

Fiche UE MU4BM113

Established and Emerging Model organisms for Marine Science - Schmid Training Course (STC)

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Descriptif	Niveau	Semestre d'enseignement	ECTS	Effectif maximal
	M1 - M2	2	6	20
Modalités pédagogiques	Volume horaire Cours	Volume horaire TD	Volume horaire TP	Présentiel/Distanciel
	16	6	38	Présentiel
Objectifs	<p>This course constitutes a research training focused on the use of marine organisms in several life science disciplines such as neurobiology, cellular morphogenesis, cell biology, tissue regeneration, evolution, life cycle and marine biotechnology. In spite of being evolutionary distant from <i>Homo sapiens</i>, marine species can bring fundamental knowledge that can be transferable to understand molecular and cellular processes in humans or can be handle to promote new technologies. The objective of the course is to illustrate this aspect. Marine organisms that will be presented during this course are already well used in the scientific community but others are said "emerging models". The spectrum of marine organisms comprises brown algae, placozoans, sponges, cnidarians, acuels, crustaceans, annelids, cephalochordates, echinoderms, urochordates and chondrichthyans.</p> <p>Through practical lab work and specific lectures, students will learn, for each model, life cycle, anatomy, embryogenesis, genetic networks and genomic data, functional approaches and tools for molecular and cellular analyses. Practical and theoretical work will be supervised by an international network of scientific experts in order to train students to academic or applied research.</p> <p>This teaching is a two-week course taking place each year in march at the Roscoff marine station.</p>			
Thèmes abordés	<p>How complex is the life cycle of some metazoans? Why sponges or annelids are able to regenerate when a piece of their body is cut off? What is responsible of cell shape? Which molecules are controlling cell division? What are the original functions of the so-called cancer and apoptosis genes in marine invertebrates? Which criteria are used to classify animals? Are small invertebrates sensitive to light? How curious as it can be, these questions can be addressed studying animals and plants coming from the oceans. In addition, we know for a long time that embryology, genetics, anatomy, evolution and zoology learned from these models can bring several chapters to the story and understanding of the human body. Through their current research, the scientific experts involved in this course will explore these questions and lead two activities to assess student learning:</p> <ul style="list-style-type: none"> - Journal club session will be organized. Students will have to make an oral presentation of a selected research paper related to studies on one of the models. - As a final exam, students will have to write the abstract of a selected paper to show that they have understood the background, main results, methodology and conclusion of a research paper. The original abstract will have been removed beforehand. 			

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Compétences acquises à l'issue de l'UE (concepts, méthodologie et outils)	<p>Students</p> <ul style="list-style-type: none"> - will acquire basic knowledge, techniques and concepts related to established and emerging marine models - will learn what are the molecular and cellular tools for functional analysis on marine models - will understand why it can be challenging to work with models that are evolutionary far from humans (for example understanding regeneration processes on worms or sponges can be transferred to the biomedical field) - will learn how to lead a complete research project <p>In addition through the journal club exercise, students will learn to speak in front of a scientific audience and to return the main results of a study. Through the final exam, students will learn how to dissect out the different steps of a project and analyze how it is constructed.</p>			
Prérequis	<p>Participation to the course requires knowledge of fundamental principles of molecular biology and developmental genetics. Knowledge in metazoan phylogeny and evolution is also desirable.</p>			
Modalités d'évaluation/100	<i>Écrit</i> 40	<i>Oral</i> 30	<i>CC</i> 30	<i>Autre</i>
Langues utilisées	<i>Dans les cours, TD, TP</i> Anglais		<i>Dans les documents, supports</i> Anglais	
Localisation	Station Biologique de Roscoff (Finistère)			