

Julia Mariette

Postdoctoral researcher in Neuroethology



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Education

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| 2022 | PhD Neuroscience
Université Paris-Saclay, Gif-sur-Yvette (91190, France) |
| 2017 | Master 2 Ethology research path
Université Paris-Nord, Villetaneuse (93430, France)
Rank : 1/19 (Valedictorian) |
| 2016 | Master 1 Ethology
Université Paris-Nord, Villetaneuse (91000, France)
Rank : 1/59 (Valedictorian) |
| 2015 | Bachelor of biology Specialization in cell biology and physiology
Université Evry Val D'Essonne, Evry (91000, France)
Rank : 1/60 (Valedictorian) |

Professional experiences

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| 2025 – 2026 | Postdoctoral researcher University Paris Saclay
Pheromonal information processing depending on the division of labour in the honey bee <i>Apis mellifera</i>
EGCE Lab, Gif-sur-Yvette, J. Carcaud (ERC Olfatask) |
| 2023 – 2025 | Postdoctoral researcher, CNRS
Pheromonal information processing in the honey bee brain
EGCE Lab, Gif-sur-Yvette, J. Carcaud (ANR Pherobrain) |
| 2017 – 2022 | Postgraduate researcher, University Paris Saclay
Study of sexual communication in male honey bee of four species in the genus <i>Apis</i>
EGCE Lab, Gif-sur-Yvette, J-C Sandoz and F. Marion-Poll (graduate school fellowship) |
| 2017 | Internship, CNRS
Effect of sub-lethal doses of pyrethroids on aversive learning in the honey bee <i>Apis mellifera</i>
EGCE Laboratory, Gif-sur-Yvette, J-C Sandoz |
| 2016 | Voluntary internship
Study of food sharing in the Calopsitte parakeet <i>Nymphicus hollandicus</i>
LECD Lab, Nanterre, France, D. Bovet |
| 2016 | Internship
Study of intrasexual vocal communication in male Zebra finches <i>Taeniopygia guttata</i>
LECD, Nanterre, France, S. Deregnaucourt & N. Geberzahn |

Competences

Electrophysiology (Single Sensillum Recording)

Setting up and operating an electrophysiology recording station, experiments on drosophila antennae (trichoid and basiconica sensilla), honey bees (worker, male, basiconica and placodea sensilla)

Calcium imaging

Transcuticular Calcium Imaging on *Drosophila* (transgenic individuals), *in vivo* calcium imaging in honey bees (males and workers, calcium dye oregon green) – training for the use of a two-photon microscopy and confocal microscopy.

Transgenesis

Microinjection of honey bee eggs at one-cell stage

Immunostaining

Honey bee brains, confocal microscopy

Insect dissection

Insects (*Drosophila*, Honey bees) brains, pheromonal glands

Molecular biology

PCR, Fragment Length Analysis (FLA), DNA extraction, pesticides applications protocols

Genetic crosses

Drosophila crossing

Behavioural tests

Appetitive and aversive learning paradigm (habituation, pavlovian conditioning absolute and differential), olfactometer, attraction assay, behavioural repertoire, sonograms

Software

R, GraphPad, (statistical analysis) VisiView (calcium imaging software), CorelDraw, Endnote, Zotero, Inkscape, Photofiltre, PyMol, Animal TA (behavioural analysis), Jalview, AmplifX, MAFFT (molecular biology), Pack Office

Alongside experiments

Students supervising (management), beekeeping & fruit fly rearing

Publications

Mariette, J., Carcaud, J. & Sandoz, J.C. The neuroethology of olfactory sex communication in the honeybee *Apis mellifera* L. *Cell Tissue Res* 383, 177–194 (2021). <https://doi.org/10.1007/s00441-020-03401-8>

Mariette J, Noël A, Louis T, Montagné N, Cherteremps T, Jacquin-Joly E, Marion-Poll F and Sandoz J-C (2023) Transcuticular calcium imaging as a tool for the functional study of insect odorant receptors. *Front. Mol. Neurosci.* 16:1182361. <https://doi.org/10.3389/fnmol.2023.1182361>

