

Work history

Senior Lecturer in Ecology and Conservation at Oxford Brookes University, United Kingdom

09/2020 – PRESENT

Kingdom

- Research on inherited symbionts of arthropods
- Undergraduate and postgraduate level teaching

Lecturer in Ecology and Conservation at Oxford Brookes University, United Kingdom

01/2019 – 08/2020

- Research on inherited symbionts of arthropods
- Undergraduate and postgraduate level teaching

Postdoctoral researcher at the University of Liverpool, United Kingdom

10/2015 – 12/2018

- Project: “Experimental Evolution of *Spiroplasma* symbionts in *Drosophila*”
- Visiting researcher with Prof. Dr. Kayla King at the University of Oxford 10/2018 – 12/2018

Teaching assistant at Universität Leipzig, Germany

04/2015 – 09/2015

- Organizer and demonstrator for undergraduate course “Zoological Systematics”

Education

Dr. rer. nat. Universität Leipzig, Germany

07/2011 – 05/2015

- Thesis: “*Wolbachia* evolution and distribution patterns: Insights from bee hosts”
- Reviewers: Prof. Dr. Peter Hammerstein and Prof. Dr. Martin Schlegel

M. Sc. Biology, Universität Leipzig, Germany

10/2008 – 09/2010

- Thesis: “Investigations on the *Nomada alboguttata* species complex and *Wolbachia* infections in bees and sphecid wasps”
- Reviewers: Prof. Dr. Christoph Bleidorn and Prof. Dr. Martin Schlegel

B. Sc. Biology, Universität Leipzig, Germany

10/2005 – 09/2008

- Thesis: “Räuber- Beute- Beziehungen im Boden: Beutewahrnehmung und Konsumptionsverhalten carnivorer Tardigraden”
- Reviewers: Prof. Dr. Willi Xyländer and Prof. Dr. Martin Schlegel

Abitur (A levels), Gymnasium “An der Rüsternbreite” Köthen (Anhalt), Germany

07/2004

Competitive funding and grants

2020	Royal Society Research Grant “Pathogens as drivers for evolutionary success of inherited symbionts”	£ 19,827.59
2018	Harry Smith Vacation Studentship of the Microbiology Society for project student and consumables	£ 1,846.00
2017	Johnston Post-Doctoral Fund of the IIB Liverpool , project “ <i>Wolbachia</i> -Virus interactions in solitary bees”	£ 3,886.00
2016	Technology Directorate Voucher Scheme sequencing grant of the University of Liverpool	£ 1,955.00
2016	Marie Skłodowska-Curie IF of the European Commission , H2020-MSCA-IF-2015, 703379 “Symbcompat”	€ 183,454.80
2015	Long Term Fellowship of the EMBO , ALTF 48-2015, LTFCONFUND2013, GA-2013-609409	£ 29,483.72
2013	Travel grant of the Gesellschaft für Biologische Systematik , to attend their annual conference	€ 250.00
2012	Stipend of the Research Academy Leipzig , to attend course “Programming for evolutionary biology”	€ 800.00
2012	Travel grant of the Gesellschaft für Biologische Systematik , to attend their annual conference	€ 100.00
2011	Doktorandenförderplatz Universität Leipzig (Stipend for doctoral studies)	€ 41,976.00

Awards & qualifications

2020	Associate Fellowship of The Higher Education Academy	REF: PR182279
2018	EMBO Laboratory Leadership Course for Postdocs , by hfp consulting	Heidelberg, DE
2018	Best student or postdoc talk, 3rd prize <i>Wolbachia</i> Conference	Salem, MA, USA
2016	Microbial Genomics “Most Promising Science Award” for poster at Genome Science Conference	Liverpool, UK
2013	Best student talk, 2nd prize Gesellschaft für Biologische Systematik annual meeting	Bonn, DE

