



Gioele Capillo

Work : V.le F. Stagno d'Alcontres, 31 – 98166 - Sant'Agata di Messina (ME), 98168, Messina, Italy

Email: gcapillo@unime.it **Phone:** (+39) 3472236971 **Phone:** (+39) 0906766714

Website: <https://www.scopus.com/authid/detail.uri?authorId=6504658274>

Website: https://www.researchgate.net/profile/Gioele_Capillo

Website: <https://scholar.google.it/citations?user=yE2x0g4AAAAJ&hl=it&oi=ao>

Website: <https://orcid.org/0000-0002-2002-1138> **Skype:** gioele.capillo **PEC:** gcapillo@pec.it

Gender: Male **Date of birth:** 26/09/1988 **Nationality:** Italian

NATIONAL SCIENTIFIC QUALIFICATION

[03/02/2022 – Current]

National Scientific qualification as associate Professor in the Italian higher education system for the disciplinary field of 05/B1 - Zoology and anthropology.

WORK EXPERIENCE

[15/01/2024 – Current]

Senior Researcher (RTDb), S.S.D. BIO/05 Zoology

University of Messina Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, V.le F. Stagno d'Alcontres, 31 – 98166 - Sant'Agata di Messina (ME)

[01/12/2022 – 15/01/2024]

Senior Researcher (RTDb), S.S.D. BIO/05 Zoology

University of Messina, Veterinary Sciences

City: Messina

Country: Italy

[18/11/2019 – 30/11/2022]

Young Researcher (RTDa), S.S.D. BIO/05 Zoology

University of Messina, Veterinary Sciences

City: Messina

Country: Italy

[26/02/2021 – Current]

IRBIM Associate

Institute for Biological Resources and Marine Biotechnology - IRBIM – CNR

City: Messina

Country: Italy

Collaboration assignment to the Institute for Biological Resources and Marine Biotechnology, to collaborate in the scientific activities of the project. The aim of the activity is the analysis of biological samples (fish), Antarctic water and sediment, bacteriological isolation and analysis of samples.

Project "PNRA18_00041 - B2-SBAM" Scientific Coordinator: Dr Monique Mancuso.

[01/2019 – Current]

University Teaching

University of Messina

City: Messina

Country: Italy

Teaching assignment Zoogeography and Biodiversity of Aquatic Organisms (S.S.D. BIO/05) 6 CFU, teaching course of the Degree Course in Biology and Ecology of the Coastal Marine Environment, of the Department of Chemical, Biological, Pharmaceutical and Environmental Sciences of the University of Messina (ME), Italy. Academic Year 2021/2022

Teaching assignment Zoology (S.S.D. BIO/05) 8 CFU, teaching course of the Degree Course in Biological Sciences, of the Department of Chemical, Biological, Pharmaceutical and Environmental Sciences of the University of Messina (ME), Italy. Academic Year 2020/2021(Class A/K) and 2021/2022 (Classes A/E-O/Z)

Teaching assignment Zoology (S.S.D. BIO/05) 5 CFU, teaching course of the Degree Course in Gastronomic Sciences. Department of Biomedical Sciences, Dentistry and Morphological and Functional Images, Messina (ME), Italy. Academic Year 2020/2021e and 2021/2022

Teaching assignment Zoology module (S.S.D. BIO/05) 3 CFU, course: Propedeutic Anatomy of the Master of Science in Veterinary Medicine of the Department of Veterinary Sciences, University of Messina, (ME), Italy. Academic Year 2019/2020, 2020/2021 and 2021/2022
09/10/2018-current date

[06/2019 – Current] **Teaching Activities PhD Course**

University of Messina

City: Messina

Country: Italy

Teaching assignment at the 36th and 37th Cycles of the PhD Course in "Applied Biology and Experimental Medicine", of the Department of Chemical, Biological, Pharmaceutical and Environmental Sciences of the University of Messina. Course title: "USE OF ANIMAL MODELS IN MODERN SCIENTIFIC RESEARCH: A ZOOLOGICAL VISION" SSD: ZOOLOGY_BIO/05_1CFU_6hours. 2020/2021-2021/2022

[11/2019 – Current] **PhD Supervisor**

University of Messina

City: Messina

Country: Italy

Supervisor of the following PhD Students: La Rosa Roberta, Carnevale Alex, Di Fresco Dario, D'Iglio Claudio, Luca Pagano, of the PhD course in Applied Biology and Experimental Medicine

[09/2014 – Current] **DISSEMINATION ACTIVITIES**

- Participation as Speaker at the Sixth Workshop of the Metropolitan Agenda for Sustainable Development of the Metropolitan City of Messina "The state of health of the Strait of Messina and the lakes of Cape Peloro" 07/02/2022
- Participation in the Sea Project in SHELL (<https://www.unime.it/it/international/evidenza/%E2%80%9Csea-shell-night%E2%80%9D-sea-science-health-environment-literature-law-economy>). The University of Messina presented the project Sea in SHELL at the Call Horizon 2020 for the European Researcher's Night. The project was not funded but obtained the dignity of "Associated event" and was held in Messina on 24 September 2021. The project "Sea in SHELL", aimed to show the general public all the research activities related to the sea carried out at the University. Contribution as rapporteur and co-rapporteur of 4 contents.
- Organizer of the Workshop "Plastic, threat to underwater life" for the Sustainability Day of the University of Messina, 30/09/2020 and 08/10/2021
- Speaker at the European Day of the Sea 2018 Villa Pace "Museale" (Messina, Italy), with a speech entitled "The Depths of the Strait, between Biodiversity and Plastics" 18/05/2018

- TV interview for MEDITERRANEO - La pêche en méditerranée (France-3 Broadcaster) on the subject Swordfish quotas. 17/07/2017
- Speaker at the European Day of the Sea, with a speech entitled "The lakes of Peloro: nature and territory", Cape Peloro Horcynus Orca, 20/05/2017
- Speaker in the meeting organized by Legambiente on the environmental issue related to the environmentally friendly exploitation of Lake Ganzirri (Messina). Project title: "Lake Ganzirri" Current status and future prospects 20/06/2015

[06/2020 – Current]

Institutional Assignments

University of Messina

City: Messina

Country: Italy

Component of the following commission for:

- revise a grant proposal in the NZ8 (Evolutionary and environmental biology) panel of the "National Marine Fisheries Research Institute" (National Science Centre, Poland) on Contamination by plastics in the benthic aquatic environment in the South Baltic Sea. 09-2021
- the contract for the realization of: COMPETITION OF IDEAS FOR THE RE-QUALIFICATION OF THE "CAPO PELORO" AREA FALLING IN THE NATURA 2000 ZPS ITA030042 SITE. CIG: 87923214D1. 11-2021
- the conferral of n. 1 assignment of professional work performance (coordinator underwater activity) within the project BIOBLU -"Robotic bioremediation for coastal debris in blue flag beach and in a maritime protected area" - Program INTERREG V-A Italy - Malta 2014-2020 Department of Biomorf; UniMe. 05/2021
- the awarding of No. 1 Scholarship for post-graduate research activities for graduates in Biology and Ecology of the Coastal Marine Environment, of the Project "PO FEAMP 2.56 entitled FISH PATH NET" on the theme "Study of the mechanisms of action of algal extracts with antibiofilm activity" Department ChiBioFarAm, UniMe. 05/2021
- the awarding of No. 1 Scholarship for post-graduate research activities for graduates in Biology and Ecology of the Coastal Marine Environment, of the Project "PO FEAMP 2.56 entitled FISH PATH NET" on the theme "Microplastics in aquatic organisms" Department ChiBioFarAm, UniMe. 05/2021
- the awarding of No. 1 Scholarship for post-graduate research activities for graduates in Biology and Ecology of the Coastal Marine Environment, of the Project "PO FEAMP 2.56 entitled FISH PATH NET" on the theme "Evaluation of antibacterial and antibiofilm activity of algal extracts". ChiBioFarAm Department, UniMe. 05/2021
- Research and the Third Departmental Mission (AQ-RDTM), SciVet Department, UniMe. 05/2021
- the examination for admission to the School of Specialization in "Breeding, hygiene, pathology of aquatic species and control of derived products", for the a.a. 2020/2021, of the SciVet Department, UniMe. 02/2021
- the public selection for the award of No. 1 Scholarship for post-graduate research activities for graduates in Foreign Languages and Literature (LM39) of the Project "PO FEAMP 2.56 entitled FISH PATH NET". ChiBioFarAm Department, UniMe. 01/2021
- the conferral of n. 1 Scholarship for activities of "Analysis of costs related to project supplies and related reporting" and "marketing analysis", Project "PO FEAMP 2.56 entitled FISH PATH NET". ChiBioFarAm Department, UniMe. 01/2021
- admission to the Bachelor of Science in Veterinary Medicine. 09/2020
- the awarding of No. 1 (a) Scholarship for post-graduate research activities of the Project "PO FEAMP 2.56 entitled FISH PATH NET" on the theme "Emerging pests in mariculture". Dept. ChiBioFarAm, UniMe. 07/2020

Research metrics

SCOPUS

Paper: 88

EDUCATION AND TRAINING

[12/04/2022 – 19/04/2022]

International Research activity

Faculty of Biosciences and Aquaculture, Nord University, Norway

Target of the research: deepen the phylogenetic correlations of trachipteridae family members, based on molecular evolution studies on the *Zu cristatus* genome sequenced.

[05/10/2015 – 30/09/2018]

PhD in "Applied Biology and Experimental Medicine", Curriculum "Biological and Environmental Sciences"

University of Messina Department of Chemical, Biological, Pharmaceutical and Environmental Sciences

City: Messina

Country: Italy

PhD in Applied Biology and Experimental Medicine, Curriculum: Biological and Environmental Sciences XXXI cycle.

The topic dealt with in the PhD was Integrated Multi-Trophic Aquaculture (IMTA) with particular attention to in-shore mariculture plants. The paper of the PhD project entitled "Sustainable aquaculture: IMTA tests with *Gracilaria gracilis* (Stackhouse) Steentoft, L.M. Irvine & Farnham", with its different objectives has been elaborated in three different scientific papers published in international journals and the various activities presented during the years of research at different national and international congresses. In parallel with these themes, the study of morphological, cytochemical, histochemical and immunohistochemical characteristics of morphofunctional adaptations and of the immune system of different aquatic organisms was pursued.

[01/11/2016 – 01/03/2017]

International Research Activity

Universidad de Oviedo

City: Oviedo

Country: Spain

Training internship at the laboratory of the Group "SINPOS" of the "Departamento de Morfología y Biología Celular de la Universidad de Oviedo" carried out during the participation in the project Research & Mobility entitled: "Effects of N-acylethanolamines and Polyphenols Association in the Control of Neuroinflammation after Traumatic Central Nervous System Injuries." The project also carried out activities to assess the impact of heavy metal pollution on aquatic ecosystems using zebrafish (*Danio rerio*) as an experimental model.