Mariette J, Carcaud, J, Louis T, Lacassagne, E, Servais, I, Montagné N, Cherteremps T, Jacquin-Joly E, Meslin, C, Marion-Poll F and Sandoz J-C (2024) Evolution of queen pheromone receptor tuning in four honey bee species (Hymenoptera, Apidae, *Apis*). *iScience*. 27, 12, 111243. <https://doi.org/10.1016/j.isci.2024.111243>

Andreu, B, **Mariette, J**, Delarue, A, Montagné, N, Cherteremps, T, Jacquin-Joly, E, Carcaud, J and J-C, Sandoz. (2024) Two olfactory receptors tuned to social pheromones in the honey bee *Apis mellifera*. **Submitted.**

Grants and fundings

University Paris-Saclay

PhD funding for COVID crisis– 12 mois (2020–2021)

Fondation pour la Recherche Médicale (FRM)

General biology program for end of PhD – FDT202012020727 – 8 mois (2021–2022)

IDEEV grants 2018 & 2019

International congress grants

IUSSI 2018

Congress grants

PhD fellowship

Biosphera graduate school (ex SDSV) – University Paris-Saclay (ex Paris-Sud)

Participation in congresses

- 2024 **International Symposia on Olfaction and Taste**, Reykjavik, Iceland (Oral)
Mariette J., Claisse, G., Sandoz, J-C. & Carcaud, J. *'Pheromonal processing in the honey bee brain'*
- 2023 **Club of Invertebrate Neurobiology (CNI)** (Oral contribution and chair), Gif-sur-Yvette, France (Oral)
Mariette J., Claisse, G., Sandoz, J-C. & Carcaud, J. *'Pheromonal processing in the honey bee brain'* **Chair**
- 2023 **Club of Invertebrate Neurobiology (CNI)** (Oral contribution and chair), Toulouse, France (Oral)
Mariette J., Carcaud, J., Lacassagne, E., Servais, I., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the queen pheromone receptor OR11 in honey bees within the genus Apis"* **Chair**
- 2022 **International Congress of Neuroethology (ICN)**, Lisbon, Portugal (Oral)
Mariette J., Carcaud, J., Lacassagne, E., Servais, I., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the queen pheromone receptor OR11 in honey bees within the genus Apis"*
- 2022 **International Congress ESITO** Backaskog, Sweden, (Oral)
Mariette J., Carcaud, J., Lacassagne, E., Servais, I., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the queen pheromone receptor OR11 in honey bees within the genus Apis"*
- 2022 **International Congress of International Union for the Study of Social Insects IUSSI**, Virtual, (Oral)
Mariette J., Lacassagne, E., Louis, T., Carcaud, J., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the queen pheromone receptor OR11 in honey bees within the genus Apis"*
- 2022 **Gottingen meeting of the German Society International Congress (NWG)**, Virtual (Oral)
Mariette J., Lacassagne, E., Louis, T., Carcaud, J., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the queen pheromone receptor OR11 in honey bees within the genus Apis"*
- 2021 **International Congress Insect Olfaction and Taste in 24 Hours around the globe**, Virtual, (Oral)
Mariette J., Lacassagne, E., Louis, T., Carcaud, J., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the queen pheromone receptor OR11 in honey bees within the genus Apis"*
- 2020 **International Congress European Chemoreception Research Organisation ECRO**, Virtual (Poster)
Mariette J., Louis T., Noël A., Larcher V., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the honeybee queen pheromonal receptor AmOR11 expressed in Drosophila olfactory neurons"* **Poster prize**
- 2019 **European Symposium of Insect Taste and Olfaction (ESITO)**, Villasimus, Sardinia (Oral contribution)
Mariette J., Louis T., Noël A., Larcher V., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Functional study of the honeybee queen pheromonal receptor AmOR11 expressed in Drosophila olfactory neurons"*
- 2019 **Neurosciences German Society International Congress (NWG)**, Gottingen, Germany, (Poster)
Mariette J., Louis T., Noël A., Larcher V., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Probing honeybee's olfactory repertoire: a new approach toward OR deorphanization"*
- 2018 **International Union for the Study of Social Insects IUSSI**, Guarujá, Brasil (Poster)
Mariette J., Louis T., Noël A., Larcher V., Montagné N., Chertemps T., Jacquin-Joly E., Marion-Poll F. & Sandoz J. C. *"Sexual communication in honey bees (Apis mellifera): first steps toward the deorphanization of drone olfactory receptors"*

