

JESSICA DITTMER

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PERSONAL INFORMATION

Name: Jessica Dittmer
Date of birth: 16/10/1984
Nationality: German

CURRENT POSITION & EDUCATION

Current position **Postdoctoral Fellow**

Rowland Institute at Harvard, Harvard University (USA)

2014 **Research Assistant**

Laboratory "Ecology & Biology of Interactions", University of Poitiers (France)

2013 **PhD in Evolutionary Biology**

Laboratory "Ecology & Biology of Interactions", University of Poitiers (France)

Host-associated Microbiota in Armadillidium vulgare: Feminizing Wolbachia and other major players

2010 **M.Sc. European Master in Applied Ecology (EMAE)**

University of Poitiers (France), University of Kiel (Germany), University of East Anglia (UK), University of Otago (New Zealand)

2008 **B.Sc. in Biology**

University of Kiel (Germany), including Erasmus semesters at the University of Poitiers (France) and University of Aberdeen (UK)

PUBLICATIONS

- [1] **Dittmer J**, Lesobre J, Moumen B, Bouchon D (2016). Host origin and tissue-microhabitat shaping the microbiota of the terrestrial isopod *Armadillidium vulgare*. *FEMS Microbiology Ecology* (in press, doi: 10.1093/femsec/fiw063) (Impact factor: 3.57)
- [2] Sicard M, **Dittmer J**, Grève P, Bouchon D, Braquart-Varnier C (2014). A host as an ecosystem: *Wolbachia* coping with environmental constraints. *Env Microbiol* 16: 3583-3607 (Impact factor 6.24, Citations: 4)
- [3] **Dittmer J**, Beltran S, Lesobre J, Raimond M, Johnson M, Bouchon D (2014). Host tissues as microhabitats for *Wolbachia* and quantitative insights into the bacterial community in terrestrial isopods. *Mol Ecol* 23: 2619-2635 (Impact factor 5.84, Citations: 3)
- [4] Leclercq S, **Dittmer J**, Bouchon D, Cordaux, R (2014). Phylogenomics of '*Candidatus* Hepatoplasma crinochetorum', a lineage of Mollicutes associated with non-insect arthropods. *Genome Biol Evol* 6: 407-415 (Impact factor 4.53, Citations: 4)
- [5] **Dittmer J**, Lesobre J, Raimond R, Zimmer M, Bouchon D (2012). Influence of Changing Plant Food Sources on the Gut Microbiota of Saltmarsh Detritivores. *Microb Ecol* 64: 814-825 (Impact factor 3.12, Citations: 3)
- [6] **Dittmer J**, Koehler A, Richard F-J, Poulin R, Sicard M (2011). Variation of parasite load and immune parameters in two species of New Zealand shore crabs. *Parasitol Res* 109: 759-767 (Impact factor 2.33, Citations: 4)

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CONFERENCE PRESENTATIONS (all as presenting author)

- **Gordon Research Conference on Ecological & Evolutionary Genomics**, 12-17 July 2015, Biddeford (USA)
"When your host shuts down: Host-microbiota dynamics during larval diapause in *Nasonia* wasps" (Poster)
- **9th International Symposium on Terrestrial Isopod Biology (ISTIB)**, 26-30 June 2014, Poitiers (France)
"The microbiota as a bacterial passport? Metagenomic insights from *Armadillidium vulgare*" (Talk)
- **8th International Wolbachia Conference**, 6-11 June 2014, Innsbruck (Austria)
"Wolbachia shaping symbiotic communities? Insights from the terrestrial isopod microbiome" (Poster)
- **Journée Scientifique autour du Séquençage en Métagénomique** (symposium organized by Roche Diagnostics), 28 March 2014, Paris (France)
"The microbiota as a bacterial passport? Metagenomic insights from terrestrial isopods" (invited talk)
- **2nd Colloque de Génomique Environnementale**, 4-6 November 2013, Rennes (France)
"Bacterial communities influenced by *Wolbachia*? Bacterial community structure and major players in the terrestrial isopod microbiota" (Poster)
- **XIV Congress of the European Society for Evolutionary Biology (ESEB)**, 19-24 August 2013, Lisbon (Portugal)
"Bacterial communities influenced by *Wolbachia*? Bacterial community structure and major players in the terrestrial isopod microbiome" (Poster)
- **7th International Wolbachia Conference**, 7-14 June 2012, Ile d'Oléron (France)
"Bacterial communities influenced by *Wolbachia*? Bacterial density and community structure in terrestrial isopods" (Talk)
- **Réseau Ecologie des Interactions Durables (REID)**, 6-8 February 2012, Rennes (France)
"La diversité des communautés bactériennes symbiotiques des isopodes terrestres – *Wolbachia* vit-elle seule?" (Talk)
- **Réunion annuelle du Groupe d'Etude de Biologie et Génétique des Populations ("Petit Pois Dérivé")**, 29-31 August 2011, Toulouse (France)
"Le microbiome des isopodes terrestres – *Wolbachia* n'est pas seule" (Talk)