Teaching experience

Supervision of graduate projects

2011 – PRESENT

- Co-supervised seven Bachelor and six Master project students at the Universities Leipzig, Liverpool, and Oxford Brookes

Graduate level teaching

2014 – PRESENT

- Module leader for “Biodiversity and Ecosystem Services” and “Career Development and Research Skills” in MSc Conservation Ecology at Oxford Brookes University
- Co-teacher for multiple modules in MSc Conservation Ecology and BSc Biological Sciences at Oxford Brookes University
- Co-designed and supervised course “Evolutionary Ecology” in MSc Biology at Universität Leipzig

Undergraduate level teaching

2011 – PRESENT

- Co-teacher for multiple modules in BSc Animal Biology and Conservation at Oxford Brookes University
- Organized and supervised course “Zoological systematics” in BSc Biology at Universität Leipzig
- Served as student demonstrator in the courses “Zoological systematics” and “Animal Physiology” in BSc Biology at Universität Leipzig

Skills

Programming & scripting	Bash, AWK, Perl, R/Shiny, \LaTeX
Computational methodology	Phylogenetics, phylogenomics, microbial genomics, molecular evolution and ecology
Molecular laboratory	PCR/qPCR, DNA/RNA extractions, library preparation for Illumina & MinION sequencing platforms
Animal husbandry	<i>Drosophila</i> sp. handling, microinjections, life history assays
Taxonomic expertise	Fauna of Germany/Northwest Europe: insects with focus on bees (Anthophila) and hoverflies (Syrphidae)

