


PERSONAL INFORMATION

Alessio Carletti




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Sex Male | Date of birth 02/11/1991 | Nationality Italian

PERSONAL STATEMENT

I am a marine biologist major in fish reproductive and developmental biology with particular focus on the skeletal development from a comparative and functional point of view. In the past, I have been working in aquaculture on brood stock hormonal treatments and later on fish nutrition testing alternative ingredients.

Currently, I am doing my PhD at the University of the Algarve (UALG) on the bioprospection of compounds from marine organisms with bone anabolic properties using zebrafish and farmed fish species as models for both pharmaceutical and aquaculture applications.

WORK EXPERIENCE

Jan 2019–Present

Early stage Researcher (PhD student) in the BioMedAqu project: "Aquaculture meets Biomedicine: Innovation in Skeletal Health research". Marie Skłodowska-Curie Actions (MSCA) Innovative Training Network (ITN) programme

University of Algarve (UALG)

Campus de Gambelas 8005-139, 8005-139 Faro (Portugal)

<https://www.ualg.pt/pt>

My research focuses on the study of the mineralogenic and osteogenic effects of extracts from several marine organisms on bone cell cultures, fish models and aquaculture species, to discover positive effects on bone formation and regeneration.

The project aims to study the marine environment, as potentially inexhaustible source of new molecules to be used in the biomedical sectors to control humane skeletal disorders and in the aquaculture industry to improve the skeletal health of cultured species.

Jul 2018–Dec 2018

Research Technician at the BIOSKEL Lab (Comparative, Adaptive and Functional Skeletal Biology)

Centre of Marine Sciences (CCMAR)

University of Algarve, Campus de Gambelas, 8005-139 Faro (Portugal)

<http://bioskel.ccmар.ualg.pt/>

Research fellowship in the ambit of the ALGARED+ project "Cross-border for the development of innovative products with microALGAs", financed by the European Territorial Cooperation Program (CTE) Spain Portugal - POCTEP

Duties: screening of microalgae extracts for osteogenic and skeletogenic activity by assessing the growth of the opercular bone in 3-dpf zebrafish (*Danio rerio*) larvae and the regeneration of the caudal fin in young adults. The potential of microalgae extracts is evaluated through the morphometric analysis of alizarin red stained bone structures from fluorescence pictures using Imaging softwares such as Fiji and ImageJ.

I also collaborated in experiments aiming at evaluating the osteotoxicity of environmental pollutants

through the assessment of skeletal deformities in 30-dpf zebrafish larvae and the regeneration of scales in adult zebrafish, and the analysis of the expression of biomarkers of bone mineralization and differentiation.

Apr 2018–Jul 2018 **Research Internship at the BIOSKEL Lab (Comparative, Adaptive and Functional Skeletal Biology)**

Centre of Marine Sciences (CCMAR)
University of Algarve, Campus de Gambelas, 8005-139 Faro (Portugal)
<https://www.ccmар.ualg.pt/>

Paid Internship with Erasmus+ Traineeship Grant.

Duties: Assessment of a new diet formulation (provided by SPAROS, Lda) containing macroalgae extracts as substitutional source of vitamin K on survival rate, growth, palatability and on the early skeletal development of Senegalese sole (*Solea senegalensis*).

I was in charge of the larval rearing and daily maintenance, live food production and enrichment, water quality analysis and control. I evaluated growth and survival performances of the soles fed with the new diet through the estimation of biometrics (e.g. total and standard length, maximum width), growth indexes (Specific Growth rate) and survival rate. I also evaluated the effects on the early skeletal development carrying out the whole mount double staining for bone and cartilage (Alizarin Red and Alcian blue) followed by observation under the bright-field microscope.

May 2017–Jul 2017 **ICCAT National Fishing Observer**

Italian Ministry of Agricultural, Food and Forestry Policies (MIPAAF)
<https://www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/202>

Fixed-term contract for the MIPAAF as ICCAT Fishing Observer during the Bluefin Tuna Fishing Campaign 2017.

