

PhD position at the Animal Ecology Group (GEA), Universidad de Vigo

Doctoral research studentship within the project DEVELIFE:

“Life-history development: the maternal and offspring perspectives”

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About Project DEVELIFE

Summary: In this four-year project, we provide a theoretical and experimental framework to study intergenerational processes of phenotypic programming by integrating maternal and offspring perspectives. The abilities of an organism to change its phenotype in response to different environmental conditions during the development and to maintain a persistent phenotype during the lifetime (i.e., phenotypic plasticity and robustness) may interactively determine the way it adapts to its environment. Developmental plasticity produces stable phenotypic outcomes in early life, especially the embryonic stage, during which the main control and organizational networks are established. In this process, mothers provide embryos with the primary environment, but developing embryos may also perceive external environmental inputs and respond to them. An interesting question is how a developing organism integrates maternal and external sources of environmental cues to produce matching phenotypes to future environmental conditions. In this project using the three-spined stickleback as a study system, we aim to study how changes in maternal and offspring environments induce phenotypic changes, and whether these changes are adaptive in both the maternal and offspring perspectives.

Keywords: developmental programming, embryo, life-history, maternal effect, plasticity, stickleback

What will you do? (PhD project within DEVELIFE and formation)

The selected PhD candidate will develop her/his own research project within the scope of DEVELIFE. The principal study organism will be the three-spined stickleback (*Gasterosteus aculeatus*), one of the most popular animal species for studies of evolution, ecology, and behaviour. Within the research theme proposed in DEVELIFE, the PhD student will explore original questions, such as i) how does an embryo interact with its maternal environment (within the egg) and external environment (temperature)?, ii) what are the most prominent embryo traits (e.g. growth rate, heart rate, gene expression, etc.) that respond to its developmental conditions and have life-long effects?, iii) what are the consequences of a match/mismatch between maternal and external environments for offspring? She/he will first begin the first-year studies with some of these questions by designing and performing stickleback experiments. Then

we expect that she/he will propose her/his own questions for the subsequent studies. She/he will be trained to use the necessary statistical tools and learn the laboratory techniques, such as qPCR techniques (DNA damage, gene expression), field sampling, and laboratory experiments on fish, etc. It is necessary for the student to hold Animal Experimentation License. She/he will take an Animal Experimentation Course in the first year to obtain the license if not already have it.

The PhD candidate will develop her/his work within a doctoral program of Universidad de Vigo (ETUSIA, <http://phdetusia.webs.uvigo.es/es/>) at the university Research Centre Modules (CACTI and CIM), where some of the most important and innovative research groups of the university are located. Our objective of training a PhD student is to help the PhD candidate to acquire the knowledge and skills they need to become independent researchers.

Your experience and profile

You have/are:

- undergraduate and master degrees in biology or marine science,
- keen interests in evolutionary biology, animal behaviour and molecular ecology,
- eager to learn new knowledge and techniques; not afraid or lazy about learning something new,
- hard working, careful, tidy, and organized,
- independent, motivated, and responsible,
- able to collaborate with others,
- fluent in English, both written and spoken.

We value also:

- your previous academic performances (e.g., mark),
- your research experience (in field and/or laboratory studies) and knowledge,
- other professional experiences,
- a driving license.

Contract

Duration: 4 years

Starting date: November or December 2023. The sooner the better.

Salary: It will be equivalent to the previous FPI studentship.

How to apply?

Send us your CV, a short motivation letter (max. 1 page), and 1 or 2 possible referees (name and email address) in English or Spanish to yeonkim@uvigo.gal. Please feel free to write us for any doubt. See also our webpage for any update: <http://avelando.webs.uvigo.es/index.html>