[16/02/2012 – 09/10/2013]

Master Degree in "Biology and Ecology of Marine Coastal Environment"

University of Messina

City: Messina

Country: Italy

Vote 110/110 and academic praise

Final elaboration: "Study of optical and confocal microscopy on *Chauliodus sloani* photophores"

[30/08/2012 – 19/10/2012]

International Research Activity

Faculty of Biosciences and Aquaculture, Nord University

City: Bodø

Country: Norway

Molecular biology techniques applied to the extraction of DNA from tissues, PCR, Real Time PCR and electrophoretic analysis of amplicons; use of different software for analysis of nucleotide sequences aimed at the design of Primers. Research target: study of hyperpolarizing channel proteins in pacemaker cells of *Gadus morhua*. Paper published: Capillo, G., Lauriano, E.R., Icardo, J.M., Siryappagouder, P., Kuciel, M., Karapanagiotis, S., Zaccone, G., Fernandes, J.M.O., 2021. Structural Identification of the Pacemaker Cells and Expression of Hyperpolarization-Activated Cyclic Nucleotide-Gated (HCN) Channels in the Heart of the Wild Atlantic Cod, *Gadus morhua* (Linnaeus, 1758). *Int. J. Mol. Sci.* 22, 7539. <https://doi.org/10.3390/ijms22147539>

[07/10/2008 – 31/01/2012]

Bachelor Degree in "Marine Biology and Ecology"

University of Messina

City: Messina

Country: Italy

Vote 110/110.

Thesis: "Morphological and histochemical study of *Scyliorhinus canicula* spiral valve". Paper published: E.R. Lauriano, S. Pergolizzi, M. Aragona, G. Montalbano, M.C. Guerrera, R. Crupi, C. Faggio, G. Capillo, Intestinal immunity of dogfish *Scyliorhinus canicula* spiral valve: A histochemical, immunohistochemical and confocal study, *Fish and Shellfish Immunology*. 87 (2019) 490-498. doi:10.1016/j.fsi.2019.01.049.

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Spanish

LISTENING B2 READING B2 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

GoogleChrome | macOS | Ability to work with several operatin systems including Windows and Mac OSX | Photo Video Editing | Statistical | Microsoft Office, Microsoft Word, Microsoft Excel, Outlook, Facebook, Google

PUBLICATIONS

89 (2023)

D'Iglio, C., Famulari, S., Albano, M., Carnevale, A., Di Fresco, D., Costanzo, M., Lanteri, G., Spanò, N., Savoca, S., **Capillo, G.**, 2023. Intraspecific variability of the saccular and utricular otoliths of the hatchetfish *Argyropelecus hemigymnus* (Cocco, 1829) from the Strait of Messina (Central Mediterranean Sea), *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0281621>

Alesci, A., Messina, E., Zuwala, K., Fumia, A., Miller, A., D'Angelo, R., Kuciel, M., Albano, M., Savoca, S., **Capillo, G.**, 2023. Mechanosensory cells in annelid oligochaete *Lumbricus terrestris* (Linnaeus, 1758): A new insight on worm evolution. *Acta Zoologica*. 1–9. <https://doi.org/10.1111/azo.12475>

87

A. Alesci, M. Albano, A. Fumia, E. Messina, A. Miller, D. Di Fresco, J.M.O. Fernandes, N. Spanò, S. Savoca, **Capillo, G.**, 2023. Shell formation in two species of bivalves: the role of mantle cells and haemocytes. *Zoological Journal of the Linnean Society*, zlad099. <https://doi.org/10.1093/zoolinlean/zlad099>

86

Zaccone, G., Alesci, A., Mokhtar, D.M., Aragona, M., Guerrera, M.C., **Capillo, G.***, Albano, M., de Oliveira Fernandes, J., Kiron, V., Sayed, R.K.A., Hussein, M.M., Lo Cascio, P., Kuciel, M., Zuwala, K., Germanà, A., Icardo, J.M., Lauriano, E.R., 2023. Localization of Acetylcholine, Alpha 7-NAC_HR and the Antimicrobial Peptide Piscidin 1 in the Macrophages of Fish Gut: Evidence for a Cholinergic System, Diverse Macrophage Populations and Polarization of Immune Responses. *Fishes* 8. <https://doi.org/10.3390/fishes8010043>

85

Alesci, A., Fumia, A., Albano, M., Messina, E., D'Angelo, R., Mangano, A., Miller, A., Spanò, N., Savoca, S., **Capillo, G.**, 2023. Investigating the internal system of defense of Gastropoda *Aplysia depilans* (Gmelin, 1791): Focus on hemocytes. *Fish Shellfish Immunol.* 137. <https://doi.org/10.1016/j.fsi.2023.108791>

84

Alesci, A., **Capillo, G.**, Fumia, A., Albano, M., Messina, E., Spanò, N., Pergolizzi, S., Lauriano, E.R., 2023. Coelomocytes of the Oligochaeta earthworm *Lumbricus terrestris* (Linnaeus, 1758) as evolutionary key of defense: a morphological study. *Zool. Lett.* 9, 1–10. <https://doi.org/10.1186/s40851-023-00203-y>

83

Alesci, A., Pergolizzi, S., Mokhtar, D.M., Fumia, A., Aragona, M., Lombardo, G.P., Messina, E., D'Angelo, R., Lo Cascio, P., Sayed, R.K.A., Albano, M., **Capillo, G.**, Lauriano, E.R., 2023. Morpho-structural adaptations of the integument in different aquatic organisms. *Acta Histochem.* 125, 152031. <https://doi.org/10.1016/j.acthis.2023.152031>

82

Tresnakova, N., Famulari, S., Zicarelli, G., Impellitteri, F., Pagano, M., Presti, G., Filice, M., Caferro, A., Gulotta, E., Salvatore, G., Sandoval, M., Vazzana, I., Imbrogno, S., **Capillo, G.**, Savoca, S., Velisek, J., Faggio, C., 2023. Multi-characteristic toxicity of enantioselective chiral fungicide tebuconazole to a model organism Mediterranean mussel *Mytilus galloprovincialis* Lamarck, 1819 (Bivalve: Mytilidae). *Sci. Total Environ.* 862. <https://doi.org/10.1016/j.scitotenv.2022.160874>

(2022) 81

D'Iglio, C., Di Fresco, D., Spanò, N., Albano, M., Panarello, G., Laface, F., Faggio, C., **Capillo, G.***, Savoca, S., 2022. Occurrence of Anthropogenic Debris in Three Commercial Shrimp Species from South-Western Ionian Sea. *Biology (Basel)*. 11, 1616. <https://doi.org/10.3390/biology11111616>

80

Savoca, S., Di Fresco, D., Alesci, A., **Capillo, G.***, Spanò, N., 2022. Mucus secretions in Cnidarian, an ecological, adaptive and evolutive tool. *Adv. Oceanogr. Limnol.* 13. <https://doi.org/10.4081/aiol.2022.11054>

79

Spanò, N., Di Paola, D., Albano, M., Manganaro, A., Sanfilippo, M., D'Iglio, C., **Capillo, G.**, Savoca, S., 2021. Growth performance and bioremediation potential of *Gracilaria gracilis* (Steentoft, L.M. Irvine & Farnham, 1995). *Int. J. Environ. Stud.* 00, 1–13. <https://doi.org/10.1080/00207233.2021.1954775>

78

Albano, M., D'Iglio, C., Spanò, N., Fernandes, J.M. de O., Savoca, S., **Capillo, G.** Distribution of the Order Lampriformes in the Mediterranean Sea with Notes on Their Biology, Morphology, and Taxonomy. *Biology (Basel)*. (2022). 11. <https://doi.org/10.3390/biology11101534>

77

Albano, M., D'Iglio, C., Spanò, N., Di Paola, D., Alesci, A., Savoca, S., **Capillo, G.** New Report of *Zu cristatus* (Bonelli, 1819) in the Ionian Sea with an In-Depth Morphometrical Comparison with All Mediterranean Records. *Fishes* 7, 305. (2022). <https://doi.org/10.3390/fishes7060305>

76

D'Iglio, C., Famulari, S., Albano, M., Giordano, D., Rinelli, P., **Capillo, G.***, Spanò, N., Savoca, S., Time-Scale Analysis of Prey Preferences and Ontogenetic Shift in the Diet of European Hake *Merluccius merluccius* (Linnaeus, 1758) in Southern and Central Tyrrhenian Sea. *Fishes* 7. (2022). <https://doi.org/10.3390/fishes7040167>

75

Alesci, A., Albano, M., Savoca, S., Mokhtar, D.M., Fumia, A., Aragona, M., Lo Cascio, P., Hussein, M.M., **Capillo, G.**, Pergolizzi, S., Spanò, N., Lauriano, E.R. Confocal Identification of Immune Molecules in Skin Club Cells of Zebrafish (*Danio rerio*, Hamilton 1882) and Their Possible Role in Immunity. *Biology (Basel)*. 11, 1653. (2022) <https://doi.org/10.3390/biology11111653>

74

Alesci, A., **Capillo, G.**, Mokhtar, D.M., Fumia, A., D'Angelo, R., Lo Cascio, P., Albano, M., Guerrera, M.C., Sayed, R.K.A., Spanò, N., Pergolizzi, S., Lauriano, E.R. Expression of Antimicrobial Peptide Piscidin1 in Gills Mast Cells of Giant Mudskipper *Periophthalmodon schlosseri* (Pallas, 1770). *Int. J. Mol. Sci.* 23, 13707. (2022). <https://doi.org/10.3390/ijms232213707>

73

Alesci, A., **Capillo, G.***, Fumia, A., Messina, E., Albano, M., Aragona, M., Lo Cascio, P., Spanò, N., Pergolizzi, S., Lauriano, E.R., 2022. Confocal Characterization of Intestinal Dendritic Cells from Myxines to Teleosts. *Biology (Basel)*. 11, 748–760. (2022). <https://doi.org/10.3390/biology11071045>

72

Alesci, A., Pergolizzi, S., Savoca, S., Fumia, A., Mangano, A., Albano, M., Messina, E., Aragona, M., Lo Cascio, P., **Capillo, G.**, Lauriano, E.R., Detecting Intestinal Goblet Cells of the Broadgilled Hagfish *Eptatretus cirrhatus* (Forster, 1801): A Confocal Microscopy Evaluation. *Biology (Basel)*. (2022). 11, 151–162. <https://doi.org/10.3390/biology11091366>

71

Zaccone, G., **Capillo, G.***, Aragona, M., Alesci, A., Cupello, C., Lauriano, E.R., Guerrera, M.C., Kuciel, M., Zuwala, K., Germana, A., Icardo, J.M. Gill structure and neurochemical markers in the African bonytongue (*Heterotis niloticus*): A preliminary study. *Acta Histochem.* 124. (2022). <https://doi.org/10.1016/j.acthis.2022.151954>

70

Mancuso, M., Giuseppe, P., Francesca, F., Davide, D.P., Savoca, S., **Capillo, G.**, Teresa, R., Giovanni, P., Eleonora, G., Nunziacarla, S., Gioacchino, B., Giuliano, S., Bottari, T. Investigating the effects of microplastic ingestion in *Scyliorhinus canicula* from the South of Sicily. *Sci. Total Environ.* 850. (2022). <https://doi.org/10.1016/j.scitotenv.2022.157875>

69

Neri, G., Iaria, C., Capparucci, F., **Capillo, G.**, Pennisi, R., Nicosia, A., Giuseppe Mineo, P., Scala, A., Teresa Sciortino, M., Piperno, A., Marino, F. In vivo tracking and biosafety of fluorescent graphene-cyclodextrin nanomaterials on zebrafish embryos. *FlatChem* 35. (2022). <https://doi.org/10.1016/j.flatc.2022.100411>

68

Montesanto, F., Albano, M., Ayas, D., Betti, F., **Capillo, G.**, Çinar, M.E., Corsini-Foka, M., Crocetta, F., Dağlı, E., D'iglio, C., et al., New records of rare species in the Mediterranean Sea (December 2022). *Mediterr. Mar. Sci.* 23, 968–994. (2022). [10.3390/ijms22147539](https://doi.org/10.3390/ijms22147539)

