

Curriculum Vitae

PERSONAL INFORMATION



Francesca Falco e-mail: francesca.falco@cnr.it

Institute for Biology resource and Marine Biotechnologies (IRBIM)-(CNR)

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Sex Female | Date of birth 14/08/1975 | Nationality Italian

Academic Background and Career

16 September 2022 –present: Researcher to Institute for Biology resource and Marine Biotechnologies- National Research Council (Italy)

2007- 2022 Technical Operator, National Research Council (Italy)

2005-2007 Central Inspectorate for the protection of quality and fraud prevention of agri-food products IT, Conegliano Veneto

PhD, Environmental Biology and Biodiversity 2011-2017

University of Palermo, Palermo, Italy

Thesis Title: Comparative Analysis on larval stock of *Engraulis encrasicolus* (Linnaeus, 1758), inside Sicily channel

Tasks: Physiological Biomarkers variation for environmental tolerances and anthropic interactions

Advisor: Dr. Cammarata Matteo,

Supervisor: Mazzola Salvatore;

MS Degree in Biology, Biodiversity and Evolution, (110/110 con laude) 2011-2013

University of Palermo, Palermo, Italy

Thesis Title: Eyes Amino acids of small larval fish and their relationship with oceanographic process inside deposition area.

Tasks: (physiological Biomarkers and Ecology)

Advisor: Prof. Cammarata Matteo;

Superadvisor: Dr Angela Cuttitta

BS Degree in Environmental Science, (100/110) 2007-2011

University of Palermo, Palermo, Italy

Dissertation title: Hg accumulation in ittyo-specie from both Augusta rada and Sicily channel

Tasks: Applied Ecotoxicology

Advisor: Prof Gianguzza Antonio;

Dr Sprovieri Mario;

About Personal Statement

My passion is understanding and anticipating the adaptative responses of organisms and the ecosystem's impacts on environmental changes caused by climate changes and anthropic conditions.

Thus, my research focuses on understanding the impact on the physiological status including specifically the influence on the metabolic status and biological process of both anthropic factors (plastic and heavy metals presence) and the climate changes. Among, the biological process included growth, development on individual and population levels. I am also interested in the effects of environmental stress on animal behaviour, and the scaling of metabolic rate with body size in organisms and its relationship to ecology.

The aim of this investigation is understand how the fisiological responses of a single individual organism may provide consequences in a population level

Teaching and supervisor

2018-2020

Professor –assistant of “Zoology for preschool and elementary school and laboratory”. module: BIO/05”. (MS Primary Education Sciences) “Scienze della formazione primaria -LM -85 bis”, University of Palermo.

2014

Teacher in Module “Marine organism’ Zoology, inside Work Package project “Technologies and process for better shelf life of agro-food compart using innovative edible films pectin base”

Workshop speaker 2020

“*Linking physiological evaluation and a joint estimation of environmental response in fishes*”. In the scope (telematics Microsoft teams of IRBIM National Research Council NR)

Workshop Speaker – 2018

Simpling and conservation techniques of biological specimens to submitted biomarkers analysis. In the scope of: “Analytical Chemistry and Animal Biology indicators for the environmental pollution evaluation. From theory to the laboratory” Summer School 2018, in UniPa

2017

Workshop speaker on aminoacids composition in in small fish larval’ eyes relation to oceanographic process inside deposition prot. N° (004404/16 05/2018) IAMC_CNR Capo Granitola.

Supervisor 2018

In MS Degree theses titles: “methodologies Metodologie to evaluate the welfare status of *Trachurus trachurus* (linneus, 1758) in tyrrhenian Sea. Oceanographic Expedition “Evatir 2016-17”. Department of Earth and Marine Sciences (DiSTeM)

2014

Supervisor in Chemistry and Biochemistry Laboratory in the scope of project “Développement des Interventions innovants sur les Variétés des cépages pour l’Intégration italo-tunisienne (DIVIN)

Research Collaborator:

January 2022 –Today:

Prof. Caterina Faggio (Department of Chemical, Biological, Pharmaceutical and Environmental Sciences)- Studies on the effects of overfishing on blood of *scyliorhynchus canicula* in Mediterranean Sea.

2020 –Today:

Collaboration for Experimental research: in CIRCLES “Controlling Microbiomes Circulations for Better Food Systems”(2019-2023)- Horizon2020; the aims to discover and translate innovative microbiomes-tailored circular actions into concrete applications that will ultimately enhance EU food system performances and their overall sustainability”. Development and validation of Microbiomes –Tailored circular actions of improve productivity, quality, safety and sustainability in Atlantic Salmon and Seabream (*Spaurus aurata*) aquaculture (work package 5).