INVITED TALKS & SEMINARS

- **Research Seminar** "Insights from the terrestrial isopod microbiome: Bacterial passports, feminizing *Wolbachia* and other major players", Entomology Department, Cornell University (USA), 12 January 2015
- **Invited talk** "The microbiota as a bacterial passport? Metagenomic insights from terrestrial isopods", Journée Scientifique autour du Séquençage en Métagénomique (symposium organized by Roche Diagnostics), Paris (France), 28 March 2014

INTERNATIONAL WORKSHOPS

- **Host-associated Microbiota Workshop**, 11-14 September 2012, Basel (Switzerland)
- **COST Training School in Bioinformatics for Next-Generation-Sequencing methods**, 4-8 April 2011, Uppsala (Sweden)

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AWARDS & GRANTS

- Best student presentation: 9th International Symposium on Terrestrial Isopod Biology 2014
7th International Wolbachia Conference 2012
- Best student poster: 8th International Wolbachia Conference 2014
- Invited speaker: Roche Diagnostics meeting on bacterial metagenomic sequencing. Paris (France), March 2014
- Grant of the COST Action FA0701 to participate in the COST Training School "*Bioinformatics for Next-Generation-Sequencing methods*" held in Uppsala (Sweden), April 2011 (workshop and accommodation, 500€)
- Selected for the first edition of the Erasmus Mundus Masters Programme "European Master in Applied Ecology (EMAE)" from 2008-2010, with courses in France (Poitiers), UK (Norwich) and Germany (Kiel). This masters included a three-month research stay at the University of Otago (New Zealand) in 2010, financed by an EU Erasmus Mundus grant (stipend of 1500 € and a research grant of 3000 €)

MAJOR RESEARCH ACTIVITIES

In the course of my research activities, I have acquired experience with molecular biology techniques such as quantitative PCR, RT-qPCR, classic cloning and Sanger sequencing, genetic fingerprinting via Temperature Gradient Gel Electrophoresis (TGGE), NGS amplicon sequencing (both 454 and Illumina technologies) and cDNA synthesis/RNAseq library prep. Moreover, I am familiar with bioinformatics/software tools such as R, Mothur, QIIME, PiCRUST, Megan and Mega 5.

- ***Influence of parasitic pressure on the immune response in New Zealand shore crabs***
We demonstrated a link between macroparasitic pressure and immune parameters (haemocyte concentration, circulating phenoloxidase activity, bacterial septicaemia) in sympatric crab species across several crab populations experiencing different levels of parasitic pressure. The project involved crab sampling in the field, determination of macroparasites, haemolymph extractions and haemocyte counts, bacterial cultures and the analysis of enzymatic activity using spectrophotometry in the course of a three-month research stay in New Zealand. This work resulted in my Master's thesis defended at the University of Poitiers in June 2010 and a publication as first author in a peer-reviewed journal (Dittmer *et al.* 2011, *Parasitol Res* 109: 759-767).
- ***Gut microbiota of saltmarsh detritivores depending on changing plant food sources***
This project investigated the impact of different food sources as well as cohabitation on composition and diversity of the gut microbiota in two macrodetritivore species (the beach flea *Orchestia gammarellus* and the diplopod *Cylindroiulus latestriatus*). This work was initiated in the context of a larger research project on the consequences of agricultural land-use changes in Northern Europe at the ecosystem level. Technically, it involved DNA extraction, PCR, genetic fingerprinting via Temperature Gradient Gel Electrophoresis (TGGE), cloning and Sanger sequencing. This project resulted in a publication as first author in a peer-reviewed journal (Dittmer *et al.* 2012, *Microb Ecol* 64: 814-825).
- ***Host-associated Microbiota in Armadillidium vulgare: Feminizing Wolbachia and other major players***
PhD project (supervisor: Prof. Didier Bouchon) investigating the host-associated microbiota in the terrestrial isopod *Armadillidium vulgare*. Terrestrial isopods represent an excellent model system for multipartite animal-bacteria symbioses due to their well-characterized association with the

