

Curriculum Vitae

Dr. Tiziana Cappello

Senior Researcher (TDb) – S.S.D. BIO/06 (Comparative Anatomy and Cytology)

Dept. of Chemical, Biological, Pharmaceutical and Environmental Sciences

University of Messina - ITALY

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Scopus ID: 55236662100

Publons ID: 1192150

Education

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| 2021 - to date | Researcher RTD-b art. 24, c. 3-b, L. 240/10, S.S.D. BIO/06 -University of Messina, IT |
| 2019 - 2021 | Researcher RTD-a art. 24, c. 3-a, L. 240/10, S.S.D. BIO/06 - University of Messina, IT |
| 2017 | National Scientific Habilitation as Associate Professor , S.S.D. BIO/06 |
| 2014 - 2017 | II PhD in Applied Biology and Experimental Medicine, curriculum Experimental Medicine, XXIX cycle (first classified with the highest score; without bursary), University of Messina, IT, awarded on 23/01/2017. PhD Thesis in “ ¹ H NMR-based metabolomics: a powerful tool to unravel the mechanisms of toxicity of mercury”. Supervisor: Prof. Maria Maisano, University of Messina, IT; Co-supervisor: Dr. Patrícia Pereira, University of Aveiro and CESAM, PT. |
| 2010 - 2013 | PhD in Biology and Cellular Biotechnologies, XXV cycle (first classified with the highest score, with bursary), University of Messina, IT, awarded on 22/03/2013. Mention of Doctor Europaeus . PhD Thesis in “Metabolome changes in mussel (<i>Mytilus</i> spp.) from natural environments. Discovery of novel biomarkers for environmental monitoring”. Supervisor: Prof. Salvatore Fasulo, University of Messina, IT; Co-supervisor: Prof. Mark Viant, University of Birmingham, UK. |
| 2006 - 2008 | Master's Degree in Biology and Ecology of the Coastal Marine Environment, with the voting of 110/110 cum laude . University of Messina, IT, awarded on 28/07/2008. M.Sc. Thesis in “Metallothioneins in tissues of aquatic organisms”. Supervisor: Prof. Salvatore Fasulo, University of Messina, IT. |

2003 - 2006 **Bachelor's Degree** in Marine Biology and Ecology, with the voting of **110/110 cum laude**. University of Messina, IT; awarded on 26/07/2006. B.Sc. Thesis in “Spatial structure and biodiversity of marine bacterial communities in an area of the Western Mediterranean Sea (Strait of Gibraltar – Sardinia Channel)”. Supervisor: Prof. Mariolina De Francesco, University of Messina, IT.

Research Interests

Dr. Cappello's research activity is mainly focused on **ecocytotoxicology** and **biomonitoring** of aquatic environments with the aim to elucidate the biological effects of metal(loid)s, POPs, PAHs, pharmaceuticals and emerging contaminants, i.e. microplastics and nanoparticles, as well as climate changes, on aquatic invertebrates (mussels, clams and sea urchins) and fish, at both embryonic and adult stage. The target organs primarily investigated to assessing the organisms' recovery capacities and the strategies elicited against the various environmental stresses are the gills, mainly involved in nutrient uptake, gas exchange and neurotransmission, and first organ to suffer from pollutant toxic effects due to their surface at direct and continuous contact with the external medium, and the digestive gland (in invertebrates) and liver (in lower vertebrates) as the major sites for xenobiotic bioaccumulation and detoxification processes. The novelty of her research stands on the use of environmental protonic Nuclear Magnetic Resonance (**¹H NMR**)-based **metabolomics**, a cutting edge approach useful to comprehensively assess the health status of organisms by the simultaneous identification of low molecular weight metabolites (*metabolite biomarkers*) involved in various metabolic pathways. Environmental metabolomics, combined with conventional biomarkers (i.e. histological, immunohistochemical, molecular and enzymatic), provides novel and more complete insights into biota defence mechanisms under stress conditions, as well over the interactions between organisms and the environment, thus offering an overview of the metabolic status of a biological system.

Professional Experiences

- 2017 **Anna Laura Segre Fellowship for PhD 2017**, funded by the Gruppo Italiano Discussione Risonanze Magnetiche (**GIDRM**) for a 4-month project. Research project on “NMR approach and emergent contaminants: Evaluation of the biological effects of microplastics in marine mussels”. **Supervisor:** Prof. Maria Maisano, University of Messina, IT
- 2015 **Visiting PhD-student** for a six-month formative stage at the **IAMC-CNR of Capo Granitola, Campobello di Mazara, IT**, within the second PhD. Research project on “Evaluation of metabolic changes induced by anthropogenic acoustic pollution on aquatic invertebrates and lower vertebrates by environmental metabolomics and biochemical/genetics tools”, supervised by Dr. Francesco Filiciotto, IAMC-CNR of Capo Granitola, IT.
- 2013 **One-year Post-Doctoral Research Fellowship** funded by the **IAMC-CNR of Messina, IT**. Research activity on “Research experience on monitoring by the use of bioindicators (vertebrates and invertebrates), with particular focus on novel biomarkers, such as molecular and -omics, and application of Nuclear Magnetic Resonance (NMR)-based environmental metabolomics”. Supervisor: Dr. Simone Cappello, IAMC-CNR of Messina, IT; Co-supervisor: Prof. Salvatore Fasulo, University of Messina, IT.

- 2012 **Visiting PhD-student** for a three-month formative stage at the School of Biosciences of the **University of Birmingham, UK**, within the first PhD, for advanced training in Environmental Metabolomics. Research project on “Seasonal variation of metabolism in wild mussel *Mytilus edulis* populations over an annual cycle”, supervised by Prof. Mark Viant, University of Birmingham, UK.
- 2009 **Visiting Student** for a six-month formative stage at the Department of Biology of the **Virginia Commonwealth University (VCU, Richmond, USA)**, supported by a Bonino-Pulejo Fellowship. Research project on “Use of novel bioindicators and biomarkers to assess the environmental health status”, supervised by Prof. Leonard Smock and Dr. Rima Franklin, Virginia Commonwealth University, USA
- 2008 **Formative stage** at the Laboratory of Biomonitoring and Ecocytotoxicology of the University of Messina (Messina, IT), within the **M.Sc.** Laboratory experience supervised by Prof. Salvatore Fasulo, University of Messina, IT.
- 2006 **Formative stage** at the Laboratory of Ecology of the Marine Bacterial Communities of the University of Messina (Messina, IT), within the **B.Sc.** Laboratory experience supervised by Prof. Mariolina De Francesco, University of Messina, IT.
- 2005 **Formative experience** on board of the N/O Urania, for the oceanographic campaign organized by CIESM (Project SUB II).
- 2005 **Formative experience** within a project on the demographic rate of marine benthonic species (*Aristeus antennatus*, *Aristaomorpha fogliacea*) in an area of the Central Mediterranean Sea.

Workshops and Practical Courses

- 2016 Participation, after selection, to the **2nd Metabolomics Sardinian Scientific School** on “How to bridge metabolomics and genomics”, organized by the **University of Cagliari**, held in a Pula, Cagliari (**Italy**), 12 - 16 September
- 2014 Participation to the **International Workshop** on “Plastics: resource or environmental risk?”, at the Department of Sciences and Technological Innovation (DISIT) at the **University of the Eastern Piedmont, Alessandria (Italy)**, 10 February, sponsored by **SETAC Italian Branch**
- 2012 Participation, after selection, to the **EMBO Practical Course** on “Mass Spectrometry and Proteomics”, at the Department of Biochemistry and Molecular Biology of the **University of Southern Denmark, Odense (Denmark)**, 18 - 25 April
- 2011 Participation, after selection, to the **2nd PRIMO's Next – “Advanced Students Workshop** on Fundamentals of Science, Environment and Health”, organized by the Biophysics Institute of the **Rio de Janeiro Federal University**, held in Búzios, Rio de Janeiro (**Brazil**), 20 - 30 October, sponsored by **PRIMO**
- 2011 Participation to the **International Workshop** on “The Endocrine Disruptors: what scientists, physicians, politicians and people should know about what’s going on in the environment”, held in Montalbano Elicona, Messina (**Italy**), 07 - 09 September, sponsored by **The Endocrine Society, Society for Reproduction and Fertility (UK), European Medical Association (B)**

Scientific Committee Membership

- 2022 - to date **Member of the Council of the Department** of Chemical, Biological, Pharmaceutical and Environmental Sciences (**ChiBioFarAm**) at the University of Messina in representation of **Researchers** per il triennio 2021/22, 2022/23, 2023/24
- 2022 - to date **Member of the Thesis Defence Committee** for the B.Sc. in Biological Sciences at the University of Messina
- 2021 - to date **Member of the Joint Teachers-Students Committee (CPDS)** for the B.Sc. in Biological Sciences at the University of Messina
- 2021 - to date **Member of the *FWO Review College*** (Expert panel 2022-2024)
- 2021 **Member of the Evaluation Committee for the exam of ammission to the Doctorate** in Applied Biology and Experimental Medicine, XXXVII cycle, at the University of Messina
- 2020 - to date **Member of the Focus Group** for the M.Sc. in Biology of the Health, Applied Technologies and Nutrition at the University of Messina
- 2020 - to date **Member of the *College of Expert Reviewers*** for the European Science Foundation (ESF)
- 2020 - to date **Member of the *Centro de Estudos do Ambiente e do Mar* (CESAM)** at the University of Aveiro, Portugal
- 2020 - to date **Member of the Teaching Committee of the Doctorate** in Applied Biology and Experimental Medicine at the University of Messina
- 2020 - to date **Member of the Thesis Defence Committee** for the M.Sc. in Biology at the University of Messina
- 2018 **Member of the Scientific Committee and Invited Co-chair** for the tracks 3a. Life on land, and 3b. Life below water of the 24th Annual International Sustainable Development Research Conference “Actions for a sustainable world: from theory to practice” (ISDRS 2018), held at the University of Messina, Italy, from 13th to 15th June

