

Baptiste Piqueret

Laboratoire d'Ethologie Expérimentale et Comparée
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Education

- 2017 – 2021 **Ph.D • Olfactory detection of human cancer by ants** • Laboratoire d'Ethologie Expérimentale et Comparée (LEEC), UR4443, Université Sorbonne Paris Nord (USPN), Villetaneuse, France. Funded for 40 months. Defended on the 5th of march 2021.
- 2015 – 2017 **Master's degree** (magna cum laude) • Behavioural Ecology, Evolution and Biodiversity • Université François Rabelais, Tours, France
- 2012 – 2015 **B.Sc** (cum laude) • Integrative and Evolutive Biology • Université François Rabelais, Tours, France

Research Experience

- 2021 **Post-doc** • Utilisation of urine as biomarker for the detection of tumour bearing individuals • (LEEC, USPN)
- 2017 - 2021 **Ph.D • Olfactory detection of human cancer by ants** • Advisors: **Pr. Patrizia d'Ettorre** (LEEC, USPN) & **Dr. Jean-Christophe Sandoz** (Evolution, Genomes, Behaviour and Ecology, CNRS)
- 2017 **Master's internship second year** • Associative appetitive learning in an ant species (*Formica fusca*): memory and extinction • Advisor: **Pr. Patrizia d'Ettorre** with the collaboration of **Dr. Jean-Christophe Sandoz**
- 2016 **Master's internship first year** • Morphologic characterization of six populations of a thermophilic ant, *Aphaenogaster iberica*, regarding the altitude • Advisors: **Ph.D Cristela Sanchez** & **Pr. Raphaël Boulay** • CNRS - Institut de Recherche sur la Biologie de l'Insecte (IRBI) • Université François Rabelais, Tours, France.

Publications

Published

- 1 Piqueret, B., Sandoz, J.C., d'Ettorre, P. (2019) Ants learn fast and do not forget: associative olfactory learning, memory and extinction in *Formica fusca*. Royal Society Open Science 6, 190778. doi: 10.1098/rsos.190778

- 2 Piqueret, B., & D'Ettoire, P. (2021). Communication in Ant Societies. In A. Kaufman, J. Call, & J. Kaufman (Eds.), *The Cambridge Handbook of Animal Cognition* (Cambridge Handbooks in Psychology, pp. 36-55). Cambridge: Cambridge University Press. doi:10.1017/9781108564113.004

Under revision

- 3 Piqueret, B., Bourachot, B., Leroy, C., Devienne, P., Mechta-Grigoriou, F., d'Ettoire, P., Sandoz, J.C. Ants detect cancer cells through volatile organic compounds.

Academic activities

Participations in events

- 2020 Participation to "My Thesis in 180 seconds" – Finale Sorbonne Paris Cité 2020
<https://youtu.be/R19QqavAeuc>

Teaching

- 2017-2021 **Brain & Psychology (Psychology - Bs 1st year) – 42 h / year**
- Vulnerability factors in the addiction (Stress & glucocorticoids)
 - Neurotransmission and functional consequences: comparison of cerebral investigation methods
 - Cerebral imaging
 - The synapse
 - Neurotransmitters and receptors
 - Introduction to the biological basis of depression
- Behavioural neurosciences (Psychology Bs 3rd year) – 20 h / year**
- Depression (From the epidemiology & symptoms to the treatment & antidepressant)
- Methodological tools (Applied & fundamental Ethology – M.S 2nd year) – 3h**
- Practical course on aggression in *Camponotus aethiops* ants
 - Practical course on the learning and memory of *Formica fusca* ants

Collective activity

- 2018 & 2019 International Student Course in Behavioural Biology, organised by the Institut Francilien d'Ethologie (IFE). Villetaneuse, France.
General organisation, logistic, hardware and software organisation
- 2017-2020 Representatives of the non-permanent members of the LEEC (PhD students, Post-docs, and short-term contract technicians).
- Referee activity* Insectes Sociaux, Biochimica et Biophysica Acta (BBA) - Reviews on Cancer

- Affiliations* UIEIS : Union Internationale pour l'Etude des Insectes Sociaux
CNI: Club de neurobiologie des invertébrés
IFE: Institut Francilien d'Ethologie
MediatEC: Médiation chimique dans l'environnement – Ecologie Chimique
GDR 3658
For the general public: Savante Banlieue, Science Ouverte, La Science se livre

Conferences & Workshops attended

Invited talks at international conferences

- 2018 Piqueret, B., Sandoz, J.-C., d'Etterre, P. (2018) Appetitive associative memory is highly resistant in *Formica fusca* ants. International Congress of the International Union for the Study of Social Insects IUSISI. Guarujá, Brazil.

Talks | international conferences

- 2019 Piqueret, B., Sandoz, J.-C., d'Etterre, P. Ants learn fast and do not forget: olfactory associative learning and memory extinction in *Formica fusca*. Behaviour 2019. Chicago, USA.

