

Curriculum Vitae

Sean T. Prigge

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Education and Training

Amherst College (Amherst, MA)	BA	1991	Physics
Johns Hopkins School of Medicine (Baltimore, MD)	Ph.D.	1997	Biophysics

Professional Experience

2010- Associate Professor, Molecular Microbiology and Immunology;
Biochemistry and Molecular Biology
Johns Hopkins Bloomberg School of Public Health

2010- Associate Professor, Biophysics and Biophysical Chemistry
Johns Hopkins School of Medicine

2002-2009 Assistant Professor Molecular Microbiology and Immunology;
Biochemistry and Molecular Biology
Johns Hopkins Bloomberg School of Public Health

2002-2009 Assistant Professor, Biophysics and Biophysical Chemistry
Johns Hopkins School of Medicine

2000-2002 Visiting Scientist, National Cancer Institute

1999-2002 Visiting Scientist, Biophysics and Biophysical Chemistry
Johns Hopkins School of Medicine

1998-2002 Captain, Walter Reed Army Institute of Research

Professional Activities

1995- Member, Biophysical Society

1996- Member, American Crystallographic Association

2000- Member, American Association for the Advancement of Science

2002- Steering Committee, Johns Hopkins Malaria Research Institute

2003- Ad hoc grant reviewer for the Wellcome Trust, JHMRI Postdoctoral
Fellowship Program

2004 Ad hoc reviewer, NIH-NRSA Study section (ZRG1 FO8),
3-5 March 2004,
3-5 November 2004

2005 Ad hoc reviewer, NIH (ZAI1 AR-M),

- June 23 2005
- 2005- Ad hoc reviewer, Stanford Synchrotron Radiation Laboratory user proposals
 2005- Ad hoc reviewer, NIH-NRSA Study section (ZRG1 F13),
 9-11 March 2005,
 20-22 July 2005,
 31 Oct-1 Nov 2005,
 15-16 March 2006,
 20-21 November 2006,
 19-20 March 2007,
 19 November 2010,
 18-19 July 2011,
 22-12 March 2012,
 15-16 November 2012
- 2006 Ad hoc reviewer, NIH (BMCB-Q),
 March 1 2006
- 2006- Ad hoc reviewer, NIH (PTHE),
 June 7-9 2006,
 October 4-6 2006,
 June 7-8 2007,
 January 24-25 2008
- 2007 Session chair, Molecular Parasitology Meeting, Woods Hole, MA 16-20 Sept
 2008 Ad hoc reviewer, NIH (Genetics-C),
 October 14-15 2008
- 2008 Ad hoc grant reviewer for the Wellcome Trust
 2012 Session chair, Molecular Parasitology Meeting, Woods Hole, MA 22-26 Sept

Editorial Activities

- Peer review for:
- Antimicrobial Agents and Chemotherapy*
 - Acta Crystallographica F*
 - Biochimica et Biophysica Acta*
 - Biochemistry*
 - Biochemical Journal*
 - Bioorganic and Medicinal Chemistry Letters*
 - Combinatorial Chemistry and High Throughput Screening*
 - Current Enzyme Inhibition*
 - Cell*
 - Cell, Host and Microbe*
 - Chemistry and Biology*
 - Current Drug Targets*
 - Current Pharmaceutical Design*
 - EMBO Journal*
 - Eukaryotic Cell*
 - European Journal of Medicinal Chemistry*
 - FEMS Microbiology Reviews*
 - International Journal of Biochemistry and Cell Biology*

Journal of the American Chemical Society
Journal of Biological Chemistry
Journal of Molecular Biology
Malaria Journal
mBio
Molecular and Biochemical Parasitology
Molecular and Cellular Biology
Molecules
Molecular Microbiology
Nature Medicine
PLoS Neglected Tropical Diseases
PLoS ONE
PLoS Pathogens
Proceedings of the National Academy of Science
Proteins: Structure, Function and Genetics
Science
Traffic
Trends in Parasitology

