



## Chloé Bonneau Researcher in microbial ecotoxicology

French, D.O.B.: Sept.03.1983  
5 rue de la Doua  
69100 Villeurbanne, France  
Tel. +33 (0) 4 72 20 87 48  
[chloe.bonneau@inrae.fr](mailto:chloe.bonneau@inrae.fr)  
*Curriculum vitae updated on January 2020*

### Research Experience

---

- 2015- **Researcher in aquatic microbial ecotoxicology, INRAE**, Lyon-Villeurbanne, *France*  
**INRAE** : French National Institute for Agriculture, Food and Environment,  
Team : Aquatic Microbial Ecotoxicology, Research unit : RiverLy
- 2012-15 **Post-doctoral researcher in the European project AquaStress**  
Biology of Nutrition and Environmental Toxicology, Catholic University of Louvain (UCL), Belgium  
*Topic: influence of nutrition (fatty acids) on fish sensibility to heavy metals (in vitro/in vivo approaches)*  
*Funding : Marie Curie Intra-European Fellowship (2013-2015)*
- 2007-11 **Junior Researcher in the European project Keybioeffects**  
Institute of Aquatic Ecology, University of Girona : UdG, Spain  
*Topic: the evaluation of the potential of antioxidant enzymes as biomarkers of stress in river biofilms*
- 2009 Pre-doctoral stay (3 months), Centre for Environmental Research – UFZ, Leipzig, Germany  
*Topic: Preliminary study for the design of a Functional Gene Array for river biofilms*
- 2006 Master project (6 months), Centre for Integrated Research in Biosafety, Christchurch, New Zealand

### Education- Degrees

---

- 2013 European accreditation to conduct experimentation on animals (« Maitre d'expérience »)
- 2011 **Ph. D. in experimental and environmental sciences *summa cum laude***, UdG, Spain  
**Marie-Curie grant in the EU Research Training Network Keybioeffects**  
Title: Contribution of antioxidant enzymes to toxicity assessment in fluvial biofilms  
Advisor: Pr. Helena Guasch
- 2006 **Research Master in Life Sciences with honors**, specialization: Microbiology and Industrial Catalysis  
**Engineering diploma in Biochemistry and Bacterium Genetics**, specialization: Post-genomics  
Institut National des Sciences Appliquées (INSAT), Toulouse, France

### Scientific activities

---

- Research interests* **Aquatic microbial ecotoxicology, benthic microbial communities, microbial adaptation and resilience** to contamination, PICT : Pollution induced community tolerance, **functional** responses
- Scientific & technical skills* Project management: design, coordination, team management, results diffusion...  
**Ecotoxicology**, experimental approach in microcosms, measure of **microbial functions** (enzymatic activities, metabolic activities...), **molecular biology**, lipid analyses  
**Statistics**: dose-response fitting, tests of significance, (non-)linear regression, toxic thresholds (EC<sub>50</sub>, NEC), multivariate analysis, good knowledge of R
- Diffusion of scientific results* (co-)author of **>25 articles** published in peer-reviewed journals, book chapters...  
**oral communications and posters** in national and international conferences  
Publication list available on <https://orcid.org/0000-0001-6341-003X>
- Reviewer for* Aquatic Toxicology, STOTEN, Frontiers in Microbiology, Ecotoxicology, Ecotoxicology & Environmental Safety, Chemosphere, ESPR...

### Teaching, formation and science popularization

---

- Since 2007 **Mentoring** of master students (9) and PhD student (2)
- Since 2017 **Teaching** in ecotoxicology (Master), University of Savoie Mont-Blanc, *France*
- Since 2016 Participation to different events of science popularization : Fête de la Science, Nuit des Chercheurs

## Scientific activities - Involvement in national and international projects

Date	Title	Role	Funding
2019-20	i-LINK+2018 - Consortium for the investigation of the dynamics of plastic particles in fluvial systems	Partner	CISC – Spanish national research council
2018-21	<b>Antibiotools - A set of tools to monitor antibiotic and antibiotic resistances in aquatic ecosystems</b>	<b>Coordinator</b>	<b>ANSES</b> - French Agency for Food, Environmental and Occupational Health & Safety
2018-21	Antibiotox - Fate of antibiotics and associated resistance genes in agroecosystems: ecotoxicological risk for functional microbial communities of receiving river systems	WP leader	ANR – French Research Agency
2017-19	COMMUSED - Structural and functional assessment of benthic microbial and invertebrate communities to evaluate the ecological quality of polluted rivers	Partner	Rhône Méditerranée Corse Water Agency
2017-18	SEDIPICT - Validation and application of Pollution Induced Community Tolerance (PICT) measurement to evaluate in situ effects of pollutants on sediment microbial communities	Partner	AFB- French Agency for Biodiversity
2016-20	IMPACT-CE - Development and transfer of chemical and biological tools to monitor the impact of agricultural practices on lotic ecosystems.	Partner	AFB & the French Ministry of the Environment
2013-15	FishStress - The impact of nutrition on fish under multiple stress situations: the influence of lipids in sensitivity to metals and thermal stress (PIEF-GA-2012-332049)	Leader	EU
2012-15	AQUASTRESS - Aquatic systems under multiple stress: a new paradigm integrating aquaculture and ecotoxicology research (P7/31, Belspo)	Partner	Belspo
2010-11	FLUVIALMULTISTRESS - Multi-stressors in fluvial ecosystems (CTM2009-14111-CO2-01)	Partner	Spanish minister
2007-10	ITN Keybioeffects - Cause-effect Relations of Key Pollutants on the European Rivers Biodiversity (MRTN-CT-2006-035695, Marie Curie)	PhD student	EU