Didactic activities

- 2022/23 - to date **Lecturer** of the course “Methods of identification of animal species” (S.S.D. BIO/06) for the B.Sc. in Biological Sciences at the University of Messina
- 2021/22 - to date **Lecturer** of the course “Ecocytotoxicology and Environmental Metabolomics” (S.S.D. BIO/06) for the M.Sc. in Biology of the Health, Applied Technologies and Nutrition at the University of Messina
- 2021/22 - to date **Lecturer** of the course “Cytology and Histology” (S.S.D. BIO/06), O-Z class, for the B.Sc. in Biological Sciences at the University of Messina
- 2021 **Teaching activity** at the High School “Vittorio Emanuele III” in Patti (ME), as external expert in **Biology** within the project “Sperimenti...Amo le STEM” (BANDO-STEM2020), aimed at enhancing the study of scientific topics, prerequisite for the new future careers, with a task of n° 8 hours.
- 2020/21 – 2021/22 **Lecturer** of the course “Animal Biology” (S.S.D. BIO/06) for the B.Sc. in Gastronomic Sciences at the University of Messina

- 2020/21 - to date **Lecturer** of the course “Systems Biology and applicative biotechnologies” (S.S.D. BIO/06) within the Doctorate in “Applied Biology and Experimental Medicine” at the University of Messina
- 2019/20 - to date **Seminar assignment** within the course “Cellular Markers and Animal Morpho-functional Adaptations” (S.S.D. BIO/06) of the M.Sc. in Biological Science, curriculum Environmental Biology, at the University of Naples Federico II, entrusted by the teacher in charge Prof. Giulia Guerriero, on the topic “Metabolites as novel cellular biomarkers in Ecocytotoxicology”
- 2019 **Connoisseur of the subject** and **Member of the Evaluation Committee** for the course “Developmental Biology” (S.S.D. BIO/06)
- 2017 **Seminar assignment** within the Workshop “NMR Day: Fish and seafood applications” organized by the Gruppo Italiano Discussione Risonanze Magnetiche (**GIDRM**), entrusted by the Department of Biological and Environmental Sciences and Technologies of the University of Salento, on “Health status of edible aquatic organisms from natural environments by NMR approach”, on 19th April
- 2016 - 2021 **Seminar assignment** within the course “Biotechnologies in Cytotoxicology” (S.S.D. BIO/06) of the M.Sc. in Biology at the University of Messina, entrusted by the teacher in charge Prof. Maria Maisano, on the topic “Environmental Metabolomics and NMR Spectroscopy”
- 2016 **Teaching activity** within the Doctoral School in Agronomy and Environment at the **University of Sousse, Tunisia**, to training PhD-students on “Metabolomics analysis of biological extracts” as well as providing Lectures on “Metabolomics evaluation of the effects of xenobiotics on marine organisms”, from 4th to 9th April
- 2016 **Teaching activity** within the Protocol of Agreement between the High School “Leonardo da Vinci” in Reggio Calabria and the **University of Messina**, with specific didactic activities on the enhancement of knowledge in **Biology** for the access to University courses for high school students, with a task of n° 21 hours.
- 2016 **Informative tutoring activity** at the Struttura Interdipartimentale di Raccordo (SIR), Faculty of Sciences and Technologies, **University of Messina**, with Front-Office activities for university students, with a task of n° 54 hours.
- 2016 **Specialized didactic tutoring activity** within the project for the “Enhancement of knowledge to access the University courses” in **Biology** for high school students, at the Struttura Interdipartimentale di Raccordo (SIR), Faculty of Sciences and Technologies, **University of Messina**, with a task of n° 120 hours.
- 2016 **Teaching activity** within the **Summer School** organized by the Centro Orientamento e Placement (COP) of the **University of Messina**, aimed at the enhancement of **Biology** for high school students by classes, lectures, didactic laboratories, and elaboration and evaluation (individual and collective) of simulated tests for access to medical-scientific University courses, from 18th to 22nd July.
- 2016 **Teaching activity** at the Department of Biology of the **University of Aveiro, Portugal**, by Lectures and Seminars on the “Application of Environmental Metabolomics in the field of Ecotoxicology”, and a practical course on the extraction of polar metabolites from

biological tissues, FID acquisition, and analysis of NMR spectra, from 10th to 20th October.

- 2015 **Teaching activity** within the **Basic Course of Gemmology**, organized by Centro Analisi Gemmologiche, affiliated to the Department of Biological and Environmental Sciences of the **University of Messina**, for the modules on organic materials: Pearls and Corals. In both modules, the potential effects of environmental pollution on the normal biological activities of aquatic organisms were addressed.
- 2014 - 2017 **Connoisseur of the subject** and **Member of the Evaluation Committee** for the course “Developmental Biology” (S.S.D. BIO/06)
- 2011 - 2014 **Connoisseur of the subject** and **Member of the Evaluation Committee** for the course “Fundamentals of Cell Biology” (S.S.D. BIO/06)
- 2010 - 2011 **Tutoring activity** for students of B.Sc. in Biological Sciences, for n° 20 hours.
- 2010 - 2011 **Laboratory tutoring activity** for students attending “Fundamental of Cell Biology” and “Cytochemistry and Histochemistry” of the M.Sc. in Biology, for n° 90 hours.

Student research supervising/tutoring activities

- 2022 **Tutor** of Dr. Giovanna Mazzeo for the B.Sc. in Biological Sciences, thesis in “Metabolomics: an innovative investigative approach on biological systems”, 23 March
- 2021 - to date **Supervisor** of the research activity of the PhD-student Mariachiara Galati for the Doctorate in Applied Biology and Experimental Medicine, on the comparative effects of the exposure to microplastics and biomicroplastics on marine mussels by *in vivo* and *in vitro* approaches.
- 2021 - to date **Supervisor** of the research activity of Angela Miliadò, Noemi Cusimano and Silvia Maio for the M.Sc. in Biology of Health, Applied Technologies and Nutrition, on the evaluation of the effects of environmental contaminants on various species of aquatic organisms by histological, immunohistochemical, enzymatic and metabolomic approaches.
- 2021 **Co-Tutor** of Dr. Barbara Billè for the M.Sc. in Biology, thesis in “Embryotoxicity of imidacloprid in medaka (*Oryzias latipes*) and zebrafish (*Danio rerio*)”, 14 October
- 2021 **Tutor** of Dr. Angela Lucatelli for the M.Sc. in Biology, thesis in “Metabolome changes induced by polystyrene microplastic exposure in the Mediterranean mussel *Mytilus galloprovincialis*”, 29 July
- 2021 - to date **Supervisor** of the research activity of the PhD-student Imad Krikech from the University Abdelmalek Essadi, **Morocco**, within the **Erasmus+ mobility**, on various species of sponges from Moroccan coastal sites to evaluate the environmental health status by histological, immunohistochemical, enzymatic and metabolomic approaches; 03 May - April 2022 (12 months)
- 2021 **Co-Tutor** of Dr. Luigi Crisafulli for the M.Sc. in Biology, thesis in “Effects of microplastics on the metabolome of mussel *Mytilus galloprovincialis* digestive glands”, 25 March
- 2020 **Co-Tutor** of Dr. Maria Romano for the M.Sc. in Biology, thesis in “Impact of microplastics on the gill epithelium of mussel *Mytilus galloprovincialis*”, 28 July

- 2019 - 2020 **Research supervision** of the PhD-student Imen Laouati from the University Badji Mokhtar Annaba, **Algeria**, on mussels *Perna perna* from coastal Algerian sites to evaluate the environmental health status by histological, immunohistochemical, enzymatic and metabolomic approaches; 25 November - 20 February (3 months)
- 2019 - 2020 **Research supervision** of the PhD-student Islem Zerarguia from the University of Chadli Bendjati El-Tarf, **Algeria**, on sponges *Chondrilla nucula* and fish *Scomber scombrus* and *Auxis rochei* from coastal Algerian sites to evaluate the environmental health status by histological, immunohistochemical, enzymatic and metabolomic approaches; 25 November - 07 February (3 months)
- 2019 **Research supervision** of the PhD-student Sabrine Afsa from the Higher Institute of Biotechnology of Monastir, **Tunisia**, within the **Erasmus+ mobility**, on mussels *Mytilus galloprovincialis* exposed to environmental levels of caffeine and salicylic acid to evaluate their biological effects by immunohistochemical, enzymatic and molecular approaches; 04 March - 25 October (8 months)
- 2019 **Research supervision** of the PhD-student Omayma Missawi from the Higher Institute of Biotechnology of Monastir, **Tunisia**, within the **Erasmus+ mobility**, on seaworms *Nereis diversicolor* exposed to environmental plastics to evaluate their biological effects by histological, immunohistochemical and metabolomic approaches; 07 March - 10 October (7 months)
- 2019 **Research supervision** of the PhD-student Nesrine Zitouni from the Higher Institute of Biotechnology of Monastir, **Tunisia**, on fish *Serranus scriba* from Tunisian sites to evaluate the impact of environmental plastics by metabolomic approaches; 01 June - 02 August (2 months)
- 2018 **Research supervision** of the M.Sc.-student Guilherme Marques Teixeira from the University of Aveiro, **Portugal**, within the **Erasmus+ mobility**, on fish *Sparus aurata* reared with experimental diets to evaluate their effects by metabolomic approaches; 01 September - 31 October (2 months)