Talks | national conferences

- 2019 Piqueret, B., Mechta-Grigoriou, F., Bourachot, B., Sandoz, J.-C., d'Etterre, P. Ants are able to detect the odour of cancer cells. Congress of the International Union for the Study of Social Insects IUSISI – French Section. Avignon, France.
- 2018 Piqueret, B., Sandoz, J.-C., d'Etterre, P. Appetitive associative olfactory memory is highly resistant in *Formica* ants. Médiation chimique dans l'environnement – Ecologie Chimique (MediatEC), GDR 3658 - CNRS. Rennes, France.
- 2017 Piqueret, B., Sandoz, J.-C., d'Etterre, P. Associative and appetitive learning within a species of ant (*Formica fusca*): memory and extinction. Congress of the International Union for the Study of Social Insects IUSISI – French Section. Paris, France.

Invited talk in other universities

- 2021 Piqueret, B., Olfactory detection of human cancer by ants. Institut de Recherche sur la biologie de l'Insecte (IRBI), Université de Tours, France
- 2021 Piqueret, B., Olfactory detection of human cancer by ants. Department of Ecology, University of Szeged, Hungary.

Poster presentations | national conferences

- 2018 Piqueret, B., Sandoz, J.-C., d'Etterre, P. Are *Formica fusca* the perfect student? Club de Neurobiologie des Invertébrés. Versailles, France.

Poster presentations at student conferences

- 2019 Piqueret, B., Mechta-Grigoriou, F., Bourachot, B., Sandoz, J.-C., d'Etterre, P. Ants are able to detect the odour of cancer cells. International Student Course in Behavioural Biology, organised by the Institut Francilien d'Ethologie (IFE). Villetaneuse, France.
- 2019 Piqueret, B., Sandoz, J.-C., d'Etterre, P. Olfactory detection of human cancer by ants. Annual PhD day, organised by the Doctoral School "Sciences, Technologies, Santé – Galilée". Bobigny, France.

2018 Piqueret, B., Sandoz, J.-C., d'Ettoire, P. Associative and appetitive learning within a specie of ant (*Formica fusca*): memory and extinction. International Student Course in Behavioural Biology, organised by the Institut Francilien d'Ethologie (IFE). Villetaneuse, France.

Seminars for the general public

2019 Piqueret, B. L'animal, meilleur ami de l'Homme ? Savante Banlieue. Villetaneuse, France.

2019 Piqueret, B. L'animal, meilleur ami de l'Homme ? La science se livre. Sceaux, France.

2019 Piqueret, B. Détection olfactive du cancer humain par les fourmis / Olfactory detection of human cancer by ants. Annual PhD day, organised by the Doctoral School "Sciences, Technologies, Santé – Galilée". Bobigny, France.
Format: My thesis in 180s

2018 Martinez, V., Verjat, A., Piqueret, B. "Parcours excellence" for the pupils of the college Jean Vilar. Villetaneuse, France.

2018 Martinez, V., Verjat, A., Piqueret, B. "Science Ouverte à Paris 13" for the Open Science Association, Drancy, France.

2017-2018 Piqueret, B. Des rongeurs, des hommes... et des insectes ! Savante Banlieue. Villetaneuse, France.

Award & Honours

2019 **Best Oral presentation** • Annual PhD day, organised by the Doctoral School "Sciences, Technologies, Santé – Galilée". Bobigny, France. • Format: My thesis in 180s

2018 **Best poster presentation** (1st ex-aequo for PhD students) • International Student Course in Behavioural Biology, organised by the Institut Francilien d'Ethologie (IFE). Villetaneuse, France.

Technical and analytic skills

Animal facility **Ants:** behavioural observations, nests construction, collection in the wild and rearing experience (*Formica*, *Lasius*, *Camponotus*, *Messor*, *Aphaenogaster*). Basic rearing knowledge with *Atta*, *Neoponera* and *Ectatomma*.

Rodents: Rearing experience and samples collection (urine and feces) with *Mus spicilegus* (wild type) & *Mus musculus* (wild and lab type).

Insects: Basic rearing experience with drosophila, crickets and cockroaches.

Aquatic species: Personal experience with fresh water species (fish, shrimps...)

Chemistry Gas-Chromatography coupled with Mass-Spectrometry (GC-MS), liquid samples and headspace (Solid Phase Micro-Extraction, SPME). Analysis of cell line medium, urine and feces.

Cellular biology Maintenance and propagation of ovarian (IGROV-1) and breast (MCF-7, MCF-10A, MDA-MB-231) cell lines.

Statistical analysis R software. Basic functions (Wilcoxon, t-test...) and advanced ones (GLMMs, PCA, Bootstraps...)
Video analysis Manual and automatic following of individuals. ImageJ, Ethoc
Morphometry analysis Dissection of insects (head, legs...) and measurements using informatic tools.

References

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