JEREMY P. MALLARI

Curriculum Vitae
Assistant Professor at California State University-San Bernardino
Department of Chemistry and Biochemistry
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CURRENT POSITON

2015-current **California State University-San Bernardino**, San Bernardino, CA
Associate Professor of Chemistry

EDUCATION

2009-2015 **Howard Hughes Medical Institute, Washington University**, St. Louis, MO
Postdoctoral research in Cellular Biology with Dr. Daniel Goldberg

2003-2008 **University of California-San Francisco**, San Francisco, CA
PhD in Chemistry and Chemical Biology with Dr. R. Kip Guy

2001-2003 **San Francisco State University**, San Francisco, CA
NIH Post Baccalaureate Research fellow in Chemistry with Dr. Clifford Berkman

1997-2003 **San Francisco State University**, San Francisco, CA
B.A. General Biology, B.S. Biochemistry

AWARDS AND HONORS

2020 National Science Foundation (NSF) Major Research Instrumentation Grant
2019 CSU Program for Education and Research in Biotechnology (CSUPERB) Curriculum Development Grant
2019 CSUSB Faculty Research and Creative Activities Mentor Award
06/2018-09/2018 CSUSB OSR Summer Research Fellowship
06/2017-06/2018 CSUSB OAR Mini-Grant
06/2016-12/2017 CSU Program for Education and Research in Biotechnology (CSUPERB) New Investigator Grant
01/2017 CSUSB OSR Faculty/Student Research Award
06/2016-06/2017 CSUSB OAR Mini-Grant
12/2015 CSUSB OSR Faculty/Student Research Award
08/2006 Best Poster, 75th Gordon Research Conference, Combinatorial Chemistry
08/2003-05/2005 University of California Cota-Robles Fellowship
06/2001-06/2003 NIH Post Baccalaureate Research (PREP) Fellowship
11/2001 SFSU College of Science and Engineering Student Project Fund Award

RESEARCH EXPERIENCE

09/2015-current **California State University, San Bernardino,** San Bernardino, CA
Assistant Professor of Chemistry
My laboratory studies falcilysin (FLN), a metalloprotease required for the survival of the malaria parasite, *P. falciparum*, in the human host. Though essential to the parasite's survival, the biological role of this enzyme is not well characterized. To investigate the role of FLN in malaria pathogenesis, we are developing a series of

chemical inhibitors that will enable us to specifically block the activity of FLN in cultured parasites. These studies will provide valuable chemical tools that will allow us to explore loss-of-function studies in live parasites, and will provide insights into the biology of this poorly understood metalloprotease.

05/2009-08/2015 **HHMI, Washington University**, St. Louis, MO
Postdoctoral Scholar with Dr. Daniel E. Goldberg
Postdoctoral research focused on two projects. The first investigated the function and regulation of the two Kae1 (Kinase-Associated Endopeptidase) proteins in the malaria parasite *Plasmodium falciparum*. I characterized the essentiality, expression, and biochemical activities of these proteins. I also developed a novel IP-MS (immunoprecipitation-mass spectrometry) based proteomic strategy to study Kae1 interaction partners in cultured parasites. This research identified an atypical and apicoplast-specific protein interaction network for Kae1, suggesting a novel role for this protein family in regulating ribosome function. The second project determined the essentiality and localization of multiple putative *P. falciparum* metalloproteases, with a specific focus on neurolysin, falcilysin, and pitrilysin. Proteins were expressed and purified in bacteria or cultured parasites, and biochemically characterized.

08/2003-12/2008 **University of California, San Francisco,** San Francisco, CA
PhD Student with Dr. R. Kip Guy
Thesis project focused on the design, synthesis, and evaluation of thiosemicarbazones and purine-derived nitriles as cysteine protease inhibitors. These compounds were optimized for selective activity against cultured *Trypanosoma brucei* and the trypanosomal proteases TbcatB and rhodesain. Lead compounds were further optimized for *in vivo* stability in mice and for TbcatB selectivity relative to human cathepsins. Inhibitor efficacy was tested for activity in a murine model of African Trypanosomiasis and found to prolong survival of infected mice.

09/2000-06/2003 **San Francisco State University**, San Francisco, CA
Research Assistant with Dr. Clifford E. Berkman
Undergraduate research focused on the design and synthesis of phosphonamidate inhibitors of the human metalloprotease PSMA (prostate specific membrane antigen).

