

Academic Education

- 2010 FAPESP Invited Visiting Researcher (Universidade de São Paulo, Brazil)
2006 – 2010 PhD thesis (Faculdade de Medicina da Universidade de Lisboa, Portugal)
1998 – 2003 Biology undergraduate (Faculdade de Ciência da Universidade do Porto, Portugal)

Scientific Degrees

- 2010 PhD in in Biomedical Sciences, Specialization in Biopathological Sciences with dissertation titled *Interactions of Plasmodium Blood and Liver Stages within a Single Host*, granted by Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, supervised by Maria M. Mota
2003 Licentiate Degree in Biology in Faculdade de Ciências da Universidade do Porto, Portugal

Professional Career

- July 2020 – present Lise Meitner Group Leader at the Max Planck Institute for Infection Biology, Berlin
Jun 2016 – Dec 2020 Junior Group Leader, Center for Infectious Diseases_ Parasitology, Heidelberg University
Feb 2011– May 2016 Postdoctoral Fellow at Crompton Lab, NIAID, National Institutes of Health, Rockville, USA

Field of interest

The main goal of my lab is to understand how *Plasmodium*, the causative agent of malaria, survives the dry season when no mosquitoes are available. *Plasmodium* usually alternates between a human host and a mosquito vector, but in many areas of the globe a long and complete dry season interrupts transmission for several months. We study the host and parasite factors that contribute to silent carriage of parasites in ~20% of children during the 6-month dry season in Mali, and how transmission resumes in the ensuing wet season when mosquitoes return.

Funded Projects

Max Planck African Partner Group grant awarded by the Max Planck Society to Moussa Niangaly and Silvia Portugal from 2021 until 2026.

Lise Meitner Excellence Program– *Pf* dry season reservoir awarded to Silvia Portugal from 2021 until 2025.

ERC Starting Grant 2017 #759534: *DrySeasonPf* — *ERC-2017-STG* awarded to Silvia Portugal from 2018 until 2022.

SFB1129 Project 18 *Deciphering the regulation of Plasmodium falciparum replication*, grant awarded to Markus Ganter and Silvia Portugal from 2018 until 2022.

DIZF TTU 03.805 – FP2018: *Repeat direct venous inoculation of Plasmodium falciparum sporozoites, strain NF54 and clone 7G8, in healthy adult volunteers naturally exposed to malaria in Gabon: a randomized open-label study*, awarded to Benjamin Mordmueller and Silvia Portugal from 2019 until 2021.

DIZF TTU 03.701 – FP2016: *Exploring asymptomatic Plasmodium falciparum: Targeting the dry season reservoir of infection*, structural group grant awarded to Silvia Portugal from 2016 until 2020.

DZIF TI 07.009 – TSS02: DZIF seminar series ‘*Malaria Cross Talk Between Field and Bench Research*’ until 2020.

Coordinating Functions

Organizing team of the 2020 **BioMalPar** conference held annually at the EMBL in Heidelberg.

DIZF seminar series titled: ‘**Malaria cross talk between field and bench research**’ in Heidelberg 2017 to 2020.

Awards & Honors

- 2022 Bailey K. Ashford Medal awarded by the American Society of Tropical Medicine and Hygiene
2020 Lise Meitner Excellence Program group leader award by the The Max Planck Society

2019	Junior faculty representative of Heidelberg University of at the Excellence Strategy Competition
2018	Grand Challenges Meeting in Berlin by the Bill & Melinda Gates Foundation, October, 2018
2018	SFB1129 Grant at Heidelberg University Hospital
2017	ERC Starting Grant at Heidelberg University Hospital
2016	Group Leader Fellowship at Heidelberg University Hospital, DZIF
2015	Fellows Award for Research Excellence (FARE) NIH Scientific Directors
2014	Fellows Award for Research Excellence (FARE) NIH Scientific Directors
2013	Burroughs Wellcome Fund Endowment to attend the Biology of Parasitism course at the Marine Biology Laboratory, Woods Hole, USA
2012	European Molecular Biology Organization (EMBO) Long-Term Fellowship
2010	Participation on the 60 th Interdisciplinary Meeting of Nobel Laureates at Lindau, Germany
2009	Short-Term Fellowship by Fundação Calouste Gulbenkian, Portugal to attend the 5 th MIM Pan-African Malaria Conference, November 2 - 6, 2009, Nairobi, Kenya
2009	University of South Florida Travel Award to attend the Vivax Malaria Research III: 2009 and Beyond conference, May 24 - 28, 2009, Gamboa Rainforest Resort, Panama

