

Silvie Huijben, PhD

Assistant Professor

Phone +1 480 965-1395

Website <http://www.huijbenlab.net>

Email silvie.huijben@asu.edu

Twitter [@silviehuijben](https://twitter.com/silviehuijben)

I am an **evolutionary biologist** with a keen interest in the arms-race between us humans and the organisms we aim to control, in particular **resistance evolution** of malaria parasites and malaria-transmitting mosquitoes. My lab studies the evolutionary ecology of the organism with the key question: how can we use evolutionary theory to better design **resistance management strategies**?

Education

Oct 2006 – Jan 2010	PhD Cell, Animal and Population Biology, Edinburgh University, UK
June 2003 – Aug 2006	MSc Biology, Wageningen University, Netherlands
Sept 2000 – Nov 2004	BSc Biology, Wageningen University, Netherlands

Professional experience

Mar 2018 – current	Assistant professor , Center for Evolution and Medicine, Arizona State University, USA
June 2017 – Feb 2018	Assistant research professor , Barcelona Institute for Global Health (ISGlobal), Barcelona, Spain
Nov 2013 – May 2017	Post-doctoral fellow , Barcelona Institute for Global Health (ISGlobal), Barcelona, Spain
Jan 2010 – Oct 2013	Post-doctoral scholar , Center for Infectious Disease Dynamics, Pennsylvania State University, USA
Oct 2006 – Dec 2009	PhD candidate , Institutes of Evolution, Immunology and Infection Research, Edinburgh University, UK. Supervisors: Prof. Andrew Read, Dr. Alex Rowe. “ <i>Experimental studies on the ecology and evolution of drug-resistant malaria parasites</i> ”
Aug 2006 – Sept 2006	Research assistant , Wageningen University. Study on Blue Tongue Virus outbreak in The Netherlands.
Nov 2005 – June 2006	MSc thesis at Kenya Medical Research Institute (Kisumu, Kenya). Supervisors: Dr. Andrew Githeko, Dr. Willem Takken. “ <i>Inter-specific competition between Anopheles gambiae and An. arabiensis larvae in a semi-field situation in Western Kenya</i> ”
Oct 2004 – March 2005	MSc thesis at the Institutes of Evolution, Immunology and Infection Research, Edinburgh University. Supervisors: Prof. Andrew Read, Dr. Jaap de Roode. “ <i>The role of drug treatment, in response to clinical signs, on within-host competition and relative transmission of malaria parasites.</i> ”
June 2004	Research assistant , University of Oxford. Vegetation study on grazed and nongrazed meadows.
June 2003 – Jan 2004	MSc thesis , Laboratory of Entomology, Wageningen University. Supervisors: Dr. Willem Takken (WUR), Drs. Harald Schmidt. “ <i>Avian malaria in Rotterdam Zoo; a study on the natural history of avian malaria in the Netherlands.</i> ”

Conferences, workshops and seminars (Past 5 years):

Aug 2019 Princeton “Dialogues in Complexity workshop” (**Invited participant**)

