

Scott E. Lindner, Ph.D.

Associate Professor of Biochemistry and Molecular Biology
Co-Director of the Huck Center for Malaria Research
Pennsylvania State University

W230B Millennium Science Complex
University Park, PA 16802, USA

(Office) 1.814.867.4062
(Email) Scott.Lindner@psu.edu
(Website) <http://LindnerLab.org>

Professional Summary

- **Research Areas:** Transmission Biology of the Malaria Parasite (*Plasmodium*), Mechanistic Studies of Post-Transcriptional Gene Regulation, Host/Mosquito/Parasite Interactions, Protein Biochemistry, Synthetic Biology, Genetic Engineering/Editing (including CRISPR approaches), and Structural Biology.
- **Funding:** Current recipient of grants from the National Institutes of Health (NIAID R01, R21; NIGMS R01). Previous recipient of a Department of Defense DARPA SBIR subcontract, and NIAID Research Scholar Development (K22), NIGMS Post-doctoral (F32) and NCI Pre-doctoral (T32) NRSA awards.

Education and Positions

Associate Professor <i>Co-Director of the Huck Center for Malaria Research</i> <i>Pennsylvania State University, Department of Biochemistry and Molecular Biology</i>	July 2020 – Present
Assistant Professor <i>Co-Director of the Huck Center for Malaria Research</i> <i>Pennsylvania State University, Department of Biochemistry and Molecular Biology</i>	July 2013 – June 2020
Staff Scientist, Laboratory of Stefan Kappe <i>Seattle Biomedical Research Institute, Malaria Program</i>	May 2012 – June 2013
NIH NRSA Post-Doctoral Fellow/Post-Doctoral Scientist, Laboratory of Stefan Kappe <i>Seattle Biomedical Research Institute, Malaria Program</i>	Sept 2009 – April 2012
NIH NRSA Post-Doctoral Fellow, Laboratory of Jim Keck <i>University of Wisconsin-Madison, Department of Biomolecular Chemistry</i>	Jan 2007 – Aug 2009
Ph.D., Cancer Biology, Laboratory of Bill Sugden <i>University of Wisconsin-Madison, McArdle Laboratory for Cancer Research</i>	Aug 2001 – Dec 2006
B.S., Molecular Biology, Laboratory of Charles Helmstetter <i>Florida Institute of Technology, Department of Biology</i>	Sept 1997 – May 2001

Publications (39)

While an Associate Professor at Pennsylvania State University (2)

Bowman, L.M.*, Finger, L.E.*, Hart, K.J., & **Lindner, S.E.** "Definition of Constitutive and Stage-Enriched Promoters in the Rodent Malaria Parasite, *Plasmodium yoelii*." *Malaria Journal*. 2020 Nov 23; 19(1):424. Doi: 10.1186/s12936-020-03498-2. (* equal contribution)

Gray, S.L., Tiedge, T.M., Butkus, J.M., Earp, T.J., **Lindner, S.E.**, & Roy, R. "Determination of Human Identity from *Anopheles stephensi* Mosquito Blood Meals Using Direct Amplification and Massively Parallel Sequencing." *Forensic Science International: Genetics*. 2020 Sep; 48:102347. Doi: 10.1016/j.fsigen.2020.102347.

While an Assistant Professor at Pennsylvania State University (20)

Rios, K.T. & **Lindner S.E.** "Protein-RNA Interactions Important for *Plasmodium* Transmission." *PLoS Pathogens*. 2019 Dec 26; 15(12):e1008095. doi: 10.1371/journal.ppat.1008095. Invited Review.

Lindner, S.E.*, Swearingen, K.E.*, Shears, M., Walker, M.P., Vrana, E.N., Hart, K.J., Minns, A.M., Sinnis, P., Moritz, R.L., & Kappe, S.H.I. # "Transcriptomics and proteomics reveal two waves of translational repression during the maturation of malaria parasite sporozoites." *Nature Communications*. 2019 Oct 31; 10(1):4964. doi: 10.1038/s42467-019-12936-6. (* equal contribution, # joint supervision/co-corresponding authors)

Lee, M., **Lindner, S.E.**, Marco-Rubio, J.J., & Llinás, M. "Cutting back malaria: CRISPR/Cas9 genome editing of *Plasmodium*." *Briefings in Functional Genomics*. 2019 Jul 29. pii:elz012. 1-9. doi: 10.1093/bfpg/elz012. Invited Review.

Vivax Sporozoite Consortium (Alphabetical): Ansell, B., Charnaud, S., Duffy, M., Emery-Corbin, S.J., Flannery, E., Jex, A., Kappe, S.H., Koepfli, C., Mikolajczak, S., Muller, I., Lerch, A., **Lindner, S.E.**, Merienne, N., Patrapuvich, R., Petter, M., Sattabongkot, J., Smith, J., and Swearingen, K.E.. "Transcriptome and histone epigenome of *Plasmodium vivax* salivary-gland sporozoites point to tight regulatory control and mechanisms for liver-stage differentiation in relapsing malaria." *International Journal for Parasitology*. 2019 Jun; 49(8):501-513 doi: 10.1016/j.ijpara.2019.02.007.

Walker M.P., & **Lindner, S.E.** "Ribozyme-Mediated, Multiplex CRISPR Gene Editing and CRISPR interference (CRISPRi) in rodent-infectious *Plasmodium yoelii*." *Journal of Biological Chemistry* 2019 Jun 14; 294(24):9555-9566. doi: 10.1074/jbc.RA118.007121

****Featured as one of the Top 50 most viewed JBC papers in May and June 2019.**

Hart, K.J., Oberstaller, J., Walker, M.P., Minns, A.M., Kennedy, M.F., Padykula, I., Adams, J.H., & **Lindner, S.E.** "*Plasmodium* male gametocyte development and transmission are critically regulated by the two putative deadenylases of the CAF1/CCR4/NOT Complex." *PLoS Pathogens* 2019 Jan 31; 15(1):e1007164. 1-28.