Educational activities

- 2022 **Didactic-formative activities** with the thematic laboratory on “Effects of pollutants on the embryo development of aquatic organisms” within the project **Sea in SHELL**, event associated to the “European Researchers’ Night 2021”, held at Ganzirri Lagoon on 15th May
- 2022 **Didactic-formative activities and sensitization** for the defence and safety of the sea within the project “Nauticinblu, Ed. 2022”, with the Nautical Institute “Caio Duilio” in Messina by outdoor activities including beach litter sampling, organized by the Association **Marevivo**, held in Messina on 3rd and 4th March
- 2022 **Speaker** with the talk “A sea of plastics! Biological effects on different aquatic organisms” within the project “Nauticinblu, Ed. 2022”, for the Nautical Institutes of Milazzo, Catania, Sciacca and Messina, organized by the Association **Marevivo**, held in Messina on 15th and 17th February

- 2021 **Speaker** with the talk “Pollution by plastics: Threats for marine environment and human health” within the Bio in Sicily 2021 event, held on Bagheria (Palermo) from 1st to 3rd October
- 2021 **Didactic-divulgative activities** with the thematic laboratory on “Effects of pollutants on the embryo development of aquatic organisms” within the project **Sea in SHELL**, event associated to the “European Researchers’ Night 2021”, held on 24th September
- 2021 **Speaker** with the talk “SOS plastic: from the sea to our plates! Effects of microplastics on the health of aquatic organisms” within the project **REsPoNSo**, Reduction of ghost fisheries in Sicily (PO FEAMP 2014/2020 Measure 1.40), held on 16th May
- 2021 **Speaker** with the talk “SOS plastics: from the sea to our plates” within the seminars organized by the Association **UNIxME** (University students for Messina), held on 26th February
- 2020 **Speaker** with the talk “The cell: structure and function” within the Course preparatory to the exam for the habilitation to the profession of Biologist, organized by the **National Order of Biologists** and the University of Messina, held on 29th October
- 2020 **Didactic-formative activities and sensitization** for the defence and safety of the sea within the project “Nauticinblu”, with the Nautical Institute “Caio Duilio” in Messina by indoor and outdoor activities including beach litter sampling, organized by the Association **Marevivo**, held in Messina on 6th and 17th February
- 2020 **Speaker** with the talk “SOS plastics: from the sea to our plates” within the project “Nauticinblu – For the future of the sea and its professionals”, at the Nautical Institute “Caio Duilio” in Messina, organized by the Association **Marevivo**, held in Messina on 5th February
- 2019 **Invited speaker** with the talk “NMR-based metabolomics: a holistic approach for monitoring complex biological systems” at the Cultural Meeting of the **Accademia Peloritana dei Pericolanti**, II Class Medical-Biological Sciences (**APMB**) of the University of Messina, held in Messina on 28th May
- 2019 **Speaker** with the talk “The fascination of biology: life, environment, nutrition and applied technologies” within the **Festival of the Scientific Culture**, IV edition, “Make the Future”, held at the High School “Caminiti Trimarchi” in Giardini Naxos (ME) on 26th March
- 2019 **Speaker** with the talk “The fascination of biology: life, environment, nutrition and applied technologies” within the **Festival of the Scientific Culture**, IV edition, “Make the Future”, held at the High School “Felice Bisazza” in Messina on 21th March
- 2019 **Didactic-formative activities, communication and sensitization** for the defence and safety of the marine environment and its resources within the Association **Marevivo**, at both national and local level.
- 2018 **Speaker** with the talk “SOS plastics: from the sea to our plates” at the **European Day of the Sea** on “Messina and its seas”, organized by the University of Messina and Consortium for Marine Sciences (CoNISMa), held in Messina on 18th May
- 2017 **Speaker** with the talk “Bioindicators for evaluating the health status of the sea” at the **European Day of the Sea** on “Messina e its sea: resources and opportunities”,

organized by the University of Messina and Consortium for Marine Sciences (CoNISMa), held in Messina on 20th May

2017 **Invited speaker** with the talk “Health status of edible aquatic organisms from natural environments by NMR approaches” at the **Workshop** on “NMR Day: Fish and SeaFood Applications”, organized by the Gruppo Italiano Discussione Risonanze Magnetiche (GIDRM), held in Lecce on 19th April

P.I. in Research Projects/Funds

- 2021 - to date “Impact of microplastics and associated contaminants on reproduction and development: a comparative and multidisciplinary study on mechanisms of action and protective strategies”. **PRIN 2020** (20204YRYS5_003). **Scientific Coordinator:** Prof. Sergio Minucci, University of Campania “Luigi Vanvitelli”. **Unit Responsible:** Prof. Tiziana Cappello, University of Messina; Prof. Patrizia Bovolin, University of Torino; Dr. Alessandra Gallo, Zoological Station “Anthon Dohrn” of Naples; Prof. Maria De Falco, University of Naples Federico II. (LS3; Funds: 914.546,00 €)
- 2020 “Funding for basic activities related to research”. **FFABR UNIME 2020** (Funds: 1.500,00 €)
- 2017 “Analisi NMR e contaminanti emergenti: Valutazione degli effetti biologici delle microplastiche in mitili marini” (*“NMR approach and emergent contaminants: Evaluation of the biological effects of microplastics in marine mussels”*). Gruppo Italiano Discussione Risonanze Magnetiche (**GIDRM**) – **Anna Laura Segre Fellowship for PhD 2017**. **Principal Investigator:** Dr. Tiziana Cappello, University of Messina, IT. **Supervisor:** Prof. Maria Maisano, University of Messina, IT
- 2009 “Use of novel bioindicators and biomarkers to assess the environmental health status”. Uberto Bonino e Maria Sofia Pulejo Foundation (**FBP**) - **XXXI Fellowship 2008**. **Principal Investigator:** Dr. Tiziana Cappello, University of Messina, IT. **Tutor:** Prof. Leonard Smock, Virginia Commonwealth University (USA)

Participation to Research Projects

- 2019 - 2021 “FISH PATH NET - Potenziamento dei Centri di Ittiopatologia Siciliani” (*“FISH PATH NET – Enhancement of the Sicilian Ichthyopathological Centres”*). **PO FEAMP 2014/2020; Measure 2.56:** Measures for Animal Health and Welfare. **Scientific Coordinator:** Prof. Fabio Marino, University of Messina, IT.
- 2013 - 2016 “Systems Biology in the study of xenobiotic effects on marine organisms for evaluation of the environmental health status: biotechnological applications for potential recovery”. Funded by **MIUR, PRIN 2010-2011** (2010ARBLT7_001/008). **Scientific Coordinator:** Prof. Salvatore Fasulo, University of Messina, IT. **Responsibles of Unit:** Prof. Claudio Leonzio, University of Siena, IT; Prof. Marco Colasanti, University of Roma 3, IT; Prof. Trifone Schettino, University of Salento, IT; Prof. Rosalba Gornati, University of Insubria, IT; Prof. Giulia Guerriero, University of Naples, IT; Dr. Giuseppe Mancini, University of Catania, IT; Dr. Cappello Simone, IAMC-CNR of Messina, IT.

- 2013 - 2015 “Neurotoxicity of mercury in fish and association with morphofunctional brain alterations and behavior shifts – NEUTOXMER”. Funded by Fundação para a Ciência e a Tecnologia (FCT) - Programme 2013. **Scientific Coordinator:** Prof. Mário Pacheco, University of Aveiro (PT)
- 2012 - 2013 “Characterization of the Daphnid metabolome to discover novel biomarkers for environmental monitoring” Funded by **Bio-NMR** (BIO-NMR-00141). **Scientific Coordinator:** Prof. Salvatore Fasulo, University of Messina (IT). **Scientific Responsible:** Prof. Mark Viant, University of Birmingham (UK)
- 2009 - 2011 “Biomonitoring of coastal marine environments: development and application of novel integrated cytochemical and molecular methodologies”. Funded by **MIUR, PRIN 2007** (prot. 20079FELYB). **Scientific Coordinator:** Prof. Salvatore Fasulo, University of Messina (IT). **Responsibles of Unit:** Prof. Laura Canesi, Università di Genova (IT); Prof. Claudio Leonzio, Università di Siena (IT)
- 2013 - not fundable “Transcriptomic Response to Polychlorinated Biphenyls in Mussel, *Mytilus edulis*”. **Scientific Coordinator:** Prof. John Stegeman, Woods Hole Oceanographic Institution (MA, USA). **Participants:** Dr. Afonso Bainy, Federal University of Santa Catarina (Brazil); Prof. Maria Bebianno, University of Algarve (Portugal); Prof. Miren Cajaraville, University of the Basque Country (Spain); Dr. Ibon Cancio, University of the Basque Country (Spain); **Dr. Tiziana Cappello**, University of Messina (Italy); Prof. Kevin Chipman, University of Birmingham (United Kingdom); Dr. John Craft, Glasgow Caledonian University (United Kingdom); Dr. Francesco Dondero, University of the Piedmont (Italy); Prof. Salvatore Fasulo, University of Messina (Italy); Prof. Hisato Iwata, Ehime University (Japan); Dr. Matthew Jenny, University of Alabama (AL, USA); Prof. Mauro Rebelo, Federal University of Rio de Janeiro (Brazil); Dr. David Sheehan, University College, Cork (Ireland); Dr. Shinsuke Tanabe, Ehime University (Japan); Dr. Juliano Zanette, University of the Rio Grande (Brazil); Dr. Jed Goldstone, Woods Hole Center for Oceans and Human Health (MA, USA).