Publication record

32. *Design and implementation of multiplexed amplicon sequencing panels to serve genomic epidemiology of infectious disease: a malaria case study.* LaVerriere E, Schwabl P, Carrasquilla M, Taylor AR, Johnson ZM, Shieh M, Panchal R, Straub TJ, Kuzma R, Watson S, Buckee CO, Andrade CM, **Portugal S**, Crompton PD, Traore B, Rayner JC, Corredor V, James K, Cox H, Early AM, MacInnis BL, Neafsey DE. **Mol Ecol Resour.** 2022 Apr 19. PMID: 35437908

31. *P. falciparum transcription in different clinical presentations of malaria associates with circulation time of infected erythrocytes.* Thomson-Luque R, Votborg-Novél L, Ndovie W, Andrade CA, Niangaly M, Attipa C, Lima NF, Coulibaly D, Doumtabe D, Guindo B, Tangara B, Maiga F, Kone AK, Traore K, Kayentao K, Ongoiba A, Doumbo S, Thera AM, Traoré B, Seydel K, Osório N, **Portugal S.** **Nat Commun.** 2021 Jul 30;12(1):4711. PMID: 34330920

30. *Multimeric antibodies from antigen-specific human IgM+ memory B cells restrict Plasmodium parasites.* Thouvenel CD, Fontana MF, Netland J, Krishnamurthy AT, Takehara KK, Chen Y, Singh S, Miura K, Keitany GJ, Lynch EM, **Portugal S**, Miranda MC, King NP, Kollman JM, Crompton PD, Long CA, Pancera M, Rawlings DJ, Pepper M, **J Exp Med.** 2021 Apr 5;218(4):e20200942. PMID: 33661302

29. *Plasmodium falciparum-specific IgM B cells dominate in children, expand with malaria and produce functional IgM.* Hopp CH, Sekar P, Diouf A, Miura K, Boswell K, Skinner J, Tipton CM, Peterson ME, Chambers MJ, Andrews S, Lu J, Tan J, Li S, Doumbo S, Kayentao K, Ongoiba A, Traore B, **Portugal S**, Sun PD, Long CA, Koup RA, Long EO, McDermott AB, Crompton PD, **J Exp Med.** 2021 Apr 5;218(4):e20200901. PMID: 33661303

28. *Increased time of Plasmodium falciparum in the circulation underlies persistent asymptomatic infection in the dry season.* Andrade CA, Fleckenstein F, Thomson-Luque R, Doumbo S, Lima NF, Anderson C, Hibbert J, Hopp SH, Tran TM, Li S, Niangaly M, Cisse H, Doumtabe D, Skinner J, Sturdevant D, Ricklefs S, Virtaneva K, Asghar M, Homann MV, Turner L, Martins J, Allman EL, N'Dri M, Winkler V, Llinás M, Lavazec C, Martens C, Färnert A, Kayentao K, Ongoiba A, Lavstsen T, Osório NS, Otto TD, Recker M, Traor B, Crompton PD, **Portugal S.** **Nat Med.** 2020 Oct 26 PMID: 33106664

27. *A Molecular Signature in Blood Reveals a Role for p53 in Regulating Malaria-Induced Inflammation.* Tran TM, Guha R, **Portugal S**, Skinner J, Ongoiba A, Bhardwaj J, Jones M, Moebius J, Venepally P, Doumbo S, DeRiso EA, Li S, Vijayan K, Anzick SL, Hart GT, O'Connell EM, Doumbo OK, Kaushansky A, Alter G, Felgner PL, Lorenzi H, Kayentao K, Traore B, Kirkness EF, Crompton PD. **Immunity.** 2019 Aug 23. pii: S1074-7613(19)30335-8. PMID: 31492649

