

Curriculum vitae – Marie VASSE

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Research interests

I am an evolutionary ecologist. My research focuses on the interplay between community ecology and evolutionary biology in driving the dynamics of microbial communities. I use a combination of experimental, computational and conceptual approaches to investigate the feedbacks between ecological interactions, evolutionary trajectories and community properties.

Keywords: coevolution, community ecology, microbiology, bacteriophages, social evolution

Professional experience

- 2021 (forthcoming) **Marie-Curie fellow.** MIVEGEC – CNRS, Montpellier, France
- 2016 – present **Postdoctoral fellow (independent).** Evolutionary Biology group of G.J. Velicer, ETH Zürich, Zürich, Switzerland.
Ecology and evolution of bacterial communities and bacteriophages
- 2012 – 2015 **PhD student.** Evolutionary ecology group, Institut des Sciences de l'Evolution – University of Montpellier, France. Advisor: M.E. Hochberg
Evolutionary ecology of social bacterial populations under antibiotic and bacteriophage pressure
- Mar – Sep 2012 **MSc student.** Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier, France. Advisors: M.A. Selosse, D. McKey and R. Blatrix
Multilocus phylogeny of fungi involved in ant-plant symbioses
- Nov 2011 – Jan 2012 **Pregraduate fellow.** Agrocampus Ouest, Rennes, France. Advisor: M. Plantegenest
Interplay of parasitic pressure and bacterial symbionts on aphid offspring phenotypes
- Mar – Aug 2011 **Pregraduate fellow.** Laval University, Québec, Canada. Advisor: R.R. Bélanger
*Functional genomics of the fungus *Pseudozyma flocculosa**

- Oct 2010 – Feb 2011 **Pregraduate fellow.** AgResearch Ruakura Research Centre, Hamilton, New Zealand. Advisor: P. J. Gerard
Behavioural interactions between two Microctonus parasitoid wasps
- Jan – Feb 2010 **Pregraduate fellow.** James Hutton Institute, Dundee, Scotland UK. Advisor: S. N. Johnson
Predatory functional response of Coccinella septempunctata to Amphorophora idaei

Educational background

- 2012 – 2015 **PhD.** Institut des Sciences de l'Evolution – University of Montpellier, France.
- 2008 – 2012 **Ingénieure agronome** in Ecology and Evolution. Agrocampus Ouest centre de Rennes, France's top graduate engineering school for agricultural and life sciences (Grande école). Valedictorian
- 2009 **Semester student** at Laval University, Québec, Canada. Coursework in Ecology and Evolution
- 2006 – 2008 **Classes Préparatoires BCPST.** Lycée Montaigne, Bordeaux, France Mathematics and Biology preparatory classes leading to selective entrance by examination into the French Grandes écoles

Publications

Peer-reviewed publications

10. Nair RR.*, **Vasse M.*+**, Wielgoss S., Sun L., Yuen-Tsu NY., Velicer GJ. 2019 Bacterial predator-prey coevolution accelerates genome evolution and selects on virulence-associated prey defences. *Nature Communications* 10, 4301. *co-first authors [IF 13.8]
9. **Vasse M.**⁺ and Wielgoss S. 2018 Bacteriophages of *Myxococcus xanthus*, a social bacterium. *Viruses* 10(7): 374 [IF 3.7]
8. Torres-Barceló C., Gurney J., Gougat-Barbera C., **Vasse M.**, Hochberg ME. 2018 Transient negative effects of antibiotics on phages do not jeopardise the advantages of combination therapies. *FEMS Microbiology Ecology* 94(8) [IF 4.1]
7. **Vasse M.**, Voglmayr H., Mayer V., Gueidan C., Nepel M., Moreno L., de Hoog S., Selosse MA., McKey D., Blatrix R. 2017 A phylogenetic perspective of the association between ants (Hymenoptera: Formicidae) and black yeasts (Ascomycota: Chaetothyriales). *Proceedings of the Royal Society of London series B* 284: 20162519. [IF 5.6]