Duties: I was in charge of the supervision for the fishing operations of bluefin tuna (*Thunnus thynnus*), reporting any violation of the regulations in constant contact with the fisheries control authorities. I drafted a detailed mission report with video-photographic documentation and collected biometric data or biological samples for the ICCAT Scientific committee (Standing Committee on Research and Statistic or SCRS).

Jun 2015–Sep 2015 **Research Trainee at Reproductive Physiology and Biology Laboratory, Institute of Marine Biology, Biotechnology and Aquaculture**

Hellenic Centre for Marine Research (HCMR), Heraklion (Greece)
<https://www.hcmr.gr/en/research-institutes/marine-biology-and-genetics-aquaculture/>

Paid Internship with Erasmus+ Traineeship Grant.

Duties: Evaluating the effectiveness of GnRH (Gonadotropin Releasing Hormone) periodical injection and slow release implant on inducing gametogenesis and on the quality of the spawning in cultured meagre (*Argyrosomus regius*). I was in charge of:

- i) monitoring the maturation of the gonads and gametes under a bright-field microscope.
- ii) evaluating the quality of the gametes through the analysis of sperm motility parameters and the quality of the fertilized eggs through the analysis of survival and deformity rates.

I was also in charge of the daily broodstock management, food preparation, enrichment and administration, collection of the eggs derived from spawning event, analysis of the fecundity and fertilization rates, water quality analysis and correction. I worked with several species of high interest in the Mediterranean aquaculture such as meagre (*Argyrosomus regius*), wreckfish (*Polyprion americanus*), sharp-snout seabream (*Diplodus puntazzo*), greater amberjack (*Seriola dumerili*), Shi drum (*Umbrina cirrosa*), gilthead seabream (*Sparus aurata*) and European seabass (*Dicentrarchus labrax*).

EDUCATION AND TRAINING

Feb 2015–Mar 2018

Master in Marine Biology

EQF level 7

Polytechnic University of Marche (UNIVPM)
Via Breccie Bianche,, 60131 Ancona (Italy)
<http://www.univpm.it/Entra/>

Grade: 110/110 with honors

Thesis title: “The use of insect meal for the culture of rainbow trout (*Oncorhynchus mykiss*): effects on stress response and immune system”.

Supervisor: Prof. Ike Olivotto.

I investigated the effect of the substitution of fishmeal with insect meal in feed formulation through histological analysis of the liver and intestinal mucosa by the use of different staining techniques (PAS staining , routine hematoxylin and eosin stain, Masson's trichromic staining). I determined, in collaboration with the Organic and Inorganic Chemistry team, the biochemical composition of the intestinal mucosa by Fourier Transform Infrared Spectroscopy (FTIR) and analysed the expression of several marker genes of stress and immune response by the use of molecular biology tools (RNA extraction, cDNA synthesis, agarose gel electrophoresis, real-time PCR). I also collaborated with the entomology lab for the culture of the insect (*Hermetia illucens*) and the flour production, and I was in charge of maintaining the experimental group of rainbow trout (*Oncorhynchus mykiss*), checking the daily water parameters, preparing and administrating the experimental diets.

Sep 2010–Feb 2015

Bachelor in Biological Sciences

EQF level 6

Polytechnic University of Marche
Via Breccie Bianche, 60131 Ancona (Italy)
<http://www.univpm.it/Entra/>

Grade: 98/110

Thesis title: “Effects of endocrine disruptors on marine vertebrate”.

Supervisor: Prof. Oliana Carnevali.

Nov 2017–Dec 2017

Maldivian Coral Reef Restoration Workshop

MaRHE Center (Marine Research and High Education Center), University of Milano Bicocca (Maldives) (Maldives)
<https://bestr.it/award/show/08ee764ef8aba603f2bd04b524634dedeed9c5bb>

The workshop provided an experience on what is involved in coral reef restoration using the coral reef gardening concept and touched on current best practices, appropriate design, logistics and evaluation of a restoration project. The workshop was divided into a series of classroom lessons and field activities with SCUBA diving.

Coordinator: Dr. Phanor H Montoya-Maya.

Apr 2017

Internship at the aquaculture lab

Università degli studi di Udine (UNIUD), Pagnacco (Italy)

During the internship I was in charge of the daily preparation and administration of experimental diets, water quality analysis and I performed laboratory activities (RNA extraction, cDNA synthesis, agarose gel electrophoresis, real-time PCR).