26. *Binding brain better-matching var genes and endothelial receptors.* Fleckenstein H, **Portugal S.** **EMBO Mol Med.** 2019 Feb 25. pii: e10137. PMID: 30804082

25. *Malaria-induced interferon- γ drives the expansion of Tbethi atypical memory B cells.* Obeng-Adjei N, **Portugal S**, Holla P, Li S, Sohn H, Ambegaonkar A, Skinner J, Bowyer G, Doumbo OK, Traore B, Pierce SK, Crompton PD. **PLoS Pathog.** 2017 Sep 27;13(9):e1006576. PMID: 28953967

24. Atypical memory B cells in human chronic infectious diseases: An interim report. **Portugal S**, Obeng-Adjei N, Moir S, Crompton PD, Pierce SK. *Cell Immunol*. 2017 Nov; 321:18-25. Review. PMID: 28735813
23. Treatment of Chronic Asymptomatic Plasmodium falciparum Infection Does Not Increase the Risk of Clinical Malaria Upon Reinfection. **Portugal S**, Tran TM, Ongoiba A, Bathily A, Li S, Doumbo S, Skinner J, Doumtabe D, Kone Y, Sangala J, Jain A, Davies DH, Hung C, Liang L, Ricklefs S, Homann MV, Felgner PL, Porcella SF, Färnert A, Doumbo OK, Kayentao K, Greenwood BM, Traore B, Crompton PD. *Clin Infect Dis*. 2017 Mar 1;64(5):645-653. PMID: 28362910
22. Targeting Neutrophils to Prevent Malaria-Associated Acute Lung Injury/Acute Respiratory Distress Syndrome in Mice. Sercundes MK, Ortolan LS, Debone D, Soeiro-Pereira PV, Gomes E, Aitken EH, Condino-Neto A, Russo M, D'Império Lima MR, Alvarez JM, **Portugal S**, Marinho CR, Epiphanyo S. *PLoS Pathog*. 2016 Dec 7;12(12):e1006054. PMID: 27926944
21. Somatically Hypermutated Plasmodium-Specific IgM(+) Memory B Cells Are Rapid, Plastic, Early Responders upon Malaria Rechallenge. Krishnamurthy AT, Thouvenel CD, **Portugal S**, Keitany GJ, Kim KS, Holder A, Crompton PD, Rawlings DJ, Pepper M. *Immunity*. 2016 Aug 16;45(2):402-14. PMID: 27473412
20. Circulating Th1-Cell-type Tfh Cells that Exhibit Impaired B Cell Help Are Preferentially Activated during Acute Malaria in Children. Obeng-Adjei N, **Portugal S**, Tran TM, Yazew TB, Skinner J, Li S, Jain A, Felgner PL, Doumbo OK, Kayentao K, Ongoiba A, Traore B, Crompton PD. *Cell Rep*. 2015 Oct 13;13(2):425-39. PMID: 26440897
19. Genetic Resistance to Malaria Is Associated With Greater Enhancement of Immunoglobulin (Ig)M Than IgG Responses to a Broad Array of Plasmodium falciparum Antigens. Arama C, Skinner J, Doumtabe D, **Portugal S**, Tran TM, Jain A, Traore B, Doumbo OK, Davies DH, Troye-Blomberg M, Dolo A, Felgner PL, Crompton PD. *Open Forum Infect Dis*. 2015 Aug 26;2(3):ofv118. Sep. PMID: 26361633
18. Malaria Vaccines: Moving Forward After Encouraging First Steps. Tran TM, **Portugal S**, Draper SJ, Crompton PD. *Curr Trop Med Rep*. 2015 Mar;2(1):1-3. PMID: 25995985
17. Malaria-associated atypical memory B cells exhibit markedly reduced B cell receptor signaling and effector function. **Portugal S**, Tipton CM, Sohn H, Kone Y, Wang J, Li S, Skinner J, ...Doumbo OK, Doumbo S, Kayentao K, Ongoiba A, Traore B, Sanz I, Pierce SK, Crompton PD. *Elife*. 2015 May 8;4. PMID: 25955968
16. HIV Malaria Co-Infection Is Associated with Atypical Memory B Cell Expansion and a Reduced Antibody Response to a Broad Array of Plasmodium falciparum Antigens in Rwandan Adults. Subramaniam KS, Skinner J, Ivan E, Mutimura E, Kim RS, Feintuch CM, **Portugal S**, Anastos K, Crompton PD, Daily JP. *PLoS One*. 2015 Apr 30;10(4):e0124412. PMID: 25928218
15. Impact of acute malaria on pre-existing antibodies to viral and vaccine antigens in mice and humans. Banga S, Coursen JD, **Portugal S**, Tran TM, Hancox L, Ongoiba A, Traore B, Doumbo OK, Huang CY, Harty JT, Crompton PD. *PLoS One*. 2015 Apr 28;10(4):e0125090. PMID: 25919588
14. Gut microbiota elicits a protective immune response against malaria transmission. Yilmaz B, **Portugal S**, Tran TM, Gozzelino R, Ramos S, Gomes J, Regalado A, Cowan PJ, d'Apice AJ, Chong AS, Doumbo OK, Traore B, Crompton PD, Silveira H, Soares MP. *Cell*. 2014 Dec 4;159(6):1277-89. PMID: 25480293
13. Exposure-dependent control of malaria-induced inflammation in children. **Portugal S**, Moebius J, Skinner J, Doumbo S, Doumtabe D, Kone Y, Dia S, Kanakabandi K, Sturdevant DE, Virtaneva K, Porcella SF, Li S, Doumbo OK, Kayentao K, Ongoiba A, Traore B, Crompton PD. *PLoS Pathog*. 2014 Apr 17;10(4):e1004079. PMID: 24743880
12. Malaria immunity in man and mosquito: insights into unsolved mysteries of a deadly infectious disease. Crompton PD, Moebius J, **Portugal S**, Waisberg M, Hart G, Garver LS, Miller LH, Barillas-Mury C, Pierce SK. *Annu Rev Immunol*. 2014;32:157-87. Review. PMID: 24655294
11. Young lives lost as B cells falter: what we are learning about antibody responses in malaria. **Portugal S**, Pierce SK, Crompton PD. *J Immunol*. 2013 Apr 1;190(7):3039-46. Review. PMID: 23526829
10. B cell analysis of ethnic groups in Mali with differential susceptibility to malaria. **Portugal S**, Doumtabe D, Traore B, Miller LH, Troye-Blomberg M, Doumbo OK, Dolo A, Pierce SK, Crompton PD. *Malar J*. 2012 May 11;11:162. PMID: 22577737
9. Superinfection in malaria: Plasmodium shows its iron will. **Portugal S**, Drakesmith H, Mota MM. *EMBO Rep*. 2011 Dec 1;12(12):1233-42. Review. PMID: 22081142

