Maéva A. **Techer**

Postdoctoral Research Associate

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I am an evolutionary biologist who seek to understand the origin of biodiversity. In particular, I am interested in how arthropods can rapidly respond and adapt to environmental changes. I integrate omics approaches to identify genetic mechanisms driving diversification in the lab and in the field.

Education

University of Reunion Island
La Reunion, France

Ph.D. in Population Genetics and Ecology — *2012 - 2015*

- Thesis: Genetic diversity, structure, and admixture of native and introduced honey bee populations in the South West Indian Ocean islands.
- Co-advisors: Dr. Hélène Delatte, Dr. Johanna Clémencet, Dr. Bernard Reynaud

University of Reunion Island
La Reunion, France

Master of Sciences in Biodiversity and Tropical Ecosystems — *2010 - 2012*

University of Reunion Island
La Reunion, France

Bachelor of Sciences in Biology of Organisms and Populations — *2007 - 2010*

Professional Experience

Texas A&M University and NSF-BII Behavioral Plasticity Research Institute
College Station, TX, USA

Posdoctoral Research Associate — *2021 - Present*

- Leading and generating a high temporal resolution and tissue-specific transcriptomic data during locust phase change for *Schistocerca gregaria*.
- Built, tracked, and co-organized the rearing and maintenance of locusts and grasshoppers in crowded and isolated conditions in quarantine.
- Integral role in the organization of BPRI genome team that produced five new high-quality and chromosome-length locust genomes (largest 8.5 Gb).
- Collaborated, mentored students, and generated samples and data for BPRI interdisciplinary experts in neurobiology, transcriptomics, single-cell genetics, behavior, and more.
- Co-Advisors: Prof. Hojun Song, Prof. Spencer Behmer, and Prof. Gregory Sword.

Okinawa Institute of Science and Technology
Okinawa, Japan

Postdoctoral Scholar and Research Fellow (from 2019) — *2016 - 2021*

- Developed new methods to extract DNA/RNA from single low input arthropod material for Illumina and PacBio next-generation sequencing.
- Created the largest worldwide collection to retrace the invasive routes of the honey bee parasitic *Varroa* mite (56 countries spanning over 30 years).
- Developed a bioinformatics pipeline for population genomics to analyze large sequencing datasets generated in-house (> 1500 whole genomes).
- Selected, designed, and validated a new targeted genotyping by 10k SNP sequencing.
- Advisor: Prof. Alexander S. Mikheyev

University of Reunion Island
La Reunion, France

PhD Graduate Student — *2012 - 2015*

- Collected and extracted DNA from > 3,000 honey bee individuals from the South West Indian Ocean islands and mainland native areas (Europe and Africa).
- Performed various molecular methods using mtDNA and microsatellites genotyping.
- Retraced the colonization and admixture levels of native and invasive honey bee subspecies populations in insular systems using population genetics.

Awards & Distinctions

TAGC2024 Childcare Travel Grant

Genetics Society of America *2024*

Postgraduate Poster Award: Life on a Dynamic Planet Symposium

Texas A and M University *2023*

ESA2022 Travel Grant

Department of Entomology, Texas A and M University *2019*

OIST Mini-Symposium Grant (co-awardee)

Okinawa Institute of Science and Technology *2020*

KAKENHI Research Grant

Japan Society for the Promotion of Science *2019*

Agreenium fellow travel Grant

Agreenium Consortium *2013-2014*

Darwin Conference Travel Award (1st prize of the Rosalind Franklin Challenge)