TEACHING EXPERIENCE

09/2015-current **CSU San Bernardino,** San Bernardino, CA
Assistant Professor
Instructor for year-long Organic Chemistry Laboratory (CHEM 221-223B, 3 hours/week) and Principles of Organic Chemistry I Laboratory (CHEM 321-323, 6 hours/week). Instructor for the year-long lecture component of Organic Chemistry I (Chem 221-223A, 3.0 hours of lecture per week). Responsible for preparing lectures and accompanying powerpoint presentation, exams, and other class materials. Also responsible for grading and for supervising study sessions.

01/2014-05/2014 **Webster University**, Webster Grove MO
Adjunct Instructor
Instructor (3 hours lab/lecture per week) for Essentials of Biology Lab II (BIOL1561). Responsible for designing and teaching a laboratory course with a focus on malaria and molecular biology techniques. Also responsible for lecturing, preparing reading materials and exams, and designing laboratory experiments. In this course, students

performed experiments with the goal of cloning and recombinantly expressing the malarial protease falcilysin.

07/2013-08/2013 **Washington University**, St. Louis, MO
Adjunct Instructor
Instructor (4.5 hours of lecture per week) for General Chemistry Laboratory II (CHEM152). Responsible for lecturing and for writing exams. Also responsible for supervising TAs whose duties included grading and monitoring of laboratory sessions.

06/2013-07/2013 **Washington University**, St. Louis, MO
Adjunct Instructor
Instructor (4.5 hours of lecture per week) for General Chemistry Laboratory I (CHEM151). Responsible for lectures and for writing exams. Also responsible for supervising TAs whose duties included grading and monitoring of laboratory sessions.

01/2008-05/2008 **University of Memphis**, Memphis, TN
Adjunct Instructor
Instructor (6 hours of lab per week) for Organic Chemistry II Lab (CHEM3302). Responsible for pre-lab lectures and supervision of laboratory sessions. Also responsible for writing and grading exams.

08/2007-12/2007 **University of Memphis**, Memphis, TN
Adjunct Instructor
Instructor (6 hours of lab per week) for Organic Chemistry II Lab (CHEM3301). Responsible for pre-lab lecture and supervision of laboratory sessions. Also responsible for writing and grading exams.

01/2005-05/2005 **UCSF**, San Francisco, CA
Teaching Assistant
Tutoring and conducting study sessions for PharmD students enrolled in Advanced Organic Chemistry (PC113). Also responsible for grading of homework and exams.

08/1997-12/1997 **Columbia Park Boys Club**, San Francisco, CA
Tutor
After school tutoring for inner city grade school students. Focus on developing basic reading and arithmetic skills and helping with homework.

MENTORING EXPERIENCE

10/2015-current I began my research laboratory at CSUSB in October 2015, and started training my first undergraduate students shortly afterwards. I am currently mentoring 8 undergraduate researchers in my lab (**Teodulo Crisanto, Ruby Aispuro, Jeff Chance, Obiel Hernandez, Cindy Nguyen, Hannah Fejzic, Cory Pugne-Andenoro, and Nikolay Masvidol**). All 7 students have completed at least 2 quarters of organic chemistry. I train each of these students directly in medicinal chemistry and organic synthesis, and all students invest 10+ hours a week in the lab. Students' current training focuses on learning how to 1) safely use laboratory equipment, 2) perform basic organic chemistry techniques, and 3) troubleshoot experiments and analyze data. Students are all working to synthesize small-molecule inhibitors of falcilysin, an essential protease expressed by the malarial protease *P. falciparum*.

08/2010-12/2012 **Ericka X. Ricaldez** (*PhD student at Washington University in St. Louis*). Assessing the effects of small molecule inhibitors on cell growth and lipid content in *P. falciparum*.

04/2010-05/2013 **Kevin Kim** (*Undergraduate student at Washington University in St. Louis*). Project focused on developing a method to clone, recombinantly express, and purify a putative malarial metalloprotease in *E. coli*.

10/2013-06/2015 **Kenneth Macneal** (*MD student at Washington University in St. Louis*). Biochemical characterization of a neurolysin homologue in *P. falciparum*. Project focused on evaluating the oligopeptidase activity of both recombinant and native parasite protein.

INVITED SEMINARS

1. P3-STEM: Promoting STEM transfer student success at multiple Minority/Hispanic Serving Institutions. National Meeting of the American Chemical Society, San Diego, CA, August **2019**.