Publications

PEER-REVIEWED

- [25] Ekroth AKE, **Gerth M**, Stevens EJ, Ford SA, King KC (2021) Host genotype and genetic diversity shape the evolution of a novel bacterial infection. doi: 10.1038/s41396-021-00911-3
- [24] **Gerth M**, Martinez-Montoya H, Ramirez P, Masson F, Griffin JS, Aramayo R, Siozios S, Lemaitre B, Mateos M, Hurst GDD (2021) Rapid molecular evolution of *Spiroplasma* symbionts of *Drosophila*. *Microbial Genomics* 7:000503.
- [23] Sontowski R, **Gerth M**, Richter S, Gruppe A, Schlegel M, van Dam N, Bleidorn C (2020) Infection patterns and fitness effects of *Rickettsia* and *Sodalis* symbionts in the green lacewing *Chrysoperla carnea*. *Insects* 11:867.
- [22] Glowska E, Filutowska ZK, Dabert M, **Gerth M** (2020) Microbial composition of enigmatic bird parasites: *Wolbachia* and *Spiroplasma* are the most important bacterial associates of quill mites (Acari: Syringophilidae). *Microbiology Open* 9:e964.
- [21] Dencker T, Leimeister C, **Gerth M**, Bleidorn C, Snir S, Morgenstern B (2020) ‘Multi-SpaM’: a maximum-likelihood approach to phylogeny reconstruction using multiple spaced-word matches and quartet trees. *NAR Genomics and Bioinformatics* 2:lqz013
- [20] Chrostek E, **Gerth M** (2018) Is *Anopheles gambiae* a natural host of *Wolbachia*? *mBio* 10: e00784-19.
- [19] Leimeister C, Schellhorn J, Dörrer S, **Gerth M**, Bleidorn C, Morgenstern C (2018) *Prot-SpaM*: Fast alignment-free phylogeny reconstruction based on whole-proteome sequences. *GigaScience* giy148.
- [18] Bleidorn C, **Gerth M** (2018) A critical re-evaluation of multilocus sequence typing (MLST) efforts in *Wolbachia*. *FEMS Microbiology Ecology* 94: fix163.
- [17] **Gerth M**, Wolf R, Bleidorn C, Richter J, Sontowski R, Unrein J, Schlegel M, Gruppe A (2017) Green lacewings (Neuroptera: Chrysopidae) are commonly associated with a diversity of rickettsial endosymbionts. *Zoological Letters* 3: 12.
- [16] **Gerth M**, Hurst GDD (2017) Short reads from honey bee (*Apis* sp.) sequencing projects reflect microbial associate diversity. *PeerJ* 5: e3529.
- [15] Menger J, **Gerth M**, Unrein J, Henle K, Schlegel M (2017) Isolation and characterization of Polymorphic microsatellite loci from the Rufous-throated Antbird *Gymnophrys rufigula* (Aves: Thamnophilidae) *The Wilson Journal of Ornithology* 129: 407–411.
- [14] **Gerth M**, Bleidorn C (2016) Comparative genomics provides a timeframe for *Wolbachia* evolution and exposes a recent biotin synthesis operon transfer. *Nature Microbiology* 2: 16241.
- [13] **Gerth M** (2016) Classification of *Wolbachia* (Alphaproteobacteria, Rickettsiales): No evidence for a distinct supergroup in cave spiders. *Infection, Genetics and Evolution* 43: 378–380.
- [12] Suh A, Witt CC, Menger J, Sadanandan KR, Podsiadlowski L, **Gerth M**, Weigert A, McGuire JA, Mudge J, Edwards SV, Rheindt FE (2016) Ancient horizontal transfers of retrotransposons between birds and ancestors of human pathogenic nematodes. *Nature Communications* 7: 11396.
- [11] Aguado MT, Grande C, **Gerth M**, Bleidorn C, Norena C (2016) Characterization of the complete mitochondrial genomes from Polycladida (Platyhelminthes) using next-generation sequencing. *Gene* 575: 199–205.
- [10] Weigert A, Golombek A, **Gerth M**, Schwarz F, Struck TH, Bleidorn C (2016) Evolution of mitochondrial gene order in Annelida. *Molecular Phylogenetics and Evolution* 94: 196–206.
- [9] Sontowski R, Bernhard D, Bleidorn C, Schlegel M, **Gerth M** (2015) *Wolbachia* distribution in selected beetle taxa characterized by PCR screens and MLST data. *Ecology and Evolution* 5: 4345–4353.
- [8] Kahnt B, **Gerth M**, Paxton RJ, Bleidorn C, Husemann M (2015) The complete mitochondrial genome of the endemic and highly specialised South African bee species, *Rediviva intermixta* (Hymenoptera: Melittidae), with a comparison to other bee mitogenomes. *Biological Journal of the Linnean Society* 116: 940–953.
- [7] **Gerth M**, Saeed A, White JA, Bleidorn C (2015) Extensive screen for bacterial endosymbionts reveals taxon-specific distribution patterns among bees (Hymenoptera, Anthophila). *FEMS Microbiology Ecology* 91: fiv047.
- [6] Glowska E, Dragun-Damian A, Dabert M, **Gerth M** (2015) New *Wolbachia* supergroups detected in quill mites (Acari: Syringophilidae). *Infection, Genetics and Evolution* 30: 140–146.
- [5] **Gerth M**, Gansauge M-T, Weigert A, Bleidorn C (2014) Phylogenomic analyses uncover origin and spread of the *Wolbachia* pandemic. *Nature Communications* 5: 5117.

- [4] Kahnt B, Soro A, Kuhlmann M, **Gerth M**, Paxton RJ (2014) Insights into the biodiversity of the Succulent Karoo hotspot of South Africa: the population genetics of a rare and endemic halictid bee, *Patellapis doeritica*. *Conservation Genetics* 15: 1491–1502.
- [3] **Gerth M**, R the J, Bleidorn C (2013) Tracing horizontal *Wolbachia* movements among bees (Anthophila): a combined approach using MLST data and host phylogeny. *Molecular Ecology* 22: 6149–6162.
- [2] **Gerth M**, Bleidorn C (2013) A multilocus sequence typing (MLST) approach to diminish the problems that are associated with DNA barcoding: A reply to Stahlhut et al. (2012). *Systematics and Biodiversity* 11: 15–17.
- [1] **Gerth M**, Geissler A, Bleidorn C (2011) *Wolbachia* infections in bees (Anthophila) and possible implications for DNA barcoding. *Systematics and Biodiversity* 9: 319–327.

