Mélanie BOËL

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RESEARCH EXPERIENCES

October 2016 – October 2019: PhD – LEHNA (Supervision: D. Roussel and Y. Voituron)

Relationship between mitochondrial bioenergetics and body mass in mammals

- Studying oxygen consumption and ATP synthesis of mitochondria from mammal's liver or muscle, and to evaluate the mitochondrial efficiency (ATP/O) and its evolution with body mass.
- Comparing three species belonging to *Mus* genus to understand mechanisms involved in the differences of mitochondrial functions observed in *Mus mattheyi*.

January 2016 – June 2016: Internship – LEHNA (Supervision: D. Roussel)

Impact of food restriction on both mitochondrial efficiency and lipid metabolism in Cairina moschata

- Measuring oxygen consumption and ATP synthesis of mitochondria from duck's liver or muscle in presence of three different lipid substrates, as well as activities of some enzymes, in order to determine the impact of caloric restriction on the mitochondrial efficiency.

February 2015: Internship – MARine Biodiversity, Exploitation and Conservation (MARBEC)
(Supervision: J.H. Lignot and G. Rivera-Ingraham)

Impact of salinity on oxidative balance of gills from Carcinus aestuarii

- Assessing the impact of salinity on crabs, measuring their oxygen consumption at whole animal scale, the activities of antioxidant enzymes (SOD, CAT) and the oxidative damage in their gills, involved in different physiological functions (respiration or osmoregulation).

April 2013 – June 2013: Internship – ISARA (Supervision: Y. Demarigny and L. Gemelas)

Achievement of a microbial strain collection capable of producing exopolysaccharides and diacetyl

- Creating a microbial strain collection to find a bacterium capable to produce both exopolysaccharides and diacetyl, and to growth in flour-based culture medium.

Skills: mitochondria isolation; polarographic measurements on isolated mitochondria; high-resolution respirometry (OROBOROS); ATP synthesis measurements; enzymatic assays (enzymes involved in metabolism or in oxidative balance); Phylogenetically Independent Contrasts (PIB - comparative method); microbial cultures; screening of lactic bacteria.

ACADEMIC FORMATIONS

2017: University degree "Expérimentation animale niveau 1" (University Claude-Bernard Lyon 1 – ENS Lyon)

2016: Master's degree "Physiologie Intégrée en Conditions Extrêmes" (University Claude-Bernard Lyon 1)

2014: Bachelor's degree in Biology (University Claude-Bernard Lyon 1)

2013: DUT Biological Engineering option agri-food and organic industries (University Claude-Bernard Lyon 1)

PUBLICATIONS

Roussel, Damien, Mélanie Boël, and Caroline Romestaing. 2018. "Fasting Enhances Mitochondrial Efficiency in Duckling Skeletal Muscle by Acting on the Substrate Oxidation System." *The Journal of Experimental Biology* 221 (Pt 4). https://doi.org/10.1242/jeb.172213.

Rivera-Ingraham, Georgina A., Kiam Barri, Mélanie Boël, Emilie Farcy, Anne-Laure Charles, Bernard Geny, and Jehan-Hervé Lignot. 2016. "Osmoregulation and Salinity-Induced Oxidative Stress: Is Oxidative Adaptation Determined by Gill Function?" *The Journal of Experimental Biology* 219 (Pt 1): 80–89. https://doi.org/10.1242/jeb.128595.

CONFERENCES

November 2017: **3ème Colloque Ecophysiologie Animale – Oral presentation** (Strasbourg, France). ***Mitochondrial approach to study the relationship between metabolism and body mass of individual***. M. Boël, Y. Voituron, C. Romestaing, D. Roussel

November 2015: **2nd Colloque Ecophysiologie Animale – Poster** (La Rochelle, France). ***Is an hormetic effect of free radicals mediating salinity acclimation in crabs?*** G. Rivera-Ingraham, K. Barri, M. Boël, E. Farcy, A. L. Charles, B. Geny, J. L. Lignot.

August 2015: **The 9th International Congress of Comparative Physiology and Biochemistry – Poster** (Kraków, Poland). ***How do osmoregulating tissues cope with oxidative stress? A Mediterranean crab as a study.*** G. Rivera-Ingraham, K. Barri, M. Boël, E. Farcy, A. L. Charles, B. Geny, J. L. Lignot

SCHOLARSHIPS AND FINANCINGS

2016 - 2019: **ministerial scolarships (France)**

INTERNSHIP SUPERVISION AND ADMINISTRATION EXPERIENCES

February 2018:

- Thomas Verdier (physiological Master's degree): ***Evolution of aero- and anaerobic metabolisms as a function of aging, in two muscles (Gastrocnemius and Pectoralis), in the King Penguin chicks.***
- Lucie Moutet (physiological Master's degree): ***Allometric relationship between metabolism and body mass in mammals.***

October 2017 – October 2019: PhD students representative in laboratory council (LEHNA)