Pierre-Axel MONTERNIER
PhD in physiology
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SUMMARY OF QUALIFICATIONS

I am an expert in bioenergetics, especially in the investigation of mitochondrial function. Throughout my years of research, I mastered the management of pharmacology projects by designing an accurate experimental plan, monitoring the execution of the studies, writing, and validating the reports and ensuring internal and external communication of the results. I have developed strong interpersonal skills thanks to my interactions with external partners (CROs and Academics) and my work in a cross functional team. My involvement in the R&D committee broaden the scope of my knowledge on the drug development path.

My experience provides me with a strong background to develop my career towards broader program management and involvement in strategic discussions.

PROFESSIONAL EXPERIENCES

Senior Manager Pharmacology
Poxel Pharma, Lyon (France) 2019 – present

In this position, I contributed to the advancement of our rare disease programs by managing pharmacological studies (CROs and Academic partners), by presenting the results internally and externally to KOLs that endorsed our programs for clinical development. I was the pharmacology representative for regulatory filings that led to the Fast Track and Orphan Drug Designations for our assets.

My focus this past year was to identify new indications for our assets based on their mechanism of action and the existing proof of concept of parent drugs. This work led to the identification of new diseases of interest, the design of multiple work plans (experimental design, timeline, and budget) and to the formalization of collaborations with partners.

Research Scientist
Erytech Pharma, Lyon (France) 2019

During this fixed-term contract, I joined the *expertise team* and brought my expertise of bioenergetics to assess the efficacy of the main asset of the company. I managed exploratory studies performed internally by a team of technicians. I also managed proof of concept studies outsourced by CROs and Academic partners.

I assisted the project managers to analyze the data by bringing my innovative point of view. Combined with a re-analysis of existing data, this work contributed to the identification of a potential new mechanism of action of the main asset of the company.

Post-doctoral researcher – drug development project sponsored by pharma company
Buck Institute for Research on Aging, Novato CA (USA) – 2016 - 2019
Martin Brand & Simon Melov Labs – labs focused on bioenergetics and free radical production

This postdoc position was a sponsored research agreement with a biotech for a drug repositioning. I mastered the assessment of mitochondrial function by working with the world-expert in bioenergetics. I was in charge of the design and the execution of the *in vitro* and *in vivo* experimental plans as well as the organization of the communication of the results to the sponsor.

My work contributed to the patent filing and to a better understanding of the mechanism of action.

Doctoral researcher

University of Lyon – Ecophysiology behavior & conservation, Lyon (France) – 2012 - 2015

Lab focused on understanding physiological adaptations to the environment

During my PhD, I learned how to manage a scientific project from end to end. I designed and executed experimental studies for which I managed scientific and administrative aspects. I took part to several scientific missions on isolated field, strengthening my autonomy. I facilitated my projects' funding by obtaining grants.

My work contributed to increase the knowledge of fundamental physiology of wild bird species. I was also involved in the pedagogic team by giving lectures in physiology for bachelor and master students, as well as mentoring master students during their internship. I was a board member of the laboratory unit.

Field researcher

Crozet scientific station, French sub-Antarctic Island - French Polar Institute – 2010 - 2012

During this scientific mission, I designed and executed experimental studies in isolated environment. The context of this field work strengthened my autonomy as well as my technical skills.

My work helped to better understand the physiology of King Penguins and was included in my PhD thesis. This position, in an isolated environment with only few people, was also a life experience that enhanced my interpersonal skills.

SKILLS AND TECHNIQUES

In vitro section:

- Cell & mitochondria bioenergetics (Seahorse, Oroboros & Reactive Oxygen Species)
- Perfused heart (Langendorff system) & primary cell culture (cardiomyocytes)
- Cell culture (C2C12 – N27A)
- Western blot, qPCR and standard biochemical dosages

In vivo section:

- European accreditation, FELASA-C
- Animal husbandry and colony management (GMO mice – rats – ducks – wild bird species)
- Whole body analysis (metabolism – body composition/EchoRMI)
- Echocardiography (mouse)
- Surgery (King Penguin & Duck – logger implementation, muscle biopsy)
- Tissues sampling (rats – mice – ducks)
- Chronic treatment (*IP* & *IV* injections)

Data analysis & software:

- Office, Prism, MacVector, SoftMouse, eLABJournal

Language: French, English

EDUCATION

University of Lyon, Lyon (France).