PREPRINTS

- [3] Arif S, **Gerth M**, Hone-Millard WG, Nunes MDS, Dapporto L, Shreeve TG (2021) The dirty north: Evidence for multiple colonisations and *Wolbachia* infections shaping the genetic structure of the widespread butterfly *Polyommatus icarus* in the British Isles *bioRxiv:2020.09.03.267203*.
- [2] Griffin, JS, **Gerth M**, Hurst GDD (2021) Rapid divergence in independent aspects of the compatibility phenotype in the *Spiroplasma/Drosophila* interaction. *bioRxiv:2021.02.03.429608*.
- [1] **Gerth M** (2019) Model selection alters phylogenetic inference. *bioRxiv:849018*.

OTHERS

- [8] Siozios S, **Gerth M**, Griffin J, Hurst GDD (2018) Symbiosis: *Wolbachia* host shifts in the fast lane. *Current Biology* 28: R269–R271.
- [7] Bleidorn C, **Gerth M**, Hopfe C, May M, Mayer R, M ller M, Rudolph A, Schaffer S, Wolf R, Bernhard D (2016) Die Stechimmenfauna (Hymenoptera, Aculeata) der Halde Trages bei Leipzig. *Ampulex* 8: 6–15.
- [6] Weniger R, Bernhard D, **Gerth M** (2015) Schwebfliegenfunde (Diptera, Syrphidae) vom Bienitz bei Leipzig mit dem Erstnachweis von *Melangyna pavlovskyi* (Violovitsh, 1956) aus Deutschland. *Entomologische Nachrichten und Berichte* 59: 185–192.
- [5] **Gerth M**, Unrein J, Bleidorn C (2015) Zur Verbreitung von *Rickettsia* in Neuropteren. *DGaaE Nachrichten* 29: 90–92.
- [4] **Gerth M**, Mayer R, Hering L, Wolf R, Schaffer S, Bleidorn C (2012) Zur Stechimmenfauna (Hymenoptera, Aculeata) des Bienitz in Leipzig. *Ampulex* 5: 5–14.
- [3] **Gerth M**, Franke FA, Stolle E, Bleidorn C (2010) Ein neuer Nachweis der Goldwespe *Chrysis leachii* Shuckard (Hymenoptera, Chrysididae) in Th ringen mit Anmerkungen zu potentiellen Wirten. *Ampulex* 2: 61–64.
- [2] Sann M., **Gerth M**, Venne C, Tiedemann R, Bleidorn C (2010) Molekulare und morphologische Untersuchungen zum Status des *Nomada alboguttata* (Apiformes) Artkomplexes. *Ampulex* 2: 65–72.
- [1] Helm C, Sametschek T, **Gerth M** (2010) Nachweis des Edelkrebse *Astacus astacus* (Linnaeus, 1758) (Crustacea: Decapoda, Astacidae) in der Dahleener Heide (Sachsen). *Jahresschrift f r Feldherpetologie und Ichthyofaunistik in Sachsen* 12: 89–91.

Scientific community service

EDITING

- Co-editor of Special Issue “Insect Symbionts: Evolution and Application” in *Insects*.