67

Pagano, M., Savoca, S., Impellitteri, F., Albano, M., **Capillo, G.**, Faggio, C.. Toxicological Evaluation of Acetylsalicylic Acid in Non-Target Organisms: Chronic Exposure on *Mytilus galloprovincialis* (Lamarck, 1819). *Front. Physiol.* 13. (2022). <https://doi.org/10.3389/fphys.2022.920952>

66

R.K.A. Sayed, G. Zaccone, **G. Capillo**, M. Albano, D.M. Mokhtar. Structural and Functional Aspects of the Spleen in Molly Fish *Poecilia sphenops* (Valenciennes, 1846): Synergistic Interactions of Stem Cells, Neurons, and Immune Cells. *Biology (Basel)*. 11, 779 (2022). <https://doi.org/10.3390/biology11050779>

65

C. D'Iglio, M. Albano, S. Famulari, N. Spanò, P. Rinelli, S. Savoca, **G. Capillo.**

Basic Intersexuality (Abnormal Hermaphroditism) in the Blackmouth Catshark, *Galeus melastomus*, (Rafinesque, 1810), from the Southern Tyrrhenian Sea (Central Mediterranean Sea). *Fishes.* 7(3):120 (2022). <https://doi.org/10.3390/fishes7030120>

64

S. Famulari, S. Savoca, G. Panarello, C. Iaria, N. Spanò, **G. Capillo**, New record of a female violet blanket octopus (*Tremoctopus violaceus*, delle Chiaje, 1830) in the Strait of Messina, southern Italy. *International Journal of Environmental Studies*, 2022. In press

63

Alesci A., Pergolizzi S., **Capillo G.**, Lo Cascio P., Lauriano E.R.

Rodlet cells in kidney of goldfish (*Carassius auratus*, Linnaeus 1758): A light and confocal microscopy study.(2022) *Acta Histochemica*, 124 (3), DOI: 10.1016/j.acthis.2022.151876

62

Zacccone G., **Capillo G.**, Fernandes J.M.O., Kiron V., Lauriano E.R., Alesci A., Lo Cascio P., Guerrera M.C., Kuciel M., Zuwala K., Icardo J.M., Ishimatsu A., Murata R., Amagai T., Germanà A., Aragona M.

Expression of the Antimicrobial Peptide Piscidin 1 and Neuropeptides in Fish Gill and Skin: A Potential Participation in Neuro-Immune Interaction. (2022) *Marine Drugs*, 20 (2), DOI: 10.3390/md20020145

61

Alesci A., Pergolizzi S., Lo Cascio P., **Capillo G.***, Lauriano E.R.

Localization of vasoactive intestinal peptide and toll-like receptor 2 immunoreactive cells in endostyle of urochordate *Styela plicata* (Lesueur, 1823).(2022) *Microscopy Research and Technique*. DOI: 10.1002/jemt.24119

60

Maina J.N., Icardo J.M., Zacccone G., Aragona M., Lauriano E.R., Alesci A., Albano M., Guerrera M.C., Germana A., Fernandes J.M.O., Kiron V., **Capillo G.** Immunohistochemical and ultrastructural study of the immune cell system and epithelial surfaces of the respiratory organs in the bimodally breathing African sharptooth catfish (*Clarias gariepinus* Burchell, 1822). (2022) *Anatomical Record*. DOI: 10.1002/ar.24896

59

Sanfilippo, M., Albano, M., Manganaro, A., **Capillo, G.**, Spanò, N., Savoca, S. Spatiotemporal Organic Carbon Distribution in the Capo Peloro Lagoon (Sicily, Italy) in Relation to Environmentally Sustainable Approaches, (2022) *Water (Switzerland)*, 14 (1), art. no. 108. DOI: 10.3390/w14010108

58

D'iglio, C., Natale, S., Albano, M., Savoca, S., Famulari, S., Gervasi, C., Lanteri, G., Panarello, G., Spanò, N., **Capillo, G.** Otolith Analyses Highlight Morpho-Functional Differences of Three Species of Mullet (*Mugilidae*) from Transitional Water (2022) *Sustainability (Switzerland)*, 14 (1), art. no. 398. DOI: 10.3390/su14010398

(2021) 57

D'iglio, C., Albano, M., Tiralongo, F., Famulari, S., Rinelli, P., Savoca, S., Spanò, N., **Capillo, G.** Biological and ecological aspects of the blackmouth catshark (*Galeus melastomus* Rafinesque, 1810) in the southern Tyrrhenian Sea (2021) *Journal of Marine Science and Engineering*, 9 (9), art. no. 967. DOI: 10.3390/jmse9090967

56

D'iglio, C., Albano, M., Famulari, S., Savoca, S., Panarello, G., Di Paola, D., Perdichizzi, A., Rinelli, P., Lanteri, G., Spanò, N., **Capillo, G.** Intra- and interspecific variability among congeneric *Pagellus* otoliths (2021) *Scientific Reports*, 11 (1), art. no. 16315. DOI: 10.1038/s41598-021-95814-w

55

Lauriano E.R., **Capillo G. ***, Icardo J.M., Fernandes J.M.O., Kiron V., Kuciel M., Zuwala K., Guerrera M.C., Aragona M., Germana' A. and Zacccone G., 2021. Neuroepithelial cells (NECs) and mucous cells express a variety of neurotransmitters and neurotransmitter

receptors in the gill and respiratory air-sac of the catfish *Heteropneustes fossilis* (Siluriformes, Heteropneustidae): a possible role in local immune defence. *Zoology*, 1- 148, art. no. 125958. DOI: 10.1016/j.zool.2021.125958

54

54- Spanò, N., Di Paola, D., Albano, M., Manganaro, A., Sanfilippo, M., D'Iglio, C., **Capillo G.**, Savoca, S.*, 2021. Growth performance and bioremediation potential of *Gracilaria gracilis* (Steentoft, L.M.Irvine & Farnham, 1995). *International Journal of Environmental Studies*. 1- International Journal of Environmental Studies. DOI: 10.1080/00207233.2021.1954775

53

Capillo, G., Lauriano, E.R., Icardo, J.M., Siriyappagouder, P., Kuciel, M., Karapanagiotis, S., Zacccone, G., Fernandes, J.M.O., 2021. Structural Identification of the Pacemaker Cells and Expression of Hyperpolarization-Activated Cyclic Nucleotide-Gated (HCN) Channels in the Heart of the Wild Atlantic Cod, *Gadus morhua* (Linnaeus, 1758). *Int. J. Mol. Sci.* 22, 7539. <https://doi.org/10.3390/ijms22147539>

52

Savoca, S., Matanović, K., D'Angelo, G., Vetri, V., Anselmo, S., Bottari, T., Mancuso, M., Kužir, S., Spanò, N., **Capillo, G.**, Di Paola, D., Valić, D., Gjurčević, E. Ingestion of plastic and non-plastic microfibers by farmed gilthead sea bream (*Sparus aurata*) and common carp (*Cyprinus carpio*) at different life stages. *Science of the Total Environment*, 782, (2021). 10.1016/j.scitotenv.2021.146851

51

Albano, M., Panarello, G., Di Paola, D., Capparucci, F., Crupi, R., Gugliandolo, E., Spanò, N., **Capillo, G.**, Savoca, S. The influence of polystyrene microspheres abundance on development and feeding behavior of *Artemia salina* (Linnaeus, 1758) *Applied Sciences (Switzerland)*, 11 (8), (2021). 10.3390/app11083352

50

D'Iglio, C., Savoca, S., Rinelli, P., Spanò, N., **Capillo, G.** Diet of the deep-sea shark *Galeus melastomus rafinesque*, 1810, in the Mediterranean Sea: What we know and what we should know *Sustainability (Switzerland)*, 13 (7), (2021) 10.3390/su13073962

49

Capillo, G., Zacccone, G., Cupello, C., Fernandes, J.M.O., Viswanath, K., Kuciel, M., Zuwala, K., Guerrero, M.C., Aragona, M., Icardo, J.M., Lauriano, E.R. Expression of acetylcholine, its contribution to regulation of immune function and O₂ sensing and phylogenetic interpretations of the African butterfly fish *Pantodon buchholzi* (Osteoglossiformes, Pantodontidae)

Fish and Shellfish Immunology, 111, pp. 189-200. (2021) 10.1016/j.fsi.2021.02.006

48

Fazio, F., Saoca, C., **Capillo, G.**, Iaria, C., Panzera, M., Piccione, G., Spanò, N. Intra-variability of some biochemical parameters and serum electrolytes in rainbow trout (Walbaum, 1792) bred using a flow-through system

Heliyon, 7 (2), (2021). 10.1016/j.heliyon.2021.e06361

[2021] 47

Albano, M., Panarello, G., Di Paola, D., D'Angelo, G., Granata, A., Savoca, S., **Capillo, G.** The mauve stinger *Pelagia noctiluca* (Cnidaria, Scyphozoa) plastics contamination, the Strait of

Messina case, International Journal of Environmental Studies. (2021) doi.org/10.1080/00207233.2021.1893489

46

De Leo, F., Marchetta, A., **Capillo, G.**, Germanà, A., Primerano, P., Schiavo, S. Lo, Urzì, C., Surface active ionic liquids based coatings as subaerial anti-biofilms for stone built cultural heritage. Coatings. (2021) <https://doi.org/10.3390/coatings11010026>

(2020) 45

J. Icardo, **G. Capillo**, E.R. Lauriano, M. Kuciel, M. Aragona, M.C. Guerrera, G. Zaccone, The gas bladder of *Pantodon buchholzi*. Structure and relationships with the vertebrae, Journal of Morphology. 281 (2020):1588–1597 <https://doi.org/10.1002/jmor.21271>

44

A. Alesci, E. Rita, M. Aragona, **G. Capillo***, S. Pergolizzi, Acta Histochemica Marking vertebrates langerhans cells , from fish to mammals, Acta Histochemica. 122 (2020) 151622. doi:10.1016/j.acthis.2020.151622.

43

S. Pergolizzi, A. Marino, **G. Capillo***, M. Aragona, P. Marconi, E.R. Lauriano, Expression of Langerin/CD 207 and α -smooth muscle actin in ex vivo rabbit corneal keratitis model, Tissue and Cell. 66 (2020). doi:10.1016/j.tice.2020.101384.

42

E.R. Lauriano, S. Pergolizzi, P. Lo Cascio, M. Kuciel, N. Zizzo, M.C. Guerrera, M. Aragona, **G. Capillo***, Expression of Langerin/CD207 in airways, lung and associated lymph nodes of a stranded striped dolphin (*Stenella coeruleoalba*), Acta Histochemica. 122 (2020). doi: 10.1016/j.acthis.2019.151471.

41

G. Zaccone, C. Cupello, **G. Capillo***, M. Kuciel, A.L.R. Nascimento, A. Gopesh, G.P. Germanà, N. Spanò, M.C. Guerrera, M. Aragona, R. Crupi, J.M. Icardo, E.R. Lauriano, Expression of Acetylcholine- and G protein coupled Muscarinic receptor in the Neuroepithelial cells (NECs) of the obligated air-breathing fish, *Arapaima gigas* (Arapaimatidae: Teleostei), Zoology. (2020). doi:10.1016/j.zool.2020.125755.