University of La Reunion *2009*

Eskom Expo for Young Scientists Travel Award

Expo Sciences Reunion *2009*

Scientific Publications

Book/Chapter

1. **Techer, M. A.**, Chakrabarti, P., Caesar, L., Eynard, S., Farell, M., Foster, L., Gorrochategui-Ortega, J., Henriques, D., Li-Byarlay, H., Morré, J., Newton, I., Parejo, M., Pinto, A., Vignal, A., Zarraonaindia, I., & McAfee, A. (in press). Standard methods and good practices in Apis honey bee omics research. **Journal of Apicultural Research: BEEBOOK Vol. IV**
2. Chantawannakul, P., Beaurepaire, A., Bulet, P., Houdelet, C. Huang, S., Li, J., Maeda, T., de Miranda, J. R., Paxton, R., Phokasem, P., Sakamoto, Y., Sinpoo, C., **Techer, M. A.**, Zheng, H. & Dietemann, V. (in review). Standard methods for Apis cerana pest and pathogen research. **Journal of Apicultural Research: BEEBOOK Vol. IV**

Peer-reviewed

1. Hasegawa, N., **Techer, M. A.**, Adjlane, N., Al-Hissnawi, M. S., Antúnez, K., Beaurepaire, A., Christmon, K., Delatte, H., Dukku, U. H., Eliash, N., El-Niweiri, M. A. A., Esnault, O., Evans, J. D., Haddad, N. J., Locke, B., Muñoz, I., Noël, G., Panziera, D., Roberts, J. M. K., De la Rúa, P., Shebl, M. A., Stanimirovic, Z., Rasmussen, D. A., & Mikheyev, A. S. (2023). Evolutionarily diverse origins of deformed wing viruses in western honey bees. **Proc. Natl. Acad. Sci. U. S. A.**, 120, e2301258120.
2. Dukku, U., **Techer, M.**, Yeboah, A. A., & Vincent, S. N. (2023). A country-wide survey of Varroa destructor, an ectoparasitic mite of honey bees, in Nigeria: determination of mitochondrial haplotype. **Journal of Apicultural Research.**
3. **Techer, M. A.**, Roberts, J. M. K., Cartwright, R. A., & Mikheyev, A. S. (2022). The first steps toward a global pandemic: Reconstructing the demographic history of parasite host switches in its native range. **Molecular Ecology**, 31(5), 1358–1374.
4. Hasegawa, N., **Techer, M. A.**, & Mikheyev, A. S. (2020). A toolkit for studying Varroa genomics and transcriptomics: Preservation, extraction, and sequencing library preparation. **BMC Genomics**, 22(1), 54.
5. Galataud, J., Delatte, H., **Techer, M. A.**, Simiand, C., Sookar, P., Reynaud, B., & Clémencet, J. European meets African honeybees (Apis mellifera L.) in the tropics: morphological changes related to genetics in Mauritius Island (South-West Indian Ocean). **PLOS One**.
6. Traynor, K. S., Mondet, F., de Miranda, J. R., **Techer, M. A.**, Kowallik, V., Oddie, M. A. Y., Chantawannakul, P., & McAfee, A. (2020). Varroa destructor: A Complex Parasite, Crippling Honey Bees Worldwide. **Trends in Parasitology**, 36(7), 592–606.
7. Dukku, U. H., **Techer, M. A.**, & Vincent, S. N. (2020). A country-wide survey of Varroa destructor, an ectoparasitic mite of honey bees, in Nigeria: a preliminary report. **Journal of Apicultural Research**, 59(1), 59–62.
8. **Techer, M. A.**, Rane, R. V., Grau, M. L., Roberts, J. M. K., Sullivan, S. T., Liachko, I., Childers, A. K., Evans, J. D., & Mikheyev, A. S. (2019). Divergent evolutionary trajectories following speciation in two ectoparasitic honey bee mites. **Communications Biology**, 2(1), 357.
9. Wragg, D., **Techer, M. A.**, Canale-Tabet, K., Basso, B., Bidanel, J.-P., Labarthe, E., Bouchez, O., Le Conte, Y., Clémencet, J., Delatte, H., & Vignal, A. (2018). Autosomal and mitochondrial adaptation following admixture: A case study on the honeybees of Reunion Island. **Genome Biology and Evolution**, 10(1), 220–238.
10. **Techer, M. A.**, Clémencet, J., Simiand, C., Turpin, P., Garnery, L., Reynaud, B., & Delatte, H. (2017). Genetic diversity and differentiation among insular honey bee populations in the southwest Indian Ocean likely reflect old geographical isolation and modern introductions. **PLOS One**, 12(12), e0189234.
11. **Techer, M. A.**, Clémencet, J., Simiand, C., Preeaduth, S., Azali, H. A., Reynaud, B., & Delatte, H. (2017). Large-scale mitochondrial DNA analysis of native honey bee Apis mellifera populations reveals a new African subgroup private to the South West Indian Ocean islands. **BMC Genetics**, 18(1), 53.