REVIEWING

- 55 peer review reports for 31 journals in total, including *Current Biology*, *Nature Communications*, *BMC Biology*, *The ISME Journal*, and *Molecular Ecology*
- Reviewer for French ANR (Agence nationale de la recherche)

CONFERENCE ORGANIZATION

- Co-organizer of the RES special interest groups meeting “Endosymbiont, Infection, Immunity” (Liverpool, UK, 2017)
- Co-organizer of the DZG graduate group meeting “Beyond tree reconstruction – applications for phylogenetic trees” (Leipzig, DE, 2012)

SOCIETY MEMBERSHIPS

- Microbiology Society (since 2016)
- German Society for Biological Systematics (Since 2012)
- German Zoological Society (since 2010)

Conference abstracts

POSTERS

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| 2017 | DGaaE conference “Experimental evolution of <i>Spiroplasma</i> symbionts in <i>Drosophila</i> ” | Freising, DE |
| 2016 | Genome Science “Comparative genomics of bee-associated <i>Wolbachia</i> ” | Liverpool, UK |
| 2013 | DZG conference “The diversity of bacterial endosymbionts within bees (Anthophila)” | Munich, DE |
| 2012 | DZG conference “Patterns of <i>Wolbachia</i> infections in bees (Anthophila)” | Konstanz, DE |
| 2011 | DGaaE conference “ <i>Wolbachia</i> infections in bees: implications for the use of mitochondrial markers in molecular taxonomy” | Berlin, DE |

TALKS

2018	Wolbachia conference “Molecular strain characterization in <i>Wolbachia</i> phylogeny and evolutionary ecology”	Salem, MA, USA
2017	Symbiosis in the microbial world: from ecology to genome evolution (workshop of The Company of Biologists) “Experimental evolution of <i>Spiroplasma</i> symbionts in <i>Drosophila</i> ”	Wiston House, UK
2017	DZG conference “Experimental evolution of <i>Spiroplasma</i> symbionts in <i>Drosophila</i> ”	Bielefeld, DE
2017	Genomic Systematics Symposium “Short reads from honey bee (<i>Apis</i> sp.) sequencing projects reveal microbial associate diversity”	Bielefeld, DE
2017	DGaaE conference “On the role and distribution of bacterial symbionts in lacewings (Neuroptera) and allies”	Freising, DE
2016	Microbiology Society conference “Genomic analyses of bee-associated <i>Wolbachia</i> reveal a recent biotin operon transfer and enable the timing of <i>Wolbachia</i> diversification”	Liverpool, UK
2016	Insect Symbiont SIG of the RES “Genomic analyses of bee-associated <i>Wolbachia</i> reveal a recent biotin operon transfer and enable the timing of <i>Wolbachia</i> diversification”	Oxford, UK
2014	Wolbachia conference “Phylogenomic analyses of <i>Wolbachia</i> supergroup relationships”	Innsbruck, AT
2014	GfBS conference “Phylogenomic analyses of <i>Wolbachia</i> supergroup relationships”	Dresden, DE
2012	Hymenopterist’s meeting “Ecological prerequisites for <i>Wolbachia</i> infections in bees (Anthophila)”	Stuttgart, DE
2012	Wolbachia conference “Horizontal <i>Wolbachia</i> transfer among bees (Anthophila) and their kleptoparasites assessed with MLST data”	Oleron, FR
2012	Zoological systematics graduate meeting of the DZG “Exploring horizontal transmission of <i>Wolbachia</i> among bees (Anthophila) and their kleptoparasites”	Leipzig, DE
2012	Gfbs conference “Assessing brood parasitism as a potential mechanism for horizontal transmission of <i>Wolbachia</i> endosymbionts in bees”	Bonn, DE
2011	DZG conference “Exploring horizontal <i>Wolbachia</i> transmission among bees (Anthophila) using MLST data”	Saarbrücken, DE
2010	Hymenopterist’s meeting “Untersuchungen zum <i>Nomada alboguttata</i> (Hymenoptera: Apidae) Artkomplex: <i>Wolbachia</i> Infektionen und Implikationen für DNA-Barcoding bei Bienen”	Stuttgart, DE
2010	DZG conference “ <i>Wolbachia</i> infection in <i>Nomada alboguttata</i> (Hymenoptera, Apidae) reveals problems with barcoding approaches in bees”	Hamburg, DE