****Selected as the week's Featured Research Article.**

Swearingen, K.E. & **Lindner S.E.** "*Plasmodium* Parasites Viewed Through Proteomics" *Trends in Parasitology* 2018 Nov; 37(11): 945-960. doi: 10.1016/j.pt.2018.08.003. Invited Review.

****Featured as the Cover Image/Publication for November 2018**

Bennink, S., von Bohl, A., Ngwa, C., Henschel, L., Kuehn, A., Pilch, N., Weibbach, T., Rosinski, A.N., Scheuermayer, M., Repnik, U., Przyborski, J.M., Minns, A.M., Orchard, L.M., **Lindner, S.E.**, Griffiths, G., Llinás, M., & Pradel, G. "A seven-helix protein constitutes stress granules crucial for regulating translation during human-to-mosquito transmission of *Plasmodium falciparum*." *PLoS Pathogens* 2018 Aug 22; 14(8):e1007249. 1-36.

Liang, X., Hart, K.J., Gang, D., Siddiqui, F.A., Sebastian, A., Li, X., Albert, I., Miao, J., **Lindner, S.E.**, & Cui, L. "Puf3 participates in ribosomal biogenesis in malaria parasites." *Journal of Cell Science* 2018 Mar 26; 131(6). doi: 1.1242/jcs.212597.

Hahn, W.O., Butler, N.S., **Lindner, S.E.**, Akilesh, H.M., Sather, D.N., Kappe, S.H.I., Hamerman, J.A., Gale Jr., M., Liles, W. C., & Pepper, M. "cGAS-mediated control of blood-stage malaria promotes *Plasmodium*-specific germinal center responses." *JCI Insight* 2018 Jan 25;3(2). 1-19. doi: 10.1172/jci.insight.94132

Work done in part as a Staff Scientist at SBRI.

Publications (continued)

While an Assistant Professor at Pennsylvania State University (Continued)

Minns, A.M., Hart, K.J., Subramanian, S., Hafenstein, S., & **Lindner S.E.** "Nuclear, Cytosolic, and Surface Localized Poly(A)-Binding Proteins of *Plasmodium yoelii*." *mSphere*. 2018 Jan 10; 3(1). 1-13. pii:e00435-17. doi: 10.1128/mSphere.00435-17.

Zander, R.A., Vijay, R., Pack, A.D., Guthmiller, J.J., Graham, A.C., **Lindner, S.E.**, Vaughan, A.M., Kappe, S.H., & Butler N.S. "Th1-like *Plasmodium*-specific memory CD4+ T cells support humoral immunity." *Cell Reports*. 2017 Nov 14; 21(7): 1839-1852. doi: 10.1016/j.celrep.2017.10.077
Work done in part as a Staff Scientist at SBRI.

Munoz, E. E., Hart, K. J., Walker, M. P., Kennedy, M. F., Shipley, M. M., & **Lindner, S.E.** "ALBA4 modulates its stage-specific interactions and specific mRNA fates during *Plasmodium yoelii* growth and transmission." *Molecular Microbiology*. 2017 Oct; 106(2):266-284. doi: 10.1111/mmi.13762

Swearingen, K. E., **Lindner, S.E.**, Flannery, E., Vaughan A.M., Patrapuvich, R., Kopfli, C., Muller, I., Jex, A., Moritz, R.L., Kappe, S.H.I., Sattabongkot, J. & Mikolajczak, S. "Proteogenomic analysis of the total and surface-exposed proteomes of *Plasmodium vivax* salivary gland sporozoites." *PLoS Neglected Tropical Diseases*. 2017 Jul 31; 11(7):e0005791. 1-36. doi: 10.1371/journal.pntd.005791.
Work done in part as a Staff Scientist at SBRI.

El-Manzalawy, Y., Munoz, E.M., **Lindner, S.E.***, & Honavar, V.* "PlasmoSEP: Predicting Surface Exposed Proteins on the Malaria Parasite Using Semi-supervised, Self-training, and Expert-annotated Data." *Proteomics*. 2016 Dec; 16(23):2967-2976. (* joint supervision/co-corresponding authors)

Huang, W., Hulverson, M.A., Zhang, Z., Choi, R., Hart, K.J., Kennedy, M., Subba Rao Vidadala, R., Maly, D.J., Van Voorhis, W.C., **Lindner, S.E.**, Fan, E., & Ojo, K.K. "5-Aminopyrazole-4-carboxamide analogues are selective inhibitors of *Plasmodium falciparum* microgametocyte exflagellation and potential malaria transmission blocking agents." *Bioorganic & Medicinal Chemistry Letters*. 2016 Nov 15; 26 (22):5487-5491. doi: 10.1016/j.bmcl.2016.10.014

Swearingen, K.E.*, **Lindner, S.E.***, Shi, L., Shears, M.J., Harupa, A., Hopp, C.S., Vaughan, A.M., Springer, T.A., Moritz, R.L., Kappe, S.H., & Sinnis, P. "Interrogating the *Plasmodium* Sporozoite Surface: Identification of Surface-Exposed Proteins and Demonstration of Glycosylation on CSP and TRAP by Mass Spectrometry-Based Proteomics." *PLoS Pathogens*. 2016 Apr 29; 12(4):e1005606. 1-32. doi: 10.1371/journal.ppat.1005606.
(* equal contribution) Work done in part as a Staff Scientist at SBRI.
****Recognized as one of the "Top 50 Most Downloaded" articles of the year for PLoS Pathogens.**

Reddy, B.P.N., Shrestha, S., Hart, K.J., Liang, X., Kemirembe, K., Cui, L., & **Lindner, S.E.** "A bioinformatic survey of RNA-binding proteins in *Plasmodium*." *BMC Genomics* 2015 Nov 2; 16:890. 1-26. doi: 10.1186/s12864-015-2092-1

