

Project title	Project brief	ESR no.	Supervisor	Co-Supervisor
Identify and quantify skeletal defects in fish	Develop a software tool able to automatically identify skeletal elements in a variety of images, perform measurements, classify skeletal malformations, and disseminate a web-based environment.	1	Raphaël Maree	
Bone matrix detection and function of the fibulin genes in bone formation	Study the function of specific mutated zebrafish genes in bone formation.	2	Marc Muller	Yves Henrotin
Mutate zebrafish lines to model bone malformations	Combine generation of mutant zebrafish lines with studies in human cell lines to investigate the function of specific genes.	3	Martine Cohen-Solal	Corinne Collet
Early indicators of skeletal diseases	Develop a description of morphological, histological and biomolecular descriptors/ markers of anomalous skeletogenesis.	4	Clara Boglione	Michele Scardi
Behavioural dynamics modulating skeletal anomaly's onset and repair	Study how the behavioural dynamics modulate skeletal anomaly's onset and repair.	5	Clara Boglione	Andrea Fabris
Skeletal health of marine fish fed plant-based diets supplemented in Zn, Mn and Se	Determine the effect of plant ingredients on skeleton macro- and micromorphology by following molecular and practical morphological indicators.	6	Marisol Izquierdo	Paul Eckhard Witten
Socio-economic impact of skeletal research	Perform the economic evaluation, using the discrete choice methodology, to measure in monetary terms the burden of bone anomalies in European fish farms, evaluating the risk and prediction of skeleton anomalies as well as the effect of preventive measures developed and applied by fish farmers.	7	Juan Carlos Martin	Didier Van Caillie, María Concepción Román García
Dietary levels of vitamins K and D on Ca metabolism and skeletal health	Characterize the effects of vitamins K and D effects on Ca metabolism and skeletal health of marine fish larvae, model fish and on bone-derived cells, with the aim to define adequate levels of these vitamins for preservation of skeletal health.	8	Marisol Izquierdo	Clara Boglione
New marine-derived additives enhancing bone formation and regeneration	Study the mineralogenic effects of compounds extracted from marine organisms on bone cell cultures, model and aquaculture fish, to discover positive effects on bone formation and regeneration.	9	Leonor Cancela	Paulo Gavaia
Effects of micronutrients and probiotics from Lactobacillus in bone cell differentiation in fish	Study the effects of micronutrients extracted from Lactobacillus on osteoblastic and chondroblastic skeletal cells, on zebrafish cell cultures and on aquaculture species, to discover positive effects on bone formation and regeneration.	10	Oliana Carnevali	Paulo Gavaia, Francesca Maradonna
Developmental and molecular mechanisms of vertebral body fusion in teleost fish	Study of vertebral fusion defects in developing salmon, in order to better understand the fusion process also in other species and to formulate recommendations to reduce their incidence.	11	Paul Eckhard Witten	Antonella Forlino
New insights into the phosphate metabolism of the skeleton in Atlantic salmon ( <i>Salmo salar</i> )	Focus on the effects of phosphate deficiency or oversupply on skeletal malformations, with focus on vertebral column malformations, to define optimal conditions for skeletal health.	12	Paul Eckhard Witten, Ann Huysseune	
Dietary balance of pro-oxidant and antioxidant nutrients for bone formation and remodelling in medaka	Develop a model to predict the effects and optimum dietary levels of antioxidant nutrients required to prevent loss of bone density in humans or skeletal anomalies in farmed fish.	13	Leonor Cancela	Paulo Gavaia
Repair mechanisms in notochord sheath cells support spine regeneration during zebrafish skeletogenesis	In depth understanding of the molecular and cellular events during spine repair in larval zebrafish based on 4D description of the cellular process leading to repair and based on molecular analysis of the expression profile of these cells.	14	Stefan Schulte-Merker	Paul Eckhard Witten
Osteological effects of dietary lipid modulation in aquaculture-produced meagre	Study the role of dietary lipids in growth, mineral contents and effects on skeletal development by identifying genes involved in mediating the skeletogenic effects of essential fatty acids. Recommend dietary EFA levels that promote a correct osteological development in aquaculture.	15	Pedro Pousao	Laura Ribeiro