40

J.J. Róžański, **G. Capillo**, E.R. Lauriano, M. Aragona, M. Kuciel, G. Zaccone, K.D. Żuwała, Ultrastructural and immunocytochemical studies on the olfactory receptor neurons in the *Ichthyosaura alpestris*, Acta Zoologica. (2020). doi:10.1111/azo.12351.

39

S. Pergolizzi, V. D'Angelo, M. Aragona, P. Dugo, F. Cacciola, **G. Capillo**, G. Dugo, E.R. Lauriano, Evaluation of antioxidant and anti-inflammatory activity of green coffee beans methanolic extract in rat skin, Natural Product Research. 34 (2020) 1535–1541. doi: 10.1080/14786419.2018.1523161.

38

J. Dymek, G. Rosenqwis, M. Kuciel, E.R. Lauriano, **G. Capillo**, G. Zaccone, K. Żuwała, Micro- and macro-morphology of the olfactory organ of *Syngnathus typhle* (Syngnathidae, Actinopterygii), Acta Zoologica. (2020). doi:10.1111/azo.12328.

37

E.R. Lauriano, M.C. Guerrero, R. Laurà, **G. Capillo**, S. Pergolizzi, M. Aragona, F. Abbate, A. Germanà, Effect of light on the calretinin and calbindin expression in skin club cells of adult zebrafish, *Histochemistry and Cell Biology*. (2020). doi:10.1007/s00418-020-01883-9.

36

F. Fazio, C. D'Iglio, **G. Capillo**, C. Saoca, k. Peycheva, G. Piccione, & L. Makedonski. Environmental Investigations and Tissue Bioaccumulation of Heavy Metals in Grey Mullet from the Black Sea (Bulgaria) and the Ionian Sea (Italy). *Animals*, 10(10) (2020), 1739. <https://doi.org/10.3390/ani10101739>

35

A. Spinelli, **G. Capillo**, C. Faggio, D. Vitale, N. Spanò, Returning of *Hippocampus hippocampus* (Linnaeus, 1758) (Syngnathidae) in the Faro Lake-oriented Natural Reserve of Capo Peloro, Italy, *Natural Product Research*. 34 (2020) 595–598. doi: 10.1080/14786419.2018.1490909.

34

A. Stara, M. Pagano, **G. Capillo**, J. Fabrello, M. Sandova, I. Vazzana, E. Zuskova, J. Velisek, V. Matozzo, C. Faggio, Assessing the effects of neonicotinoid insecticide on the bivalve mollusc *Mytilus galloprovincialis*, *Science of the Total Environment*. 700 (2020). doi: 10.1016/j.scitotenv.2019.134914.

33

S. Savoca, T. Bottari, E. Fazio, M. Bonsignore, M. Mancuso, G.M. Luna, T. Romeo, L. D'Urso, **G. Capillo***, G. Panarello, F. Neri, N. Spanò, Plastics occurrence in juveniles of *Engraulis encrasicolus* and *Sardina pilchardus* in the Southern Tyrrhenian Sea, *Science of the Total Environment*. 718 (2020). doi:10.1016/j.scitotenv.2020.137457.

32

S. Savoca, G. Grifó, G. Panarello, M. Albano, S. Giacobbe, **G. Capillo**, N. Spanó, G. Consolo, Modelling prey-predator interactions in Messina beachrock pools, *Ecological Modelling*. 434 (2020) 109206. doi:<https://doi.org/10.1016/j.ecolmodel.2020.109206>.

31

G. Capillo, S. Savoca, G. Panarello, M. Mancuso, C. Branca, V. Romano, G. D'Angelo, T. Bottari, N. Spanò, Quali-quantitative analysis of plastics and synthetic microfibers found in demersal species from Southern Tyrrhenian Sea (Central Mediterranean), *Marine Pollution Bulletin*. 150 (2020). doi:10.1016/j.marpolbul.2019.110596.

30

A. Stara, M. Pagano, G. Capillo, J. Fabrello, M. Sandova, M. Albano, E. Zuskova, J. Velisek, V. Matozzo, C. Faggio, Acute effects of neonicotinoid insecticides on *Mytilus galloprovincialis*: A case study with the active compound thiacloprid and the commercial formulation calypso 480 SC, *Ecotoxicology and Environmental Safety*. 203 (2020). doi: 10.1016/j.ecoenv.2020.110980.

(2019) 29

E.R. Lauriano, S. Pergolizzi, M. Aragona, G. Montalbano, M.C. Guerrero, R. Crupi, C. Faggio, **G. Capillo**, Intestinal immunity of dogfish *Scyliorhinus canicula* spiral valve: A histochemical, immunohistochemical and confocal study, *Fish and Shellfish Immunology*. 87 (2019) 490–498. doi:10.1016/j.fsi.2019.01.049.

28

E.R. Lauriano, S. Pergolizzi, M. Aragona, N. Spanò, M.C. Guerrero, **G. Capillo***, C. Faggio, Merkel cells immunohistochemical study in striped dolphin (*Stenella coeruleoalba*) skin, *Tissue and Cell*. 56 (2019) 1–6. doi:10.1016/j.tice.2018.11.003.

27

G. Zaccone, J. Maina, A. Germanà, G. Montalbano, **G. Capillo**, L. Aragona, M.J. Kuciel, E.R. Lauriano, J.M. Icardo, First demonstration of the neuroepithelial cells and their chemical code in the accessory respiratory organ and the gill of the sharptooth catfish, *Clarias gariepinus*: A preliminary study, *Acta Zoologica*. 100 (2019) 160–166. doi:10.1111/azo.12242.

26

P. Licata, R. Tardugno, S. Pergolizzi, **G. Capillo**, M. Aragona, A. Colombo, T. Gervasi, V. Pellizzeri, N. Cicero, M. Calò, In vivo effects of PCB-126 and genistein on vitellogenin expression in zebrafish, *Natural Product Research*. 33 (2019) 2507–2514. doi:10.1080/14786419.2018.1455048.

25

R. Costa, **G. Capillo***, A. Albergamo, R.L. Volsi, G. Bartolomeo, G. Bua, A. Ferracane, S. Savoca, T. Gervasi, R. Rando, G. Dugo, N. Spanò, A multi-screening evaluation of the nutritional and nutraceutical potential of the mediterranean jellyfish pelagia noctiluca, *Marine Drugs*. 17 (2019). doi:10.3390/md17030172.

24

S. Savoca, **G. Capillo**, M. Mancuso, T. Bottari, R. Crupi, C. Branca, V. Romano, C. Faggio, G. D'Angelo, N. Spanò, Microplastics occurrence in the Tyrrhenian waters and in the gastrointestinal tract of two congener species of seabreams, *Environmental Toxicology and Pharmacology*. 67 (2019) 35–41. doi:10.1016/j.etap.2019.01.011.

23

F. Fazio, C. Saoca, M. Sanfilippo, **G. Capillo**, N. Spanò, G. Piccione, Response of vanadium bioaccumulation in tissues of *Mugil cephalus* (Linnaeus 1758), *Science of the Total Environment*. 689 (2019) 774–780. doi:10.1016/j.scitotenv.2019.06.476.

22

S. Savoca[§], **G. Capillo[§]**, M. Mancuso, C. Faggio, G. Panarello, R. Crupi, M. Bonsignore, L. D'Urso, G. Compagnini, F. Neri, T. Bottari, N. Spanò, Detection of artificial cellulose microfibers in Boops boops from the northern coasts of Sicily (Central Mediterranean), *Science of the Total Environment*. 691 (2019) 455–465. doi:10.1016/j.scitotenv.2019.07.148.

21

T. Bottari, S. Savoca, M. Mancuso, **G. Capillo**, G. GiuseppePanarello, M. MartinaBonsignore, R. Crupi, M. Sanfilippo, L. D'Urso, G. Compagnini, N. Spanò, E. Fazio, Plastics occurrence in the gastrointestinal tract of Zeus faber and Lepidopus caudatus from the Tyrrhenian Sea, *Marine Pollution Bulletin*. 146 (2019) 408–416. doi:10.1016/j.marpolbul.2019.07.003.

20

F. Fazio, C. Saoca, V. Ferrantelli, G. Cammilleri, **G. Capillo**, G. Piccione, Relationship between arsenic accumulation in tissues and hematological parameters in mullet caught in Faro Lake: a preliminary study, *Environmental Science and Pollution Research*. (2019). doi:10.1007/s11356-019-04343-7.

(2017) 19

G. Montalbano[§], **G. Capillo[§]**, R. Laurà, F. Abbate, M. Levanti, M.C. Guerrera, E. Ciriaco, A. Germanà, Neuromast hair cells retain the capacity of regeneration during heavy metal exposure, *Annals of Anatomy*. (2018). doi:10.1016/j.aanat.2018.03.007.

18

E.R. Lauriano, C. Faggio, **G. Capillo**, N. Spanò, M. Kuciel, M. Aragona, S. Pergolizzi, Immunohistochemical characterization of epidermal dendritic-like cells in giant mudskipper, *Periophthalmodon schlosseri*, *Fish and Shellfish Immunology*. 74 (2018) 380–385. doi:10.1016/j.fsi.2018.01.014.

17

G. Zaccone, E.R. Lauriano, **G. Capillo**, M. Kuciel, Air-breathing in fish: Air-breathing organs and control of respiration: Nerves and neurotransmitters in the air-breathing organs and the skin, 120 (2018) 630–641. doi:10.1016/j.acthis.2018.08.009.

16

S.H. Hoseinifar^S, S. Yousefi, G. **Capillo**^S, H. Paknejad, M. Khalili, A. Tabarraei, H. Van Doan, N. Spanò, C. Faggio, Mucosal immune parameters, immune and antioxidant defence related genes expression and growth performance of zebrafish (*Danio rerio*) fed on *Gracilaria gracilis* powder, *Fish & Shellfish Immunology*. (2018). doi:10.1016/j.fsi.2018.09.046.

15

G. Capillo, S. Silvestro, M. Sanfilippo, E. Fiorino, G. Giangrosso, V. Ferrantelli, I. Vazzana, C. Faggio, Assessment of Electrolytes and Metals Profile of the Faro Lake (Capo Peloro Lagoon, Sicily, Italy) and Its Impact on *Mytilus galloprovincialis*, *Chemistry and Biodiversity*. (2018). doi:10.1002/cbdv.201800044.

14

G. Capillo, S. Savoca, R. Costa, M. Sanfilippo, C. Rizzo, A.L. Giudice, A. Albergamo, R. Rando, G. Bartolomeo, N. Spanò, N. Spanò, C. Faggio, New insights into the culture method and antibacterial potential of *Gracilaria gracilis*, *Marine Drugs*. 16 (2018). doi:10.3390/md16120492.

13

G. Capillo, G. Panarello, S. Savoca, M. Sanfilippo, M. Albano, R.L. Volsi, G. Consolo, N. Spanò, Intertidal ponds of messina's beachrock faunal assemblage, evaluation of ecosystem dynamics and communities' interactions, *AAPP Atti Della Accademia Peloritana Dei Pericolanti, Classe Di Scienze Fisiche, Matematiche e Naturali*. 96 (2018) A41–A416. doi:10.1478/AAPP.96S3A4.

(2017) 12

M. Sengar, L. Yadav, A. Gopesh, D. Zaccone, E.R. Lauriano, **G. Capillo**, Fine structure of diffused pseudobranchial neurosecretory cells associated with carotid labyrinth in an air-breathing catfish *Clarias batrachus*, 98 (2017) 105–113. doi:10.1111/azo.12100.