Supervisors: Prof. Francesca Tulli, Dr. Gloriana Cardinaletti

Sep 2013–Nov 2013

Internship at the marine zoology lab

Polytechnic University of Marche,
Via Brecce Bianche, 60100 Ancona (Italy)
<http://www.univpm.it/Entra/>

Internship (120 hours) as curricular activity of the Bachelor's degree in Biological Sciences.

The duties included: preparation, processing, dehydration and fixation of histological samples of samples of hydrozoans from various areas of the Mediterranean sea, observation under the bright-field microscope, identification at specie-level with dichotomous keys and bibliography. Substrate sorting.

Supervisor: Prof. Stefania Puce

PERSONAL SKILLS

Mother tongue(s) Italian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B1
IELTS 5,5 (2015)					
Spanish	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Communication skills

- Good communication skills, acquired during degree courses, Erasmus+ experiences, living abroad and work experience that involved the dissemination of scientific outcomes through written reports and oral presentations.
- Work experience in television and radio media, Experience as a photographer, cameraman, video editing.

Organisational / managerial skills

- Good organizational skills: precision and scientific approach to problem solving.
- Independent in organizing the research work, bibliographic research, experiment design and planning, collaborating and discussing with the lab group to find original solutions.

Job-related skills

Aquaculture work:

Open/close recirculating systems, Mechanical/Biological/Chemical filtration, Water quality assessment and control. Aquaculture and aquariology fish and invertebrate maintenance and reproduction, animal welfare. Larval rearing and daily maintenance, live food production (Artemia, rotifers, microalgae, copepods) and enrichment. Brood stock management, reproduction, fish handling, drugs administration, hormonal treatment (GnRH Injections and slow release Implants), gamete quality evaluation, sperm motility, eggs maturity.

Nutrition, diet nutrient profiles, alternative ingredients, insect meal (Hermetia illucens).

Laboratory work:

Tissue sampling and processing, fixation, preparation, staining.

Histology techniques: Masson's, routine hematoxylin and eosin, PAS (Periodic Acid– Schiff), whole mount double staining for bone and cartilage, Alizarin red, Alcian blue, Calcein, Von Kossa, TRAP staining. Immunohistochemistry, ELISA, Chromatography, UV-Visible spectroscopy, FT-IR Spectroscopy, brightfield and fluorescent microscopy. Zebrafish in vivo tools for evaluation of bone formation, mineralization and skeletal development (zebrafish operculum assay, caudal fin assay, skeletal deformities evaluation), Zebrafish transgenic lines.

Molecular Biology Tools: electrophoretic techniques, agarose gel, gene expression evaluation tools,

RNA/DNA-Extraction (Trizol, RNAzol, Nyzol), cDNA synthesis and RT-PCR, Real Time PCR, qPCR, Primers design.

Statistics and image analysis:

Proficient user of GraphPad Prism 7 and the Microsoft Office Suite (Word, Excel, PowerPoint), Adobe Photoshop, Illustrator and FinalCutProX; Basic user of R and RStudio Software, ImageJ and Fiji image analysis softwares.

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem-solving
Proficient user	Proficient user	Proficient user		Proficient user

Digital skills - Self-assessment grid

Driving licence A1, B

ADDITIONAL INFORMATION

Conferences

Conference SIBIC 2018 (VII Congresso Iberico de Ictiologia)

University of Algarve, Faro, Portugal

<https://www.sibic2018.org>

Conference which encompasses all aspects of fish biology and habitat or resource management, from riverine environments to the open waters of the planet's oceans.

Conference IAFSB 2018 (5th meeting Interdisciplinary Approaches in Fish Skeletal Biology)

Vila Galé Albacora, Tavira, Portugal

<https://iafsb.org>

Conference which gives a multidisciplinary focus on the fish skeleton from paleontology to biomedical research.

Certifications

SCUBA Diver with 60+ dives

- PADI Rescue Diver
- CMAS Plongeur 2
- CMAS Plongeur 1
- DAN BLS Provider
- DAN First Aid Provider
- DAN Oxygen Provider