- July 2019 University of Groningen, The Netherlands “Outsmarting insecticide- and drug-resistance evolution” **(invited seminar)**
- July 2019 Syngenta, UK “Outsmarting insecticide- and drug-resistance evolution” **(invited seminar)**
- Jan 2019 ASU-Princeton “Dialogues in Complexity Conference” **(Invited participant)**
- Oct 2018 Department of Infectious Diseases, University of Georgia “Outsmarting insecticide- and drug-resistance evolution” **(invited seminar)**
- Sept 2018 School of Life Sciences, Arizona State University “Outsmarting insecticide- and drug-resistance evolution” **(invited seminar)**
- Aug 2018 Annual meeting of the International Society of Evolution, Medicine and Public Health **(Oral presentation)**
- May 2018 Workshop “Insecticide resistance in *Aedes* and *Anopheles* species”, Ministry of Health, Guyana **(Organizer, teacher)**
- Nov 2017 Yearly Society in Science Symposium, Zurich, Switzerland **(Oral presentation)**
- Nov 2017 CNRS - Jacques Monod Conference, Roscoff, France “Antimalarial drug-resistance; what do HIV and immunity have to do with it?” **(Oral presentation)**.
- Jan 2017 Center for Evolution and Medicine, Arizona State University, USA “Putting evolution back into the drug-resistance toolbox” **(Invited seminar)**.
- Nov 2016 Yearly Society in Science Symposium, Zurich, Switzerland **(Oral presentation)**
- Nov 2016 ISGlobal, Spain “Making the most out of our toolbox – IPTp in the context of antimalarial resistance and HIV co-infections” **(Seminar)**
- Jan 2016 Workshop “Running to stand still: Evolution and management of drug resistance in healthcare and agriculture”. Barcelona, Spain **(co-organizer, chair)**
- Dec 2015 TPH Winter Symposium “Drug Resistance: From Mechanism to Management”, Basel, Switzerland **(Participant)**
- Nov 2015 Yearly Society in Science Symposium, Zurich, Switzerland **(Oral presentation)**
- July 2015 Latsis Symposium: “Drug Resistance and the Future of Disease Control”, Zurich, Switzerland **(Participant)**
- July 2015 Gordon Research Seminar: “Translating malaria research to the field”, Girona, Spain **(Oral presentation and discussion leader)**
- July 2015 Gordon Research Conference: “Translating malaria research to the field”, Girona, Spain **(Participant)**
- Nov 2014 Yearly Society in Science Symposium, Zurich, Switzerland
- Oct 2014 Montpellier, France “The ecology and evolution of resistant malaria parasites; Is our current drug regime really the best one?” **(Invited seminar)**
- Sept 2014 Conference “Infectious diseases as drivers of evolution: the challenge ahead” Roscoff, France **(Poster presentation)**
- May 2014 RAPIDD workshop on co-infection and the evolution of resistance, Princeton University **(invited participant, oral presentation)**

Academic service

Editorial board member

PLOS ONE (since July 2018)

Peer reviewer academic journals:

American Naturalist; Biology Letters; Evolution, Medicine and Public Health; Evolutionary applications; Future Microbiology; Genetics; International Health; International Journal of Parasitology; Journal of Theoretical Biology; Lancet; Malaria Journal; Nature Scientific Reports; Philosophical Transactions B; PLoS ONE; PNAS; Royal Society B: Biological Sciences.

Peer reviewer grants:

Swiss National Science Foundation

Awards and funding

- 2015 BBSRC International Workshop (£11,190 for organization of workshop, co-organizer)
2013 Marie Curie International Incoming Fellowship (2 year fellowship)
2013 Society in Science – Branco Weiss Fellowship (5 years – 500,000 CHF)
2006 Post-graduate research scholarship from the Darwin Trust of Edinburgh (3 year scholarship)

