

# Karine Salin

**K**arine Salin is a Research Scientist at Ifremer (Institut Français de Recherche pour l'Exploitation de la Mer), the French Research Institute for Exploitation of the Sea.



mitochondrial traits within individuals is virtually lacking due to the need to cull animals in order to take the tissue samples required for mitochondrial assays. I designed methodological advances for analysing mitochondrial function from non-lethal sampling in fish. Repeatability of individual variation in mitochondrial traits has been evaluated in two tissues (red muscle and red blood cells) in European sea bass.

*What do you most enjoy about your work?*

The freedom to organize my time, to develop my ideas, and to exchange with colleagues and collaborators; I have been inspired by amazing mentors, colleagues, and authors. Every day is different, and I continuously face new challenges and learn from other scientists.

*What do you find most challenging?*

The most challenging aspect is keeping focussed on the research that I have the time and resources to deal with. I receive so many invitations to collaborate on exciting new projects and it is difficult to evaluate priorities to select one amongst many interesting questions to focus on.

*What does a typical day look like for you?*

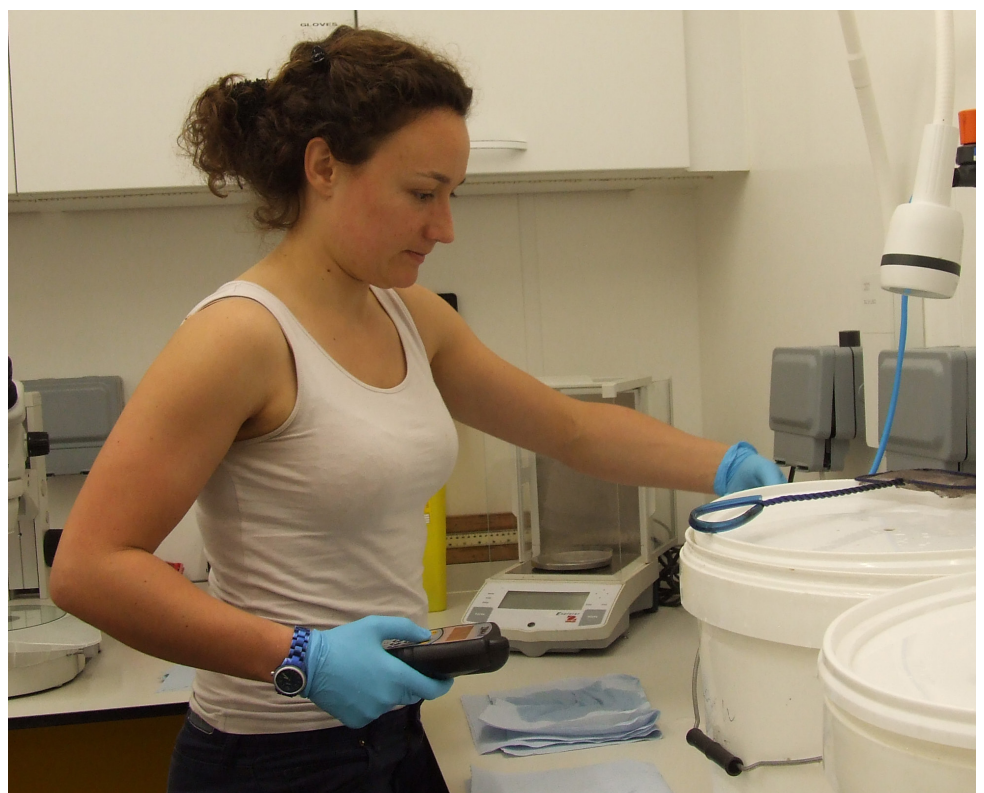
Cycling to work is probably the only thing I would do every day. I can only be efficient when I focus on one task a day. I can spend a full day reading articles, writing up projects or manuscripts, or running an experiment.

*Tell us about your background. How did you first become interested in ecophysiology?*

I have been interested in ecophysiology since my Master's degree. As an Ecophysiologicalist, my research interests span integrative approaches from molecules to whole organisms. My work investigates how physiological mechanisms underlie life-history trajectories in animals. During my Master's degree, I focussed on the importance of mitochondrial plasticity in responses to environmental change. During my PhD, I started examining whether energy metabolism and oxidative stress are proximate causes of life-history variation which underlie life-history trade-offs.

*What are you working on currently?*

I currently work on the variation in mitochondrial metabolism within individuals. Information on the stability of



*Right:* Setting up for measurement of the body mass of individual fish.

*What are you hoping to work on in the future?*

I hope to examine whether individual variation in mitochondrial phenotype is transmitted to future generations, and whether transgenerational effects of ancestral environments on offspring mitochondrial phenotypes can mitigate the impacts of environmental change. Along with within-generation phenotypic plasticity, transgenerational plasticity is now recognized as a highly effective mechanism by which animals can mitigate the effects of global environmental change.



“Every day is different, and I continuously face new challenges and learn from other scientists”

*What advice would you give to aspiring scientists in this area?*

First, find your own work/life balance and good time management skills; it is difficult to accept that our job is never “fully done”. Secondly, research is full of “failing” steps before a success; you need to get in touch with (new!) people, ask questions, and learn new things.

*Left:* Addition of solution to the respirometry chamber for the mitochondrial assay.

#### **Selected Publications from SEB or Affiliated Journals.**

Auer SK, Bassar RD, Salin K, Metcalfe NB. 2016. [Repeatability of metabolic rate is lower for animals living under field versus laboratory conditions](#). *Journal of Experimental Biology* 219, 631-624.

Roussel D, Salin K, Dumet A, Romestaing C, Rey B, Voituron Y. 2015. [Oxidative phosphorylation efficiency, proton conductance and reactive oxygen species production of liver mitochondria correlates with body mass in frogs](#). *Journal of Experimental Biology* 218, 3222–3228.

Salin K, Auer SK, Anderson GJ, Selman C, Metcalfe NB. 2016. [Inadequate food intake at high temperatures is related to depressed mitochondrial respiratory capacity](#). *Journal of Experimental Biology* 219, 1356–1362.

Salin K, Luquet E, Rey B, Roussel D, Voituron, Y. 2012. [Alteration of mitochondrial efficiency affects oxidative balance, development and growth in frog \(\*Rana temporaria\*\) tadpoles](#). *Journal of Experimental Biology* 215, 863-869.