12. **Techer, M. A.**, Clémencet, J., Simiand, C., Portlouis, G., Reynaud, B., & Delatte, H. (2016). Genetic diversity of the honeybee (Apis mellifera L.) populations in the Seychelles archipelago. **Insect Conservation and Diversity / Royal Entomological Society of London**, 9(1), 13–26.
13. Rasolofoarivao, H., Clémencet, J., **Techer, M. A.**, Ravaomanarivo, L. H. R., Reynaud, B., & Delatte, H. (2015). Genetic diversity of the endemic honeybee: Apis mellifera unicolor (Hymenoptera: Apidae) in Madagascar. **Apidologie**, 46(6), 735–747.
14. **Techer, M. A.**, Clémencet, J., Turpin, P., Volbert, N., Reynaud, B., & Delatte, H. (2015). Genetic characterization of the honeybee (Apis mellifera) population of Rodrigues Island, based on microsatellite and mitochondrial DNA. **Apidologie**, 46(4), 445–454.

Preprint

1. Eliash, N., Tetsuya, E., Johnston, S. J., **Techer, M. A.**, Holmes, V. R., Rangel, J., Economo, E. P., & Mikheyev, A. S. Varroa mites escape the evolutionary trap of haplodiploidy. In bioRxiv p. 2024.05. 10.593493.

Skills

Technical skills

Wet lab	Omics Analysis	Bioinformatics
DNA/RNA extraction and quality control – Sanger Sequencing – Library Preparation – Whole Genome Sequencing – RNASeq – PCR – Orthoptera tissues dissections – Image Stacking – Lab BioSafety Compliance	Population Genetic and Structure Analysis – Reads mapping and QC – Variant Calling and Filtering – Differential Gene Expression Analysis – Comparative Genomics – Spatial Genomics – Demographic Inferences	R – Shell – SLURM – Bash – Python – Snakemake – GitHub – Markdown

Languages

Skill	French	English	Spanish	Portuguese	Japanese
Reading	Native	Advanced	Elementary	Elementary	Beginner
Writing	Native	Intermediate	Beginner	Beginner	Beginner
Listening	Native	Upper-intermediate	Elementary	Pre-intermediate	Beginner
Speaking	Native	Intermediate	Beginner	Beginner	Beginner

Mentoring and Teaching Experience

Teaching

Guest lecturer Undergraduate Population Genetics Class - J. Spencer Johnston *2022*

Guest teacher at Onna/OIST Children's school of Science *2017*

Student Mentoring

Emily Baker | Undergraduate | Texas A&M University | 2024-Present |
Jackson Linde | Ph.D. student | Texas A&M University | 2023-Present |
Christopher Brennan | Ph.D. student | Texas A&M University | 2021-Present |
Alyssa Canova | Ph.D. student | Texas A&M University | 2021-Present |
Audélia Mechti | Ph.D. student | Texas A&M University | 2021-Present |
Vivian Peralta Santana | Ph.D. student | Texas A&M University | 2021-Present |
Alexis Acoff | MSc student | Southern Illinois University Edwardsville | 2022 |
Danielle Sherry | Undergraduate | Texas A&M University | 2021-2022 |
Nonno HASEGAWA | Ph.D. student | Okinawa Institute of Science and Technology | 2020-2022 |
Elroy KWAN-AU | Honour student | ANU Canberra | 2019 |