Mikolajczak, S.A.*, Vaughan, A.V.*, Kangwanrangsang, N., Yimamnuaychok, N., Rezakhani, N., Fishbauger, M., Lakshmanan, V., Singh, N., Kaushansky, A., Baldwin, M., **Lindner, S.E.**, Adams, J.H., Prachumsri, J., & Kappe, S.H. "*Plasmodium vivax* liver stage development and hypnozoite persistence in human liver-chimeric mice." *Cell Host & Microbe*. 2015 Apr 8; 17(4): 526-35. doi: 10.1016/j.chom.2015.02.011. (* equal contribution)

Cui, L., **Lindner, S.**, & Miao, J. "Translational regulation during stage transitions in malaria parasites." *The Annals of the New York Academy of Sciences*. 2015 Apr; 1342:1-9 doi: 10.1111/nyas.12573. Invited Review.

Publications (continued)

While a Post-Doctoral Fellow/Staff Scientist at Seattle Biomedical Research Institute (SBRI) (11)

Harupa, A., Sack, B., Lakshmanan, V., Arang, N., Douglass, A., Oliver, B., Stuart, A., Sather, D.N., **Lindner, S.E.**, Hybiske, K., Torii, M., & Kappe, S.H.I. "SSP3 is a novel *Plasmodium yoelii* sporozoite surface protein with a role in gliding motility." *Infection and Immunity* 2014 Nov; 82(11): 4643-4653. doi: 10.1128/IAI.01800-14.

Lindner, S.E., Sartain, M.J., Hayes, K., Harupa, A., Moritz, R.L., Kappe, S.H.I. & Vaughan, A.M. "Enzymes involved in plastid-targeted phosphatidic acid synthesis are essential for *Plasmodium yoelii* liver-stage development." *Molecular Microbiology* 2014 Feb; 91(4): 679-693. doi: 10.1111/mmi.12485

****Featured as the Cover Image/Publication**

Mailu, B.M., Ramasamay, G., Mudeppa, D.G., Li, L., **Lindner, S.E.**, Peterson, M.J., DeRocher, A.E., Kappe, S.H.I., Rathod, P.K., & Gardner, M.J. "A nondiscriminating glutamyl-tRNA synthetase in the *Plasmodium* apicoplast: the first enzyme in an indirect aminoacylation pathway." *Journal of Biological Chemistry* 2013 Nov 8; 288(45):32539-52. doi: 10.1074/jbc.M113.507467

Pei, Y. *, Miller, J.L. *, **Lindner, S.E.**, Vaughan, A.M., Torii, M., & Kappe, S.H.I. "*Plasmodium yoelii* inhibitor of cysteine proteases is exported to exomembrane structures and interacts with yoelipain-2 during asexual blood-stage development." *Cellular Microbiology* 2013 Sep; 15(9):1508-1526. doi: 10.1111/cmi.12124.
(* equal contribution)

Lindner, S.E., Mikolajczak, S.A., Vaughan, A.M., Moon, W., Joyce, B.R., Sullivan, W.J., & Kappe, S.H.I. "Perturbations of *Plasmodium* Puf2 expression and RNA-seq of Puf2-deficient sporozoites reveal a critical role in maintaining RNA homeostasis and parasite transmissibility." *Cellular Microbiology* 2013 Jul; 15(7):1266-1283. doi: 10.1111/cmi.12116.

Lindner, S.E. *, Swearingen, K.E. *, Harupa, A., Vaughan, A.M., Sinnis, P., Moritz, R.L., & Kappe, S.H.I. "Total and putative surface proteomics of malaria parasite salivary gland sporozoites." *Molecular and Cellular Proteomics* 2013 May; 12(5): 1127-1143. doi:10.1074/mcp.M112.024505 (* equal contribution)

Kennedy, M., Fishbaugher, M.E., Vaughan, A.M., Patrapuvich, R., Boonhok, R., Yimamnuaychok, N., Rezakhani, N., Metzger, P., Ponpuak, M., Sattabongkot, J., Kappe, S.H., Hume, J.C.C., & **Lindner, S.E.** "A rapid and scalable density gradient purification method for *Plasmodium* sporozoites." *Malaria Journal* 2012 Dec 17; 11:421. 1-10. doi: 10.1186/1475-2875-11-421.

Vaughan, A.M., Mikolajczak, S. A., Camargo, N., Lakshmanan, V., Kennedy, M., **Lindner, S.E.**, Miller, J.L., & Kappe, S.H. "A transgenic *Plasmodium falciparum* NF54 strain that expresses GFP-luciferase throughout the parasite life cycle." *Molecular and Biochemical Parasitology* 2012 Dec;186(2): 143-147. doi: 10.1016/j.molbiopara.2012.10.004.

Lindner, S.E. *, Miller, J.L. *, & Kappe, S.H. "Malaria parasite pre-erythrocytic infection: preparation meets opportunity." *Cellular Microbiology* 2012 Mar; 14(3): 316-324. doi: 10.1111/j.1462-5822.2011.01734.x.
(* equal contribution) [Invited Review](#).

Lindner, S.E., Llinás, M., Keck, J.L., & Kappe, S.H. "The primase domain of PfPrex is a proteolytically matured, essential enzyme of the apicoplast." *Molecular and Biochemical Parasitology* 2011 Dec; 180(2): 69-75. doi: 10.1016/j.molbiopara.2011.08.002.

[Work done in part as a Post-Doctoral Fellow at the University of Wisconsin](#)

Aly, A.S.I, **Lindner, S.E.**, MacKellar, D.C., Peng, X., & Kappe, S.H. "SAP1 is a critical post-transcriptional regulator of infectivity in malaria parasite sporozoite stages." *Molecular Microbiology* 2011 Feb; 79(4): 929-939. doi: 10.1111/j.1365-2958.2010.07497.x.

