

**Maria Maisano** is Full Professor for the Scientific-Disciplinary Field BIO/06 (SSD BIO/06; Comparative Anatomy and Cytology).

Since the academic year 2010/2011 she lectures on “Developmental Biology” for the Bachelor’s Degree in Biological Sciences.

Since the academic year 2011/2012 she lectures on “Fundamentals of Cytology and Histology” for the Bachelor’s Degree in Biology and Marine Ecology.

Since the academic year 2015/2016 she lectures on “Cytology and Histology” for the Bachelor’s Degree in Biological Sciences, and on “Biotechnologies in Cytotoxicology” for the Master’s Degree in Biology.

From the academic year 2011/12 she is member of the Teaching Board of the Doctorate of Research in “Biology and Cellular Biotechnologies” until the XXVIII cycle, and since the academic year 2013/14 she is member of the Doctorate of Research in “Applied Biology and Experimental Medicine”, as reference professor for the ANVUR evaluation, since the XXIX cycle.

For the academic year 2012/2013 she is member of the Teaching Staff Mobility within the bilateral agreement (ERASMUS) between the University of Messina and the University of Algarve, Portugal.

For the academic year 2011 she was member of the Examination Committee for the qualification to exercise the profession of Biologist, in both the examination sessions, and for all the successive academic years she was nominated as substitute or aggregate member.

She has been Supervisor and Tutor of numerous Bachelor’s and Master’s students, as well as national and international (ERASMUS) PhD-students.

#### *ORGANIZATIONAL ACTIVITIES*

Since the academic year 2011/2012 she is member of the didactic committee of the Bachelor’s Degree in Biological Sciences.

In 2012 she has been elected by teachers of the Biological Area of the University of Messina as Member of the Area Committee.

Since 2012 to 2015 she has been member of the Board of the SETAC Italian Branch.

In 2013 she has been nominated as member of the Re-examination Committee by the Bachelor’s Degree in Marine Biology and Ecology, and as Teacher AQ by the Bachelor’s Degree in Biological Sciences.

In September 2013 she has been elected by the Italian Zoological Union (UZI) Society as member of the Didactic Committee.

Since the academic year 2015/2016 she is member of the Didactic Committee of the Master’s Degree in Biology.

In 2016 she has been nominated as member of the Peer Committee by the Bachelor’s Degree in Biological Sciences and in 2017 as member of the Re-examination Committee.

In 2016 she was Chairmen of a session of “Gametogenesis and Reproduction” during the Conference of the Italian Embryological Group.

Since 2016 she is Editor of the Editorial Board of the peer reviewed Italian Journal of Zoology, now The European Zoological Journal since January 2017.

In 2018 she was Chairmen for the session “Biodiversity and Ecosystem Services” at the 24<sup>th</sup> International Sustainable Development Research Society Conference.

In 2018 she was nominated as Coordinator of the Bachelor’s Degree in Biological Sciences for the 3-year period 2018/2021.

#### *SCIENTIFIC ACTIVITIES*

From 2005 to date, she is author of 64 scientific manuscripts, published on international peer-reviewed journals (Scopus, h-index: 27, citations: 1891).

She is co-author of the scientific book “Cytology and Histology” and “Histology with elements

of Microscopic Anatomy” edited by EDISES (2019).

The scientific activity is mainly focused on:

- Teratogenic and embryotoxic effects of various and emerging environmental pollutants, by using invertebrate and low vertebrate embryos, with focuses on the implementation of Fish Embryo Toxicity test – FET, developed and validated by OECD. In this regard she did a formative stage as Research Professor at the CEFAS (Centre for Environment, Fisheries and Aquaculture Science) in Weymouth, UK.
- Biomonitoring of natural aquatic environments, by using invertebrates and low vertebrates as bioindicator organisms. The biomarkers used are both of histological, through morphological, histochemical and immunohistochemical investigation of the respiratory epithelium and digestive gland tissue, and molecular type, through the study of the gene expression of key biomarkers. Results from these analyses are useful to biomonitoring the natural environments, as well as to developing novel, effective and rapid methodologies of investigation.
- Investigations of environmental nanotoxicology through the use of metal nanoparticles and micro- and nano-plastics for the study of the effects caused by these substances on sentinel invertebrate organisms (mussels and sea urchins) and lower aquatic vertebrates both at the embryo and adult stage. The results obtained will be useful to better understand the behavior of these emerging pollutants in sea water and their potential toxic effects related to their ability to aggregate and vehiculate other contaminants.
- Application of environmental metabolomics by using nuclear magnetic resonance (NMR) spectroscopy on biofluids and tissue extracts. The environmental metabolomics is increasingly applied to understanding the responses of organisms to abiotic stresses, both natural (temperature, food restriction) and anthropogenic (pollution, captivity). Such investigations are particularly innovative and allow to: a) obtain data on the biological effects and molecular mechanisms of action of individual pollutants and their mixtures; b) develop new technologies for assessing the quality of the marine coastal environment.