Oral presentations and outreach

Selected Invited talks

Theo Murphy Meeting: Locust and bee plasticity in a changing world, The Royal Society *Cambridge, UK*
Temporal Dynamics of Phase Transitions: Transcriptome Profiling in Swarming Locusts *2024*
SOLATINA, The Latin American Society for Bee Research *Zoom, Virtual*
The untold story of Varroa mite successful invasion unraveled by worldwide population genomics *2021*
1st COLOSS (Prevention of honey bee Colony LOSSes) Asia Conference *Chiang Mai, Thailand*
World biogeography and populations genomics of ectoparasitic Varroa mites *2020*

28th Plant and Animal Genome Conference: Honeybee Genomics — *San Diego, California*
Facing the War between Honey Bees and Mites: Genomic Insights into Varroa Global Success — *2020*
OIST Science Festival Cafe, Okinawa Institute of Science and Technology — *Okinawa, Japan*
The Story of Bees and Mites' Journey. — *2019*
Ecology and Evolution Seminar Series, The Australian National University — *Canberra, Australia*
At the origin of a global invasion: the honey bee parasite Varroa that keeps on jumping — *2019*
EcoEncontros, University of Sao Paulo — *Sao Paulo, Brazil*
At the origin of a global invasion: the honey bee parasite Varroa that keeps on jumping — *2018*

Selected Contributed talks

Behavioral Plasticity Research Institute BPRI 2023 Symposium — *Houston, Texas*
Time-course transcriptome landscape of phase transitions in the Desert Locust — *2023*
Entomological Society of America ESA2022 — *Vancouver, Canada*
Time-course analysis of sensory and brain tissue transcriptomes during phase transitions in the Desert Locust (Schistocerca gregaria). — *2022*
Congress of Apidology Eurbee 8 — *Ghent, Belgium*
Tracking genomics footprints of successful host switches in honey bee Varroa mites. — *2018*
International Union for the Study of Social Insects IUSSI2018 — *Guaruja, Brazil*
At the origin of a global invasion: the honeybee parasite that keeps on jumping. — *2018*
Congress of Apidology Eurbee 7 — *Cluj-Napoca, Romania*
Genetic diversity and structure of A. mellifera in the South West Indian Ocean islands. — *2016*
International Union for the Study of Social Insects IUSSI2014 — *Cairns, Australia*
Unraveling the mysteries of honeybee in the Mascarene Islands — *2014*

Outreach experience

1. Honey and Coral Project. Collaboration for prevention of red soil erosion between the Ecology and Evolution and Onna Village Office, Agricultural Section, Okinawa, 2019.
2. Guest at WonderLabs podcast (Apple: apple.co/2KP4pWl, Google: bit.ly/2StEUuX)
3. Invited Speaker at the 3rd Nerd Nite Okinawa, Chatan, 2018.
4. Lead organizer of the OIST Science Festival booth "The wonderful world of honeybees" and creator of the "EcoEvo Quest" video game (Microsoft Powerpoint support), 2016-2019.
5. Invited speaker to the OIST Science Trip to Miyako High School, Miyako-jima, 2017.

Leadership and Academic Services

Member of the NSF-BII BPRI Research Committee — *2023-Present*
Member of the NSF-BII BPRI Trainee Leadership Council — *2022-Present*
Jury at the Graduate Student Forum of Entomology at Texas A and M University — *2021*
Co-organizer of the Honey bee health in a changing world and COLOSS Asia at OIST — *2021*
Jury member of My Research in 200s at OIST — *2020*
Member of the OIST Internal Seminar Series organizing committee — *2017-2019*
Ph.D. student delegate at the UMR PVBMT and 3P Laboratory — *2014-2016*

Peer Review Services	Society/Network Member
Apidologie – Journal of Apicultural Science – Insects – The Science of Nature – BioMed Research International – Entomological Science – Experimental and Applied Acarology – Molecular Ecology – PeerJ – Frontiers in Ecology and Evolution – Scientific Reports – Journal of Heredity	Entomological Society of America – Genetics Society of America – COLOSS – JSPS Alumni Network – i5K