2019

Prof. Daniela Piazzese.(Department of Earth and Marine Sciences)- Teresa Bottari (Institute for the Coastal Marine Environment, National Research Council, Italy)-Dr Giovanni Presti (Chemical Laboratory of Palermo, Italian Customs and Monopolies Agency, Palermo, Italy)

Research activity: Study of relationship between amino acid and fatty acids profile and microplastic tissue contents in fish. The aim was evaluating if metabolism as physiological process may be disturbed by microplastics contents in wilds habit. This work has focussed on Mediterranean fish species such as *Scyliorhinus canicula*.

2018

Cammarata Matteo(Prof of Ecology and zoology , - University of Palermo, Department of Earth and Sea Sciences) Dr.Irene Vazzana (Experimental Zoophylactic Institute of Sicily A. Mirri) .

To study the adaptation relationship of physiological responses of species habitating in strongly impacted marine ecosystem from anthropogenic activity as fishing. The aim was to use some common indicators and attempt to define an index of the General Health Status (GES), evidencing and supporting the role of physiological status of some fish species in Mediterranean Sea, across biochemistry analysis.

2020

Shaun Killen (Professor of Ecophysiology, University of Glasgow)

proposing to develop an approach based on accurate physiological biomarkers for estimation of stress as an index of collateral mortality, bound to anthropic activity such as fishing activity.

2015

Guoayao Wu (Prof of A&M Texas University, Department of Animal Science)

Experimental research at Biochemistry lab with a project: “HPLC techniques for determination of free and peptide bound amino acids in animal tissues” and “Biochemical analysis” that was part of my dissertation project on studying evolution of amino acids and protein synthesis in animals. During this period she attended regular lab meeting and class NUTR 641 “Nutritional biochemistry”;

Professional Body Memberships

Italian Society of Marine Biology (SIBM) as an ordinary member;

Reviewer:**Comparative Biochemistry and Physiology, Part C:**

Banaee M, Sagvand S, Sureda A, Amini M, Haghi BN, Sopjani M, Faggio C. Evaluation of single and combined effects of mancozeb and metalaxyl on the transcriptional and biochemical response of zebrafish (*Danio rerio*). *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology*. 2023 Mar 7:109597.

Banaee M, Beitsayah A, Prokić MD, Petrović TG, Zeidi A, Faggio C. Effects of cadmium chloride and biofertilizer (Bacilar) on biochemical parameters of freshwater fish, *Alburnus mossulensis*. *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology*. 2023 Mar 20:109614.

Frontiers in physiology:

Zhang Y, Guan T, Wang L, Ma X, Zhu C, Wang H, Li J. Metamifop as an estrogen-like chemical affects the pituitary-hypothalamic-gonadal (HPG) axis of female rice field eels (*Monopterus albus*). *Frontiers in Physiology*. 2023 Jan 19;14:41.

Society Experimental Biology (Animal Biology section) as Early Career Scientist;

Mother tongue(s)	Italian				
Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2

Publications:

Impellitteri F, Multisanti CR, Rusanova P, Piccione G, **Falco F***, Faggio C. Exploring the Impact of Contaminants of Emerging Concern on Fish and Invertebrates Physiology in the Mediterranean Sea. *Biology*. 2023 Jun;12(6):767.

Pradhoshini KP, Priyadharshini M, Santhanabharathi B, Ahmed MS, Parveen MH, War MU, Musthafa MS, Alam L, **Falco F**, Faggio C. Biological effects of ionizing radiation on aquatic biota- A critical review. *Environmental toxicology and pharmacology*. 2023 Mar 2:104091.

Shiry N, Derakhshesh N, Alavinia SJ, Pouladi M, **Falco F**, Faggio C. *Anodonta cygnea*, a freshwater swan mussel, exposed to diazinon: toxicity thresholds in behaviour and physiology. *Veterinary Research Communications*. 2023 Feb 10:1-7.

Falco F, Bono G, Cammarata M, Cavalca J, Vazzana I, Dara M, Scannella D, Guicciardi S, Faggio C, Ragonese S. Stress related blood values in *Scyliorhinus canicula* as live-indicators of physiological status after bottom trawling capture activity. *Comparative Biochemistry and*

Physiology Part B: Biochemistry and Molecular Biology 263, 110802,
doi:<https://doi.org/10.1016/j.cbpb.2022.110802> (2023).

Mancuso M, Panarello G, **Falco F**, Di Paola D, Savoca S, Cmmmm, Romeo T, Presti G, Gullotta E, Spanò NC, Bono G, Giuliano S., Bottari T. Investigating the effects of microplastic ingestion in *Scyllorhinus canicula* from the South of Sicily. *Science of The Total Environment*. 2022 Dec 1;850:157875.

Zicarelli G, Multisanti CR, **Falco F**, Faggio C. Evaluation of toxicity of Personal Care Products (PCPs) in freshwaters: Zebrafish as a model. *Environmental Toxicology and Pharmacology*. 2022 Jun 28:103923.