Publications (continued)

While a Post-Doctoral Fellow at the University of Wisconsin (3)

Kolonko, E.M, Albaugh, B.N., **Lindner, S.E.**, Chen, Y, Satyshur, K.A., Keck, J.L., Kaufman, P.D., & Denu, J.M. "Catalytic activation of histone acetyltransferase Rtt109 by a histone chaperone." *Proceedings of the National Academy of Sciences USA* 2010 Nov 23; 107(47): 20275-20280. doi: 10.1073/pnas.1009860107.

Lindner, S.E., De Silva, E., Keck, J.L. & Llinás, M. "Structural determinants of DNA binding by a *P. falciparum* ApiAP2 transcriptional regulator." *Journal of Molecular Biology* 2010 Jan 22; 395(3): 558-567. doi: 10.1016/j.jmb.2009.11.004.

Berndsen, C.E., Tsubota, T., **Lindner, S.E.**, Lee, S., Holton, J.M., Kaufman, P.D., Keck, J.L., & Denu, J.M. "Molecular functions of the histone acetyltransferase chaperone complex Rtt109-Vps75." *Nature Structural and Molecular Biology* 2008 Sep; 15(9): 948-956.

While a Ph.D. Student at the University of Wisconsin (3)

Lindner, S.E., Zeller, K., Schepers, A., & Sugden, B. "The affinity of EBNA1 for its origin of DNA synthesis is a determinant of the origin's replicative efficiency." *Journal of Virology* 2008 Jun; 82(12): 5693-5702. doi: 10.1128/JVI.00332-08.

Lindner, S.E. & Sugden, B. "The plasmid replicon of Epstein-Bar Virus: mechanistic insights into efficient, licensed, extrachromosomal replication in human cells." *Plasmid* 2007 Jul; 58(1): 1-12.

Wang, J. *, **Lindner, S.E.** *, Leight, E.R., & Sugden, B. "Essential elements of a licensed, mammalian plasmid origin of DNA synthesis." *Molecular and Cellular Biology* 2006 Feb; 26(3): 1124-1134. (* equal contribution)

Pending Publications

Gontu, A. *, Srinivasan, S. *, Salazar, E. *, Nair, M.S., Nissly, R.H., Greenawalt, D., Bird, I.M., Herzog, C., Ferrari, M.J., Poojary, I., Katini, R., **Lindner, S.E.**, Minns, A.M., Rossi, R., Christensen, P.A., Castillo, B., Chen, J., Eagar, T.N., Yi, X., Zhao, P., Leveque, C., Olsen, R.J., Bernard, D.W., Gollihar, J., Kuchipudi, S.V. #, Musser, J.M. #, & Kapur, V. # "Limited window for donation of convalescent plasma with high live-virus neutralizing antibodies for COVID-19 immunotherapy." (*Resubmitted Dec 1, 2020*). (* equal contribution, # co-corresponding authors)

Funding

ACTIVE:

R01AI123341 (Lindner)	11/01/2016 – 10/31/2021	3.0 months
NIH/NIAID	\$250,000/Year Direct Costs	

Mechanisms governing translational regulation during *Plasmodium* transmission.

The goal of this proposal is to identify the key *cis* elements and *trans* factors at work during transmission of the malaria parasite to enact specific translational repression.

Role: PI

R01GM125907 (Lindner & Hafenstein)	01/01/2018 – 12/31/2021	1.2 months
NIH/NIGMS	\$367,500/Year Direct Costs	

Development of Cryo-EM/TEM Technologies for Small Protein and RNA Systems

The goal of this proposal is to advance scaffolding technology for structural biology approaches utilizing electron microscopy for proteins and RNA.

Role: Co-PI, Administrative Lead PI

T32GM125592 (Pugh)	2018 – 2023	0 months
NIH/NIGMS		

Eukaryotic Gene Regulation (EGR) Pre-Doctoral Training Program

The goal of this funded training grant is to train a future generation of scientists in experimental, molecular and computational sciences applied towards understanding mechanisms of eukaryotic gene regulation.

Role: Faculty Trainer (Since 2020)

T32DK120509 (Patterson)	2020 - 2025	0 months
NIH/NIDDK		

Integrative Analysis of Metabolic Phenotypes (IAMP) Pre-Doctoral Training Program

The goal of this funded training grant is to train a future generation of scientists in experimental, molecular, and bioinformatics approaches applied towards integrating our understanding of the host metabolism in health and disease.

Role: Faculty Trainer (Since 2020)

PENDING:

R21 – (Vinetz)	2021-2023 (Proposed)	Submitted 10/2020
NIH/NIAID		

CRISPR Ribozyme Guide Ribozyme (CRISPR-RGR): Novel Tool for *Plasmodium gallinaceum* Editing

The goal of this proposed work is to investigate the role of chitinases in ookinete functions in the mosquito midgut using avian-infectious *Plasmodium gallinaceum* parasites.

Role: Subcontract PI. Design and production of CRISPR-based gene editing plasmid system.

T32 – (Llinas)	2021-2026 (Proposed)	Resubmitted 09/2020
NIH/NIAID		

Proteins, Populations, and Pandemics in Infectious Disease (PPPID) Training Program

The goal of this proposed training grant is to train a new generation of skilled scientists to readily move between population and molecular approaches.

Role: Faculty Trainer

Funding (continued)

COMPLETED:

R21AI123690 (Ojo)
NIH/NIAID

2017 – 2020
\$70k Direct Costs

Coformulation of bumped kinase inhibitors (BKIs) with Artemisinin combination therapy (ACT) will stop widespread transmission of artemisinin-resistant malaria strains

The goal of this funded proposal is to investigate the effect of combined drug therapy for malaria using drugs that target the asexual and sexual stages of the parasite.

Role: Subcontract PI.