6. **Vasse M.*+**, Noble R.J.*, Akhmetzhanov R.A., Torres-Barceló C., Gurney J., Bénateau S., Gougat-Barbera C., Kaltz O., Hochberg ME. 2017 Antibiotic stress selects against cooperation in a pathogenic bacterium. *Proceedings of the National Academy of Sciences* 114.3: 546–551. *co-first authors [IF 10.6]
5. Torres-Barceló C.*, Franzon B.*, **Vasse M.**, Hochberg ME. 2016 Long-term effects of single and combined introductions of antibiotics and bacteriophages on populations of *Pseudomonas aeruginosa*. *Evolutionary Applications* 9: 4, 583-595. *co-first authors [IF 5]
4. **Vasse M.**, Torres-Barceló C., Hochberg ME. 2015 Phage selection for bacterial cheats leads to population decline. *Proceedings of the Royal Society of London series B* 7;282(1818). pii: 20152207. [IF 5.6]
3. Torres-Barceló C., Arias-Sanchez FI., **Vasse M.**, Ramsayer J., Kaltz O. and Hochberg ME. 2014 A window of opportunity to control the bacterial pathogen *Pseudomonas aeruginosa* combining antibiotics and phages. *PlosOne* 9 (9): e106628. [IF 2.8]
2. Betts A., **Vasse M.**, Kaltz O. and Hochberg ME. 2013 Back to the future: evolving bacteriophages to increase their effectiveness against the pathogen *Pseudomonas aeruginosa* PAO1. *Evolutionary Applications* 6 (7): 1054–63. [IF 5]
1. Gerard P.J., **Vasse M.**, Wilson DJ. 2012 Abundance and parasitism of clover root weevil (*Sitona lepidus*) and Argentine stem weevil (*Listronotus bonariensis*) in pastures. *New Zealand Plant Protection* 65: 180-185

Manuscripts submitted and preprints

- **Vasse M.**, Bonhoeffer S., Frénoy A. [Ecological effects of stress drive bacterial evolvability under sub-inhibitory antibiotic treatments](#). 2020 *bioRxiv* 181099
- Ronai I.*, Greslehner GP.*, Boem F.*, Carlisle J.*, Stencel A.*, Suárez J.*, Bayir S., Bretting W., Formosinho J., Guerrero AC., Morgan WH., Prigot-Maurice C., Rodeck S., **Vasse M.**, Wallis JM., Zacks O. “Microbiota, Symbiosis and Individuality Summer School” Meeting Report. Accepted with minor revisions at *Microbiome* *co-first authors
- Freund L., **Vasse M.**, Velicer GJ. Hidden paths to endless forms most wonderful: Parasite-blind diversification of host quality. Under review for *PLOS Biology*
- Schaal K., Yuen-Tsu NY., **Vasse M.**, Velicer GJ. Latent evolution of cheater resistance and genetic requirements for a cooperative trait. Under review for *Proceedings of the National Academy of Sciences*

- Álvarez C., Amigo I., Arganda S., Calovi DS., Duran-Trio L., Gómez-Moracho T., González-Gancedo S., Heras FJH., Hernández-Sánchez M., Jeanson R., Morales AV., Morán A., Nido GS., Pascual-García A., Pérez-Escudero A., de Polavieja GG., Romero-Ferrero F., Valbuena A., **Vasse M.**, Villar ME. An initiative from the scientific community against COVID-19.

Communications

Invited speaker

- 2020 (forthcoming) Seminar - Département de Microbiologie Fondamentale, Université de Lausanne, Switzerland
- 2019 Seminar - Ecology and Evolution seminar series (SEEM), Montpellier, France
- 2018 Conference - 22nd Evolutionary Biology Meeting, Marseille, France
- 2016 Seminar - Erasmus MEME Winter School, Montpellier, France
- 2015 Seminar - Institute of Integrative Biology at ETH, Zurich, Switzerland

Oral communications

- 2019 Phage.fr Phage Network Conference, Grenoble, France
- 2018 French Society of Ecology and Evolution Conference (SFE²), Rennes, France
- 2017 ESEB Conference, Groningen, Netherlands
- 2016 International Conference on the Biology of the Myxobacteria, Interlaken, Switzerland
- 2015 ESEB Conference, Lausanne, Switzerland
- 2014 Seminar - Institute of Evolution Science (ISEM), Montpellier, France
- 2014 MICOM Conference, Jena, Germany
- 2011 Seminar - Agrocampus Ouest, Rennes, France
- 2011 Seminar - AgResearch Ruakura Research Centre, Hamilton, New Zealand

Poster presentations

- 2019 Jacques Monod Conference, Roscoff, France
- 2019 ESEB Conference, Turku, Finland
- 2018 Evolution-ESEB Conference, Montpellier, France
- 2017 Winter School “Ecological genomics of coevolutionary interactions”, Weggis, Switzerland
- 2014 Summer school “Understanding Microbial Communities; Function, Structure and Dynamics”, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK
- 2011 Conférence Internationale sur les ravageurs en Agriculture, Montpellier, France
- 2010 Journées scientifiques, Agrocampus Ouest, Rennes, France

Press coverage for first author papers

- 2017 CNRS En direct des labos: “Les antibiotiques favorisent le jeu de dupe de certaines bactéries” for Vasse et al., *Proceedings of the National Academy of Sciences* 2017
- 2016 CNRS En direct des labos: “Chez certaines bactéries, la tricherie conduit à l'extinction” for Vasse et al., *Proceedings of the Royal Society of London series B* 2015

