of hypoxia. *Biochem.*, 2018, 57, 6, 893-94.
16. **Heffern, M. C.*** Diversifying the Glowing Bioluminescent Toolbox. *ACS Cent. Sci.*, 2017, 3, 1234-1236. **Invited contribution for a First Reactions article.**
15. Aron, A. T., † **Heffern, M. C.**, † Lonergan, Z. R., † Vander Wal, M. N., Baker, B. R., † Spangler, B., Zhang, Y., Park, H., Stahl, A., Renslo, A. R., Skaar, E. P., Chang, C. J. In vivo bioluminescence imaging of labile iron accumulation in a murine model of Acinetobacter baumannii infection. *Proc. Natl. Acad. Sci.*, 2017, 114, 12669-12674.
14. **Heffern, M. C.**, † Park, H., † Au-Yeung, H., † Van de Bittner, G. C., Ackerman C. M.; Stahl, A., Chang, C. J. In vivo bioluminescence reveals copper deficiency in a murine model of non-alcoholic fatty liver disease. *Proc. Natl. Acad. Sci.*, 2016, 113, 14219-14224. **Featured in Chemical & Engineering News.**
13. **Heffern, M. C.**, † Reichova, V., † Coomes, J. L., Harney, A. S., Bajema, E.; Meade, T. J. Tuning Cobalt(III) Schiff Base Complexes as Activated Protein Inhibitors. *Inorg. Chem.*, 2015, 18, 9066-74.
12. **Heffern, M. C.**, Velasco, P. T., Matosziuk, L. M., Coomes, J. L., Karras, C., Eckermann, A. L., Klein, W. B., Meade, T. J. Modulation of Amyloid- β Oligomerization by Co(III) Schiff Base Complexes. *ChemBioChem*, 2014, 15, 1584-1589.
11. **Heffern, M. C.**, † Matosziuk, L. M., † Meade, T. J. Lanthanide Probes for Bioresponsive Imaging. *Chem. Rev.*, 2014, 114, 4496-4539. **>350 Citations to date.**
10. **Heffern, M. C.**; Kurutz, J.; Meade, T. J. Spectroscopic Elucidation of the Inhibitory Mechanism of Cys₂His₂ Zinc Finger Transcription Factors by Cobalt(III) Schiff Base Complexes. *Chem. Eur. J.*, 2013, 19, 17043-17053. **Featured Key Article by Global Medical Discovery (June 2014).**
9. **Heffern, M. C.**; Yamamoto, N.; Holbrook, R. J.; Eckermann, A. E.; Meade, T. J. Cobalt Complexes as Promising Therapeutic Agents. *Curr. Opin. Chem Biol.* 2013, 17, 189-196.
8. Matosziuk, L.M.; Leibowitz, J. H.; **Heffern, M. C.**; Macrenaris, K. W.; Ratner, M. A.; Meade, T. J. Structural Optimization of Zn(II) Activated MR Imaging Probes. *Inorg. Chem.*, 2013, 52, 12250-12261.
7. Manus, L. M.; Holbrook, R. J.; Atesin, T. A.; **Heffern, M. C.**; Harney, A. S.; Eckermann, A. E.; Meade, T. J. Axial Ligand Exchange of N-heterocyclic Cobalt(III) Schiff Base Complexes: Molecular Structure and NMR Solution Dynamics. *Inorg. Chem.*, 2013, 52, 1069-1076.
6. Matosziuk, L. M.; Holbrook, R. J.; Manus, L. M.; **Heffern, M. C.**; Ratner, M. A.; Meade, T. J. Rational Design of [Co(acacen)L₂]⁺ Inhibitors of Biological Activity. *Dalton Trans.*, 2013, 42, 4002-12.
5. Velasco, P. T.; **Heffern, M. C.**; Sebollela, A.; Popova, I. A.; Lacor, P. N.; Lee, K. B.; Zun, X.; Tiano, B. N.; Viola, K. L.; Eckermann, A. L.; Meade, T. J.; Klein, W. L. Synapse-Binding Subpopulations of A β Oligomers Sensitive to Peptide Assembly Blockers and scFv Antibodies. *ACS Chem. Neurosci.*, 2012, 3, 972-981.
4. Hurtado, R.; Harney, A. S.; **Heffern, M. C.**; Holbrook, R. J.; Holmgren, R.; Meade, T. J. Specific inhibition of the transcription factor Ci by a Cobalt(III)-Schiff base-DNA conjugate. *Mol. Pharm.*, 2012, 9, 325-333.
3. Beier, C. W.; **Cuevas, M. A.**; Brutchey, R. L. Low-Temperature Synthesis of Solid-Solution Ba_xSr_{1-x}TiO₃ Nanocrystals. *J. Mater. Chem.*, 2010, 20, 5074-5079.
2. Beier, C. W.; **Cuevas, M. A.**; Brutchey, R. L. Effect of Surface Modification on the Dielectric Properties of BaTiO₃ Nanocrystals. *Langmuir*, 2010, 26, 5067-5071.