R21AI130692 (Lindner)
NIH/NIAID

2017 – 2020
\$275k Direct Costs

Ribozyme Guided CRISPRi in Human- and Rodent-Infectious *Plasmodium* species

The goal of this funded proposal is to develop and optimize a gene regulation system based upon CRISPR/Cas9 for *Plasmodium* parasites.

Role: PI

Lab Bench to Commercialization Program (Lindner and Hafenstein)
Pennsylvania State University

2017 – 2019
\$75k Total Costs

Versatile Display Scaffolds for Cryo-EM Approaches

The goal of this internal grant was to promote the development and commercialization of highly symmetrical, versatile scaffolds for cryo TEM imaging.

Role: Co-PI

SBIR Award #193342 (De Novo DNA, Inc.)
Department of Defense/DARPA

2017 – 2018
\$50k Subcontract

Highly Scalable Multiplexed CRISPR Applications Using Advanced Part Toolboxes and Circuits

The goal of this effort was to optimize the design, testing, and implementation of ribozyme/single guide RNA panels for CRISPR approaches in *Plasmodium* parasites.

Role: Subcontract PI

K22AI101039 (Lindner)
NIH/NIAID

2013-2016
\$250K Total Costs

Dissection of RNA Storage Granules Essential to *Plasmodium* Transmission

The goal of this funded proposal was to characterize the composition and function of RNA storage granules in *Plasmodium* sporozoites during transmission from the mosquito vector to the vertebrate host.

Role: PI

Cyberhealth Innovation Seed Funds (Lindner, Allen)
PA Tobacco Cure Fund; Huck Institutes/Institute for CyberScience

2014 – 2015
\$62k Total Costs

Prioritization of Malaria-Vaccine Candidates using New Methods for Functional Annotation

The goal of this funded proposal was to leverage our unpublished, high-mass accuracy proteomic datasets of the parasite's surface and to develop improved methods to predict protein domain structures and functions.

Role: Co-PI

OPP1067687 (Co-PI: Kappe and Sinnis, Co-I: Lindner)
Bill and Melinda Gates Foundation

2012 – 2013
\$450k Total Costs

Proteomic Identification of Novel Surface and Secreted Antigens as Targets to Block Malaria Infection

The goal of this solicited accelerated grant proposal was to build upon our initial proteomics discoveries to identify novel surface/secreted proteins on *Plasmodium* sporozoites to serve as antibody-based vaccine targets.

Role: Co-I

Funding (continued)

COMPLETED:

F32GM083438 – NRSA Post-Doctoral Fellow (Lindner)
NIH/NIGMS

2009 – 2011
\$97k Total Costs

Structural Analysis of DNA Replication Machinery of *Plasmodium falciparum*

The goal of this fellowship was to train in both the fields of structural biology and molecular parasitology in order to address significant problems in malaria biology using these complementary approaches.

Role: PI

T32CA009135 – NRSA Pre-Doctoral Fellow (Lindner)
NIH/NCI

2004 – 2005

Pre-doctoral Training in Experimental Oncology

The goal of this fellowship was to train and study host/pathogen interactions of Epstein-Barr virus (EBV), the first identified human tumor virus. Research was focused upon viral DNA replication by co-opting host proteins.

Role: Trainee

Selected Honors

2020	Molecular Parasitology Meeting, Session Co-Chair
2019	ASTMH Annual Meeting: Session Co-Chair
2019	Keynote Speaker, Future of Malaria Research Symposium
2019	Co-Organizer, Pennsylvania Parasitology Conference (PParaCon 2019)
2018	Co-Organizer, Pennsylvania Parasitology Conference (PParaCon 2018)
2018	BioMalPar; EMBL, Heidelberg, Germany. CRISPR Workshop Co-Chair
2017	Molecular Parasitology Meeting, Session Co-Chair
2015	ASTMH Annual Meeting: Symposium Organizer and Chair
2014	ASTMH Annual Meeting: Co-Chair for Malaria - Molecular Biology Section
2014	ASTMH Pre-Meeting Course, Advances in Proteomics and Metabolomics: Toward Dissecting Host-Pathogen Interactions; Co-Organizer (with Manuel Llinás)
2013 – 2015	NIAID K22 Research Scholar Development Award
2010	U. Washington / Howard Hughes Medical Institute (HHMI) Future Faculty Fellow
2009 – 2011	NIAID F32 Ruth L. Kirschstein NRSA Postdoctoral Fellow
2009	Molecular Parasitology Meeting, <i>Award for Excellent Oral Presentation</i>
2001	Graduated with <i>magna cum laude</i> distinction, Florida Institute of Technology
2001	<i>Frank G. Brooks Award for Excellence in Student Research</i> , Tri-Beta District I
2000 – 2001	Tri-Beta National Biological Honor Society
2000 – 2001	Outstanding Senior in Molecular Biology, Florida Institute of Technology
1997 – 2001	Presidential Scholarship, Florida Institute of Technology
1997 – 2001	Dean's List, Florida Institute of Technology

Invited Talks at Universities/Institutes

While an Associate Professor at Pennsylvania State University:

(Mar 2021) University of Glasgow, Glasgow, UK

While an Assistant Professor at Pennsylvania State University:

(June 2020)	University of Georgia, Center for Vaccines and Immunology, Athens, GA *COVID-19 Cancellation
(April 2020)	Washington University, School of Medicine, Department of Cell Biology & Physiology, St Louis, MO *Cancelled due to COVID-19
(March 2020)	University of Florida, Emerging Pathogens Institute, Gainesville, FL *COVID-19 Cancellation
Jan 2020	Indiana University, School of Medicine, Department of Pediatrics, Indianapolis, IN
May 2019	Pennsylvania State University, College of Medicine, Department of Biochemistry and Molecular Biology, Hershey, PA
Oct 2018	Harvard University, T.H. Chan Harvard School of Public Health, Department of Immunology and Infectious Diseases, Boston, MA
May 2018	Humboldt University, Department of Biology, Berlin, Germany
April 2018	Drexel University, Department of Microbiology and Immunology, Philadelphia, PA
Jan 2018	Naval Medicine Research Unit – Six (NAMRU-6), Lima, Peru
Oct 2017	University of Minnesota, School of Medicine, Department of Biomedical Sciences, Duluth, MN
March 2017	University of Pittsburgh, Department of Biological Sciences, Pittsburgh, PA
Dec 2016	CRISPR Approaches for Apicomplexans; Sanger Centre, Hinxton, UK
Oct 2016	University of Pennsylvania, Department of Microbiology, Parasitology Seminar Series, Philadelphia, PA
Sept 2016	Indiana University, School of Medicine, Department of Pharmacology & Toxicology, Indianapolis IN
Jan 2016	University of South Florida, Department of Global Health, Tampa, FL
Oct 2015	University of Oklahoma, Department of Microbiology and Immunology, Oklahoma City, OK
May 2015	Johns Hopkins University, Bloomberg School of Public Health, Malaria Research Institute, Baltimore, MD
April 2014	Rutgers University, New Jersey Medical School Seminar Series, Newark, NJ

While a Post-Doctoral Fellow/Staff Scientist at Seattle Biomedical Research Institute (SBRI):

Oct 2012	University of Texas, Department of Microbiology & Molecular Genetics, Houston, TX
Oct 2012	University at Buffalo, Department of Microbiology & Immunology, Buffalo, NY
July 2012	Pennsylvania State University, Department of Biochemistry and Molecular Biology, University Park PA
Feb 2012	Western Washington University, Department of Biology, Bellingham, WA

Conferences and Meetings

Dec 2020	EMBO: In Situ Structural Biology: From Cryo EM to Integrative Modeling. (virtual)
Sept 2020	Molecular Parasitology Meeting; Woods Hole, MA. (virtual)
Nov 2019	American Society for Tropical Medicine and Hygiene (ASTMH) Annual Meeting; Baltimore, MD. Oral Presentation and Faculty Participant for Speed Networking Event (ACMCIP)
Nov 2019	Future of Malaria Research Symposium, Rockville, MD. Keynote Speaker
Sept 2019	Molecular Parasitology Meeting; Woods Hole, MA
Sept 2018	Molecular Parasitology Meeting; Woods Hole, MA
May 2018	BioMalPar; EMBL, Heidelberg, Germany. Oral Presentation
Apr 2018	DARPA Safe Genes Meeting; Biosphere2 at Oracle, AZ.
Feb 2018	Keystone Symposium: Cryo-EM from Cells to Molecules: Multi-Scale Visualization of Biological Systems (F1); Tahoe City, CA
Nov 2017	American Society for Tropical Medicine and Hygiene (ASTMH) Annual Meeting; Baltimore, MD. Oral Presentation
Sept 2017	Molecular Parasitology Meeting; Woods Hole, MA
June 2017	American Society for Microbiology Annual Meeting; New Orleans, LA. Oral Presentation
Jan 2017	Keystone Symposium: Precision Genome Engineering; Breckenridge, CO
Sept 2016	Molecular Parasitology Meeting; Woods Hole, MA.
June 2016	Alan Magill Memorial Symposium; Walter Reed Army Institute of Research, Silver Spring, MD.
April 2016	World Malaria Day Symposium; Johns Hopkins University, Bloomberg School of Public Health
Oct 2015	American Society for Tropical Medicine and Hygiene (ASTMH) Annual Meeting; Philadelphia, PA. Oral Presentation
Sept 2015	Molecular Parasitology Meeting; Woods Hole, MA
May 2015	American Society for Microbiology Annual Meeting; Poster Presentation
Nov 2014	American Society for Tropical Medicine and Hygiene (ASTMH) Annual Meeting; Oral Presentation
Nov 2014	ASTMH Pre-Meeting Course, Advances in Proteomics and Metabolomics: Toward Dissecting Host-Pathogen Interactions; Oral Presentation
Oct 2014	EMBO: The Complex Life of mRNA; Heidelberg, Germany; Poster Presentation
Sept 2014	Molecular Parasitology Meeting; Woods Hole, MA
April 2014	World Malaria Day Symposium; NY Academy of Science; New York, NY; Poster Presentation
Sept 2013	Molecular Parasitology Meeting; Woods Hole, MA
Jan 2013	Malaria; Keystone Symposium; Poster Presentation
Sept 2012	Molecular Parasitology Meeting; Woods Hole, MA; Poster Presentation
May 2012	Seattle Parasitology Conference; Seattle, WA; Oral Presentation
March 2012	Protein-RNA Interactions in Biology and Disease; Keystone Symposium; Poster Presentation
May 2011	Seattle Parasitology Conference; Seattle, WA
May 2010	Seattle Parasitology Conference; Seattle, WA
Sept 2009	Molecular Parasitology Meeting; Woods Hole, MA; Oral Presentation
Sept 2008	Molecular Parasitology Meeting; Woods Hole, MA; Poster Presentation
Sept 2005	Eukaryotic DNA Replication; Cold Spring Harbor Laboratory; Poster Presentation
Aug 2004	DNA Replication and Genome Integrity; Salk Institute; Poster Presentation
June 2004	Buffalo DNA Replication and Repair Symposium; Buffalo, NY; Oral Presentation
July 2003	International Herpesvirus Workshop; Madison, WI
April 2001	Association of Southeastern Biologists; New Orleans, LA; Oral Presentation

Professional Affiliations

Pennsylvania State University:

2013 – Present	Center for Malaria Research (CMaR), Co-Founder and Co-Director
2013 – Present	Center for Infectious Disease Dynamics (CIDD), Member
2013 – Present	Center for RNA Molecular Biology, Member
2013 – Present	Center for Molecular Immunology and Infectious Disease (CMIID), Member