8. *Host-mediated regulation of superinfection in malaria.* Portugal S, Carret C, Recker M, Armitage AE, Gonçalves LA, Epiphonio S, Sullivan D, Roy C, Newbold CI, Drakesmith H, Mota MM. *Nat Med.* 2011 Jun;17(6):732-7. doi: 10.1038/nm.2368. Epub 2011 May 15. PMID: 21572427

7. *Crystal structure of arginase from Plasmodium falciparum and implications for L-arginine depletion in malarial infection.* Dowling DP, Ilies M, Olszewski KL, Portugal S, Mota MM, Llinás M, Christianson DW. *Biochemistry.* 2010 Jul 6;49(26):5600-8. PMID: 20527960

6. *Host scavenger receptor SR-BI plays a dual role in the establishment of malaria parasite liver infection.* Rodrigues CD, Hannus M, Prudêncio M, Martin C, Gonçalves LA, Portugal S, Epiphonio S, Akinc A, Hadwiger P, Jahn-Hofmann K, Röhl I, van Gemert GJ, Franetich JF, Luty AJ, Sauerwein R, Mazier D, Koteliensky V, Vornlocher HP, Echeverri CJ, Mota MM. *Cell Host Microbe.* 2008 Sep 11;4(3):271-82. PMID: 18779053