11

E.R. Lauriano, S. Pergolizzi, J. Gangemi, M. Kuciel, **G. Capillo**, M. Aragona, C. Faggio, Immunohistochemical colocalization of G protein alpha subunits and 5-HT in the rectal gland of the cartilaginous fish *Scyliorhinus canicula*, 80 (2017) 1018–1027. doi:10.1002/jemt.22896.

10

G. Zaccone, E.R. Lauriano, M. Kuciel, **G. Capillo**, S. Pergolizzi, A. Alesci, A. Ishimatsu, Y.K. Ip, J.M. Icardo, Identification and distribution of neuronal nitric oxide synthase and neurochemical markers in the neuroepithelial cells of the gill and the skin in the giant mudskipper, *Periophthalmodon schlosseri*, *Zoology*. (2017). doi:10.1016/j.zool.2017.08.002.

9

R. Costa, A. Albergamo, M. Piparo, G. Zaccone, **G. Capillo**, A. Manganaro, P. Dugo, L. Mondello, Multidimensional gas chromatographic techniques applied to the analysis of lipids from wild-caught and farmed marine species, *European Journal of Lipid Science and Technology*. (2017). doi:10.1002/ejlt.201600043.

8

G. Capillo, M. Sanfilippo, V. Aliko, N. Spanò, A. Spinelli, A. Manganaro, *Gracilaria gracilis*, source of Agar: A short review, *Current Organic Chemistry*. 21 (2017) 380–386. doi: 10.2174/1385272820666161017164605.

(2016) 7

E.R. Lauriano, K. Zuwała, M. Kuciel, K.A. Budzik, **G. Capillo**, A. Alesci, S. Pergolizzi, G. Dugo, G. Zaccone, Confocal immunohistochemistry of the dermal glands and evolutionary considerations in the caecilian, *Typhlonectes natans* (Amphibia: Gymnophiona), 97 (2016) 154–164. doi:10.1111/azo.12112.

6

E.R. Lauriano, S. Pergolizzi, **G. Capillo**, M. Kuciel, A. Alesci, C. Faggio, Immunohistochemical characterization of Toll-like receptor 2 in gut epithelial cells and macrophages of goldfish *Carassius auratus* fed with a high-cholesterol diet, *Fish and Shellfish Immunology*. 59 (2016) 250–255. doi:10.1016/j.fsi.2016.11.003.

5

M. Pagano[§], **G. Capillo**[§], M. Sanfilippo, S. Palato, F. Trischitta, A. Manganaro, C. Faggio, Evaluation of functionality and biological responses of *mytilus galloprovincialis* after exposure to quaternium-15 (Methenamine 3-Chloroallylochloride), *Molecules*. 21 (2016). doi:10.3390/molecules21020144.

4

M. Sanfilippo, **G. Capillo**, N. Spanò, A. Manganaro, Evaluation of water variables in no-take zone of ustica marine protected area (Southern Tyrrhenian Sea), *Brazilian Archives of Biology and Technology*. 59 (2016). doi:10.1590/1678-4324-2016160330.

(2015) 3

G. Zaccone, D.S. Fudge, T.M. Winegard, **G. Capillo**, M. Kuciel, K. Funakoshi, E.R. Lauriano, Confocal imaging and phylogenetic considerations of the subcutaneous neurons in the Atlantic hagfish *Myxine glutinosa*, *Acta Zoologica*. 96 (2015). doi:10.1111/azo.12068.

2

J.M. Icardo, E. Colvee, E.R. Lauriano, **G. Capillo**, M.C. Guerrero, G. Zaccone, The structure of the gas bladder of the spotted gar, *Lepisosteus oculatus*, *Journal of Morphology*. 276 (2015) 90–101. doi:10.1002/jmor.20323.

(2014) 1

D. Zaccone, E.R. Lauriano, **G. Capillo**, K. Zuwała, K.A. Budzik, M. Kuciel, G. Zaccone, Confocal imaging of autonomic preganglionic neurons in the spinal cord of the caecilian *Typhlonectes natans* (Amphibia: Gymnophiona), *Acta Histochemica*. 116 (2014) 1399–1406. doi:10.1016/j.acthis.2014.09.004.

DRIVING LICENCE

Motorbikes: A

Cars: B

PROFESSIONAL SKILLS

Professional Skills

- Taxonomical identification of invertebrates and vertebrates aquatic organisms
- Techniques of dissection of organs and tissues from aquatic organisms
- Techniques of cytochemistry, histochemistry and immunohistochemistry
- Use of optical microscopes, fluorescence and stereoscopes
- Use of various image acquisition systems
- Use of the Zeiss LSM 700 laser scanning confocal microscope applied in the field of immunofluorescence and three-dimensional reconstruction
- Molecular biology and bioinformatics techniques, from DNA extraction to primer design to DNA amplification
- Visual sampling techniques in immersion, Underwater Visual Census
- Use of the main sampling equipment in aquatic environments (Niskin bottle, Rosette, Buckets, Multiparameter probe).
- Knowledge of the main methods of water and sediment analysis.
- Use of TOC Analyzer to evaluate the carbon content of water
- Use of Spectrophotometers

NATIONAL AND INTERNATIONAL CONFERENCES PARTICIPATION

International 2023

Participation_Otolith from the deep sea, the case of *Argyropelecus hemigymnus* (Cocco, 1829) from the Strait of Messina (Central Mediterranean Sea). **G. Capillo**, M. Albano, C. D'Iglio, G. Lanteri, S. Famulari, N. Spanò, S. Savoca. 7th International Otolith Symposium, 10/2023, Vina del Mar, Chile

Contribution_Intra-specific variability of the saccular, utricular and lagenar otoliths of the garfish *Belone belone* (Linnaeus, 1760) from South-Western Ionian Sea (Central Mediterranean Sea). M. Albano, **G. Capillo**, C. D'Iglio, S. Famulari, N. Spanò, S. Savoca. 7th International Otolith Symposium, 10/2023, Vina del Mar, Chile

Contribution_Eco-morphology of sagittal otoliths in five Macrouridae species from Central Mediterranean Sea. S. Savoca, C. D'Iglio, M. Albano, S. Famulari, N. Spanò, **G. Capillo**. 7th International Otolith Symposium, 10/2023, Vina del Mar, Chile

Contribution_Not only sagittae: evaluation of intra-specific differences of lapilli and asterisci of *Scorpaena porcus* (Linnaeus, 1758) from the Strait of Messina (Italy - Central Mediterranean Sea). S. Famulari, **C. D'Iglio**, M. Albano, S. Savoca, N. Spanò, J. Ferri, G. Capillo. 7th International Otolith Symposium, 10/2023, Vina del Mar, Chile

Contribution_Comparative study on *sagittae* shape, morphometry, and age structures from two populations of *Scorpaena porcus* (Linnaeus, 1758) inhabiting the Strait of Messina (Central Mediterranean Sea) and Split area (North-Central Mediterranean Sea). C. D'Iglio, S. Famulari, M. Albano, S. Savoca, **G. Capillo**, J. Ferri. 7th International Otolith Symposium, 10/2023, Vina del Mar, Chile

Contribution_Ignoto S., Tiralongo F., Carnevale A., **Capillo G.**, Indelicato S., Brundo M.V. Gonadic maturity of *Paracentrotus lividus* (Lamarck, 1816): comparative techniques and possible implications for the conservation and breeding of the species. 5th Euro-Mediterranean Conference for Environmental Integration (EMCEI-23), 10/2023, Rende (Cosenza)

National 2023

Contribution_The first complete mitochondrial DNA annotation of *Zu cristatus* (Bonelli, 1819) with features and phylogeny. 2023. Albano, M., Giosa, D., De Oliveira Fernandes, J.M., Giuffrè, L., Tripathy, P. S., Bonomo, A., Romeo, O., **Capillo, G.** 82° Congresso dell'Unione Zoologica Italiana. Palermo, 09/2023.

Contribution_Internal system of defense: cellular adaptation in the evolution of different marine invertebrates. 2023. Alesci, A., Fumia, A., Marino, S., Miller, A., Albano, M., **Capillo, G.** 82° Congresso dell'*Unione Zoologica Italiana*. Palermo, 09/2023.

Organization_Componente del comitato organizzatore e della segreteria organizzativa del 52° Congresso della Società Italiana di Biologia Marina, tenutosi presso l'UniMe, 06/2023. <http://congresso.sibm.it/>

Contribution_First occurrence of the nemertean *Baseodiscus delineatus* (Delle Chiaje, 1822) from brackish faro lagoon (Messina, Italy). F. Rosano, C. D'Iglio, A. Alesci, D. Di Fresco, **G. Capillo**. *SIBM*, Messina 06/2023

Contributo_Underwater cultural heritage conservation by means anti-biofouling ecofriendly products. M. Luci, F. De Leo, S. Lo Schiavo, **G. Capillo**, M. Ricca, M. La Russa, S. Ruffolo, N. Ruocco, C. Galasso, M. Mutalipassi, G. Marino, D. Coppola, C. Urzì, D. De Pascale. *SIBM*, Messina 06/2023

Contribution_Preliminary investigation on teleost assemblages in the brackish faro lagoon (Natural Oriented Reserve of Capo Peloro, Messina, Italy). A. Carnevale, S. Famulari, N. Spanò, **G. Capillo**. *SIBM*, Messina 06/2023

Contribution_Distribution and morphometry of the lessepsian species *Pinctada radiata* Leach, 1814 (Pteriidae) in the Oriented Nature Reserve of Capo Peloro Lagoon. D. Di Fresco, C. D'Iglio, S. Famulari, S. Savoca, **G. Capillo**. *SIBM*, Messina 06/2023

Contribution_Assessment of gonadic maturity stage of *Paracentrotus lividus* (Lamarck, 1816) in the eastern coast of Sicily. S. Ignoto, F. Tiralongo, A. Carnevale, **G. Capillo**, S. Indelicato, M. V. Brundo. *SIBS*, Trieste, 04/2023

2022

Organizzazione del convegno internazionale "Plant and animal biodiversity in the central Mediterranean Area"- "Biodiversità vegetale ed animale nell'Area centro mediterranea a 30 anni dalla Direttiva Habitat e Rete Natura 2000" Giovedì 19 maggio 2022, Università degli Studi di Messina

Contributo-Pagano M., Savoca S., Impellitteri F., Albano M., **Capillo G.**, Faggio C. (2022). "Acetylsalicylic acid: physiological changes in non-target organism *Mytilus galloprovincialis*". 94rd National Congress of the Italian Society of Experimental Biology. Torino, 6-9 April 2022 p.31

Contributo-Zicarelli, G., Pagano M., Savoca, S., Impellitteri, F., Albano, M., **Capillo G.**, Faggio C. *Mytilus galloprovincialis*: a non-target organism as a tool for assessing the potential toxicity of Acetylsalicylic acid (ASA). 2022ESCPB 2022. 32nd Congress New European Society for Comparative Physiology and Biochemistry. *Book of Abstract*.