PhD in Biology, specialized in Physiology (2015). UMR-5023, supervisor: Dr Damien Roussel

University of Lyon, Lyon (France).

Master degree in biology, specialized in ecophysiology under harsh environmental conditions

PUBLICATIONS

Gluais-Dagorn P. *et al* - Direct AMPK activation corrects NASH in rodents through metabolic effects and direct action on inflammation and fibrogenesis. *Hepatol Commun.* 2022.

Roussel D. *et al* - Skeletal muscle metabolism in sea-acclimatized king penguins. II. Improved efficiency of mitochondrial bioenergetics. *J Exp Biol.* 2020.

Wong HS, **Monternier PA**, Brand MD - S1QELs suppress mitochondrial superoxide/hydrogen peroxide production from site I_Q without inhibiting reverse electron flow through Complex I. *Free Radic Biol Med.* 2019.

Wong H. *et al* - Plate-based measurement of superoxide and hydrogen peroxide production by isolated mitochondria. *Mitochondrial Bioenergetic. Methods in Molecular Biology, vol 1782.* Humana, 2018.

Wong H. *et al* - Production of superoxide and hydrogen peroxide from specific mitochondrial sites under different bioenergetics conditions. *J. Biological Chemistry*, 2017.

Monternier P.A. *et al* - Mitochondrial oxidative phosphorylation efficiency is upregulated during fasting in two major oxidative tissues of ducklings. *Comp. Biochem. Physio. Part A*. 2017.

Benoit B. *et al* - Fibroblast growth factor 19 regulates skeletal muscle mass and ameliorate muscle wasting in mice. *J. Nature Medicine*. 2017.

Teulier L. *et al* - Lipid-induced thermogenesis is upregulated by the first cold-water immersions in juvenile penguins. *J. Comp. Physiol. B.* 2016, 186; 639-50.

Rey B. *et al* - Hormetic response triggers multifaceted anti-oxidant strategies in immature king penguins (Aptenodytes patagonicus). *Free Radic Biol Med* 2016, 97; 577-87.

Monternier P.A. *et al* - Skeletal muscle heterogeneity in fastin-induced changes in mitochondrial oxidative phosphorylation efficiency in cold-acclimated birds. *J. Exp. Biol*. 2015, 218; 2427-2434.

Monternier P.A. *et al* - Mitochondrial phenotypic flexibility enhances energy savings during winter fast in king penguin chicks. *J. Exp. Biol*. 2014, 217; 2691-2697.

PRESENTATIONS

The MPP^+ model of Parkinson's disease may be driven by ATP crisis rather than by oxidative stress. 2018 Monternier P.A. & M.D. Brand. Scientific Advisory Meeting, Buck Institute – Novato (USA).

Does MPP^+ model of Parkinson's disease increase mitochondrial H_2O_2 production? 2018 Monternier P.A. & M.D. Brand. Internal Research Seminar, Buck Institute – Novato (USA).

Mitochondrial efficiency as a regulator of energy trade-offs in birds fasting in the cold. 2015 Monternier P.A. *et al.* International Congress of Comparative Physiology and Biochemistry, Krakow (Poland).

Mitochondrial efficiency as a regulator of energy trade-offs in birds fasting in the cold. 2015 Monternier P.A. *et al.* Congrès de Physiologie et de Biologie Intégrative, Strasbourg (France).

Mitochondrial efficiency: The energetic key to survive during winter fast in king penguin chicks. 2013, Monternier P.A. *et al.* Society for Experimental Biology annual meeting, Valencia (Spain).

AWARDS

YGGDRASIL grant from the Research Council of Norway – funded the field work in Ny-Åleseund - 2014
Travel grant from the Company of Biologists - 2013
Third prize – regional final "My Thesis in 180 seconds" - 2014