

# Sujet de thèse Unité Evo-Eco-Paléo - campagne 2018

**Université :** Université de Lille

**Ecole doctorale :** ED104 Sciences de la matière, du rayonnement et de l'environnement (SMRE)

**Filière doctorale :** Géosciences Écologie Paléontologie Océanographie

**Titre de la thèse :** Lier les processus micro- et macro-évolutifs impliqués dans les mollusques dulcicoles du Rift Est Africain (Linking microevolutionary and macroevolutionary processes in freshwater mollusks from the East African Rift)

**Direction de thèse :** Prof. Xavier VEKEMANS (directeur) et Dr. Bert VAN BOCXLAER (co-encadrant)

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**Laboratoire(s) de Rattachement :** Unité Évolution, Écologie et Paléontologie, UMR CNRS 8198

**Programme(s) de Rattachement :** ANR - JJC - EVOLINK (PI. Bert Van Bocxlaer)

**Financement acquis ou demandé :** 50% ANR EVOLINK (acquis) + 50% Université de Lille (demandé)

## SUJET DE THÈSE

We are pleased to announce a PhD fellowship for a highly motivated, enthusiastic and independent student with a keen interest in evolutionary biology to help us develop studies on African freshwater mollusks. These mollusks are an emerging model system in the study of diversification and evolutionary radiations. The candidate will be expected to develop morphological and molecular datasets to examine differentiation and divergence at both regional and continental scales, specifically for Unionidae.

Project background:

How mechanisms causing differentiation between populations ultimately contribute to macroevolution remains a central question in evolutionary biology. We propose to address this question by studying mechanisms of differentiation at various levels of biological organization in evolutionary radiations of freshwater mollusks of the East African Rift System (EARS). The EARS is geographically subdivided in several quasi-replicate systems that permit to study evolution at various spatial and taxonomic scales. The freshwater mollusks of the EARS are diverse, with life-history traits that correlate well to ecological niches, and diversification is ongoing in several lake basins, so that processes leading to speciation can be reconstructed accurately. Furthermore, fossilized ancestral lineages can be traced over long periods with good temporal and phylogenetic resolutions. In this project we will study how processes of population differentiation have contributed to reproductive isolation and thus speciation, and we will frame our results in a wider taxonomic and geographic context to examine links between microevolution and macroevolution. The obtained datasets will allow us to test biogeographic models, parallel and iterative evolution, and trait change in relation to diversification. Subsequently we will test whether macroevolutionary conclusions based on the modern fauna remain valid when the fossil record is included in these studies.

Required competences:

- A master degree in a relevant field (Biology/Life Sciences *sensu lato*, incl. Paleontology)
- Experience in molecular biology (expertise in bioinformatics is desirable)
- Be motivated to assimilate new knowledge and competences
- Be capable to work in an interdisciplinary and collaborative environment
- Have the capacity and enthusiasm to write clear scientific reports (experience with writing

scientific papers is desirable)

- Be enthusiastic to participate in fieldwork (having experience is desirable)
- Have good knowledge of English (knowledge of French is also desirable)