2. Development of potent purine derived nitriles of the trypanosomal protease TbcatB. 76th Gordon Research Conference, Combinatorial Chemistry, New London, NH, June **2007**.

PUBLICATIONS

Research Manuscripts

1. Identification of Plasmodium falciparum Falcilysin Inhibitors by a Virtual Screen. Eagon, S.; Howland, M.; Heying, M.; Callant, E.; Brar, N.; Pompa, E.; Mallari, J.P. *Bioorg. And Med. Chem. Lett. Accepted 09/2020.*

1. Structure guided development of potent piperazine-derived hydroxamic acid inhibitors targeting falcilysin. Kahlon, G.; Lira. R.; Maslov, N.; Pompa, E.; Brar, N.; Eagon, S.; Anderson, M.O.; Andaya, A.A.; Chance, J.P.; Fejzic, H.R.; Keniston, A.; Huynh, N.; Celis, N.; Vidal, B.; Trieu, N.; Rodriguez, P.; Mallari, J.P. *Bioorg. And Med. Chem. Lett.* **2020**, 32, 127683.

2. Development of piperazine-based hydroxamic acid inhibitors against falcilysin, an essential malarial protease. Chance, J.P.; Fejzic, H.F.; Hernandez, O.; Istvan, E.S.; Andaya, A.A.; Maslov, N.; Aispuro, R.; Crisanto, T.; Nguyen, H.; Vidal, B.; Serrano, W.; Kuwahara, B.; Andanado, C.P.; Goldberg, D.E.; , Mallari, J.P. *Bioorg. And Med. Chem. Lett.* **2018**, 28, 1846.

3. Esterase mutation is a mechanism of resistance to antimalarial compounds. Istvan, E.S.; Mallari, J.P.; Corey, V.; Dharia, N.; Marshall, G.; Winzeler, E.; Goldberg, D.E. *Nature Commun.* **2017**, 8, 14240.

4. Kinase-associated endopeptidase 1 (Kae1) participates in an atypical ribosome-associated complex in the apicoplast of *Plasmodium falciparum*. Mallari, J.P.; Oksman, A.; Vaupel, B.; Goldberg, D.E. *J. Biol. Chem.* **2014**, 43, 30025.

5. Whole body physiologically-based pharmacokinetic model for nutlin-3a in mice after intravenous and oral administration. Zhang, F.; Tagen, M.; Throm, S.; Mallari, J.P.; Miller, L.; Guy, R.K.; Dyer, M.A.; Williams, R.T.; Roussel, M.F.; Nemeth, K.; Zhu, F.; Zhang, J.; Lu, M.; Stewart, C.F. *Drug Met. And Disp*. **2011**, 39, 15.

6. Optimization of purine-nitrile TbcatB inhibitors for use in vivo and evaluation of efficacy in murine models. Mallari, J.P.; Zhu, F.; Lemoff, A.; Kaiser, M.; Lu, M.; Brun, R.; Guy, R.K. *Bioorg. and Med. Chem.* **2010**, 18, 8302.

7. Determination of nutlin3a in murine plasma by liquid chromatography electrospray ionization tandem mass spectrometry. Bai , F.; Zhu, F.; Tagen M.; Miller, L.; Owens, T.S.; Mallari, J.P.; Derrick, E.; Zhang, F.; Stewart, C.F. *J. Pharm. Biomed. Anal*. **2009**, 51, 915.

8. Structure guided development of selective nitrile based inhibitors of TbcatB. Mallari, J.P.; Shelat, A.; Caffrey, C.; Kosinski, A.; Connely, M.; McKerrow, J.H.; Guy, R.K. *J. Med. Chem*. **2009**, 52, 6489.

9. Antimalarial activity of thiosemicarbazones and purine derived nitriles. Mallari, J.P.; Guiguemde, W.A.; Guy, R.K. *Bioorg. and Med. Chem. Lett.* **2009**, 19, 3546.

10. Discovery of potent thiosemicarbazone inhibitors of rhodesain and TbcatB. Mallari, J.P.; Shelat, A.; Kosinski, A.; Caffrey, C.; Connely, M.; Zhu, F.; McKerrow, J.H.; Guy, R.K. *Bioorg. and Med. Chem. Lett*. **2008**, 18, 2883.

11. Development of potent purine derived nitriles of the trypanosomal protease TbcatB. Mallari, J.P.; Shelat, A.; Obrien, T.; Caffrey, C.; Kosinski, A.; Connely, M.; Harbut, M.; Greenbaum, D.; McKerrow, J.H.; Guy, R.K. *J. Med. Chem*. **2008**, 51, 545.