Cuttitta A, Patti B, Musco M, Masullo T, Placenti F, Quinci EM, **Falco F**, Bennici CD, Di Natale M, Pipitone V, Cammarata M. Inferring Population Structure from Early Life Stage: The Case of the European Anchovy in the Sicilian and Maltese Shelves. *Water*. 2022 Apr 29;14(9):1427.

Falco F, Bottari T, Ragonese S, Killen SS, Towards the integration of ecophysiology with fisheries stock assessment for conservation policy and evaluating the status of the Mediterranean Sea, *Conservation Physiology*, Volume 10, Issue 1, 2022, coac008, <https://doi.org/10.1093/conphys/coac008>

Bono G, Falsone F, **Falco F**, Di Maio F, Gabriele M, Gancitano V, Geraci ML, Scannella D, Mancuso M, Okpala CO, Luisa P. Microplastics and Alien Black Particles as Contaminants of Deep-Water Rose Shrimp (*Parapenaeus longisthoris* Lucas, 1846) in the Central Mediterranean Sea. *Journal of Advanced Biotechnology and Bioengineering*. 2020 ;8:23-8.

Falco F, Stincone P, Cammarata M, Brandelli A. (2020) Amino Acids as the Main Energy Source in Fish Tissues .*Research Open. Preventive Medicine*; 2 (1).

Di Bella C, Traina A, Giosuè C, Carpintieri D, Lo Dico GM, Bellante A, Del Core M, **Falco F**, Gherardi S, Uccello MM, Ferrantelli V. (2020) Heavy metals and PAHs in meat, milk, and seafood from Augusta Area (Southern Italy): contamination levels, dietary intake, and human exposure assessment. *Frontiers in public health*. Jul 7;8:273.

Falco F, Barra M, Wu G, Dioguardi M, Stincone P, Cuttitta A, Torri M, Bonanno A, Cammarata M. *Engraulis encrasicolus* larvae from two different environmental spawning areas of the Central Mediterranean Sea: first data on amino acid profiles and biochemical evaluations. *The European Zoological Journal*. 2020 Jan 1;87(1):580-90.

Piazzese D, Bonanno A, Bongiorno D, **Falco F**, Indelicato S, Milisenda G, Vazzana I, Cammarata M. Co-inertia multivariate approach for the evaluation of anthropogenic impact on two commercial fish along Tyrrhenian coasts. *Ecotoxicology and environmental safety*. 2019 Oct 30;182:109435.

Cammarata M, Benenati G, Dara M, Parisi MG, Piazzese D, **Falco F**. Sabella spallanzanii mucus contain a galactose-binding lectin able to agglutinate bacteria. Purification and characterization. *Invertebrate Survival Journal*. 2019 Mar 15:15-24.

Traina A, Bono G, Bonsignore M, **Falco F**, Giuga M, Quinci EM, Vitale S, Sprovieri M. Heavy metals concentrations in some commercially key species from Sicilian coasts (Mediterranean Sea): Potential human health risk estimation. *Ecotoxicology and environmental safety*. 2019 Jan 30;168:466-78.

Falco F, Barra M, Cammarata M, Cuttitta A, Jia S, Bonanno A, Mazzola S, Wu G. Amino acid composition in eyes from zebrafish (*Danio rerio*) and sardine (*Sardina pilchardus*) at the larval stage. SpringerPlus. 2016 Dec;5(1):1-9.

Cuttitta A, Patti B, Maggio T, Quinci EM, Pappalardo AM, Ferrito V, De Pinto V, Torri M, **Falco F**, Nicosia A, Musco M. Larval population structure of *Engraulis encrasicolus* in the Strait of Sicily as revealed by morphometric and genetic analysis. Fisheries Oceanography. 2015 Mar;24(2):135-49.

D'Agostino F, Oliveri E, Bagnato E, **Falco F**, Mazzola S, Sprovieri M. Direct determination of total mercury in phosphate rock using alkaline fusion digestion. Analytica chimica acta. 2014 Dec 10;852:8-12.

Bonsignore M, Manta DS, Oliveri E, Sprovieri M, Basilone G, Bonanno A, **Falco F**, Traina A, Mazzola S. Mercury in fishes from Augusta Bay (southern Italy): risk assessment and health implication. Food and Chemical Toxicology. 2013 Jun 1;56:184-94.

Bonanno A, Zgozi S, Cuttitta A, El Turki A, Di Nieri A, Ghmati H, Basilone G, Aronica S, Hamza M, Barra M, Genovese S, **Falco F**, Mazzola S. Influence of environmental variability on anchovy early life stages (*Engraulis encrasicolus*) in two different areas of the Central Mediterranean Sea. Hydrobiologia. 2013 Jan;701(1):273-87.

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