External:

2013 – Present	American Society for Biochemistry and Molecular Biology (ASBMB)
2013 – Present	American Society for Microbiology (ASM)
2014 – Present	American Society of Tropical Medicine and Hygiene (ASTMH)
2014 – Present	American Committee of Molecular, Cellular, and Immunoparasitology (ACMCIP), ASTMH

Patents (5):

- Lindner, S.E.**, Hafenstein, S., & Butler, N. "Specific Selection of Immune Cells Using Versatile Display Scaffolds" *PTC Application Filed May 20, 2020*. PCT/US2020/033785
- Lindner, S.E.** & Hafenstein, S. "Versatile Display for Proteins" # 62/472,119. PCT/US2018/022803
- Lindner, S.E.**, Kappe, S.H., Swearingen, K.E., & Moritz R.L. "Sporozoite surface proteins" #61718054.
- Lindner, S.E.**, Kennedy, M., & Hume, J.C.C "Density gradient purification for *Plasmodium* sporozoites" #61678541.
- Lindner, S.E.** and Sugden, B. "Efficient oriP/EBNA-1 plasmid vector." #12/353,835.

Service to the Profession

Peer Review of Publications:

- **Associate Editor** – Parasite and Host Section, *Frontiers in Cellular and Infection Microbiology*: 8/2019 – Present
- **Guest Editor** – *PLoS Pathogens*
- **Ad hoc Reviewer**: *Nature Microbiology*, *Nature Communications*, *Genome Research*, *PLoS Pathogens*, *BMC Genomics*, *Nucleic Acids Research*, *Journal of Biological Chemistry*, *mSphere*, *Infection & Immunity*, *Molecular Microbiology*, *International Journal of Parasitology*, *Scientific Reports*, *FEBS Journal*, *Molecular and Biochemical Parasitology*, *Current Protein & Peptide Science*, *Frontiers in Microbiology*, *Frontiers in Cellular and Infection Microbiology*, *ACS Synthetic Biology*, *iScience*.

Peer Review of Grant Applications:

- Swiss National Science Foundation: 2020
- National Institutes of Health, NIAID, PTHE Study Section, *Ad Hoc* Member: June 2018, June 2019, Feb 2020
- US-Israel Binational Science Foundation: 2018
- National Institutes of Health, U19 Program, International Centers of Excellence for Malaria Research: 2016
- Department of Defense, Congressionally Directed Medical Research Program (CDMRP): 2014, 2015, 2016, and 2018
- Medical Research Council, UK, Peer Reviewer: December 2018

External Advisory/Review Boards:

- Aug 2020: Uniformed Services University: Henry C. Wu Award for Excellence in Research Selection Committee
- Aug 2019: Development of the Parasites Collection Site, Addgene. <https://www.addgene.org/crispr/parasites/>
- Mar 2018: Carver Trust, External Reviewer
- Nov 2015: Maryland Industrial Partnerships Program (MIPS), External Reviewer
- Jan 2015 – Present: Alumni Advisory Board, McArdle Laboratory for Cancer Research, U. Wisconsin.

Service to the Department of Biochemistry and Molecular Biology (BMB)

2020 – 2021	Peer Teaching Evaluation Committee
2017 – 2021	Chair, BMB Departmental Seminar Series and Distinguished Lectures Committee
2016 – 2021	Member, BMB Graduate Student Recruitment Committee
2019 – 2020	Member, Safety Committee
2018 – 2019	Member, Commencement Attendance Committee
2014 - 2015	Participant, BMB Graduate Student Recruitment Committee
2016 – 2017	Member, BMB Department Head Search Committee
2015 – 2017	Chair, BMB Departmental Seminar Series
2014 – 2015	Chair, Distinguished Seminar Selection Committee
2013 – 2017	Member, Distinguished Seminar Selection Committee
2015	Reviewer, BMB Summer Undergraduate Research Fellowship
2013 – 2015	Member, Graduate Affairs Committee

Service to the Eberly College of Science

2017	Faculty Participant, Dean's Advisory Meeting, Promoting Penn State through Social Media
2015, 2019	Collaboration to develop animations/videos for general audiences with the Office of Digital Learning (with Daryl Branford)
2014, 2015	Guest Speaker, "Spend a Summer Day" College Overview Session for Prospective Undergraduate Students
2013	Faculty Representative, Freshman Convocation Ceremony

Service to the Pennsylvania State University

2019 – Present	Member, Microscopy Core Steering Committee
2019 – 2020	Member, Search Committee for the Director of the Animal Research Program
2019	Faculty Participant, STEM Open House for Diverse Graduate Student Recruiting
2019	Member, Qualifying Exam Committee for Molecular Cellular and BioSciences
2019	Interviewee, “ <i>Hey I Got A Question About That</i> ” Podcast
2018	Speaker, Grant Writing Workshop, Center for Infectious Disease Dynamics (CIDD)
2017	Panelist, Penn State College of Medicine Career Day, Hershey, PA
2014 - Present	Participant, Huck Institutes Graduate Student Recruitment
2015 – 2016	Member, Candidacy Organizing Committee, Molecular Cellular and BioSciences
2015	Script and Film two videos for the Massive Online Open Course (MOOC) focused on “Emerging/Expanding Mosquito-Borne Disease” with Manuel Llinas, Matthew Thomas, and Jason Rasgon (organized by Matthew Ferrari, Department of Biology and Huck Institutes of the Life Sciences)
2015, 2018	“Meet the Professor” lunch with Schreyer Honors College students to provide an opportunity to interact with Freshmen/Sophomores.
2014	Huck Institutes Graduate Program Promotional Videos
2014	Judge, Penn State Graduate Expo
2014	Reviewer, University Graduate Fellowship (Huck Institutes)
2014	Interviewer, Occupational Safety/Environmental Health Specialist
2013 – Present	Co-Founder & Co-Director, Center for Malaria Research (CMaR)

Teaching Experience

Courses:

BMB/MICRB251: Molecular & Cell Biology 1 (125-280 Students, 40 Lectures) - Fall Semesters of 2015 - 2020. I revised the course in Summer 2020 to a Flipped Classroom model to better serve students during COVID-19.