On-going scientific collaborations

Dr. Tiziana Cappello has devoting considerable amount of time to disseminate worldwide the results of her researches through participation to national and international scientific meetings, which are for her great opportunities to introduce herself to the scientific communities, as well as actively undertake, thanks to her friendly personality and dedication to research, new collaborations with researchers worldwide.

- 2020 - to date **Prof. Aasma Noreen** – Virtual University of Pakistan, **PK**
“Biological toxicity of nanoparticles on fish species”.
- 2018 - to date **Prof. Mohamed Banni** - University of Monastir, **TU**
“Biological effects of microplastics on marine organisms”.
- 2017 - to date **Dr. Ali Ranjbar Jafarabadi** - Tarbiat Modares University, **IR**
“Distribution, sources and effects of environmental pollutants in coral reef Islands of the Persian Gulf, Iran”.
- 2016 - to date **Dr. Caroline Vignet** - EAWAG, **CH**
“Use of histology to detect alteration in zebrafish *Danio rerio* larvae after exposure to imidacloprid, a neonicotinoid insecticide”.

- 2015 - to date **Prof. Jérôme Cachot** - EPOC, UMR CNRS, University of Bordeaux, **FR**
 “Use of environmental metabolomics approaches to detect alteration in Japanese medaka larvae after exposure to imidacloprid, a neonicotinoid insecticide”.
- 2015 - to date **Prof. Cinta Porte** - IDAEA-CSIC, Barcelona, **ES**
 “Metabolic effects induced by drospirenone on livers of sea bass *Dicentrarchus labrax* and digestive glands of mussel *Mytilus galloprovincialis*”.
- 2015 - to date **Dr. Francesco Filiciotto** - IAMC-CNR Capo Granitola, **IT**
 “Application of environmental metabolomics and biochemical/genetics tools for evaluation of metabolic changes induced by anthropogenic acoustic pollution on aquatic invertebrates and lower vertebrates”.
- 2013 - to date **Prof. Maria João Bebianno** - University of Algarve, **PT**
 "Metabolomic and proteomic responses to active pharmaceutical ingredients, i.e. ibuprofen, fluoxetine, diclofenac, and their mixture, on mussel *Mytilus galloprovincialis*".
- 2013 - to date **Prof. Mário Pacheco; Dr. Patricia Pereira** - University of Aveiro, **PT**
 "Correlation of mercury bioaccumulation, oxidative stress and metabolomics responses in wild golden grey mullet *Liza aurata*".
- 2012 - to date **Prof. Mark Viant** - University of Birmingham, **UK**
 “Seasonal variation of metabolism in wild mussel *Mytilus edulis* populations over an annual cycle using NMR-based metabolomics”.
- 2009 - to date **Prof. Leonard Smock** - Virginia Commonwealth University, **USA**
 “Use of novel bioindicators and biomarkers to assess the environmental health status”

Academic Awards and Distinctions

- 2021 **World’s Top 2% scientists** for the year 2020, Biology field (Elsevier, Stanford University; <https://doi.org/10.17632/btchxktyw.3>)
- 2021 **Top Female Leader** within the metabolomics field and invitation as Guest Editor for the SI “In Celebration of Women in Science: Metabolomics” - **Frontiers** in Molecular Biosciences – section Metabolomics
- 2020; 2021 **Erasmus+ EU Grant - KA103** to carry out combined didactic and training activities at the University of Aveiro – Department of Biology, Aveiro (Portugal)
- 2020 **Erasmus+ ICM Grant - KA107** to carry out didactic activities at the Monastir University - Higher Institute of Biotechnology, Monastir (Tunisia)
- 2020 **Highly Cited Paper Award** from *Essential Science Indicators* for the article “Ranjbar Jafarabadi A., Riyahi Bakhtiari A., Yaghoobi Z., Yap C.K., Maisano M., **Cappello T.**, 2019. Distributions and compositional patterns of polycyclic aromatic hydrocarbons (PAHs) and their derivatives in three edible fishes from Kharg coral Island, Persian Gulf, Iran. *Chemosphere*, 215: 835-845.”
- 2019 **Best Reviewer 2015-2018** for the journal *Ecotoxicology and Environmental Safety* (**EES**; Elsevier, IF: 4.872)

- 2018 **Invited Review** for the section of “Environmental & Ecological NMR” of eMagRes (previously Wiley Encyclopedia of Magnetic Resonance) on “¹H NMR-based metabolomics of aquatic organisms”
- 2018 **Publons Peer Review Award 2018** from Publons, as one of the top 1% of peer reviewers in Environment/Ecology
- 2017 **Publons Peer Review Award 2017** from Publons, as one of the top 1% of peer reviewers in Multidisciplinary
- 2017 **Anna Laura Segre Fellowship for PhD**, funded by the **Gruppo Italiano Discussione Risonanze Magnetiche (GIDRM)** to conduct a 4-month research project at the University of Messina (IT)
- 2017 **Highly Cited Paper Award** from *Essential Science Indicators* for the article “**Cappello T.***, Brandão F., Guilherme S., Santos M.A., Maisano M., Mauceri A., Canario J., Pacheco M., Pereira P., 2016. Insights into the mechanisms underlying mercury-induced oxidative stress in gills of wild fish *Liza aurata* combining ¹H NMR metabolomics and conventional biochemical assays. *Sci.Total Environ.* 548-549:13-24”
- 2016 **Highly Cited Research Award** from *Marine Environmental Research* journal for the article “**Cappello T.**, Maisano M., D’Agata A., Natalotto A., Mauceri A., Fasulo S., 2013. Effects of environmental pollution in caged mussels (*Mytilus galloprovincialis*). *Mar. Environ. Res.* 91: 52-60”
- 2016 **Participation Grant** for the **2nd Metabolomics Sardinian Scientific School** – “How to bridge metabolomics and genomics”, organized by the University of Cagliari, held in Pula, Cagliari (**Italy**), from 12th to 16th September
- 2016 “Brandão F., **Cappello T.*¹**, Raimundo J., Santos M.A., Maisano M., Mauceri A., Pacheco M., Pereira P., 2015. Unravelling mechanisms of mercury hepatotoxicity in wild fish (*Liza aurata*) through a triad approach: bioaccumulation, metabolomic profiles, and oxidative stress. *Metallomics*, 7: 1352-1363” added in **Metallomics Metals in Marine Biochemistry online collection** <<http://rsc.li/29KfqIX>>
- 2015 **Conference Student Travel Award** for the 18th International Symposium on Pollutant Responses in Marine Organisms (**PRIMO**)
- 2015 **Conference Registration and Travel Grant** for the 25th SETAC Europe Annual Meeting (**SETAC**)
- 2015 Classified among the **first top 10 candidates** for the fellowship “**L’Oréal Italia** – per le donne e la Scienza”, 2014-2015
- 2014 **Conference Travel Grant** for the 24th Congress of the Italian Society of Ecology (**S.It.E.**)
- 2013 **Doctor Europaeus Mention** (PhD European Label), awarded with the title of *Philosophiae Doctor* (**PhD**)
- 2012 **Erasmus Student Mobility Grant** 2012/2013 to carry out research at the University of Algarve, Faro (Portugal)
- 2012 **Participation Grant** for the **EMBO Practical Course** – “Mass Spectrometry and Proteomics” at the University of Southern Denmark, Odense (**Denmark**), from 18th to 25th April

- 2011 **Participation Grant** for the **2nd PRIMO's Next** – “Advanced Students Workshop on Fundamentals of Science, Environment and Health” organized by the Biophysics Institute of the Rio de Janeiro Federal University and the PRIMO conference, held in Búzios, Rio de Janeiro (**Brazil**) from 20th to 30th October
- 2011 **Habilitation** to exercise the profession of **Biologist** - University of Messina, IT
- 2009 **Bonino-Pulejo Fellowship** for a six-month formative stage at the Virginia Commonwealth University (**VCU; Richmond, USA**)

Society Memberships

- 2022 - to date Società Italiana di Biologia Sperimentale (**SIBS**)
- 2020 - to date Aggregate Member of the Accademia Peloritana dei Pericolanti (**APP**), II class of Medical Biological Sciences
- 2020 - to date Associazione **Marevivo**
- 2017 - to date Gruppo Embriologico Italiano (**GEI**)
- 2017 - to date Gruppo Italiano Discussione Risonanze Magnetiche (**GIDRM**)
- 2017 - to date Società Italiana di Immunobiologia Comparata e dello Sviluppo (**SIICS**)
- 2015 - to date Society of Environmental Toxicology and Chemistry (**SETAC**)
- 2014 - to date Società Italiana di Ecologia (**S.It.E.**)
- 2010 - to date Unione Zoologica Italiana (**U.Z.I.**)

Reviewer Activity (as verified on publons.com/a/1192150)