Publications

29. Smith-Aguasca R, Gupta H, Ubereguia E, Maquina M, Saute F, Paaijmans KP, Mayor A, **Huijben S** (*in press*). “Mosquitoes as a feasible sentinel group for antimalarial resistance surveillance by Next Generation Sequencing of *Plasmodium falciparum*” *Malaria Journal*
28. **Huijben S**, Macete E, Mombo-Ngoma G, Ramharter M, Kariuki S, Desai M, Shi Y, Mwangoka G, Massougbodji A, Cot M, Tuikue Ndam N, Uberegui E, Gupta H, Cisteró P, Aponte JJ, González R, Menéndez C, Mayor A (*in press*). Counter-selection of antimalarial resistance polymorphisms by Intermittent Preventive Treatment of pregnant women. *Journal of Infectious Diseases*
27. de-Dios T, van Dorp L, Gelabert P, Carøe C, Sandoval-Velasco M, Fregel R, Escosa R, Aranda C, **Huijben S**, Balloux F, Gilbert MTP, Lalueza-Fox C (2019). Genetic affinities of an eradicated European *Plasmodium falciparum* strain. *Microb Genomics* DOI 10.1099/mgen.0.000289
26. Paaijmans K, Brustollin M, Aranda C, Eritja R, Talavera S, Pagès N, **Huijben S**. (2019). Phenotypic insecticide resistance in arbovirus mosquito vectors in Catalonia and its capital Barcelona (Spain). *PLoS One* 14(7):e0217860.
25. Riveron JM, **Huijben S**, Tchappa W, Tchouakui M, Wondji MM, Tchoupo M, Irving H, Cuamba N, Maquina M, Paaijmans K, Wondji CS. (2019). Escalation of pyrethroid resistance in the malaria vector *Anopheles funestus* induces a loss of efficacy of PBO-based insecticide-treated nets in Mozambique. *Journal of Infectious Diseases* 220(3): 467-475
24. **Huijben, S.**, Chan, B.H.K., Nelson, W.A. & Read, A.F. (2018). The impact of within-host ecology on the fitness of a drug-resistant parasite. *Evolution, Medicine, and Public Health* 2018(1): 127–137.
23. **Huijben, S.** and Paaijmans, K.P. (2018) Putting evolution in elimination: winning our ongoing battle with evolving malaria mosquitoes and parasites. *Evolutionary Applications* 11(4): 415-430
22. Glunt KD, Coetzee M, **Huijben S**, Koffi AA, Lynch PA, N'Guessan R, Oumbouke WA, Sternberg ED, Thomas MB. (2018). Empirical and theoretical investigation into the potential impacts of insecticide resistance on the effectiveness of insecticide-treated bed nets. *Evolutionary Applications* 11(4):431-441
21. The malERA Consultative Group on Resistance (2017) malERA Refresh: An Updated Research Agenda for Malaria Eradication: Resistance. *PLoS Medicine* 14(11): e1002450
20. **Huijben, S.**, Chan, B.H.K., & Read, A.F. (2015). The relevance of undetectably rare resistant malaria parasites in treatment failure: experimental evidence from *Plasmodium chabaudi*. *American Journal of Hygiene and Tropical Medicine* 92: 1214-1221.
19. Birger S., Kouyos R.D., Cohen T., Griffiths E., **Huijben S.**, Mina M., Volkova V., Grenfell B., and Metcalf C.J.E. (2015). The potential impact of coinfection on antimicrobial chemotherapy and drug resistance. *Trends in Microbiology* 23: 537–544.
18. Glunt K.D., Abílio A.P., Bassat Q., Buló H., Gilbert A.E., **Huijben S.**, Manaca M.N., Macete E., Alonso P. & Paaijmans K.P. (2015). Long-lasting insecticidal nets no longer effectively kill the highly resistant *Anopheles funestus* of southern Mozambique. *Malaria Journal* 14: 298.
17. Day, T., **Huijben, S.**, & Read, A.F. (2015). Is selection relevant in the evolutionary emergence of drug resistance? *Trends in Microbiology* 23: 126-133.