## Scientific communications – international peer-reviewed publications

- Martin-Laurent F, Topp E, Billet L, Batisson I, Malandain C, Besse-Hoggan P, Morin S, Artigas J, **Bonnineau C**, Kergoat L, Devers-Lamrani M, Pesce S .2019. Environmental risk assessment of antibiotics in agroecosystems: ecotoxicological effects on aquatic microbial communities and dissemination of antimicrobial resistances and antibiotic biodegradation potential along the soil-water continuum. *Environmental Science & Pollution Research* 26, 18930–18937.
- Arambourou H, Planelló R, Llorente L, Fuertes I, Barata C, Delorme N, Noury P, Herrero Ó, Villeneuve A, **Bonnineau C**. 2019. *Chironomus riparius* exposure to field-collected contaminated sediments: From subcellular effect to whole-organism response. *Science of The Total Environment* 671, 874–882.
- Mendoza-Lera C, Ribot M, Foulquier A, Martí E, **Bonnineau C**, Breil P, Datry T. 2019. Exploring the role of hydraulic conductivity on the contribution of the hyporheic zone to in-stream nitrogen uptake. *Ecohydrology* 12, e2139.
- Mahamoud Ahmed A, Lyautey E, **Bonnineau C**, Dabrin A, Pesce S. 2018. Environmental concentrations of copper, alone or in mixture with arsenic, can impact river sediment microbial community structure and functions. *Frontiers in microbiology*. 9
- Pesce S, Perceval O, **Bonnineau C**, Casado-Martinez C, Dabrin A, Lyautey E, Naffrechoux E, Ferrari BJD. 2018. Looking at biological community level to improve ecotoxicological assessment of freshwater sediments: report on a first French-Swiss workshop. *Environmental Science and Pollution Research* 25, 970–974
- Ferain A, **Bonnineau C**, Neefs I, De Saeyer N, Lemaire B, Cornet V, Larondelle Y, De Schamphelaere KAC, Debier C, Rees JF. 2018. Exploring the interactions between polyunsaturated fatty acids and cadmium in rainbow trout liver cells: a genetic and proteomic study. *Aquatic Toxicology* 205, 100–113.
- Ferain A, **Bonnineau C**, Neefs I, Das K, Larondelle Y, Rees JF, Debier C, Lemaire B. 2018. Transcriptional effects of phospholipid fatty acid profile on rainbow trout liver cells exposed to methylmercury. *Aquatic Toxicology* 199, 174–187
- Brüggemann M, Hayeck N, **Bonnineau C**, Pesce S, Alpert PA, Perrier S, Zuth C, Hoffmann T, Chen J, George C. 2017. Interfacial photochemistry of biogenic surfactants: A major source of abiotic volatile organic compounds. *Faraday Discussions* 200, 59–74
- Mellery J, Scalisi F, **Bonnineau C**, Kestemont P, Rollin X, Larondelle Y. 2017. Impact of Lignans on the Polyunsaturated Fatty Acid Metabolic Processing in a Rainbow Trout (*Oncorhynchus Mykiss*) Cell Line. *Aquaculture* 476, 106–110