Public outreach

Vasse M. 2017 [Quand les antibiotiques entravent la coopération bactérienne](#). Planet-Vie. [in French]

Most relevant courses and workshops

May 2020	Workshop – The holobiont concept. (virtual meeting) Bordeaux, France
January 2020	Course - Microbiota data analysis. Zürich, Switzerland
July 2019	Summer school - Microbiota, Symbiosis and Individuality: Conceptual and Philosophical Issues. Biarritz, France
February 2019	Course - Flow cytometry (BD LRSFortessa and BD FACSCanto II) and HTS plate reader. Zürich, Switzerland
November 2017	Course - Experimental evolution: From theory to practice. Vienna, Austria
January 2017	Winter school - Ecological genomics of coevolutionary interactions. Weggis, Switzerland
November 2016	Course - Beckman Coulter laboratory robot: handling and programming. Nyon, Switzerland
October 2014	Summer school - Methods for Mathematical and Empirical Analysis of Microbial Communities. Cambridge, UK
June 2014	Workshop - Spatial Evolutionary Epidemiology. Montpellier, France
December 2013	Workshop - Games in Evolution: Models and Microbes. Paris, France
June 2013	Workshop - Inclusive Fitness and Game Theory. Arolla, Switzerland

Funding and grants (total about 635 000 euros)

2020	Marie Curie Independent Fellowship	€184 708
2019	ETH Independent Career Seed grant	CHF30 000

2019	French Medical Research Foundation Individual fellowship (declined)	€134 400
2017	Marie Curie - ETH CONFUND Fellowship	CHF225 700
2014	Grant from Isaac Newton Institute for Mathematical Sciences (Cambridge)	£450
2013	Teaching position (monitorat) at the University of Montpellier	€7 920
2012	Doctoral grant from the French Research Ministry	€60 660
2011	Grant from the Laval University (Quebec, Canada) for a research project	\$7 500
2010	Grant from Agrocampus Ouest (France) for a research project in Scotland	€550
2009	Scholarship from the Brittany region (France) to study in Canada	€1 200

Teaching and supervision

As a PhD student, I was involved in the teaching of Integrative Biology and Ecology and Evolution at the University of Montpellier (136 hours of presence between 2013 and 2015). At ETH Zürich, I am taking part of the yearly review course for Master students (75 hours). In addition, I directly supervised six projects and co-supervised another five since 2014.

Present	Supervision of Nicola Mayhofer as a research assistant employed on the Career Seed Grant. ETH Zürich, Switzerland
Present	Supervision of Ben Kriesel's Bachelor project. ETH Zürich, Switzerland
Present	Supervision of August Paula's MSc thesis. ETH Zürich, Switzerland
2018	Supervision of August Paula's MSc project. ETH Zürich, Switzerland
2018	Supervision of Ahmet Temiz's Bachelor project. Bogaziçi University, Turkey
2018	Co-supervision of Nicola Mayrhofer's Bachelor thesis. ETH Zürich, Switzerland
2018	Supervision of Xianda Guo's MSc thesis. ETH Zürich, Switzerland
2017	Co-supervision of Charlotte Rosher's MSc thesis. Erasmus MEME program
2017	Co-supervision of James Kavanagh's MSc thesis. Erasmus MEME program
2015	Co-supervision of Doriane Daniel's MSc thesis. University of Montpellier
2014	Co-supervision of Blaise Franzon's MSc thesis. University of Montpellier

Engagements in the scientific community

Peer reviewing

4 peer-reviews since 2016 in journals: *ISME journal* (2), *Microorganisms* MDPI (1), *Journal of Bacteriology & Parasitology* (1)

Professional memberships

2016 - present	Complex Systems Society
2014 - present	European Society for Evolutionary Biology
2013 - present	French Society of Ecology and Evolution (Société Française d'Ecologie et d'Evolution)
2013 - 2015	Society for the Study of Evolution

Conference organization

2019	Co-organizer with Antoine Frénoy of symposium “Bacterial evolution under biotic stress” at ESEB 2019 in Turku, Finland
2018 - present	Organizer of the biweekly phage meetings at ETH Zurich, Switzerland
2016	Co-organizer of the International Conference on the Biology of the Myxobacteria in Interlaken, Switzerland
2014	Co-organizer of the 10 th Conference “Ecology and Behavior” in Montpellier, France

COVID 19

Since April 2020, I participate as a coordinator to the initiative for research on the COVID19: <https://crowdfightcovid19.org>.

Social engagements

During my PhD, I organized weekly yoga and dance sessions at ISEM Montpellier, France. At ETH Zürich, I organized or co-organized the department sledging trips (2017, 2018), the department hiking trip (2018), and the Evolutionary biology lab retreat (2019).

Languages

French	Native
English	Proficient user score TOEIC: 970 in 2015
Spanish	Fluent