Managing editor: *Proteins: Structure, Function and Genetics*

Honors and Awards

American Chemical Society, Petroleum Research Award, 2005
Marjorie Gilbert Young Investigator Award, 2005
Faculty Innovation Award, JHSPH, 2003
Faculty Development Award, 2002
American Crystallographic Association Travel Award, 1997
Ehrlich Graduate Student, Johns Hopkins Young Investigator Day 1997
Biophysical Society Student Travel Award, 1997
Forris Jewett Moore Fellowship, 1994-5
Forris Jewett Moore Fellowship, 1993-4
Amherst Memorial Fellowship, 1991-2
National Research Service Award, 1991-1993
Magna cum laude, 1991

Publications

59. J. E. Gisselberg, T. A. Delli-Bovi, G. Bosch, and **S. T. Prigge**. The Suf iron-sulfur cluster synthesis pathway is required for apicoplast maintenance in malaria parasites. *PLoS Pathogens*, *In revision*.
58. J. Stec, A. Fomovska, G. A. Afanador, S. P. Muench, Y. Zhou, B.-S. Lai, K. E. Bissati, M. R. Hickman, P. J. Lee, S. E. Leed, J. M. Auschwitz, C. Sommerville, S. Woods, C. W. Roberts, D. Rice, **S. T. Prigge**, R. McLeod, A. P. Kozikowski. Modification of Triclosan Scaffold in Search of Improved Inhibitors for Enoyl-Acyl Carrier Protein (ACP) Reductase in *Toxoplasma gondii*. *J. Med. Chem.* *submitted*.

57. T. A. Delli-Bovi, J. E. Gisselberg and **S. T. Prigge**. Parasites FeS up: Iron-Sulfur Cluster Biogenesis in Eukaryotic Pathogens. *PLoS Pathogens*, *Accepted*.
56. B. Falkard, C. Deschermeier, L.-S. Hecht, K. A. Mathews, T. R. S. Kumar, A. Ecker, P. Sinnis, **S. T. Prigge**, V. Heussler and D. A. Fidock. A Key Role for Lipoic Acid Synthesis During Plasmodium Liver-Stage Development. *Cellular Microbiology*, *In revision*.
55. G. Cheng, S. P. Muench, Y. Zhou, G. A. Afanador, E. Mui, A. Fomovska, B.-S. Lai, **S. T. Prigge**, S. Woods, C. W. Roberts, M. R. Hickman, P. J. Lee, S. E. Leed, J. M. Auschwitz, D. W. Rice, R. McLeod. Design, synthesis, and biological activity of diaryl ether inhibitors of *Toxoplasma gondii* enoyl Reductase. *Bioorganic & Medicinal Chemistry Letters*, *Accepted*.
54. F. C. Schrader, S. Glinca, J. M. Sattler, H. M. Dahse, G. A. Afanador, **S. T. Prigge**, M. Lanzer, A. K. Mueller, G. Klebe and M. Schlitzer. Novel Type II Fatty Acid Biosynthesis (FAS II) Inhibitors as Multistage Antimalaria Drugs. *Chem. Med. Chem. In press*.