Contributo-Famulari, S., D'Iglio, C., Albano, M., Lanteri, G., Natale, S., Gervasi, C., Spanò, N., Savoca, S., **Capillo, G.** "Otoliths analyses highlight differences among three species of mullet (Mugilidae) from transitional water". 94rd National Congress of the Italian Society of Experimental Biology. Torino, 6-9 April 2022

Contributo-Carnevale, A., Panarello, G., Iaria, C., Famulari, S., **Capillo, G.**, Savoca, S. "A new female violet blanket octopus (*Tremoctopus violaceus*, Delle Chiaje, 1830) record in the Strait of Messina,

Southern Italy." 94rd National Congress of the Italian Society of Experimental Biology. Torino, 6-9 April 2022

Contributo-Albano, M., Savoca, S., Romeo, O., Giosa, D., Spanò, N.,

Capillo, G., "Occurrence of *Zu cristatus* (Bonelli, 1819) in the Ionian Sea at an unusual depth." 94rd National Congress of the Italian Society of Experimental Biology. Torino, 6-9 April 2022

Contributo-Di Fresco, D., Albano, M., D'Iglio, C., Spanò, N.,

Capillo, G., Savoca, S., Plastisphere: the impact of plastics from new perspective. 94rd National Congress of the Italian Society of Experimental Biology. Torino, 6-9 April 2022

2021

Contributo-Savoca S., **Capillo G.**, D'angelo G., Spanò N., Di Paola D., Albano M., Matanovic K., Gjurcevic E.. Occurrence of microfibers in farmed gilthead seabream and common carp at different life stages (2021), J. Biol. Res., 94 (S1): 54. Virtual meeting 93° Congresso SIBS 22-25 Aprile 2021

Contributo-Albano M., Panarello G., Di Paola D., Savoca S., Famulari S., D'iglio C., Capparucci F., Spanò N., **Capillo G.**. Effects of microplastics ingestion on development and feeding behavior in brine shrimp (*Artemia salina*) (2021), J. Biol. Res., 94 (S1): 48. Virtual meeting 93° Congresso SIBS 22-25 Aprile 2021 (Best oral communication)

Contributo-Di Paola D., Savoca S., Bottari T., Mancuso M., Spanò N., **Capillo G.**, Abbate J., Lanteri G.. A scanning electron microscopy protocol for the study of marine microplastics (2021), J. Biol. Res., 94 (S1): 50. Virtual meeting 93° Congresso SIBS 22-25 Aprile 2021 (Best poster)

Contributo-D'iglio C., **Capillo G.**, Rinelli P., Di Fresco D., Savoca S., Spanò N., Tiralongo F.. New data on the diet and feeding habits of the blackmouth catshark, *Galeus melastomus* rafinesque, 1810 from the southern Tyrrhenian Sea (2021), J. Biol. Res., 94 (S1): 50. Virtual meeting 93° Congresso SIBS 22-25 Aprile 2021

Contributo-Famulari S., D'iglio C., Lanteri G., Rinelli P., Abbate J., Spanò N., Savoca S., **Capillo G.**. New insights into otoliths ecomorphology of two congeneric seabreams species, *Pagellus erythrinus* (Linnaeus, 1758) and *Pagellus bogaraveo* (Brünnich, 1768) (2021), J. Biol. Res., 94 (S1): 50. Virtual meeting 93° Congresso SIBS 22-25 Aprile 2021

2020

Contributo_Immunostimulating effect of Gracilaria gracilis powder in zebrafish (Danio rerio). Pagano, M., **Capillo, G.**, Albano, M., Savoca, S., Aliko, V., Faggio, C. "Marine biobased products: challenge for a sustainable innovation based on the three p's. Virtual Meeting, June, 2020

2019

Partecipazione_ Deepen the knowledge about spiral valve and associated lymphoid tissue (galt) of the small-spotted catshark *Scyliorhinus canicula* (Linnaeus, 1758). **Capillo, G.**, Aragona, M., Albano, M., Pergolizzi, S., Guerrera, M.C., Lauriano, E.R. 92th SIBS. Sassari, Italy, Dec, 2019

Contributo_ Plastic occurrence in *Pelagia noctiluca* from the Strait of Messina. Savoca, S., Albano, M., Panarello, G., **Capillo, G.**, Granata, A., Guglielmo, L., D'Angelo, G., Branca, C. Bottari, T., Mancuso, M., Spanò, N. 92th SIBS. Sassari, Italy, Dec, 2019

Contributo_ Merluccius merluccius and *Chlorophthalmus agassizi*: similarity and differences of microplastics ingested. Panarello, G., Savoca, S., **Capillo, G.**, Bottari, T., Mancuso, M. Albano, M., Spanò, N. 92th SIBS. Sassari, Italy, Dec, 2019

Plastic debris ingestion by demersal elasmobranch species from tyrrhenian sea: *Galeus melastomus*, *Scyliorhinus canicular* and *Raja miraletus*. Panarello, G., Savoca, S., **Capillo, G.**, Mancuso, M., Bottari, T., Spanò, N. First symposium on experimental biology: sea and environment. Trapani, Italy, May, 2019.

Plastics ingestion evidences in two commercially important species from central Mediterranean Sea. Costanzo, M., **Capillo, G.**, Savoca, S., Panarello, G., Bottari, T., Mancuso, M., Spanò, N. First symposium on experimental biology: sea and environment. Trapani, Italy, May, 2019.

Microfibers occurrence in the Mediterranean sea: evidence of ingestion by demersal-semipelagic (*Boops boops*) fish species. Di Fresco, D., Panarello, G., **Capillo, G.**, Savoca, S., Bottari, T., Mancuso, M., Spanò, N. First symposium on experimental biology: sea and environment. Trapani, Italy, 2019. **BEST POSTER**

Presence of microplastics in the gastrointestinal tract of two seabreams species (*Pagellus erythrinus* and *Pagellus bogaraveo*). Famulari, S., Savoca, S., Panarello, G., **Capillo, G.**, Mancuso, M., Bottari, T., Spanò, N. First symposium on experimental biology: sea and environment. Trapani, Italy, May, 2019.

2018

Antimicrobial Activities of Extracts from *Gracilaria gracilis* (Rhodophyta). Savoca S., **Capillo G.**, Panarello G., Lo Giudice A., Rizzo C., Rando R., Bartolomeo G., Costa R., Spanò N. 91th SIBS Congress Ancona, Italy, November 2018.

Characterization of the Metabolic Profile of *Pelagia noctiluca* (Scyphozoa). Li Volsi R., Rotondo A., Costa R., **Capillo G.**, Spanò N. 91th SIBS, Ancona November 2018.

Langerhans Cells, Morphological and Immunohistochemical Characterization in Striped Dolphin (*Stenella coeruleoalba*) Epidermis. Aragona M., **Capillo G.**, Magazzù C., Pergolizzi S., Lauriano ER. 91th SIBS Congress, Ancona November 2018.

Gracilaria gracilis: a Powerful Product from Sustainable Aquaculture. **Capillo G.**, Faggio C., Savoca S., Panarello G., Sanfilippo M., Spanò N. 91th SIBS Congress, Ancona November 2018.

Gracilaria gracilis of Capo Peloro Lagoon, a powerful product from sustainable aquaculture. **Capillo G.**, Serena S., Rizzo C., Sanfilippo M., Spanò N. *Eurolag8: 8th EUROPEAN COASTAL LAGOONS SYMPOSIUM*. Atene March 2018.

2017

An evaluation of the nutritional value of the jellyfish *Pelagia noctiluca*.

Li Volsi R., Costa R., Albergamo A., Bartolomeo G., Bua G., Ferracane A., Gervasi T., **Capillo G.**, Spanò N., Dugo G. 90th SIBS National Congress, Trapani October 2017.

Optimal housing protocols for the small-spotted catshark (*Scyliorhinus canicula*) in captivity. Panarello G., **Capillo G.**, Bottari T., Spanò N., Marino F. 90th SIBS National Congress, Trapani October 2017.

Appraisal of the abiotic and biotic framework of faro lake (Messina, Sicily). Silvestro S., **Capillo G.**, Sanfilippo M., Fiorino E., Giangrosso G., Ferrantelli V., Dara S., Vazzana I., Faggio C. 90th SIBS National Congress, Trapani October 2017.

Clibanarius erythropus and *Phorcus turbinatus* in intertidal ponds: evaluation of predator-prey interactions. **Capillo G.**, Consolo G., Li Volsi R., Panarello G., Spanò N. *School & Research Workshop. Mathematical Modeling of Self-Organizations in Medicine, Biology and Ecology: from micro to macro*. Giardini Naxos (Messina) September 2017.

Neuromast hair cells retain the capacity of regeneration during heavy metal exposure. Montalbano G., **Capillo G.**, Laurà R., Levanti M., Scopitteri T., Cavallaro M., Germanà A. *XI CONGRESSO NAZIONALE Associazione Italiana Morfologi Veterinari*, Roma May 2017.

Bioactive natural products from the mediterranean sponge *Raspaciona aculeata* (Johnston, 1842). Spinelli A., Ortega M. J., **Capillo G.**, Bertolino M., Vitale D., and Spanò N. *XIII INCONTRO DEI DOTTORANDI IN ECOLOGIA E SCIENZE DEI SISTEMI ACQUATICI*, Palermo May 2017.

Gracilaria gracilis (gracilariales, rhodophyta) from Ganzirri lagoon, state of art and perspectives. **Capillo G.**, Sanfilippo M., Li Volsi R., Spinelli A., Panarello G., Spanò N., Manganaro A. *XIII INCONTRO DEI DOTTORANDI IN ECOLOGIA E SCIENZE DEI SISTEMI ACQUATICI*, Palermo May 2017.

2016

Variation of temperature in a coastal protected area (Ganzirri lagoon, ME) during the last half century: global warming? Li Volsi R., Sanfilippo M., Cortese G., Manganaro A., Spanò N., **Capillo G.** *89° Convegno SIBS*, Ozzano dell'Emilia (BO) December 2016.

Preliminary investigation of an intertidal zone's faunal assemblage (beachrock, R.N.O. Capo Peloro, NE Sicily). **Capillo G.**, Sanfilippo M., Panarello G., Spinelli A., Manganaro A., Spanò N. *89° Convegno SIBS*, Ozzano dell'Emilia (BO) December 2016.

The importance of research in economic and environmental exploitation of a fragile transitional ecosystem: the Ganzirri lagoon (NE SICILY).

Capillo G., Sanfilippo M., Li Volsi R., Spanò N., Manganaro A. *89° Convegno SIBS*, Ozzano dell'Emilia (BO) December 2016.

2015

The impact of quaternium-15 on *Mytilus galloprovincialis*: in vitro study. Pagano M., **Capillo G.**, Sanfilippo M., Palato S., Trischitta F., Manganaro A., Faggio C. *88° Convegno SIBS*, Genova December 2015.

Environmental quality of Ustica Marine Protected Area (Sicily, Italy). Sanfilippo M., **Capillo G.**, Manganaro A. *88° Convegno SIBS*, Genova December 2015.

Growth of *Gracilaria gracilis* in fish farming and phytoremediation. **Capillo G.**, Sanfilippo M., Palato S., Manganaro A. *88° Convegno SIBS*, Genova December 2015.

The noble fan mussel *Pinna nobilis* behavior along a marine-brackish gradient. Spinelli A., Pagano M., Capillo G., Orefice T., Vazzana I., Giacobbe S., Faggio C. *88° Convegno SIBS*, Genova December 2015.

Neurotransmitter localization in the airway putative oxygen-sensitive chemoreceptor cells of air breathing fishes with particular reference to nitric oxide. Capillo G., Lauriano E. R., Sanfilippo M., Icardo J., Zaccone G. *2nd Young Natural History Scientists' Meeting*, Paris February 2015.

Organic carbon in the brackish environments of the Oriented Natural Reserve of Capo Peloro (Sicily, Italy). Sanfilippo M., **Capillo G.**, Cortese G., Monteleone A., Manganaro A. *2nd Young Natural History Scientists' Meeting*, Paris February 2015.