- 2020 - to date Environmental Toxicology and Pharmacology (**ETAP**; IF = 3.292); Water (**WATER**; IF = 2.544); Proceedings of the Zoological Society (**PZOS**; IF = 1.676)
- 2019 - to date Journal of Hazardous Materials (**HAZMAT**; IF = 9.038); Chemosphere (**CHEM**; IF = 5.778); Aquatic Toxicology (**AQTOX**; IF = 4.344); Environmental Research (**ER**; IF = 5.715); The European Zoological Journal (**EZJ**; IF = 1.656)
- 2018 - to date Environmental Science & Technology (**EST**; IF = 6.653); Environmental Pollution (**ENVPOL**; IF = 4.358); Frontiers in Physiology (**FRPH**; IF = 3.394); Ecotoxicology (**ECTX**; IF = 1.987); Food and Chemical Toxicology (**FCT**; IF = 3.977)
- 2017 - to date Molecular Ecology (**MEC**; IF = 6.086); Marine Pollution Bulletin (**MPB**; IF = 3.146); Marine Environmental Research (**MER**; IF = 3.101); Journal of Experimental Marine Biology and Ecology (**JEMBE**; IF = 1.796); Italian Journal of Zoology (**IJZ**; IF = 0.921)
- 2016 - to date Reviews in Aquaculture (**RAQ**; IF = 4.769); Ecotoxicology and Environmental Safety (**EES**; IF = 3.130); Comparative Biochemistry and Physiology – Part D (**CBP-D**; IF = 2.254); PeerJ – Life, Bio, & Health Sciences (**PeerJ**; IF = 2.180); Archives of Environmental Contamination and Toxicology (**AECT**; IF = 2.039); Continental Shelf Research (**CSR**; IF = 2.011); Aquaculture Research (**ARE**; IF = 1.606); Fish Physiology and Biochemistry (**FISH**; IF = 1.442); International Journal of Environmental Analytical

Chemistry (**GEAC**; IF = 1.411); Chinese Journal of Natural Medicines (**CJNM**; IF = 1.114)

2015 - to date Science of the Total Environment (**STOTEN**; IF = 4.099); Environmental Science and Pollution Research (**ESPR**; IF = 2.828); Comparative Biochemistry and Physiology – Part C (**CBP-C**; IF = 2.301)

Reviewer Activity of Projects

2019 - to date Estonian Research Council (**ETAg**): Postdoctoral Starting Grant (PSG) Programme 2019; Postdoctoral Starting Grant (PSG) Programme 2020

2019 - to date European Science Foundation (**ESF**): University of Bordeaux Excellence Initiative (IdEx Bordeaux) Junior Chair Programme 2019; Research Foundation Flanders (FWO-PDOC-2020_Sci-Tech); AXA Research Fund (AXA Fellowships 2021); Research Foundation Flanders (senior FWO-PDOC-2021_BIO)

Editorial Board Membership

2021 - to date **Guest Editor** of the Special Issue “In Celebration of Women in Science: Metabolomics” - Guest Editors: Danuta Dudzik, Medical University of Gdansk, PO; Amelia Palermo, University of California, US; Benedicte Elena-Herrmann, University of Grenoble (FR). **Frontiers in Molecular Biosciences – section Metabolomics** (ISSN: 2296889X; IF = 5.246) – Frontiers

2021 - to date **Guest Editor** of the Special Issue “Microplastics in the Marine Environment, Freshwater and Sewage Sludge: Occurrence and Biological Impact on Aquatic Organisms” - Guest Editor: Mohamed Banni, University of Sousse, TU. **International Journal of Environmental Research and Public Health – section Environmental Science and Engineering** (ISSN: 1660-4601; IF = 3.390) – MDPI

2021 - to date **Guest Associate Editor** of the Special Issue “Metabolomics in Aquatic Ecology and Aquaculture – Volume II” - Guest Editors: Tim Young, Auckland University of Technology, NZ; Bo Peng, Sun Yat-sen University, CHN. **Frontiers in Molecular Biosciences – section Metabolomics** (ISSN: 2296889X; IF = 5.246) – Frontiers

2020 - 2021 **Guest Associate Editor** of the Special Issue “Metabolomics in Aquatic Ecology and Aquaculture” - Guest Editors: Tim Young, Auckland University of Technology, NZ; Bo Peng, Sun Yat-sen University, CHN. **Frontiers in Molecular Biosciences – section Metabolomics** (ISSN: 2296889X; IF = 5.246) – Frontiers

2020 - to date **Editorial Board Member** of “International Journal of Environmental Research and Public Health” – section Environmental Health (**IJERPH**; ISSN: 1660-4601; IF = 3.390) – MDPI

2020 - to date **Editorial Board Member** of “Journal of Xenobiotics” (**JoX**; ISSN: 2039-4713) – MDPI

2019 - to date **Expanded Editorial Board** of “Ecotoxicology and Environmental Safety” (**EES**; ISSN: 0147-6513; IF = 6.291) – Elsevier

2016	Lead Guest Editor for the Special Issue “Toxic Effects of Metals and Metalloids in Aquatic Organisms” - Guest Editors: Patricia Pereira, Aveiro University, PT; Maria Maisano, University of Messina, IT. in BioMed Research International (ISSN: 2314-6133; IF = 3.411) – Hindawi
2016 - to date	Editorial Board Member of International Journal of Aquaculture and Fishery Sciences (IJAFS) , ISSN: 2455-8400 – Peertechz
2016 - to date	Editorial Board Member of SM Journal of Environmental Toxicology (SMJET) – SMGroup
2016 - to date	Editorial Board Member of Fishery and Aquaculture Journal (FAJ) , ISSN: 2150-3508 – OMICS International
2016 - to date	Editorial Board Member of Journal of Aquatic Pollution and Toxicology (IPJAPT) – iMedPub
2015 - to date	Review Board Member of Modern Environmental Science and Engineering (MESE) , ISSN: 2333-2581 – Academic Star
2015 - to date	Review Board Member of Applied Ecology and Environmental Sciences (AEES) , ISSN: 2328-3912 – Science and Education

Complementary Qualifications

Computer Skills	Good knowledge of Windows and MacOS X operating systems; MS Office (Word, Excel, PowerPoint, Entourage), iWork (Pages, Numbers, Keynote), Adobe Acrobat, Adobe Photoshop; Web Browsers (Internet Explorer, Safari, Firefox, Google Chrome, Opera) Knowledge of the Axio Vision Release 4.5 software, furnished with the motorized microscope Zeiss Axio Imager Z1; GelDoc software, for analysis of band intensity; GraphPad InStat and Prism softwares for statistical analysis Good knowledge of Chenomx NMR Suite, for characterization of metabolomic profiles; MatLab; ProMetab 3.3 software in MatLab; The Unscrambler X for statistical multivariate analysis; Origin 6.1 software
Technical Skills	Histochemical investigation (i.e. H/E, AB/PAS, Masson, Mallory); Immunohistochemical analysis; Molecular analyses (RNA extraction, PCR, sequencing, probes for FISH); Spectrophotometric and spectrofluorimetric analyses for enzymatic activities; Genotoxic analyses (Micronuclei and Comet Assays); Metabolomic analysis (metabolite extraction, NMR spectrum acquisition, identification and quantification of metabolites); uni- and multi-variate statistical analysis (Student's <i>t</i> -test, Mann-Whitney U, ANOVA, PCA)
Languages	Fluent speaker of Italian (native language) and English
Courses	- Core Laboratory Safety Training Course, completed with the score of 99.9 out of 99.9. Virginia Commonwealth University (VCU), Richmond, USA (2009); - Physical Hazards Course, completed with the score of 100 out of 100. Virginia Commonwealth University (VCU), Richmond, USA (2009);

- Carcinogen Course, completed with the score of 90 out of 100. Virginia Commonwealth University (VCU), Richmond, USA (2009);
- Course for the acquisition of safety regulation in scientific laboratory. University of Messina, IT (2004);
- EJO English Language Course, level Advanced. The Eagle House, Greenwich, England (2004);
- English Trinity, Grade 7 - Spoken English for Speakers of Other Languages (2002)

Other

- “Open Water Diver” patent, SSI Level I;
- Since the 2007/08 academic year, Dr. Cappello has been collaborating with Professors of Cytology, Histology, Cell Biology and Cellular Biotechnologies in conducting practical lab classes and tutoring students from B.Sc. in Biological Sciences, in Biology and Marine Ecology and in Natural Sciences, and students from M.Sc. in Biology and in Biology and Ecology of the Coastal Marine Environment.

List of Publications

To date, Dr. Cappello has co-authored **58 articles** in International peer-reviewed journals (**17 as first author** or **co-first author**¹, **17 as corresponding author**^{*}, and **12 as last author**), **1 Invited monograph**, **2 articles** in National peer-reviewed journals, **6 proceedings** and **2 Editor Notes**. Further 8 articles are currently under review.

Moreover, to date, Dr. Cappello has participated to **21 International Conferences** (10 as Speaker^{*}, 2 Plenary Talk^{*}, 1 Invited Speaker^{*} and 3 poster^{*}), **22 National Conferences** (7 as Speaker^{*} and 1 poster^{*}), and **11 Educational events** as Invited Speaker^{*}.