53. A. Fomovska, Q. Huang, K. E. Bissati, E. J. Mui, W. H. Witola, G. Cheng, Y. Zhou, C. Sommerville, C. W. Roberts, S. Bettis, **S. T. Prigge**, G. A. Afanador, M. R. Hickman, P. J. Lee, S. E. Leed, J. M. Auschwitz, M. Pieroni, J. Stec, S. P. Muench, D. W. Rice, A. P. Kozikowski, R. McLeod, Novel *N*-Benzoyl-2-Hydroxybenzamide Disrupts Unique Parasite Secretory Pathway. *Antimicrob. Agents Chemother.* **56**, 2666-2682 (2012).
52. J. R. Gallagher, K. A. Matthews, **S. T. Prigge**, *Plasmodium falciparum* apicoplast transit peptides are unstructured *in vitro* and during apicoplast import. *Traffic*, **12**, 1124-1138 (2011).
51. J. J. Bankeu, R. Khayala, B. N. Lenta, D. T. Nougoué, S. A. Ngouela, S. A. Mustafa, K. Asaad, M. I. Choudhary, S. T. Prigge, R. Hasanov, A. E. Nkengfack, E. Tsamo, M. S. Ali. Isoflavone Dimers and Other Bioactive Constituents from the Figs of *Ficus mucoso*. *J. Nat. Prod.* **74**, 1370-1378 (2011).
50. J. J. K. Bankeu, S. A. A. Mustafa, A. S. Gojayev, B.D. Lenta, D. Tchamo Nougoué, S. A. Ngouela, K. Asaad, M. I. Choudhary, S. Prigge, A. A. Guliyev, A. E. Nkengfack, E. Tsamo, M. Shaiq Ali. Ceramide and cerebroside from the stem bark of *Ficus mucoso* (Moraceae). *Chemical and Pharmaceutical Bulletin*, **58**, 1661-1665 (2010).
49. M. D. Spalding, F. L. Eyase, H. M. Akala, S. A. Bedno, **S. T. Prigge**, R. L. Coldren, W. J. Moss, N. C. Waters. Increased prevalence of the pfdhfr/pfdhps quintuple mutant and rapid emergence of pfdhps resistance mutations at codons 581 and 613 in Kisumu, Kenya. *Malaria J.* **9**, 338 (2010).
48. E. E. Chufán, S. T. Prigge, X. Siebert, B. A. Eipper, R. E. Mains, L. M. Amzel. Differential reactivity between two copper sites in peptidylglycine α -hydroxylating monooxygenase. *J. Am. Chem. Soc.* **132**, 15565-15572 (2010).
47. T. A. Delli-Bovi, M. D. Spalding, **S. T. Prigge**, Overexpression of biotin synthase and biotin ligase is required for efficient generation of sulfur-35 labeled biotin in *E. coli*. *BMC Biotechnol.* **10**, 73 (2010).
46. S. K. Tipparaju, S. P. Muench, E. J. Mui, S. Ruzheinikov, J. Z. Lu, S. Hutson, M. J. Kirisits, **S. T. Prigge**, C. W. Roberts, F. L. Henriquez, A. P. Kozikowski, D. W. Rice, and R. McLeod. Rational Development of Novel Inhibitors of *Toxoplasma gondii* Enoyl Reductase. *J Med Chem.* **53**, 6287-6300 (2010).
45. M. D. Spalding, **S. T. Prigge**, Lipoic acid metabolism in microbial pathogens. *Microbiol. Mol. Biol. Rev.*, **74**, 200-228 (2010).
44. I. Coppens, D. J. Sullivan, **S. T. Prigge**. Cell biology of malaria parasites: an update. *Trends Parasitol.* **26**, 305-310 (2010).