Effects of temperature on the density of *Gracilaria gracilis* in the salted pond of Ganzirri (NE Sicily): Global changes? Monteleone A., **Capillo G.**, Sanfilippo M., Manganaro A. *2nd Young Natural History Scientists' Meeting*, Paris February 2015.

2014

Structural and immunohistochemical study of photophores in the body of the dragonfish, *Chauliodus sloani*. **Capillo G.**, Lauriano E.R., Zaccone G., Dugo G. *SIBS*, Turin December 2014.

From culture to application. Agar from *Gracilaria gracilis* of Ganzirri lagoon (Sicily, Italy). **Capillo G.**, Genovese G., Monteleone A., Morabito M., Sanfilippo M., Manganaro A. *SIBS*, Turin December 2014.

Culture of *Gracilaria gracilis* for agar extraction (food uses) and aquaculture waste water treatment. Albano M., **Capillo G.**, Cortese G., Monteleone A., Palato S., Sanfilippo M., Manganaro A. *LET'S*, Bologna September 2014.

NATIONAL AND INTERNATIONAL RESEARCH GROUPS PARTICIPATION

[08/2012 – Current] **Nord University - Norway**

Participation in a research group with national (Prof. Giacomo Zaccone) and international (Prof. Jorge Manuel de Oliveira Fernandes) collaborations. Visiting at Nord University, Bodø (Norway). Objective of the research: to define structure, regulation and gene expression of HCN channels (Hyperpolarization-activated Cyclic Nucleotide-gated channels) in the pace-maker cells of Atlantic cod (*Gadus morhua*). Research product: Capillo, G., Lauriano, E.R., Icardo, J.M., Siriyappagounder, P., Kuciel, M., Karapanagiotis, S., Zaccone, G., Fernandes, J.M.O., 2021. Structural Identification of the Pacemaker Cells and Expression of Hyperpolarization-Activated Cyclic Nucleotide-Gated (HCN) Channels in the Heart of the Wild Atlantic Cod, *Gadus morhua* (Linnaeus, 1758). *Int. J. Mol. Sci.* 22, 7539. <https://doi.org/10.3390/ijms22147539>

[05/2014 – Current] **Universidad de Cantabria - Spain**

Participation in research activities characterized by national and international collaborations with "Departamento de Anatomía y Biología Celular", Universidad de Cantabria, Santander, 39011, Spain (Prof. José M. Icardo). Target of the project: Identification and localization of neurochemical markers involved in the control of aquatic and aerial respiration of fish, and structure and ultrastructure analysis. Products of research: DOI: 10.1016/j.zool.2020.125755; DOI: 10.1111/azo.12242; DOI: 10.1016/j.zool.2017.08.002; DOI: 10.1002/jmor.20323; DOI: 10.1002/jmor.21271

[05/2014 – Current] **Jagellonian University - Poland**

Participation in research activities characterized by international collaboration with "Department of Toxicology and Environmental Disease", Faculty of Medicine, Jagellonian University, Kpemia 15, Kraków, 30-501, Poland (Prof. Krystina Zuwała, Dr. Michal Kuciel et al.). Target of the project: Fish nervous system, respiratory system and immune system. Research products: DOI: 10.1016/j.zool.2020.125755; DOI: 10.1016/j.acthis.2019.151471; DOI: 10.1111/azo.12328; DOI: 10.1111/azo.12242; DOI: 10.1016/j.acthis.2018.08.009; DOI: 10.1016/j.fsi.2018.01.014; DOI: 10.1016/j.zool.2017.08.002; DOI: 10.1002/jemt.22896; DOI: 10.1016/j.fsi.2016.11.003; DOI: 10.1111/azo.12112; DOI: 10.1111/azo.12068; DOI: 10.1016/j.acthis.2014.09.004. DOI:10.1111/azo.12351;

[05/2014 – Current]

University of Allahabad - India e Universidade do Estado do Rio de Janeiro - Brazil

Participation in research activities characterized by national and international collaborations with "Department of Zoology", University of Allahabad, Allahabad, U.P. 211002, India (Prof. Anita Gopesh); Departamento de Zoologia, Instituto de Biologia, Universidade do Estado do Rio de Janeiro, Rua São Francisco Xavier, 524, Rio de Janeiro, 20550-900, Brazil (Dr. Camila Cupello). Project target: Morphological, histochemical, immunohistochemical and ultrastructural analysis of the respiratory system of fish with bimodal respiration (*Clarias batrachus*, *Arapaima gigas*). Prodotti della ricerca: DOI: 10.1016/j.zool.2020.125755; DOI: 10.1111/azo.12100.

[05/2014 – Current]

University of Guelph - Canada e Yokohama City University School of Medicine - Japan

Participation in research activities characterized by international collaborations with "Department of Integrative Biology", University of Guelph, Guelph, ON N1G-2W1, Canada (Prof. Douglas S. Fudge e Dr. Timothy M. Winegard); "Department of Neuroanatomy", Yokohama City University School of Medicine, 22-2 Seto, Kanazawa Ward, Yokohama, Kanagawa Prefecture, 236-0027, Japan (Prof. Kengo Funakoshi). Target of the project: Nervous control of the mucus glands of Atlantic myxine (*Myxine glutinosa*). Research product: DOI: 10.1111/azo.12068

[09/2016 – Current] **Universidad de Oviedo - Spain**

Participation in a research group with national (Prof. Antonino Germanà) and international (Prof. José A. Vega) collaborations. Visiting (PhD student) at "Departamento de Morfología y Biología Celular de la Universidad de Oviedo" during the participation in Research & Mobility project entitled: "Effects of N-acyl ethanolamines and Polyphenols Association in the Control of Neuroinflammation after Traumatic Central Nervous System Injuries." The project also carried out an assessment of the impact of heavy metal pollution on aquatic ecosystems using zebrafish (*Danio rerio*) as an experimental model. Search product: DOI: 10.1016/j.aanat.2018.03.007

[01/2017 – Current] **Gorgan University - IRAN e Chiang Mai University - Thailand**

Participation in research activities characterized by National and International collaborations with "Department of Fisheries", Faculty of Fisheries and Environment, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran (Prof. Seyed Hossein Hoseinifar); Department of Animal and Aquatic Sciences, Faculty of Agriculture, Chiang Mai University, Chiang Mai, 50200, Thailand (Dr. Hien van Doan). Target of the Project: Stimulation of the immune system of Pisces (*Danio rerio*, Experimental Model). Search product: DOI: 10.1016/j.fsi.2018.09.046.

[01/2012 – 12/2014] **RITMARE - IRBIM CNR**

Participation in the research activities of the group of the Institute for Biological Resources and Marine Biotechnology (IRBIM-CNR) U.O.S. of Messina (Dr.ssa Teresa Bottari). Project flag RITMARE, of the Unit Operative SP2_WP1_AZ4_UO06. The parasites as "biological tags" for the identification of fish stocks.

[01/2014 – Current] **UNIME-UNIBA**

Participation in research activities characterized by national collaborations with the Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Italy (Proff. Eugenia Rita Lauriano, Simona Pergolizzi et al.); Department of Veterinary Medicine, University of Bari Aldo Moro, Bari, Italy (Prof. Nicola Zizzo); Department of Veterinary Sciences, "Zebrafish Neuromorphology Lab", University of Messina, Messina, Italy (Proff. Antonino Germanà, Giuseppe Montalbano et al); Target of the project: Immune system and morpho-functional adaptations of aquatic and terrestrial vertebrates. Products of research: DOI: 10.1016/j.tice.2020.101384; DOI: 10.1080/14786419.2018.1523161; DOI: 10.1016/j.zool.2020.125755; DOI: 10.1016/j.acthis.2019.151471; DOI: 10.1111/azo.12328; DOI: 10.1007/s00418-020-01883-9; DOI: 10.1016/j.fsi.2019.01.049; DOI: 10.1111/azo.12242; DOI: 10.1016/j.tice.2018.11.003; DOI: 10.1016/j.acthis.2018.08.009; DOI: 10.1016/j.fsi.2018.01.014; DOI: 10.1016/j.zool.2017.08.002; DOI: 10.1002/jemt.22896; DOI: 10.1111/azo.12100; DOI: 10.1016/j.fsi.2016.11.003; DOI: 10.1111/azo.12112; DOI: 10.1002/jmor.20323; DOI: 10.1111/azo.12068; DOI: 10.1016/j.acthis.2014.09.004.

[05/2014 – 09/2016] **RITMARE - UNIME**

Participation in research activities Flag Project "RITMARE - Italian research for the sea" SP2_WP4_AZ2_UO02, developed by the National Inter-university Consortium for Sea Sciences with the Department of Biological and Environmental Sciences of the University

of Messina (Prof. Antonio Manganaro). Evaluation of innovative species to be exploited in aquaculture (*Pagellus bogaraveo* and *Scorpaena scrofa*) on an industrial scale.

[04/2014 – 12/2015] **INNOVAQUA - UNIME**

Participation as a Fellow in the research activities of the PON02_00451_3362185 project, CUP: B68J12000330007, "INNOVAQUA - Technological innovation to support the increase in productivity and competitiveness of Sicilian aquaculture", "Support activities for the experimental centre for the management of stock of *Seriola* breeders" of the Department of "Veterinary Sciences" (Proff. Fabio Marino, and Antonio Manganaro), of the University of Messina, Italy.

[06/2017 – 10/2017] **ARBIOME - UNIME**

Participation in the research group of the ArBioMe Project, of Biological and Archaeological Research in the Strait of Messina, University of Messina (Prof. Nunziacarla Spanò). The main activities concerned research and identification, through deep diving in submarines Triton 3300/3, Triton 3300/1MD, video monitoring using ROV (Remotely Operated underwater Vehicle), multibeam system, Side-scan sonar system, of sites of biological and historical interest in the area of the Strait of Messina (Sella and its benthic populations, mapping of the *Posidonia oceanica*, wreck under identification maximum depth 270 m, motorboat Valfiorita maximum depth 70m)

[01/2018 – Current] **MIFT - UNIME**

Participation in research activities characterized by national collaboration with the "Department of Mathematical and Informatic Sciences, Physical Sciences and Earth Sciences" of the University of Messina, Italy (Prof.ssa Giovanna D'Angelo and Prof.ssa Caterina Branca). Project target: Research and analysis of microplastics in Mediterranean fish species and their impact on the marine environment. Research products: DOI: 10.1016/j.etap.2019.01.011; 10.1016/j.marpolbul.2019.110596

[01/2018 – Current] **UNIME - IRBIM CNR - SZN**

Participation in research activities characterized by national collaborations with the "Department of Mathematical and Informatic Sciences, Physical Sciences and Earth Sciences" of the University of Messina, Italy (Professor Enza Fazio); Department of Chemical Sciences, University of Catania, (Prof. Luisa D'Urso and Prof. Giuseppe Compagnini); Institute for Biological Resources and Marine Biotechnology (IRBIM-CNR) Section of Messina, Italy (Prof/Dr. Gian Marco Luna); Superior Institute for Environmental Protection and Research (ISPRA), Milazzo (ME), Italy (Dott.ssa Teresa Romeo); "Anton Dohrn Zoological Station" Naples, Italy (Dr. Silvestro Greco). Target of the project: Research and analysis of microplastics in Mediterranean fish species of commercial interest. Research products: DOI:10.1016/j.scitotenv.2019.07.148; 10.1016/j.marpolbul.2019.07.003; 10.1016/j.scitotenv.2020.137457.