Student supervision, training and teaching

- 2025 **Co-supervision of PhD student, Camille Faber** "Pheromonal information processing depending on the division of labour in the honey bee *Apis mellifera*" Biosphera Graduate School, University Paris Saclay
- 2025 **Master final project supervision, Pauline Masnou** "Functional characterization of male honey bee olfactory receptor in the drosophila melanogaster empty neuron system" Sorbonne University, Master Biodiversity Ecology and Evolution
- 2025 **Master 1 project supervision, Naïs Gilardet** "Pheromonal information processing in the honey bee *Apis mellifera* brain" University of Tours, Master Evolutionary Ecology and Behaviour

- 2024 **Master 1 project supervision, Benoît Mandive** “Pheromonal information processing in the honey bee *Apis mellifera* brain” University of Tours, Master Evolutive Ecology and Behaviour
- 2024 **Master 1 project supervision, Léane Roux** “Attraction towards pheromones depending on task specialization in the honey bee” University of Tours, Master Evolutive Ecology and Behaviour
- 2024 **Final year bachelor voluntary internship, Mathilde Martin**, “Transgenesis in honey bees for pheromonal processing study in the honey bee” University Paris Saclay, Biology licence
- 2023 **Final year bachelor project, Evan Branlé**, “Transgenesis in honey bees for pheromonal processing study in the honey bee” University Paris Saclay, Biology licence
- 2022 **Lecture M1 Biology Evolution & Ecology – UE Ethology – Université Paris Saclay, Orsay, France**
- 2020 **Final year bachelor project, Eleanor Lacassagne**, “Functional study of the queen pheromone receptor OR11 in honey bees within the genus *Apis*” University Paris Saclay, Biology licence
- 2020 **Final year bachelor project, Ilana Servais**, “Functional study of the queen pheromone receptor OR11 in honey bees within the genus *Apis*” University Paris Saclay, Biology licence
- 2019 **Final year bachelor project, Chloé Petitimberty**, “Functional study of the queen pheromone receptor OR11 in honey bees within the genus *Apis*” University Paris Saclay, Biology licence

Membership and administration

Peer review of a scientific article in « Journal of Insect Physiology »

Non-permanent representative

Scientific Council of the IDEEV Institute, Gif-sur-Yvette (2019–2021)

Co-non-permanent representative

CS IDEEV, Gif-sur-Yvette (2017–2019)

Science Day stand

Gif-sur-Yvette (2017 to 2024)

Reception and presentation of schoolchildren

Gif-sur-Yvette secondary schools (2017–2024), Cordées de la réussite (2024)

Doctoral seminars, international guests

IDEEV Institute (2018–2022)

– Bi-monthly team seminars « pôle comportement », EGCE laboratory (2017–2021)

– EvryBio undergraduate conference, Evry Val d'Essonne University (2015)

Organisation of meetings for ANR Bee-o-Choc ANR-17-CE20-003 (2017–2022)

Sexist and sexual violence formation – Université Paris Saclay (2024)

Scientific popularization

Popularisation conference: presentation at Fresnes Town Hall, France

Presentation – Audience of all ages: "The world of bees". 2021

Popularisation conference: presentation at Bures Town Hall, Bures-sur-Yvette, France

Presentation – Audience of all ages: "Communication in bees". 2022

References

Dr. Jean-Christophe Sandoz

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Pr. Frédéric Marion-Poll

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