SCOPUS (S): **H-index: 30; Citations: 1990**

Peer-reviewed manuscripts (AR)

61. Noreen A.^{*}, Rehman N., De Marco G., El Askary A., El-kott A.F., Sayed A.A., Alanazi I.S., **Cappello T.*** Extract of *Trigonella foenum-graecum* seeds ameliorates copper oxide nanoparticles (CuO NPs)-induced toxicity in common carp *Cyprinus carpio*. *Environmental Science and Pollution Research*, submit. [IF = 4.223]

60. Abouda S., Missawi O., **Cappello T.***, Boughattas I., De Marco G., Maisano M., Banni M. Toxicological impact of environmental microplastics and benzo[a]pyrene in the seaworm *Hediste diversicolor* under environmentally relevant exposure conditions. *Environmental Pollution*, submitted as R1. [IF = 8.071]

59. De Marco G., Afsa S.¹, Galati M., Guerriero G., Mauceri A., ben Mansour H., **Cappello T.***. Time-dependent biological effects of a sub-chronic exposure to environmentally relevant doses of salicylic acid in the gills of mussel *Mytilus galloprovincialis*. *Environmental Science and Pollution Research*, submitted as R1. [IF = 4.223]

58. Krikech I., Ranjbar Jafarabadi A., Leermakers M., Le Pennec G., **Cappello T.**, Ezziyyani M.^{*}, 2022. Insights into bioaccumulation and bioconcentration of potentially toxic elements in marine sponges from the Northwestern Mediterranean coast of Morocco. *Marine Pollution Bulletin*, 180: 113770. [IF = 5.556] doi.org/10.1016/j.marpolbul.2022.113770

57. De Marco G., Afsa S.¹, Galati M., Billè B., Parrino V., ben Mansour H., **Cappello T.***, 2022. Comparison of cellular mechanisms induced by pharmaceutical exposure to caffeine and its combination with salicylic acid in mussel *Mytilus galloprovincialis*. *Environmental Toxicology and Pharmacology*, 93: 103888. [IF = 4.860] doi.org/10.1016/j.etap.2022.103888
56. Zitouni N., **Cappello T.***, Missawi O., Boughattas I., De Marco G., Belbekhouche S., Mokni M., Alphonse V., Guerbej H., Bousserhine N., Banni M., 2022. Metabolomic disorders unveil hepatotoxicity of environmental microplastics in wild fish *Serranus scriba* (Linnaeus 1758). *Science of the Total Environment*, 838 (Part 1): 155872. [IF = 7.963] doi.org/10.1016/j.scitotenv.2022.155872
55. Romdhani I., De Marco G., **Cappello T.***, Ibalá S., Zitouni N., Boughattas I., Banni M., 2022. Impact of environmental microplastics alone and mixed with benzo[a]pyrene on cellular and molecular responses of *Mytilus galloprovincialis*. *Journal of Hazardous Materials*, 435: 128952. [IF = 10.588] doi.org/10.1016/j.jhazmat.2022.128952
54. Afsa S., De Marco G.¹, Giannetto A., Parrino V., **Cappello T.***, ben Mansour H., Maisano M., 2022. Histological endpoints and oxidative stress transcriptional responses in the Mediterranean mussel *Mytilus galloprovincialis* exposed to realistic doses of salicylic acid. *Environmental Toxicology and Pharmacology*, 92: 103855. [IF = 4.860] doi.org/10.1016/j.etap.2022.103855
53. Missawi O.*, Venditti M., **Cappello T.**, Zitouni N., De Marco G., Boughattas I., Bousserhine N., Belbekhouche S., Minucci S., Maisano M., Banni M., 2022. Autophagic event and metabolomic disorders unveil cellular toxicity of environmental microplastics on marine polychaete *Hediste diversicolor*. *Environmental Pollution*, 302: 119106. [IF = 8.071] doi.org/10.1016/j.envpol.2022.119106
52. De Marco G., Oliveri Conti G., Giannetto A., **Cappello T.**, Galati M., Iaria C., Pulvirenti E., Capparucci F., Mauceri A., Ferrante M., Maisano M., 2022. Embryotoxicity of polystyrene microplastics in zebrafish *Danio rerio*. *Environmental Research*, 208: 112552. [IF = 6.498] doi.org/10.1016/j.envres.2021.112552 [cit. 0 in S]
51. De Marco G., Brandão F., Pereira P., Pacheco M., **Cappello T.***, 2022. Organ-specific metabolome deciphering cell pathways to cope with mercury in wild fish (golden grey mullet *Chelon auratus*). *Animals*, 12: 79. [IF = 2.752; OA] doi.org/10.3390/ani12010079 [cit. 0 in S]
50. Caliani I., De Marco G., **Cappello T.**, Giannetto A., Mancini G., Ancora S., Maisano M., Parrino V., Cappello S., Bianchi N., Oliva S., Luciano A., Mauceri A., Leonzio C., Fasulo S., 2022. Assessment of the effectiveness of a novel BioFilm-Membrane BioReactor oil-polluted wastewater treatment technology by applying biomarkers in the mussel *Mytilus galloprovincialis*. *Aquatic Toxicology*, 243: 106069. [IF = 4.964] doi.org/10.1016/j.aquatox.2021.106059 [cit. 0 in S]
49. Ranjbar Jafarabadi A., Mashjoor S., Riyahi Bakhtiari A., **Cappello T.**, 2021. Ecotoxicological linking of phthalates and flame-retardant combustion byproducts with coral solar bleaching. *Environmental Science & Technology*, 55(9): 5970-5983. [IF = 9.028] doi.org/10.1021/acs.est.0c08730 [cit. 2 in S]
48. Parrino V., De Marco G., Minutoli R., Lo Paro G., Giannetto A., **Cappello T.**, De Plano L.M., Cecchini S., Fazio F., 2021 Effects of pesticides on *Chelon labrosus* (Risso, 1827) evaluated by enzymatic activities along the north eastern Sicilian coastlines (Italy). *The European Zoological Journal*, 88: 540-548. [IF = 1.747; OA] doi.org/10.1080/24750263.2021.1905090 [cit. 3 in S]
47. Iftikhar M., Noureen A., Uzair M., Jabeen F., Abdel Daim M., **Cappello T.***, 2021. Perspectives of nanoparticles in male infertility: Evidence for induced abnormalities in sperm production. *International Journal of Environmental Research and Public Health*, 18: 1758. [IF = 3.390; OA] doi.org/10.3390/ijerph18041758 [cit. 4 in S]
46. Ranjbar Jafarabadi A., Mashjoor S., Mohamadjafari Dehkordi S., Riyahi Bakhtiari A., **Cappello T.**, 2021. Emerging POPs-type cocktail signatures in *Pusa caspica* in quantitative structure-activity relationship of Caspian Sea. *Journal of Hazardous Materials*, 406: 124334. [IF = 10.588] doi.org/10.1016/j.jhazmat.2020.124334 [cit. 0 in S]
45. Missawi O., Bousserhine N., Zitouni N., Maisano M., Boughattas I., De Marco G., **Cappello T.**, Belbekhouche S., Guerrouache M., Alphonse V., Banni M., 2021. Uptake, accumulation and associated cellular alterations of environmental samples of microplastics in the seaworm *Hediste diversicolor*. *Journal of Hazardous Materials*, 406: 124287. [IF = 10.588] doi.org/10.1016/j.jhazmat.2020.124287 [cit. 3 in S]