12. Discovery of Trypanocidal Compounds by Whole Cell HTS of *Trypanosoma brucei*. Mackey, Z.B.; Baca, A.M.; Mallari, J.P.; Apsel, B.; Shelat, A.; Hansell, E.J.; Chiang, P.K.; Wolff, B.; Guy, R.K.; Williams, J.; McKerrow, J.H. *Chem. Biol. Drug. Des*. **2006**, 67, 355.

13. Discovery of potent thiosemicarbazone inhibitors of rhodesain and cruzain. Fujii, N.; Mallari, J.P.; Hansell E.J.; Mackey, Z.; Doyle, P.; Zhou, Y.M.; Gut, J.; Rosenthal, P.A.; McKerrow, J.H.; Guy, R.K. *Bioorg. and Med. Chem. Lett*. **2005**, 15, 121.

14. Alternatives to 1-H-tetrazole in the preparation of phosphonate diesters and phosphonamidates from phosphonyl dichlorides. Maung, J.; Mallari, J.P.; Choy, C.J.; Berkman, C.E. *Tet. Lett*. **2004**, 45, 6497.

15. Stereoselective inhibition of glutamate carboxypeptidase by organophosphorus derivatives of glutamic acid. Mallari, J.P.; Choy, C.J.; Hu, Y.; Maung, J.; Blecha, J.; Berkman, C.E. *Bioorg. and Med. Chem.* **2004**, 12, 6011.

16. Probing for a hydrophobic binding register in prostate-specific membrane antigen with phenylalkylphosphonamidates. Maung, J.; Mallari, J.P.; Girtsman, T.A.; Wu, L.Y.; Rowley, J.A.; Santiago, N.M.; Brunelle, A.N.; Berkman, C.E. *Bioorg. and Med. Chem.* **2004**, 12, 4969.

17. Synthesis of individual glutamate-containing phosphonamidothionate steroisomers. Lu, H.; Hu, Y.; Choy, C.J.; Mallari, J.P.; Villanueva, A.F.; Arrozal, A.F.; Berkman, C.E. *Tet. Lett*. **2001**, 42, 4313.

Book Chapters

1. Mallari, J.P.; Goldberg, D.E. (2013). Falcilysin. In Rawlings, N.D.; Salvesen, G.S. (Eds.), *Handbook of Proteolytic Enzymes* (pp. 1459 – 1461), Oxford: Academic Press.

CONFERENCE ABSTRACTS

1. P3-STEM: Promoting STEM transfer student success at multiple Minority/Hispanic Serving Institutions. Mallari, J.P., Cousins, K. National Meeting of the American Chemical Society, San Diego, CA, August **2019**.

2. Structure guided development of highly specific nitrile inhibitors of the trypanosomal cathepsin TbcatB. Mallari, J.P.; Shelat, A.; Caffrey, C.; Kosinski, A.; Connely, M.; McKerrow, J.H.; Guy, R.K. 77th Gordon Research Conference-Biology of Host Parasite Interactions, Newport, RI, June **2008**.

3. Development of potent purine derived nitriles of the trypanosomal protease TbcatB. Mallari, J.P.; Shelat, A.; O'Brien, T.C.; Caffrey, C.; Kosinski, A.; Connely, M.; McKerrow, J.H.; Guy, R.K. 76th Gordon Research Conference, Combinatorial Chemistry, New London, NH, June **2007**.

4. Activity of purine nitrile derived inhibitors against Tbcat B and *T.brucei* proliferation. Mallari, J.P.; Mackey, Z.B.; O'Brien, T.C.; McKerrow, J.H.; Guy, R.K. 75th Gordon Research Conference-Biology of Host Parasite Interactions, Newport, RI, July **2006**. 75th Gordon Research Conference, Combinatorial Chemistry, Oxford, U.K., August **2006**.

5. Synthesis and evaluation of phenylalkylphosphonamidate inhibitors of PSMA. Mallari, J. P.; Choy, C.J.; Berkman, C. E. 225th ACS Meeting, New Orleans, LA, March 2003.

6. Synthesis and evaluation of phosphorus-containing inhibitors of PSMA. Mallari, J.P.; Choy, C.J.; Hosaka, M.; Girtsman, T.A.; Berkman, C.E. 224th ACS Meeting, Boston, MA, August 2002. SACNAS Conference, Anaheim, CA, September 2002.