43. M. D. Spalding, M. Allary, J. R. Gallagher, and **S. T. Prigge**. Validation of a modified method for Bxb1 mycobacteriophage integrase-mediated recombination in *Plasmodium falciparum* by localization of the H-protein of the glycine cleavage complex to the mitochondrion. *Mol. Biochem. Parasit.* 172, 156-160 (2010).
42. Y. Du, J. E. Gisselberg, J. D. Johnson, P. J. Lee, S. T. Prigge, and B. O. Bachmann. *Lactococcus lactis FabH*, encoding β -Ketoacyl-ACP synthase, can be functionally replaced by the *Plasmodium falciparum* congener. *Appl. Env. Microbiol.* 76, 3959-3966 (2010).
41. J. R. Gallagher, **S. T. Prigge**, *Plasmodium falciparum* acyl carrier protein crystal structures in disulfide-linked and reduced states and their prevalence during blood stage growth. *Proteins.* 78, 575-588 (2010).
40. C. Ben Mamoun, **S. T. Prigge**, H. Vial, Targeting the Lipid Metabolic Pathways for the treatment of Malaria. *Drug. Dev. Res.*, 71, 44-55 (2010).
39. M. D. Spalding, **S. T. Prigge**, The Amidase Domain of Lipoamidase Specifically Inactivates Lipoylated Proteins *in vivo*. *PLOS One*, 4(10), e7392 (2009).
38. P. J. Lee, J. B. Bhonsle, H. W. Gaona, D. P. Huddler, T. N. Heady, M. Kreishman-Deitrick, A. Bhattacharjee, W. F. McCalmont, L. Gerena, M. Lopez-Sanchez, N. E. Roncal, T. H. Hudson, J. D. Johnson, **S. T. Prigge**, N. C. Waters, Targeting the Fatty Acid Biosynthesis enzyme, PfKASIII, in the identification of novel antimalarial agents. *J. Med. Chem.* 52, 952-963 (2009).
37. M. D. Spalding, **S. T. Prigge**, Malaria pulls a FASt one. *Cell Host & Microbe*, 4, 509-511 (2008).
36. J. Z. Lu, **S. T. Prigge**, The tail of mycolic acids. *Chem. Biol.*, 4, 309-310 (2008).
35. M. Allary and **S. T. Prigge**, Fatty Acid Synthesis in Protozoan Parasites. In: *Encyclopedia of Life Sciences (ELS)*, John Wiley & Sons, Ltd: Chichester (2008).
34. J. Z. Lu, S. P. Muench, M. Allary, S. A. Campbell, C. W. Roberts, E. Mui, R. L. McLeod, D. W. Rice, **S. T. Prigge**, Type I and Type II Fatty Acid Biosynthesis in *Eimeria tenella*: Enoyl Reductase Activity and Structure. *Parasitology*, 134, 1949-1962 (2007).
33. M. Allary, J. Z. Lu, L. Zhu, **S. T. Prigge**, Scavenging of the cofactor lipoate is essential for the survival of the malaria parasite *Plasmodium falciparum*. *Mol. Micro.*, 63, 1331-1344 (2007).
32. S. P. Muench, **S. T. Prigge**, R. McLeod, J. B. Rafferty, M. J. Kirisits, C. W. Roberts, E. J. Mui and D. W. Rice, Studies of *Toxoplasma gondii* and *Plasmodium falciparum* enoyl acyl carrier protein reductase and implications for the development of antiparasitic agents. *Acta Crystallogr D Biol Crystallogr.* D63, 328-338 (2007).
31. D. J. Ferguson, S. A. Campbell, F. L. Henriquez, L. Phan, E. Mui, T. A. Richards, S. P. Muench, M. Allary, J. Z. Lu, **S. T. Prigge**, F. Tomley, M. W. Shirley, D. W. Rice, R. McLeod, C. W. Roberts, Enzymes of type II fatty acid synthesis and apicoplast differentiation and division in *Eimeria tenella*. *Int. J. Parasitol.* 37, 33-51 (2007).
30. S. P. Muench, **S. T. Prigge**, L. Zhu, M. J. Kirisits, C. W. Roberts, S. Wernimont, R. McLeod, D. W. Rice, Expression, purification and preliminary crystallographic analysis of the *Toxoplasma gondii* enoyl reductase. *Acta Crystallograph. Sect. F Struct. Biol. Cryst. Commun.*, 62, 604-606 (2006).
29. Y. Chen, D. Jirage, D. Caridha, A. K. Kathcart, E. A. Cortes, R. A. Denuff, J. A. Geyer, **S. T. Prigge**, N. C. Waters, Identification of an effector protein and gain-of-function mutants that activate Pfmrk, a malarial cyclin-dependent protein kinase. *Mol. Biochem. Parasit.* 149, 48-57 (2006).