BMB398B: Problem Solving in Molecular and Cell Biology (20-50 Students, 15 Weekly Trainings with Learning Assistants (see below)) - Fall Semesters of 2016-2018

BMB488: Communities of Practice, Host-Microbe Interactions (~5-6 Students, 15 Weekly Lectures and Host of an Undergraduate Researcher in the Lab) – Fall 2015, Spring 2016

BMMB507: Effective Scientific Communication (12 Students, 15 Weekly Lectures, Student Presentations, and Evaluations) – Fall 2014

BMMB509: Ethics in Biomedical Science (10-14 Students, 9 Sessions) – Fall Semesters of 2017 - 2021

Use of Evidence-Based Practices:

I have adopted several practices that have been shown to boost student comprehension and success, including:

- **Learning Assistants (LAs) and Guided Study Groups (GSGs):** Upper level undergraduates are trained and empowered to run discussion sessions using existing or self-developed curricula to help their peers who are currently enrolled in the lecture course.
- **Learning Objectives:** Specific goals are provided at the outset of the course and when starting each new section in order to allow students to know what they will gain from the course and what knowledge gains are anticipated. *Learning objectives are aligned to the teaching mission of the BMB Department.*
- **Active Learning Approaches:** The use of clicker questions allows the assessment of student comprehension on the fly and allows for lecture content to be adjusted to meet student needs. Concept mapping exercises allow students to connect similar concepts and cellular mechanisms.

People Trained in the Laboratory

Post-Doctoral Scientists

Current:

- Amy Lee Burns, Ph.D.: 03/2020 – Present
- Bridget (Joanne) Power, Ph.D.: 08/2019 – Present
- Megan Gragg, Ph.D.: 09/2018 – Present (Joint Supervision with Hafenstein)

Previous:

- Tanumoy Mondol, Ph.D.: 12/2018 – 08/2019 (Joint Supervision with Hafenstein)
- Kevin J. Hart, Ph.D.: 10/2018 – 08/2019

Graduate Students

Current:

- James McGee: 12/2019 – Present, Molecular Cellular and Integrative BioSciences (MCIBS) Ph.D. Program
- Mitchell Godin: 12/2019 – Present, Biochemistry, Microbiology and Molecular Biology (BMMB) Ph.D. Program
- Kelly Rios: 12/2015 – Present, Biochemistry, Microbiology and Molecular Biology (BMMB) Ph.D. Program
Buntun-Waller Fellowship (2015-2017)
- Michael P. Walker: 12/2014 – Present, Molecular Cellular and Integrative BioSciences (MCIBS) Ph.D. Program
Huck Graduate Research Award (2017-2019)

Previous:

- Kevin J. Hart: 12/2013 – 10/2018, Immunology and Infectious Diseases (IID) Ph.D. Program
Huck Graduate Research Award (2016-2018)
- Elyse E. Munoz: 10/2013 – 9/2016, Genetics Ph.D. Program
Sloan Scholarship, National Action Council for Minorities in Engineering (2013-2016)
Buntun-Waller Fellowship (2011-2014), Huck Institutes Graduate Enrichment Fund Award (2013-2016)
ASM Robert D. Watkins Graduate Research Fellowship (2014-2016)

Undergraduate Students

Current: None currently due to COVID-19 restrictions.

Previous:

- Taylor Dickson: 01/2020 – 05/2020, Class of 2022
- Lauren Sarko: 08/2018 – 05/2020, Class of 2020
Rodney A. Erickson Discovery Grant Recipient (Summer 2019)
Post-Graduation: Pursuing – Ph.D. at U. Wisconsin (Fall 2020 – Present)
- Olivia Smith: 01/2018 – 05/2020, Class of 2020
Post-Graduation: Pursuing – Ph.D. at U. Washington (Fall 2020 – Present)
- Logan Finger: 08/2017 – 05/2019, Class of 2019, Senior Honors Thesis
Post-Graduation: Pursuing - Medical Doctorate at U. Pittsburgh (2019-2023)
- Steve Griffin: 08/2015 – 05/2018, Class of 2018, Communities of Practice, Independent Research
Rodney A. Erickson Discovery Grant Recipient (Summer 2016)
Post-Graduation: Pursuing - MS Immunology & Microbiology, Thomas Jefferson University, Philadelphia, PA
- Laura Bowman: 05/2015 – 05/2017, Class of 2017, Senior Honors Thesis
Post-Graduation: Professional Hockey Player (Vienna Sabres (Austria), 2017-2018)
Pursuing - Medical Doctorate at U. Minnesota (2018-2023)
- Erin Vrana: 08/2014 – 05/2017, Class of 2017, Senior Honors Thesis
Rodney A. Erickson Discovery Grant Recipient (Summer 2015)
American Society for Microbiology Undergraduate Research Fellowship (ASM-URF) (Summer 2016)
Post-Graduation: Pursuing - Medical Doctorate at Vanderbilt University (2017-2022)

People Trained in the Laboratory (continued)

- Amanda Reese: 01/2014 – 05/2017, Class of 2017, Senior Honors Thesis
Department of Biochemistry and Molecular Biology SURF Fellowship (Summer 2014)
American Society for Microbiology Undergraduate Research Fellowship (ASM-URF) (Summer 2015)
Post-Graduation: Teaching in Colombia Summer-Winter 2017, Peace Corp Volunteer (2018-2020), MS in
Epidemiology at the Milken Institute School of Public Health, George Washington University (2020-2021)