5. *Genistein-supplemented diet decreases malaria liver infection in mice and constitutes a potential prophylactic strategy.* Cunha-Rodrigues M, Portugal S, Prudêncio M, Gonçalves LA, Casalou C, Buger D, Sauerwein R, Haas W, Mota MM. *PLoS One.* 2008 Jul 16;3(7):e2732. PMID: 18628947

4. *Heme oxygenase-1 is an anti-inflammatory host factor that promotes murine plasmodium liver infection.* Epiphonio S, Mikolajczak SA, Gonçalves LA, Pamplona A, Portugal S, Albuquerque S, Goldberg M, Rebelo S, ..., Kappe SH, Soares MP, Mota MM. *Cell Host Microbe.* 2008 May 15;3(5):331-8. PMID: 18474360

3. *Heme oxygenase-1 and carbon monoxide suppress the pathogenesis of experimental cerebral malaria.* Pamplona A, Ferreira A, Balla J, Jeney V, Balla G, Epiphonio S, Chora A, Rodrigues CD, Gregoire IP, Cunha-Rodrigues M, Portugal S, Soares MP, Mota MM. *Nat Med.* 2007 Jun;13(6):703-10. Epub 2007 May 13. PMID: 17496899

2. *Bone marrow chimeric mice reveal a dual role for CD36 in Plasmodium berghei ANKA infection.* Cunha-Rodrigues M, Portugal S, Febbraio M, Mota MM. *Malar J.* 2007 Mar 16;6:32. PMID: 17367535

1. *Infection by and protective immune responses against Plasmodium berghei ANKA are not affected in macrophage scavenger receptors A deficient mice.* Cunha-Rodrigues M, Portugal S, Febbraio M, Mota MM. *BMC Microbiol.* 2006 Aug 16;6:73. PMID: 16914051

TEACHING ACTIVITIES

2022-present Faculty and module head of the Biology of Parasitism: Modern Approaches course at the Marine Biological Laboratory, Woods Hole, MA

2021-present International Max Planck Research School for Infectious Diseases and Immunity (IMPRS-IDI) faculty member. MPIIB, Berlin Germany

2016-2020 Harmut Hoffmann-Berling International Graduate School of Molecular and Cellular Biology (HBIGS) faculty member. Heidelberg University, Germany

2015 Invited faculty on the 'Immunity of Host-Pathogen Interaction' module of the PhD program Science for development implemented by the Gulbenkian Institute of Science. June 8 – 12th 2015, Cidade da Praia, Cape Verde

2012 Teacher Assistant to the Flow Cytometry course during the workshop 'Learning and Teaching Parasite Cell Biology: A Route to Successful Biomedical Research in Africa'. Jan 15 – 29th 2012, Bamako, Mali

2008-2009 Parasitology practical lessons for the Faculty of Medicine University of Lisbon Microbiology degree program (school years 2007/08 and 2008/09). Under supervision of Professor Maria M. Mota, Lisbon, Portugal

GRANT REVIEWING (Ad hoc reviewer)

EMBO Short term and New venture fellowships, Leibniz Competition for Junior Research Group, French National Research Agency, and MRC UK

EDITORIAL POSITIONS (Ad hoc reviewer)

Autophagy, BMC Ecology and Evolution, BMC medicine, Cell reports Medicine, eLife, EMBO Molecular Medicine, FEMS Microbiology Reviews, Frontiers in Immunology, Infection and Immunity, International Journal for Parasitology, Journal of Infectious Diseases, Malaria Journal, Nature Communications, Parasite Immunology, PLoS Neglected Diseases, PLoS Pathogens, PLoS One, PNAS, Review Commons, The Journal of Immunology, Trends in Parasitology, Tropical Medicine & International Health, Vaccine, and Wellcome Open Research.