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endosymbiotic reproductive parasite *Wolbachia*. To date, three different feminizing *Wolbachia* strains have been identified in *A. vulgare*, presumably representing different co-evolutionary histories. The aim of this PhD was to get a more complete picture of the terrestrial isopod microbiome and the role of *Wolbachia* within the bacterial community. In order to achieve this, the microbiota of *A. vulgare* was characterized on multiple levels: (i) In field populations and laboratory lineages, (ii) in different host tissues as well as faeces and (iii) in relation to *Wolbachia* infection status, i.e. presence/absence of *Wolbachia* as well as infection with different *Wolbachia* strains. This was achieved using a combination of quantitative PCR, genetic fingerprinting via Temperature Gradient Gel Electrophoresis (TGGE) and 454 amplicon pyrosequencing of the 16S rRNA gene. Furthermore, the complete genome of a second highly abundant facultative symbiont, *Candidatus Hepatoplasma crinochetorum*, was assembled in collaboration with other researchers (Dr Richard Cordaux and Dr Sébastien Leclercq) within the host laboratory. Results obtained in the course of this project have been presented in four international and four national (French) conferences as well as two international workshops. Furthermore, this work has so far resulted in three publications in high-profile journals and several others are currently in progress.

- ***Host-microbiota dynamics during larval diapause in Nasonia wasps***

In this project, we address a new aspect of insect-bacterial symbioses by exploring how host-microbiota interactions fare during larval diapause, the overwintering stage of the parasitoid wasp *Nasonia*. To this end, we compare bacterial titers, bacterial community composition and expression levels of host antimicrobial peptide genes in normal/early diapause/prolonged diapause larvae in two closely related *Nasonia* species.

ORGANISATION OF SCIENTIFIC MEETINGS

I was part of the Organizing Committee for two international conferences

2014	9 th International Symposium on Terrestrial Isopod Biology (ISTIB), Poitiers (France)
2012	7 th International Wolbachia Conference, Ile d'Oléron (France)

PEER REVIEW ACTIVITIES

- Member of the British Ecological Society Peer Review College, since 2014
- Reviewing activities: *PLoS One* and *Belgian Journal of Zoology*

STUDENT MENTORING

January 2015 – present Co-mentoring of undergraduate student intern Bonirath Chhay (Harvard University)

January – June 2012 M.Sc. thesis of Lida Carolina Lesmes Rodriguez (co-supervision with Prof. D. Bouchon): *Diversity of symbiotic bacterial communities in terrestrial isopods*

TEACHING

- **Research Seminar for Masters students** “*Insights from the terrestrial isopod microbiome: Bacterial passports, feminizing Wolbachia and other major players*”, University of Poitiers (France), 10 November 2014

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- **Short lecture** “*Wolbachia: A multitalent among bacterial symbionts*”, NSF Genomics Short Course for Undergraduates, Cornell University (USA), 12 January 2015
- **Instructor** for the NSF Genomics Short Course for Undergraduates, Cornell University (USA), January 2016

PUBLIC ENGAGEMENT

- Several interviews with local newspapers
- Participating in a promotion movie for the EU Erasmus Mundus programmes at the University of Poitiers in 2013
(video available at <http://uptv.univ-poitiers.fr/program/temoignages-d-etudiants-des-trois-masters-erasmus-mundus-de-l-universite-de-poitiers-2013/video/3869/temoignages-d-etudiants-des-trois-masters-erasmus-mundus-de-l-universite-de-poitiers/index.html>)
- Preparation and animation of a stall during an exposition on biodiversity for the general public, organized by the French CNRS in front of the Eiffel Tower in Paris in October 2010. The stall represented the work of the research group "Ecology, Evolution, Symbiosis" at the University of Poitiers (France) and involved explaining the role of woodlice as degraders in ecosystems, microscopy with children and a game to recognize woodlice species and associate them with their respective habitats

LANGUAGES

- German (Native Language)
- English (Proficient User, Cambridge Certificate of Proficiency in English)
- French (Proficient User, Certificat Pratique de Langue Française of the Sorbonne University in Paris)
- Russian (Basic User)