1. Beier, C. W.; **Cuevas, M. A.**; Brutchey, R. L. Room-Temperature Synthetic Pathways to Barium Titanate Nanocrystals. *Small*, 2008, 4, 2102-2106. **Most Accessed List for November and December 2008.**

SEMINARS AND PRESENTATIONS (SINCE JULY 2017)

Invited Seminars and Conference Talks

- *ChemBioChem* Virtual Symposium: Metals in Biology. Virtual. 2020 Jul 8. *Invited Seminar.*
- Gordon Research Conference: Metals in Biology. Ventura, CA. 2020 Jan 23. *Invited Talk for Keynote Session* (joint session with Gordon Research Seminar: Bioinorganic Chemistry).
- Colorado School of Mines. 2019 Oct 4. *Invited Seminar.*
- Willamette University. 2019 Sep 2. *Invited Seminar.*
- Reed College. 2019 Sep 26. *Invited Seminar.*
- American Chemical Society National Meeting. San Diego, CA. 2019 Aug 25. *Contributed Talk.*
- International Conference on Biological Inorganic Chemistry. Interlaken, Switzerland. 2019 Aug 15. *Contributed Talk.*
- Canadian Chemistry Conference & Exhibition, Quebec, Canada. 2019 June 4. *Invited Talk.*
- California State University, Chico. Chico, CA. 2018 Sep 14. *Invited Seminar.*
- C&EN Talented 12 Symposium, National ACS Meeting. Washington, D.C. 2017 Aug 20-24. *Invited Seminar by Chemical & Engineering News and the American Chemical Society.*
- Invited talks: canceled because of COVID-19
 - American Chemical Society National Meeting. Philadelphia, PA. March 2020. (conference canceled)
 - American Chemical Society National meeting. Virtual. August 2020. (session canceled)

Conference Poster Presentations

- Gordon Research Conference: Metals in Biology. Ventura, CA. 2019 Jan 27-Feb 1.
- European Biological Inorganic Chemistry Conference 14. Birmingham, UK. 2018 Aug 26-30.
- Gordon Research Conference: Metals in Medicine. Andover, NH. 2018 June 24-29.
- Gordon Research Conference: Inorganic Chemistry. Biddeford, ME. 2018 June 17-22.
- Gordon Research Conference: Metals in Biology. Ventura, CA. 2018 Jan 21-26.

Selected Internal/Departmental/UC Presentations

- UC Davis Liver Research Day Symposium. Davis, CA. 2019 Oct 9. *Invited Speaker.*
- UC President's Postdoctoral Fellowship Program Northern California Luncheon. Berkeley, CA. 2019 Aug 29. *Keynote Speaker.*
- Career Conference in Chemistry. 2019 March 9. Davis, CA. *Keynote Speaker.*
- Cancer Therapeutics Program Quarterly Meeting (UC Davis). Sacramento, CA. 2018 Aug 24.
- UC President's Postdoctoral Fellowship Program Spring Academic Retreat. Lake Arrowhead, CA. 2016 Apr 15-17.

SELECTED HONORS, AWARDS, AND AFFILIATIONS

Current Funding

- National Institutes of Health NIGMS R35 MIRA Award (2019 – 2024)
- Hartwell Foundation Individual Biomedical Research Award (2019 - 2022)
- Support from CAMPOS Faculty Scholar Award (2017 – 2022)

Past Support

- Campus Research Core Research Facilities Pilot and Feasibility Program Grant (UC Davis, 2018)

- Cancer Therapeutics Program Pilot Funding (NIH funding to Comprehensive Cancer Center at UC Davis, 2018 - 2019)
- University of California President's Postdoctoral Fellowship (2015-2017): *Awarded to 3-5% of all applicants across the ten University of California campuses*
- National Science Foundation Graduate Research Fellowship (2011-2014)
- National Institutes of Health Ruth Kirschstein Pre-doctoral National Research Service Award (Awarded 2011; Declined)
- Women in Science and Engineering Undergraduate Research Award (2008)
- Undergraduate Associates Research Fellowship (2008)

Selected Honors and Recognitions

- Graduate Program Advising and Mentoring Award from UC Davis Graduate Studies (2020)
- Highlight in ChemBioTalents Issue of *ChemBioChem* (2020)
- Highlight in Emerging Investigators Issue of *Metalomics* (2019)
- Highlight in *Communications Biology*: Early Career Spotlight (2018)
- CAMPOS Faculty Scholar (2017): *Selected among incoming STEM faculty at UC Davis*
- Chemical & Engineering News' Talented 12 (2017)
- Commendation for Excellence in Graduate Research (2015)
- Gelewitz Award (2013): *Top two senior graduate students for excellence in research and service*
- Presidential Fellowship Nominee for the Department of Chemistry (2013)