28. J. A. Geyer, **S. T. Prigge**, N. C. Waters, Targeting malaria with specific CDK inhibitors. *Biochim. Biophys. Acta.*, 1754, 160-170 (2005).
27. X. Siebert, B. A. Eipper, R. E. Mains, **S. T. Prigge**, N. J. Blackburn, L. M. Amzel, The catalytic CuB site of PHM also plays a critical structural role. *Biophys. J.* 89, 3312-3319 (2005).
26. J. Z. Lu, P. J. Lee, N. C. Waters, **S. T. Prigge**, Fatty Acid Synthesis as a Target for Antimalarial Drug Discovery. *Comb. Chem. High Throughput Screen.* **8**, 27-38 (2005).
25. D. J. P. Ferguson, B. U. Samuel, F. L. Henriquez, M. J. Kirisits, S. P. Muench, **S. T. Prigge**, D. W. Rice, C. W. Roberts, R. L. McLeod, Stage specific variation in the apicoplast and associated enoyl reductase in *Toxoplasma gondii* during development in the intermediate and definitive host. *Eukaryotic. Cell*, 4, 814-826 (2005).
24. S. M. Keenan, J. A. Geyer, W. J. Welsh, **S. T. Prigge**, N. C. Waters, Rational inhibitor design and iterative screening in the identification of selective plasmodial cyclin dependent kinase inhibitors. *Comb. Chem. High Throughput Screen.* **8**, 15-26 (2005).
23. **S. T. Prigge**, R. E. Mains, B. A. Eipper, L. M. Amzel, Dioxygen binds end-on to mononuclear-copper in a precatalytic enzyme complex, *Science* 304, 864-867 (2004).
Commentary in *Chemical & Engineering News*, May 10, 82:19, 11-12.
Commentary in *Science*, May 7, 304, 864-867
Chemistry Highlights 2004, *Chemical & Engineering News*, December 20, 82:51, 53-61.
22. A. K. Bhattacharjee, J. A. Geyer, C. L. Woodard, A. K. Kathcart, D. A. Nichols, **S. T. Prigge**, Z. Li, N. C. Waters, A Three Dimensional *In Silico* Pharmacophore Model for Inhibition of *Plasmodium Falciparum* Cyclin Dependent Kinases and Discovery of Different Classes of Novel Pfmrk Specific Inhibitors. *J. Med. Chem.* 47, 5418-5426 (2004).
21. B. U. Samuel, B. Hearn, D. Mack, P. Wender, J. Rothbard, M. J. Kirisits, E. Mui, S. Wernimont, C. W. Roberts, S. Muench, D. Rice, **S. T. Prigge**, A. B. Law, and R. McLeod, Delivery of Antimicrobials into Parasites, *Proc. Natl. Acad. Sci. U S A* 100, 14281-14286 (2003).
20. S. Muench, J. Rafferty, R. McLeod, D. Rice, **S. T. Prigge**, Expression, purification and crystallization of the Plasmodium falciparum enoyl reductase, *Acta Crystallogr D Biol Crystallogr.* D59, 1246-1248 (2003).
19. C. L. Woodard, Z. Li, A. Kathcart, J. Terrell, L. Gerena, M. Lopez-Sanchez, D. E. Kyle, A. Bhattacharjee, D. Nichols, W. Ellis, **S. T. Prigge**, J. A. Geyer, and N. C. Waters, Oxindole-based compounds are selective inhibitors of Plasmodium falciparum cyclin dependent protein kinases, *J. Med. Chem.* 46, 3877-3882 (2003).
18. J. M. Bujnicki, **S. T. Prigge**, D. Caridha, P. K. Chiang, S-Adenosyl-L-homocysteine hydrolase from *Plasmodium falciparum*: structure, evolution, and interactions with inhibitors, *Proteins* 52, 624-632 (2003).
17. **S. T. Prigge**, X. He, L. Gerena, N. C. Waters, K. A. Reynolds, The initiating steps of a Type II fatty acid synthase in *Plasmodium falciparum* are catalyzed by pfACP, pfMCAT and pfKASIII, *Biochemistry* 42, 1160-1169 (2003).
16. **S. T. Prigge**, D. Caridha, P. Zhang, D. E. Kyle, W. K. Milhous, P. K. Chiang, Molecular Properties and Inhibitors of S-Adenosyl-L-Homocysteine Hydrolase (SAHH), *Proc. Int. Cong. Parasit.* **10**, 499-503 (2002).
15. N. C. Waters, K. M. Kopydlowski, T. Guszczynski, L. Wei, P. Sellers, J. T. Ferlan, P. J. Lee, Z. Li, C. L. Woodard, S. Shallom, M. J. Gardner and **S. T. Prigge**, Functional