[01/2018 – 12/2018] **IRBIM - CNR**

Participation in the research activities of the group of the Institute for Biological Resources and Marine Biotechnology (IRBIM) Messina Headquarters, National Research Council (CNR). Search Campaign MEDITS 2018 Sub-geographic area (GSA) 10 - Central South Tyrrhenian Sea 2018. The experimental trawling campaign MEDITS is aimed at determining the distribution, abundance and size composition of 52 commercial fish species and 32 species of Selaci. The methodologies adopted are such as to make the results comparable with the similar surveys carried out under the same MEDITS project in other Mediterranean countries

[02/2019 – Current] **SZN**

Participation in the research activities of the group Zoological Station "Anton Dohrn" (Dr.ssa Teresa Romeo) for the assessment of stress induced by environmental contaminants in marine animal organisms, Assessment of the impact of human activities on the biodiversity of the marine-coastal environments, Assessment of the anthropogenic impact on marine protected areas.

[09/2019 – Current] **FISH PATH NET - UNIME**

Participation in the research activities of the Research Project Group PO_FEAMP_2014_2020_SIPA_01/MS/18 ENTITLED FISH PATH NET - "STRENGTHENING SICILIAN ICHTHYOPATHOLOGY CENTRES", BASED ON MEASURE UNDER TITLE 2.56 OF THE FEAMP OP 2014/2020, ENTITLED "ANIMAL HEALTH AND WELFARE MEASURES" NOTICE NO. 508/2014 OF 15 MAY 2014. CUP N. G47B18000130009 AND SIPA PROJECT CODE 01/MS/18, as Activity Manager A.5.2. "Diseases of the abalone"

**RESPONSIBILITY FOR
SCIENTIFIC STUDIES
AND RESEARCH EN-
TRUSTED BY QUALIFIED
PUBLIC INSTITUTIONS**

[04/2014 – 12/2015] **INNOVAQUA - UNIME**

Awarding of a research grant for the activities of the PON02_00451_3362185, CUP project: B68J12000330007, "INNOVAQUA - Technological innovation to support the increase in productivity and competitiveness of Sicilian aquaculture", O.R. 1, S.A.1.2.4. "Support activities for the experimental centre for the management of stock of Seriola breeders" of the Department of "Veterinary Sciences" (Proff. Fabio Marino, and Antonio Manganaro), of the University of Messina, Italy.

[01/10/2016 – 02/10/2017] **Research & Mobility - UNIME**

Participation in Research & Mobility project entitled: "Effects of N-acylethanolamines and Polyphenols Association in the Control of Neuroinflammation after Traumatic Central Nervous System Injuries" of the Department of Chemical Sciences, Biological, Pharmaceutical and Environmental Studies University of Messina, Messina (Italy)

[02/09/2019 – Current] **FISH PATH NET - UNIME**

Responsible for Activity A.5.2. "Diseases of the abalone". Research project PO_FEAMP_2014_2020_SIPA_01/MS/18 ENTITLED FISH PATH NET - "STRENGTHENING SICILIAN ICHTHYOPATHOLOGY CENTRES", BASED ON THE FEAMP 2014/2020 MEASURE 2.56 ENTITLED MEASURES RELATING TO ANIMAL HEALTH AND WELFARE" Notice No. 508/2014 of 15 May 2014. CUP N. G47B18000130009 AND SIPA PROJECT CODE 01/MS/18.

[04/2021 – Current] **Renexia - UNIME**

Participation in the project RENEXIA - Environmental Monitoring Channel of Sicily for Wind Power Plant - 2021

[04/2021 – Current] **TERNA - UNIME**

TERNA Project - Environmental Survey Rete Italia interconnection HDVC Campania Sicilia - 2021. Chemical - Physical - Biological (meiobenthos and microbiological) sampling and analysis of sediments in the areas of Termini Imerese (PA) and Salerno (SA)

PNRA18_00041 - B2-SBAM - IRBIM - CNR

Participation Project "PNRA18_00041 - B2-SBAM" Scientific Coordinator: Dr Monique Mancuso. The aim of the activity will be the collection and analysis of biological samples (bony fish), Antarctic water and sediment, bacteriological isolation and analysis of samples.

SCIENTIFIC RESPONSIBILITY FOR INTERNATIONAL AND NATIONAL RESEARCH PROJECTS

[05/2020 – Current] **Responsabile di attività**

Responsible for activities in the project INTERREG BIOBLU- "BIOremediation of marine debris in the BLUE flag beach and in a Maritime Protected Area" Cod. C2-3.1-129, Call n. 02/2019.

[04/05/2020 – Current] **Responsabile di Attività**

Responsible for Activity A.5.2. "Diseases of the abalone". Research project PO_FEAMP_2014_2020_SIPA_01/MS/18 ENTITLED FISH PATH NET - "STRENGTHENING SICILIAN ICHTHYOPATHOLOGY CENTRES", BASED ON THE FEAMP 2014/2020 MEASURE 2.56 ENTITLED MEASURES RELATING TO ANIMAL HEALTH AND WELFARE" Notice No. 508/2014 of 15 May 2014. CUP N. G47B18000130009 AND SIPA PROJECT CODE 01/MS/18.

EDITORIAL AND PEER-REVIEWER ACTIVITIES

[02/2024 – Current] **Editorial Board Member "BMC Zoology"**

Editorial Board Member "BMC Zoology". <https://bmczool.biomedcentral.com/about/editorial-board>

[08/2023 – Current] **Subject editor MDPI**

Subject Editor of Biology & Life Sciences for MDPI Topics <https://www.mdpi.com/topics/editors/bio-life>

[04/2022 – Current] **Editorial Board Member "Fishes"**

Editorial Board Member della Rivista "Fishes". Gruppo MDPI. <https://www.mdpi.com/journal/fishes/editors>

[04/2022 – Current] **Editorial Board Member "Hydrobiology"**

Editorial Board Member della Rivista "Hydrobiology". Gruppo MDPI. <https://www.mdpi.com/journal/hydrobiology/editors>

[04/2023 – Current] **Review Editor Frontiers in Marine Science**

Review Editor Deep-Sea Environments and Ecology. <https://www.frontiersin.org/journals/marine-science/sections/deep-sea-environments-and-ecology/editors>

[04/2023 – Current] **Review Editor in Frontiers in Immunology**

Review Editor in Systems Immunology. <https://www.frontiersin.org/journals/immunology/editors>

[10/2022 – 10/2023]

Guest editor: special Issue "Otolith Application in Fish: Latest Developments and Emerging Trends"

Guest editor dello special Issue "Otolith Application in Fish: Latest Developments and Emerging Trends" della Rivista "Fishes". Gruppo MDPI. https://www.mdpi.com/journal/fishes/special_issues/0OEEVM60A9

[24/06/2020 – Current] **Section Board Member**

Section Board Member "Biodiversity and Conservation" Journal "Sustainability". MDPI. https://www.mdpi.com/journal/sustainability/sectioneditors/sustainability_biodiversity_conservation

[06/2021 – Current] **Guest Editor**

Guest Editor of the special Issue "Feature Papers in Marine Biology", section "Marine Biology", "Journal of Marine Science and Engineering" (ISSN 2077-1312 IF 2.458), MDPI. https://www.mdpi.com/journal/jmse/special_issues/feature_papers_marine_biology

[20/12/2020 – 06/2022] **Guest Editor**

Guest editor: of the special Issue "Morpho-Functional Adaptation of Marine Organisms to Different Habitats", section "Biodiversity and Conservation", Journal "Sustainability", MDPI.

Link: https://www.mdpi.com/journal/sustainability/special_issues/morpho_functional_adaptation_of_marine_organisms

[26/02/2019 – Current] **Topical Collection Editor**

Guest editor: special Issue "Effects of Pollutants on Fish" della sezione "Aquatic Animals", rivista "Animals" (EISSN 2076-2615; IF. 2.323) Gruppo MDPI. https://www.mdpi.com/journal/animals/special_issues/Effects_of_Pollutants_on_Fish

[05/07/2019 – Current] **Guest Editor**

Guest Editor: Special Issue "Homeostasis" AIMS Neuroscience. <https://www.aimspress.com/newsinfo/1252.html>

[01/2015 – Current] **Invited Reviewer**

- Acta Histochemica
- Animals
- AIMS Neuroscience
- Annals of Marine Biology and Research -Applied Sciences
- Biological Trace Element Research
- Biology
- Biometals
- Cancers
- Comparative Biochemistry and Physiology, Part C -Current Zoology
- Diversity
- Environmental Monitoring and assessment
- Environmental Research
- Fishes
- Foods
- Frontiers in Marine Science
- Grasas y Aceites
- Heliyon
- International Journal of Molecular Sciences
- International Journal of Environmental Research and Public Health -Journal of Fish Biology
- Journal of Marine Science and Engineering
- Marine Drugs
- Marine Pollution Bulletin
- Microscopy Research and Technique

- Microorganisms
- Molecules
- Pathogens
- Progress in Biophysics and Molecular Biology
- Regional Studies in Marine Science
- Science of the Total Environment
- Scientific Reports
- Sustainability
- Thalassas: An International Journal of Marine Sciences
- Veterinary Sciences
- Water
- Water Research

PARTICIPATION IN THE COLLEGE OF LECTURERS AND TEACHING ASSIGNMENTS IN PHDS

[04/05/2023 – Current] **PhD Participation Year 2023**

PARTICIPATION AT THE COLLEGE 2023 [DOT1314952] (accession completed on 04/05/2023) University of MESSINA Title: "APPLIED BIOLOGY AND EXPERIMENTAL MEDICINE" Academic year beginning: 2022/2023 - Cycle: XXXIX

[02/05/2022 – Current] **PhD Participation Year 2022**

PARTICIPATION AT THE COLLEGE 2022 [DOT1314952] (accession completed on 02/05/2022) University of MESSINA Title: "APPLIED BIOLOGY AND EXPERIMENTAL MEDICINE" Academic year beginning: 2022/2023 - Cycle: XXXVIII

[01/04/2021 – Current] **Year 2021**

PARTICIPATION IN THE COLLEGE 2021 [DOT1314952] (membership completed on 01/04/2021) University of MESSINA Title: "APPLIED BIOLOGY AND EXPERIMENTAL MEDICINE" Academic year beginning: 2021/2022 - Cycle: XXXVII

[09/04/2020 – Current] **Year 2020**

PARTICIPATION AT THE COLLEGE 2020 [DOT1314952] (accession completed on 09/04/2020) University of MESSINA Title: "APPLIED BIOLOGY AND EXPERIMENTAL MEDICINE" Academic year beginning: 2020/2021 - Cycle: XXXVI

ACHIEVEMENT OF AWARDS FOR SCIENTIFIC ACTIVITY

Grant

Fishes Journal Travel Grant per la partecipazione a: "7th International Otolith Symposium 2023, 9-13 ottobre 2023, Vina del Mar, Chile

[20/03/2018 – 23/03/2018] **GRANT**

Murray Foundation Grant for participation in the European Symposium on Coastal Lagoons "EUROLAG8" Athens (GR)

[01/2020] **Most-cited article**

Most cited article 2018/2019 of the 2018/2019 of the Journal "Chemistry and Biodiversity". Capillo, G., Silvestro, S., Sanfilippo, M., Fiorino, E., Giangrosso, G., Ferrantelli, V., Vazzana, I., Faggio, C., 2018. Assessment of Electrolytes and Metals Profile of the Faro Lake (Capo