44. **Cappello T.***, De Marco G., Oliveri Conti G., Giannetto A., Ferrante M., Mauceri A., Maisano M., 2021. Time-dependent metabolic disorders induced by short-term exposure to polystyrene microplastics in the Mediterranean mussel *Mytilus galloprovincialis*. *Ecotoxicology and Environmental Safety*, 209: 111780. [IF = 6.291; OA] doi.org/10.1016/j.ecoenv.2020.111780 [cit. 13 in S]
43. Giannetto A., Oliva S., Riolo K., Savastano D., Parrino V., **Cappello T.**, Maisano M., Fasulo S., Mauceri A., 2020. Waste valorization via *Hermetia illucens* to produce protein-rich biomass for feed: Insights into the critical nutrient taurine. *Animals*, 10: 1710. [IF = 2.752; OA] doi.org/10.3390/ani10091710 [cit. 8 in S]
42. Ranjbar Jafarabadi A., Mashjoo S., Mohamadjafari Dehkordi S., Riyahi Bakhtiari A., **Cappello T.**, 2020. Steroid fingerprint analysis of endangered Caspian seal (*Pusa caspica*) through the Gorgan Bay (Caspian Sea). *Environmental Science & Technology*, 54: 7339-7353. [IF = 9.028] doi.org/10.1021/acs.est.0c01479 [cit. 3 in S]
41. **Cappello T.***, 2020. NMR-based metabolomics of aquatic organisms. *eMagRes*, 9: 81-100. (*Invited Review*) [Monograph] doi.org/10.1002/9780470034590.emrstm1604 [cit. 17 in S]
40. Giannetto A., Oliva S., Lanes C.F.C., de Araujo Pedron F., Savastano D., Baviera C., Parrino V., Lo Paro G., Spanò N., **Cappello T.**, Maisano M., Mauceri A., Fasulo S., 2020. *Hermetia illucens* (Diptera: Stratiomyidae) larvae and prepupae: Biomass production, fatty acid profile and expression of key genes involved in lipid metabolism. *Journal of Biotechnology*, 307: 44-54. [IF = 3.307] doi.org/10.1016/j.jbiotec.2019.10.015 [cit. 27 in S]
39. Gornati R., Maisano M., Pirrone C., **Cappello T.**, Rossi F., Borgese M., Giannetto A., Cappello S., Mancini G., Bernardini G., Fasulo S., 2019. Mesocosm system to evaluate BF-MBR efficacy in mitigating oily wastewater discharges: An integrated study on *Mytilus galloprovincialis*. *Marine Biotechnology*, 21: 773-790. [IF = 2.88] doi.org/10.1007/s10126-019-09923-9 [cit. 9 in S]
38. **Cappello T.***, Maisano M., Giannetto A., Natalotto A., Parrino V., Mauceri A., Spanò N., 2019. Pen shell *Pinna nobilis* L. (Mollusca, Bivalvia) from different peculiar environments: adaptive mechanisms of osmoregulation and neurotransmission. *The European Zoological Journal*, 86: 333-342. [IF = 1.656; OA] doi.org/10.1080/24750263.2019.1673492 [cit. 9 in S]
37. Ranjbar Jafarabadi A., Dashtbozorg M., Mitra S., Riyahi Bakhtiari A., Mohamadjafari Dehkordi S., **Cappello T.**, 2019. Historical sedimentary deposition and ecotoxicological impact of aromatic biomarkers in sediment cores from ten coral reefs of the Persian Gulf, Iran. *Science of the Total Environment*, 696: 133969. [IF = 6.551] doi.org/10.1016/j.scitotenv.2019.133969 [cit. 11 in S]
36. Ranjbar Jafarabadi A., Riyahi Bakhtiari A., Mitra S., Maisano M., **Cappello T.**, Jadot C., 2019. First polychlorinated biphenyls (PCBs) monitoring in seawater, surface sediments and marine fish communities of the Persian Gulf: distribution, levels, congener profile and potential health risk assessment. *Environmental Pollution*, 253: 78-88. [IF = 6.792] doi.org/10.1016/j.envpol.2019.07.023 [cit. 31 in S]
35. Caricato R., Giordano M.E., Schettino T., Maisano M., Mauceri A., Giannetto A., **Cappello T.**, Parrino V., Ancora S., Caliani I., Bianchi N., Leonzio C., Mancini G., Cappello S., Fasulo S., Lionetto M.G., 2019. Carbonic anhydrase integrated into a multimarker approach for the detection of the stress status induced by pollution exposure in *Mytilus galloprovincialis*. A field case study. *Science of The Total Environment*, 690: 140-150. [IF = 6.551] doi.org/10.1016/j.scitotenv.2019.06.446 [cit. 18 in S]
34. Pereira P., Korbas M., Pereira V., **Cappello T.**, Maisano M., Canario J., Almeida A., Pacheco M., 2019. A multidimensional concept for mercury neuronal and sensory toxicity in fish – From toxicokinetics and biochemistry to morphometry and behavior. *BBA General Subjects*, 1863: 129298. [IF = 3.422] doi.org/10.1016/j.bbagen.2019.01.020 [cit. 20 in S]
33. Ranjbar Jafarabadi A., Dashtbozorg M., Riyahi Bakhtiari A., Maisano M., **Cappello T.**, 2019. Geochemical imprints of occurrence, vertical distribution and sources of aliphatic hydrocarbons, aliphatic ketones, hopanes and steranes in sediment cores from ten Iranian Coral Islands, Persian Gulf. *Marine Pollution Bulletin*, 144: 287-298. [IF = 4.049] doi.org/10.1016/j.marpolbul.2019.05.014 [cit. 15 in S]
32. Parisi M.G., Maisano M., **Cappello T.**, Oliva S., Mauceri A., Toubiana M., Cammarata M., 2019. Responses of marine mussel *Mytilus galloprovincialis* (Bivalvia: Mytilidae) after infection with the pathogen *Vibrio splendidus*. *Comparative Biochemistry and Physiology – Part C*, 221: 1-9.

- [IF = 2.892] doi.org/10.1016/j.cbpc.2019.03.005 [cit. 10 in S]
31. Vignet C., **Cappello T.**, Fu Q., Lajoie K., De Marco G., Clerandeanu C., Mottaz H., Maisano M., Hollender J., Schirmer K., Cachot J., 2019. Imidacloprid induces adverse effects on fish early life stages that are more severe in Japanese medaka (*Oryzias latipes*) than in zebrafish (*Danio rerio*). *Chemosphere*, 225: 470-478.
[IF = 5.778] doi.org/10.1016/j.chemosphere.2019.03.002 [cit. 37 in S]
30. Ranjbar Jafarabadi A., Riyahi Bakhtiari A., Yaghoobi Z., Yap C.K., Maisano M., **Cappello T.**, 2019. Distributions and compositional patterns of polycyclic aromatic hydrocarbons (PAHs) and their derivatives in three edible fishes from Kharg coral Island, Persian Gulf, Iran. *Chemosphere*, 215: 835-845.
[IF = 5.778] doi.org/10.1016/j.chemosphere.2018.10.092 [cit. 42 in S]
29. Ranjbar Jafarabadi A., Riyahi Bakhtiari A., Spanò N., **Cappello T.**, 2018. First report of geochemical fractionation distribution, bioavailability and risk assessment of potentially toxic inorganic elements in sediments of coral reef Islands of the Persian Gulf, Iran. *Marine Pollution Bulletin*, 137: 185-197.
[IF = 3.782] doi.org/10.1016/j.marpolbul.2018.09.052 [cit. 30 in S]
28. Ranjbar Jafarabadi A., Riyahi Bakhtiari A., Hédouin L., Shadmehri Toosi A., **Cappello T.**, 2018. Spatio-temporal variability, distribution and sources of *n*-alkanes and polycyclic aromatic hydrocarbons in reef surface sediments of Kharg and Lark coral reefs, Persian Gulf, Iran. *Ecotoxicology and Environmental Safety*, 163: 307-322.
[IF = 4.527] doi.org/10.1016/j.ecoenv.2018.07.056 [cit. 22 in S]
27. Giannetto A., **Cappello T.**, Oliva S., Parrino V., De Marco G., Fasulo S., Mauceri A., Maisano M., 2018. Copper oxide nanoparticles induce the transcriptional modulation of oxidative stress-related genes in *Arbacia lixula* embryos. *Aquatic Toxicology*, 201: 187-197.
[IF = 3.794] doi.org/10.1016/j.aquatox.2018.06.010 [cit. 16 in S]
26. Ranjbar Jafarabadi A., Riyahi Bakhtiari A., Maisano M., Pereira P., **Cappello T.**, 2018. First record of bioaccumulation and bioconcentration of metals in Scleractinian corals and their algal symbionts from Kharg and Lark coral reefs (Persian Gulf, Iran). *Science of The Total Environment*, 640-641: 1500-1511.
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Scientific Communications as Invited Speaker

11. **Cappello T.**, 2022. A sea of plastics! Biological effects on different aquatic organisms. Marevivo. Nauticinblu Ed. 2022. Messina, Italy, 15 February 2022.
10. **Cappello T.**, 2021. Pollution by plastics: Threat for the environmental and human health. Bio in Sicily, Bagheria (PA), Italy, 1-3 October 2021.
9. **Cappello T.**, 2021. SOS plastic: from the sea to our plates! Effects of microplastics on the health of aquatic organisms. REsPoNSo - Reduction of ghost fisheries in Sicily. Sicily, Italy, 16 May 2021.
8. **Cappello T.**, 2021. SOS plastics: from the sea to our plates. Seminars UNIxME. Messina, Italy, 26 February 2021.
7. **Cappello T.**, 2020. The cell: structure and function. Course preparatory to the exam for the habilitation to the profession of Biologist. National Order of Biologists, University of Messina, 29 October 2020.
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5. **Cappello T.**, Giannetto A., Parrino V., Maisano M., Mauceri A., Fasulo S., 2019. NMR-based Metabolomics: a holistic approach for monitoring complex biological systems. Accademia Peloritana dei Pericolanti, II Class Medical-Biological Sciences, Messina, Italy, 28 May 2019.
4. **Cappello T.**, 2018. Effects of polystyrene microplastics in marine mussels *Mytilus galloprovincialis* by NMR-based metabolomics. 47th National Congress on Magnetic Resonance, Torino, Italy, 19-21 September 2018.
3. **Cappello T.**, 2018. SOS plastics: from the sea to our plates. European Day of the Sea on “Messina and its seas”, Messina, Italy, 18 May 2018.
2. **Cappello T.**, 2017. Bioindicators for evaluating the health status of the sea. European Day of the Sea on “Messina e its sea: resources and opportunities”, Messina, Italy, 20 May 2017.
1. **Cappello T.**, 2017. Health status of edible aquatic organisms from natural environments by NMR approaches. GIDRM Workshop on “NMR Day: Fish and SeaFood Applications”, Lecce, Italy, 19 April 2017.