- Characterization of the Acyl Carrier Protein (PfACP) and beta-Ketoacyl ACP Synthase III (PfKASIII) from *Plasmodium falciparum*, *Mol. Biochem. Parasitol.* **123**, 85-94 (2002).
14. Z. Li, K. LeRoch, J. A. Geyer, C. L. Woodard, **S. T. Prigge**, J. Koh, C. Doerig, N. C. Waters, Influence of human p16(INK4) and p21(CIP1) on the in vitro activity of recombinant *Plasmodium falciparum* cyclin-dependent protein kinases, *Biochem. Biophys. Res. Commun.* **288**, 1207-1211 (2001).
 13. S. Jiang, **S. T. Prigge**, L. Wei, Y. Gao, T. H. Hudson, L. Gerena, J. B. Dame, D. E. Kyle, A new class of small non-peptidyl compounds blocks *Plasmodium falciparum* development in vitro by inhibiting plasmepsins, *Antimicrob. Agents Chemother.* **45**, 2577-2584 (2001).
 12. **S. T. Prigge** and P. K. Chiang, S-Adenosylhomocysteine hydrolase. In *Homocysteine in health and disease*. D. Jacobsen (Ed.), Cambridge University Press, 2000.
 11. N. C. Waters, C. L. Woodard, **S. T. Prigge**, Cyclin H activation and drug susceptibility of the Pfmrk cyclin dependent protein kinase from *Plasmodium falciparum*, *Mol. Biochem. Parasitol.* **107**, 45-55 (2000)
 10. **S. T. Prigge**, R. E. Mains, B. A. Eipper, L. M. Amzel, PAM – new insights into copper monooxygenases and peptide amidation: structure, mechanism and function, *Cell. Mol. Life Sci.* **57**, 1236-1259 (2000).
 9. **S. T. Prigge**, A. S. Kolhekar, B. A. Eipper, R. E. Mains, L. M. Amzel, Substrate-mediated electron transfer in peptidylglycine alpha-hydroxylating monooxygenase, *Nature Struct. Biol.* **6**, 976-983 (1999).
 8. P. K. Chiang, M. E. Chamberlin, D. Nicholson, S. Soubes, X. Z. Su, G. Subramanian, D. E. Lanar, **S. T. Prigge**, J. P. Scovill, L. H. Miller, J. Y. Chou, Molecular characterization of *Plasmodium falciparum* S-adenosylmethionine synthetase, *Biochem J.* **344**, 571-576 (1999).
 7. **S. T. Prigge**, B. J. Gaffney, L. M. Amzel, The Relation Between Positional Specificity and Chirality in Mammalian Lipoxygenases, *Nature Struct. Biol.* **5**, 178-179 (1998).
 6. **S. T. Prigge**, J. C. Boyington, M. Faig, K. S. Doctor, B. J. Gaffney, L. M. Amzel, Structure and Mechanism of Lipoxygenases, *Biochimie* **79**, 629-636 (1997).
 5. **S. T. Prigge**, A. S. Kolhekar, B. A. Eipper, R. E. Mains, L. M. Amzel, Amidation of Bioactive Peptides: The Structure of Peptidylglycine α -Hydroxylating Monooxygenase, *Science* **278**, 1300-1305 (1997).
 Commentary in *Nature Struct. Biol.*, December, 4, 1001-1002.
 4. **S. T. Prigge**, J. C. Boyington, B. J. Gaffney, L. M. Amzel, Lipoxygenases: Structure and Function. In *Lipoxygenase and Lipoxygenase Pathway Enzymes*, G. J. Piazza (Ed.), Champaign: AOCS Press, 1996: 1-32.
 3. **S. T. Prigge**, J. C. Boyington, B. J. Gaffney, L. M. Amzel, Structure Conservation in Lipoxygenases: Structural Analysis of Soybean Lipoxygenase-1 and Modeling of Human Lipoxygenases, *Proteins* **24**, 275-291 (1996).
 2. B. J. Gaffney, J. C. Boyington, L. M. Amzel, K. S. Doctor, **S. T. Prigge**, S. M. Yuan, Lipoxygenase Structure and Mechanism. In *Advances in Prostaglandin, Thromboxane, and Leukotriene Research*. Samuelsson, B., Ramwell, P. W., Paoletti, R., Folco, G., Granstrom, E., Nicosia, S. (Eds.), Vol. 23. New York: Raven Press, 1995: 11-16.
 1. J. Gordon, **S. T. Prigge**, S. J. Collocott, R. Driver, Specific Heat of $(\text{BiPb})_2\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_{10-y}$ from 78 to 300 K, *Physica C* **185-189**, 1351-1352 (1991).