

# Who's Who – MNHN / BOREA Research Unit Ph.D. Students' Biographies



**Morgane Bonadè** is a 1st year PhD student at the National Museum of Natural History (MNHN) in Paris. Former veterinarian, she was always interested in evolution, phylogenetics and odd organisms. An internship on evolution of calcification in catshark with an evo-devo approach resulted in a paper on which Morgane BONADE is a co-author (Enault *et al.*, 2015), and convinced her to enrol in the « Systematics Evolution Paleontology » master of the Museum. She then joined the BOREA laboratory in February 2017 where she worked on the evolution and development of the dopaminergic system of the cuttlefish *Sepia officinalis* for her master thesis. She now just started a PhD under the supervision

of Pr Laure Bonnaud-Ponticelli, where she will continue the study of the setting up of the dopaminergic system in *Sepia officinalis* with an eco-evo-devo approach to understand the adaptations to their environment. To do so, she will focus on the influence of light on brain development in relation to the cognitive abilities. Morgane also did two exchange programs during her studies (USA and Finland) and is a member of the organizing team of the Young Natural History Scientists Meeting (YNHM) hold every year by young researchers from MNHN.

*Thesis title:* Quantitative and qualitative approach of neurogenesis during the life of the cuttlefish *Sepia officinalis* and influence of light

**Frank David** has just defended his PhD in biogeochemistry and aquatic ecology at the National Museum of Natural History (MNHN), Paris. He studied life sciences and agronomy at the Ecole Nationale Supérieure Agronomique de Toulouse (ENSAT) where he was brought to examine trophic transfers in both natural ecosystems (headwater streams) and human managed environments (recirculating multi-trophic aquaculture). During his PhD, under the supervision of Pr Tarik Méziane and Dr Cyril Marchand at the laboratory BOREA, he studied carbon exchanges within a mangrove dominated tropical estuary in Vietnam using quantitative (incubation chambers, alkalinity and organic carbon measurements) and qualitative methods (fatty acids, stable isotopes). He is now interested in developing new production techniques to reduce the pressure of aquaculture on natural ecosystems.



*Thesis title:* Carbon dynamics and trophic relationships in a human impacted and mangrove dominated tropical estuary (Can Gio, Vietnam)



**Valentin De Mazancourt** is a 2nd year PhD student at the National Museum of Natural History (MNHN), Paris, under the supervision of Pr Philippe Keith and Gilles Luquet, BOREA laboratory. He studies a genus of freshwater shrimps, firstly from a phylogenetic and taxonomic point of view, using genetic, morphological and ecological data, and secondly in a sclerochronological aspect, investigating the existence of calcified parts conserved throughout the molts of the shrimps. The first part is needed to clarify the very confused taxonomy of this group, where morphology alone

cannot be relied on to discriminate species. The second part will be to better understand the lifecycle of these species, that go through a marine planctonic lifestage before living as adults in freshwater. Finding conserved calcified parts will allow to study the chemical composition of the skeleton to estimate the composition of the water they lived in. His work led him to go sampling in New Caledonia with the exploration program Our Planet Reviewed and describing several new species. Valentin graduated from Paris 6 University in 2015 with a Master degree in Systematics, Evolution and Paleontology.

*Thesis title:* Diadromy, dispersion and evolutionary history of *Caridina nilotica* and *Caridina weberi* species complexes (Crustacea: Decapoda: Atyidae) in the Indo-Pacific islands

**Julia Machon** is a 3rd year PhD student supervised by Dr Juliette Ravaux and Dr Magali Zbinden, BOREA laboratory, at Pierre and Marie Curie University (UPMC) and the National Museum of Natural History (MNHN), Paris. She got a Master degree in physiology and integrative biology, with a specialization in marine biology. Her PhD project focuses on sensory adaptations of deep hydrothermal shrimp from Mid-Atlantic Ridge, to get insights into if and how these animals use the chemical/temperature signature of the hydrothermal fluids for orientation in their environment. She uses several approaches, including microscopy, behavior experiments, molecular biology, and electrophysiology. For the latter she developed a method to record the electrical activity within the antennal appendages in response to various stimuli.



*Thesis Title:* Comparative study of sensory abilities (chemo- and thermo-reception) in deep hydrothermal Alvinocaridid shrimp *Mirocaris fortunata* and coastal shrimp *Palaemon elegans*



**Jérôme Morelle** is a third year PhD student, under the supervision of Pr Pascal Claquin, BOREA laboratory, at the University of Caen Normandy. The aim of his studies was to investigate the spatial and temporal dynamics of the microalgae primary production along the salinity gradient of the Seine estuary by considering both the phytoplanktonic and the microphytobenthic compartments. The methods used during his studies combined both carbon incorporation and PAM fluorometry to access high frequency measurements of the primary production. Beside, his work has treated the

phytoplanktonic community structure and the exopolysaccharides (TEP and EPS) pools from both primary producers at different temporal scales (i.e. tidal cycle, seasons, spatial gradient). These researches are especially important for the understanding, apprehension and management of the Seine estuary, which is important as much as ecologically and economically.

*Thesis Title:* Spatial and temporal dynamics of the primary production in the Seine estuary

**Julie Schwartz** is a third year PhD student under the supervision of Pr Pascal Favrel, laboratory BOREA, University of Caen Normandy. She obtained a Bachelor of Science (B.S.) degree in Biology of Organisms and a Master of Science (M.S.) in Neurobiology and Endocrinology at the University of Montpellier. During her master studies, she was interested by the role of serotonergic receptor 5-HT<sub>4a</sub> in the prevention of Alzheimer's disease. During her PhD, she continues to work on G-Protein Coupled Receptors (GPCRs) and more precisely on receptors "deorphanization" in a Lophotrochozoan, the oyster *Crassostrea gigas*, in the context of NEuropeptides in Marine Organisms ANR project. The studied RCPGs are the receptors for Cholecystokinin/Sulfakinin related peptides potentially involved in digestion and satiety regulation and, the receptor for Calcitonin/Calcitonin Gene-Related Peptide in oyster.



*Thesis title:* Functional characterization of neuroendocrine pathways involved in the control of the physiology by the characterization of receptor/neuropeptides couples in the oyster *Crassostrea gigas*



**Paul Valcke** is a former theoretical physicist and a second year PhD student, under the supervision of Dr Pascal Lopez, laboratory BOREA, Paris and Dr Stéphane Douady, laboratory MSC. Working in both a physicist (MSC Paris VII) and biologist laboratory (BOREA MNHN), his works aims to understand the impact and adaptation of mechanical constraints on the shape of soft corals. Taking methods from leaves image analysis and cities network studies, he develops new ways of understanding coral shape and their morphogenesis. This approach will be further coupled to mechanical models and *in situ* growth experiment, showing both: the mechanical properties as a metamaterial, and the capacity of adaptation of soft coral to their environment. Paul is also deeply implied at the CRI (Centre de recherche interdisciplinaire) for a better communication between people from different disciplines. He graduated in 2015 from the Ecole Normale Supérieure de Cachan and Paris VI.

*Thesis title:* "Shape and mechanical adaptation of *Gorgonia ventalina*"