Current Affiliations

- American Chemical Society, Division of Inorganic Chemistry
- Society of Biological Inorganic Chemistry
- UC Davis Comprehensive Cancer Center; Dual Membership: Cancer Therapeutics and Molecular Oncology

TEACHING AND MENTORING EXPERIENCE AT UC DAVIS

Bioinorganic Chemistry CHE 228A (Winter 2017)

Inorganic Chemistry: Fundamentals CHE 124A (Fall 2017, Fall 2018)

Research Mentor currently mentoring 7 graduate students and 3 undergraduate students; served as mentor for 1 student participating in UC LEADS program and 1 student participating in Mentorship and Development Program at UC Davis (past: 1 postdoctoral scholar, 1 junior research specialist, 11 undergraduate students)

External Training New Faculty Workshop by the American Chemical Society; NSF Grant Workshop by the National Science Foundation

SELECTED LEADERSHIP EXPERIENCE AND PROFESSIONAL SERVICE

Editorial Advisory Board for *ACS Central Science* (Jan 2019 – Dec 2020)

Journal Reviewer for *ACS Central Science* (2017, 2018, 2019, 2020), *Journal of American Chemical Society* (2018, 2019, 2020), *Chemical Society Reviews* (2020), *Scientific Reports* (2017, 2020), *Nature Biomedical Engineering* (2019, 2020), *Journal of Biological Inorganic Chemistry* (2018, 2019), *ChemBioChem* (2019), *Accounts of Chemical Research* (2019), *Journal of Nutritional Biochemistry* (2019), *Dalton Transactions* (2018), *Nature Methods* (2018), *Communications Biology* (2018), *Chemical Science* (2017), *Bioorganic & Medicinal Chemistry Letters* (2017), *Coordination Chemistry Reviews* (2017)

Poster and Presentation Judge for Metals in Medicine Gordon Research Conference (Andover, NH, 2018), LaRock Undergraduate Research Symposium (UC Davis, 2018), Undergraduate Research Conference (UC Davis, 2018), Chemical Biology in the Bay Area Day (UC Berkeley, 2018),

Session Chair for Power Hour at the Metals in Biology Gordon Research Conference (Ventura, CA, 2020); Bioinorganic Chemistry Gordon Research Seminar (Ventura, CA, 2020); ACS National Meeting (San Diego, CA, 2019); Inorganic Chemistry Gordon Research Seminar (Biddeford, ME, 2018); Southern California Bioinorganic Symposium (Irvine, CA, 2018)

Invited Panelist for Northwestern Alumni Panel; UC President's Postdoctoral Fellowship Academic Retreat: "Perspectives on the Job Search"; special webinar "Who Will Win the ChemNobel? Predicting the 2017 Nobel Laureate(s) in Chemistry" by Chemical & Engineering News

SELECTED ACTIVITIES FOR OUTREACH AND DIVERSITY

Planning Committee Member for ADEPT (2020): program to foster graduate research experiences with Sacramento State University students in collaboration with UC Davis Graduate Students

Mentor for Chemistry Women Mentorship Network (2018 – Present)

Educational Outreach Committee, Department of Chemistry (2017 – 2019): organize department-run activities for science engagement including chemistry demonstrations, panels, and shows

Panelist and Moderator for the Northern California Diversity Forum in Graduate Education (2016, 2018): annual series of workshops to encourage students from underrepresented groups to consider graduate education

Panelist for Grad School Scoop (2018): event to encourage underrepresented groups to enter graduate school

Guest Speaker at STEM squad by ESTEME (2018): monthly science engagement with 3rd grade students, after-school program

Niles West High School (2011-2014):

- Research Mentor from 2011 – 2013; Student Mentee in 2011-2012 achieved gold medals in both the regional and state science fairs
- Board member from 2013 – 2014 to expand mentorship opportunities for Northwestern University graduate students beyond Niles West High School

Women in Science and Engineering with Evanston Township High School (2011-2014): founding board member; coordinated and developed the program aimed at empowering young women in Evanston Township High School to continue pursuing advanced education in science and engineering

Kits & Cats Day at Northwestern University for Evanston Township High School (2013): volunteer for "Day in the Life" targeted at students in the academic low-middle range; intended to attract students who may be on the fence about college for economic or cultural reasons.

Achievements in Outreach Activities with Phi Lambda Upsilon Graduate Chemistry Honor Society:

President (2012-2013):

- Established partnership with Mather High School Mentorship Program
- Initiated service grants for which members can apply to receive funding for service initiatives
- Co-hosted the regional *National You Be the Chemist Challenge* for middle school students

PLU Service Chair (2011-2012)

- Assembled the *first* Spanish-speaking team for *Science in the Classroom* to work with the ESL 3rd grade class
- Coordinated a field trip to Northwestern University for a science show
- Initiated partnership with MRSEC to receive funding through NSF for service activities