- Coomans de Brachène A, Dif N, de Rocca Serra A, **Bonnineau C**, Velghe AI, Larondelle Y, Tyteca J, Demouli JB. 2017. PDGF-Induced Fibroblast Growth Requires Monounsaturated Fatty Acid Production by Stearoyl-CoA Desaturase. *FEBS Open Bio* 7 414–23.
- Bonnineau C**, Scaion D, Lemaire B, Belpaire C, Thomé JP, Thonon M, Leermaker M, Gao Y, Debier C, Silvestre F, Kestemont P, Rees JF. 2016. Accumulation of neurotoxic organochlorines and trace elements in brain of female European eel (*Anguilla anguilla*). *Environmental Toxicology and Pharmacology* 45, 346–355.
- Ferain A, **Bonnineau C**, Neefs I, Rees JF, Larondelle Y, De Schamphelaere KAC, Debier C. 2016. The Fatty Acid Profile of Rainbow Trout Liver Cells Modulates Their Tolerance to Methylmercury and Cadmium. *Aquatic Toxicology* 177, 171–81
- Guasch H, Ricart M, López-Doval J, **Bonnineau C**, Proia L, Morin S, Muñoz I, Romani AM, Sabater S. 2016. Influence of Grazing on Triclosan Toxicity to Stream Periphyton. *Freshwater Biology* 61, 2002–12
- Bonnineau C**, Tlili A, Faggiano L, Montuelle B, Guasch H. 2013 The use of antioxidant enzymes in freshwater biofilms: Temporal variability vs. toxicological responses. *Aquatic Toxicology* 136–137, 60–71.
- Bonnineau C**, Gallardo Sague I, Urrea G, Guasch H. 2012. Light history modulates antioxidant and photosynthetic responses of biofilms to both natural (light) and chemical (herbicides) stressors. *Ecotoxicology* 21, 1208–1224.
- Bonnineau C**, Bonet B, Corcoll N, Guasch H. 2011. Catalase in fluvial biofilms: a comparison between different extraction methods and example of application in a metal-polluted river. *Ecotoxicology* 20, 293–303.
- Bonnineau C**, Guasch H, Proia L, Ricart M, Geiszinger A, Romani AM, Sabater S. 2010. Fluvial biofilms: A pertinent tool to assess  $\beta$ -blockers toxicity. *Aquatic Toxicology* 96, 225–233.
- Guasch H, Artigas J, Bonet B, **Bonnineau C**, Canals O, Corcoll N, Foulquier A, López-Doval J, Kim-Tiam S, Morin S, Navarro E, Pesce S, Proia L, Salvadó H, Serra A. 2015. The Use of Biofilms to Assess the Effects of Chemicals on Freshwater Ecosystems. In : Romani AM, Guasch H, Balaguer MD (Eds) *Aquatic Biofilms: Ecology, Water Quality and Wastewater Treatment*. Caister Academic Press
- Rodriguez-Mozaz S, Ricart M, Köck-Schulmeyer M, Guasch H, **Bonnineau C**, Proia L, de Alda ML, Sabater S, Barceló D. 2014 Pharmaceuticals and pesticides in reclaimed water: Efficiency assessment of a microfiltration–reverse osmosis (MF–RO) pilot plant. *Journal of Hazardous Materials*.
- Proia L, Vilches C, **Bonnineau C**, Kantiani L, Farré M, Romani AM, Sabater S, Guasch H. 2013. Drought episode modulates biofilm response to pulses of Triclosan. *Aquatic Toxicology* 127, 36–45.
- Morin S, Proia L, Ricart M, **Bonnineau C**, Geiszinger A, Ricciardi F, Guasch H, Romani AM, Sabater S. 2010. Effects of a bactericide on the structure and survival of benthic diatom communities. *Vie et milieu* 60, 109–116.
- Ricart M, Guasch H, Alberch M, Barceló D, **Bonnineau C**, Geiszinger A, Farré M, Ferrer J, Ricciardi F, Romani AM, Morin S, Proia L, Sala L, Sureda D, Sabater S. 2010. Triclosan persistence through wastewater treatment plants and its potential toxic effects on river biofilms. *Aquatic Toxicology* 100, 346–353
- Geiszinger A, **Bonnineau C**, Faggiano L, Guasch H, Lopez-Doval JC, Proia L, Ricart M, Ricciardi F, Romani AM, Rotter S, Muñoz I, Schmitt-Jansen M, Sabater S. 2009. “The relevance of the community approach linking chemical and biological analyses in pollution Assessment.” *Trends in Analytical Chemistry* 28, 619–626.
- Ricciardi F, **Bonnineau C**, Faggiano L, Geiszinger A, Guasch H, López-Doval J, Muñoz I, Proia L, Ricart M, Romani AM, Sabater S. 2009. Is chemical contamination linked to the diversity of biological communities in rivers ? *Trends in Analytical Chemistry* 28, 592–602.

### *Scientific communications – international book chapters*

- Guasch H, Bonet B, **Bonnineau C**, Barral L. 2017. Microbial Biomarkers, in: *Microbial Ecotoxicology*. Springer, Cham, pp. 251–281.
- Bonnineau C**, Moeller A, Barata C, Bonet B, Proia L, Sans-Piché F, Schmitt-Jansen M, Guasch H, Segner S. 2012. Advances in the multi-biomarker approach for risk assessment in aquatic ecosystems. In: Guasch H, Ginebreda A, Geiszinger A (Eds.) *Emerging and Priority Pollutants in Rivers: Bringing Science into River Management Plans*. The Handbook of Environmental chemistry. Springer Berlin/Heidelberg, pp. 147–179.
- Guasch H, Bonet B, **Bonnineau C**, Corcoll N, López-Doval JC, Muñoz I, Ricart M, Serra A, Clements W. 2012. How to link field observations with causality ? Field and experimental approaches linking chemical pollution with ecological alterations. In: Guasch H, Ginebreda A, Geiszinger A (Eds.) *Emerging and Priority Pollutants in Rivers: Bringing Science into River Management Plans*. The Handbook of Environmental chemistry. Springer Berlin/Heidelberg, pp. 181–218.