16. Kouyos, R.D., Metcalf, C.J.E., Birger, R., Klein, E.Y., zur Wiesch, P.A., Ankomah, P., Arinaminpathy, N., Bogich, T.L., Bonhoeffer, S., Brower, C., Chi-Johnston, G., Cohen, E., Day, T., Greenhouse, B., **Huijben, S.**, Metlay, J., Mideo, N., Pollitt, L.C., Read, A.F., Smith, D.L., Standley, C., Wale, N., & Grenfell, B. (2014). The path of least resistance: aggressive or moderate treatment. *Proceedings of the Royal Society of London Series B*. 281: 20140566.
15. Pollitt, L.C., **Huijben, S.**, Sim, D.G., Salathe, R.M., Jones, M.J. & Read, A.F. (2014). Rapid response to selection, competitive release and increased transmission potential of artesunate-selected *Plasmodium chabaudi* malaria parasites. *PLoS Pathogens* 10: e1004019.
14. Vanaerschot, M., **Huijben, S.**, Van den Broeck, F., Dujardin, J-C. (2014). Drug resistance in vector-borne parasites: multiple actors and scenarios for an evolutionary arms race. *FEMS Microbiology Reviews* 38 (1): 41-55.
13. **Huijben, S.**, Bell, A. S., Sim, D.G., Salathe, R., Tomasello, D., Mideo, N., Day, T., & Read, A.F. (2013). Aggressive chemotherapy and the selection of drug resistant pathogens. *PLoS Pathogens* 9: e1003578.
12. Bell, A.S, **Huijben, S.**, Paaijmans, K.P., Sim, D., Chan, B.H.K., Nelson, W.A., & Read A.F. (2012). Enhanced transmission of drug-resistance parasites to mosquitoes following drug treatment in rodent malaria. *PLoS One* 7: e37172.
11. **Huijben, S.**, Sim, D., Nelson, W.A., & Read, A.F. (2011), The fitness of drug resistant malaria parasites in a rodent model: multiplicity of infection. *Journal of Evolutionary Biology* 24: 2410-2422
10. Metcalf C.J.E., Graham A. L., **Huijben S.**, Barclay V.C., Long G.H., Grenfell B.T., Read A.F., Bjørnstad O.N.. 2011. Quantifying the regulation of within host malaria using the effective propagation number. *Science* 333: 984-988
9. Read, A.F., Day, T., & **Huijben, S.** 2011. The evolution of drug resistance and the curious orthodoxy of aggressive chemotherapy. *PNAS* 108: 10871
8. **Huijben, S.**, Nelson, W.A., Wargo, A.R., Sim, D.G., Drew, D.R., & Read, A.F. (2010). Chemotherapy, within-host ecology and the fitness of drug resistant malaria parasites. *Evolution* 64: 2952-2968
7. Read, A.F. & **Huijben, S.** (2009). Evolutionary biology and the avoidance of antimicrobial resistance. *Evolutionary Applications* 2: 40-51.
6. Paaijmans, KP., **Huijben, S.**, Githeko, AK. & Takken W. (2009). Competitive interactions between larvae of the malaria mosquitoes *Anopheles arabiensis* and *Anopheles gambiae* under semi-field conditions in western Kenya. *Acta Tropica* 109: 124-130.
5. **Huijben, S.**, Schaftenaar, W., Wijsman, A., Paaijmans, K. & Takken, W. (2007). Avian malaria in Europe: an emerging infectious disease? In: *Emerging pests and vector-borne diseases in Europe*. Takken W. & Knols B.G.J, editors. Wageningen Academic Publishers, Wageningen.
4. Takken, W., van Rooij, E.M.A., Verhulst, N.O., Jacobs, F., **Huijben, S.**, Beeuwkes, J., Groot, N., Vos, J Spitzzen, V.C.A., Heutink, R.C.G. & van Rijn, P.A. (2007). Bluetongue: an emerging vector-borne disease outbreak in North-western Europe. In: *Emerging pests and vector-borne diseases in Europe*. Takken, W. & Knols, B.G.J, editors. Wageningen Academic Publishers, Wageningen.
3. Wargo, A. R., **Huijben, S.**, de Roode, J.C., Shepard, J., & Read, A.F. (2007). Competitive release and facilitation of drug resistant parasites following therapeutic chemotherapy in a rodent malaria model. *PNAS* 104: 19914-19919.
2. Wargo A. R., De Roode J. C., **Huijben S.**, Drew D. R., Read A. F. (2007). Transmission stage investment of malaria parasites in response to in-host competition. *Proceedings of the Royal Society of London Series B* 274: 2759-2768.
1. De Roode J, Pansini S, Cheesman J, Helinski M, **Huijben S**, Wargo A, Bell A, Chan B, Walliker D, Read A, (2005). Virulence and competitive ability in genetically diverse malaria infections. *PNAS* 112: 7624-7628.