Scientific Communications in International Congresses

19. De Marco G., Giannetto A., **Cappello T.**, Oliveri Conti G., Galati M., Pulvirenti E., Ferrante M., Mauceri A., Maisano M. Accumulation of polystyrene microplastics and embryotoxic effects in zebrafish *Danio rerio*. First Forum on Plastic: From the Environment to Human Health; Sousse (Tunisia), 04-06 November 2021. **(Oral)**
18. **Cappello T.*** Effects of microplastics in marine mussels: Time-dependent metabolic disorders after short-term exposure. First Forum on Plastic: From the Environment to Human Health; Sousse (Tunisia), 04-06 November 2021. **(Plenary Talk)**
17. **Cappello T.*** Impact of climate change on aquatic organisms. International Conference on Post Pandemic Ecological Sustainability: Challenges and Role of IT (PPES 2020); Virtual University of Pakistan (Pakistan), 06-07 October 2020. **(Invited Speaker)**
16. **Cappello T.***. Biological effects due to climate change on aquatic organisms. International Conference on Ecohealth and Environmental Sustainability (ICEES 2020), 9; Vadodara (India), 24-26 February 2020. **(Plenary Talk)**
15. **Cappello T.***, Maisano M., Giannetto A., Parrino V., Natalotto A., Oliva S., Cappello S., Mancini G., De Marco G., Mauceri A., Fasulo S. Evaluation of recovery actions applied on petrochemical polluted waters and sediments using marine mussels in mesocosm-scale experiments. 24th International Sustainable Development Research Society Conference (ISDRS 2018), 57; Messina (Italy), 13-15 June 2018. **(Speaker)**
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13. Vignet C., Lajoie K., Maisano M., Fu Q., Mottaz H., Clerandeu C., **Cappello T.**, Hollender J., Cachot J., Schirmer K. Response of zebrafish and Japanese medaka to imidacloprid: a comparative study. 13th Meeting Ecology & Behaviour; Chizè (France), 19-23 June 2017. **(Poster)**
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11. Maisano M., **Cappello T.***, Vitale V., Oliva S., Natalotto A., Mauceri A., Fasulo S. NMR-based metabolomics reveals CuO NP-induced interferences in larval morphogenesis, neurotransmission and skeletogenesis of sea urchin embryos. 30th Congress of the ^{new}European Society of Comparative Biochemistry and Physiology (ESCPB^{new}), 51; Barcelona (Spain), 4 - 7 September 2016. **(Speaker)**
10. Brandão F., **Cappello T.**, Albuquerque O., Guilherme S., Santos M.A., Maisano M., Mauceri A., Pacheco M., Pereira P. Effects of mercury bioaccumulation in gills of wild fish (*Liza aurata*) assessed by 1H NMR metabolomics and oxidative stress endpoints. 10th Iberian and 7th Iberoamerican Congress on Environmental Contamination and Toxicology (CICTA), 269-270; Vila Real (Portugal), 14 - 17 July 2015. **(Poster)**
9. Maisano M., **Cappello T.***, Oliva S., Natalotto A., Giannetto A., Battaglia P., Romeo T., Mauceri A. Evidences of changes in hepatic lipid metabolism in the atlantic bluefin tuna, *Thunnus thynnus*, from the Mediterranean Sea. 18th Pollutant Responses In Marine Organisms (PRIMO), PL-055; Trondheim (Norway), 24 - 27 May 2015. **(Speaker)**
8. **Cappello T.***, Pereira P., Maisano M., Raimundo J., Mauceri A., Pacheco M. 1H NMR-based metabolic profiling reveals tissue-specific responses to mercury toxicity in wild fish *Liza aurata*. 25th Europe Annual Meeting of the Society of the Environmental Toxicology and Chemistry (SETAC Europe), 143; Barcelona (Spain), 3-7 May 2015. **(Speaker)**
7. **Cappello T.***, Maisano M., Natalotto A., Parrino V., Giannetto A., Mauceri A., Fasulo S. Effects of petrochemical contamination on caged marine mussels using a multi-biomarker approach: histopathology, metabolomics, neurotoxicity and DNA damage. 6th Bilateral Seminar Italy-Japan (BSIJ), 28; Palermo (Italy), 19 - 20 November 2014. **(Speaker)**
6. Maisano M., Catanese E., Vitale V., **Cappello T.***, Natalotto A., Giannetto A., Barreca D., Brunelli E., Mauceri A., Fasulo S. Effects of CuO NPs on first developmental stages of the sea urchin *Arbacia lixula*. 2nd Marine NanoEcoSafety Workshop (MANET), 25; Palermo (Italy), 17 - 18 November 2014. **(Speaker)**
5. **Cappello T.***, Maisano M., Corsaro C., Mauceri A., Lo Paro G. and Fasulo S. Cellular responses to environmental pollution in *Mytilus galloprovincialis*. 17th Pollutant Responses In Marine Organisms (PRIMO), 11; Faro (Portugal), 5 - 8 May 2013. **(Poster)**

4. **Cappello T.*** Research activities for assessing the environmental health status using ecotoxicological approaches. *EMBO Practical Course in Mass Spectrometry and Proteomics*, 19-20; Odense (Denmark), 18 - 25 April 2012. **(Poster)**
3. De Domenico E., D'Agata A., Maisano M., **Cappello T.**, Fasulo S., Mauceri A. Distribution of neurotransmitter in acontia of *Calliactis parasitica* (cnidaria, Anthozoa). *7th Workshop of the Hydrozoan Society (H.S.)*, 23; Porto Cesareo, Lecce (Italy), 10 - 18 September 2010. **(Poster)**
2. Iacono F., **Cappello T.***, Corsaro C., Branca C., Maisano M., Giofrè G., De Domenico E., Mauceri A., Fasulo S. Environmental metabolomics and multibiomarkers approaches on biomonitoring of aquatic habitats. *27th Congress of the new European Society of Comparative Biochemistry and Physiology (ESCPB^{new})*, 157 (Suppl. 1), S50; Alessandria (Italy), 5 - 9 September 2010. **(Poster)**
1. McCallister S.L., Franklin R.B., Rivera M.C., Koch B.P., Schmitt-Kopplin P., Fekete A., **Cappello T.** and Neogi S.B. Reconsidering biogeography and environmental controls on microbial communities and biogeochemical cycles in the Atlantic Ocean. *11th Symposium on Aquatic Microbial Ecology (S.A.M.E.)*, 44; Piran (Slovenia), 30 August - 04 September 2009. **(Oral)**

Scientific Communications in National Congresses

21. De Marco G., Afsa S., Galati M., ben Mansour H., Cappello T. International Cooperation Italy-Tunisia: Ecocytotoxicological studies to enhance management actions for reducing pharmaceuticals in the Mediterranean area. VII Congresso CUCS, La Cooperazione Universitaria nelle nuove sfide per lo sviluppo sostenibile; Napoli, 21-23 April 2022 **(Poster)**
20. De Marco G., Afsa S., Galati M., Cappello T. Time-dependent biological impact of environmentally realistic doses of caffeine vs caffeine-salicylic acid mixtures on *Mytilus galloprovincialis*. 94° Congresso della Società Italiana di Biologia Sperimentale (SIBS); Torino, 6-9 April 2022 **(Oral)**
19. De Marco G., Galati M., Oliveri Conti G., Maisano M., **Cappello T.*** Metabolic effects of polystyrene microplastics in marine mussels after short-term exposure. 94° Congresso della Società Italiana di Biologia Sperimentale (SIBS); Torino, 6-9 April 2022 **(Speaker)**
18. Giannetto A., Oliva S., Ceccon Lanes C.F., De Araujo Pedron F., Savastanno D., Baviera C., Parrino V., Lo Paro G., Spanò N.C., **Cappello T.**, Maisano M., Mauceri A., Fasulo S. *Hermetia illucens* (Diptera: Stratiomyidae): Molecular basis of different biochemical phenotypes in different developmental larval stages. 80° Congresso Nazionale dell'Unione Zoologica Italiana (U.Z.I.), 9; Roma, 23-26 September 2019. **(Oral)**
17. Maisano M., Giannetto A., **Cappello T.**, De Marco, G., Capparucci F., Marino F., Oliveri Conti G., Zuccarello P., Ferrante M., Oliva S., Parrino V., Mauceri A., Fasulo S. Embryotoxic effects of polystyrene microplastics in zebrafish (*Danio rerio*). 65° Convegno del Gruppo Embriologico Italiano (GEI) – Società Italiana di Biologia dello Sviluppo e della Cellula; Ancona, 24-27 June 2019. **(Oral)**
16. **Cappello T.***, Maisano M. Effects of polystyrene microplastics in marine mussel *Mytilus galloprovincialis* by NMR-based metabolomics. 47th National Congress on Magnetic Resonance (GIDRM), 6; Torino, 19-21 September 2018. **(Speaker)**
15. Giannetto A., **Cappello T.**, Oliva S., Parrino V., De Marco, G., Fasulo S., Mauceri A., Maisano M. Exposure to copper oxide nanoparticles (CuO NPs) modulates the oxidative stress related genes in *Arbacia lixula* embryos. 64° Convegno del Gruppo Embriologico Italiano (GEI), 21-22; L'Aquila, 11-14 June 2018. **(Oral)**
14. **Cappello T.***, Giannetto A., Oliva S., Parrino V., Fasulo S., Mauceri A., Maisano M. Effects of CuO nanoparticles on early life stages of black sea urchin *Arbacia lixula*. 63° Convegno del Gruppo Embriologico Italiano (GEI), 7; Roma, 12-15 June 2017. **(Speaker)**
13. Maisano M., **Cappello T.**, Vignet C., Lajoie K., Fu Q., De Marco G., Mottaz H., Clerandeanu C., Hollender J., Cachot J., Schirmer K. A comparative study on the effects of imidacloprid in zebrafish and Japanese medaka. 63° Convegno del Gruppo Embriologico Italiano (GEI), 17; Roma, 12-15 June 2017. **(Oral)**
12. Parisi M.G., Maisano M., **Cappello T.**, Oliva S., Mauceri A., Toubiana M., Cammarata M. Assessment of morphological and cellular responses after infection with living bacteria in the marine mussel *Mytilus galloprovincialis*. 18° Congresso della Società Italiana di Immunobiologia Comparata e dello Sviluppo (SIICS), 10; Viterbo, 8-10 February 2017. **(Oral)**
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