#### *PARTICIPATION/RESPONSIBLE OF RESEARCH PROJECTS*

She took part as Responsible of Operative Unit and/or Scientific Coordinator to the following projects:

- “Arab-EU Technology Incubator for Sustainable Environmental Technologies and Climate Change Mitigation” (EnvMit), Erasmus+ KA2 Programme 2020. **Unit Responsible:** Prof. Maria Maisano, *submitted*.
- Funding for basic activities related to research (FFABR) 2020. **Beneficiary:** Prof. Maria Maisano.
- “FISH PAT NET” 2020, **Coordinator:** Prof. Fabio Marino, University of Messina. **Unit Responsible:** Prof. Maria Maisano.
- Funding for basic activities related to research (FFABR) 2017. **Beneficiary:** Prof. Maria Maisano.
- “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**. **Responsible:** Prof. Maria Maisano, **Principal Investigator:** Dr. Tiziana Cappello

and as Participant to the following Research Projects:

- “Robotic BIOremediation for coastal debris in BLUE Flag beach and in a Maritime Protected Area” (BIOBLU), Interreg Italia-Malta 2019. **Coordinator:** Prof. Nunziacarla Spanò, University of Messina.

- “Systems Biology in the study of xenobiotic effects on marine organisms for evaluation of the environmental health status: biotechnological applications for potential recovery”. **MIUR, PRIN 2010-2011**, prot. 2010ARBLT7\_001/008. **Coordinator:** Prof. Salvatore Fasulo, University of Messina.
- “Biomonitoring of coastal marine environments: development and application of novel integrated cytochemical and molecular methodologies”. **MIUR, PRIN 2007**, prot. 20079FELYB. **Coordinator:** Prof. Salvatore Fasulo, University of Messina.

#### *INTERNATIONAL COLLABORATIONS*

Prof. Jérôme Cachot - EPOC, UMR CNRS, University of Bordeaux, FR;  
 Prof. Cinta Porte - IDAEA-CSIC, Barcelona, ES;  
 Prof. Mário Pacheco; Dr. Patricia Pereira - University of Aveiro, PT  
 Prof. Awadhesh Jha – Plymouth University, UK;  
 Dr. Ioanna Katsiadaki - CEFAS, Weymouth, UK;  
 Prof. Maria João Bebianno - University of Algarve, PT;  
 Prof. Mohamed Banni – Higher Institute of Biotechnology of Monastir, TN;  
 Prof. Wyllia Khati – Université Chadli Bendjedid El-Tarf, AL;  
 Dr. Ali Ranjbar Jafarabadi – Tarbiat Modares University, IR;  
 Prof. Salud Deudero – Instituto Español de Oceanografía, ES;  
 Dott. Caroline Vignet - EAWAG, CH

#### *EDITORIAL BOARD MEMBER*

From 2017 she is **Editor** for “The European Zoological Journal” – Taylor & Francis Online -  
 In the 2016 she was **Editor** for “Italian Journal of Zoology”.  
 From 2016 to 2017 she was **Lead Guest Editor** of the Special Issue “Toxic Effects of Metals and Metalloids in Aquatic Organisms” in BioMed Research International (ISSN: 2314-6133; IF: 2.134) – Hindawi

#### *REVIEWER ACTIVITIES*

Chemosphere (IF: 5.108); Ecotoxicology and Environmental Safety (IF: 4.527); Environmental Pollution (IF: 5.714); Environmental Science and Pollution Research (IF: 2.914); Environmental Toxicology and Chemistry (IF: 3.421); Italian Journal of Zoology (IF: 0.814); The European Zoological Journal (IF: 0.942); Marine Environmental Research (IF: 3.445); Science of the Total Environment (IF: 5.589); Food and Chemical Toxicology (IF: 3.775); Marine Pollution Bulletin (IF: 3.782); Water Research (IF: 7.913); Molecular Reproduction and Development (IF: 3.113); Aquatic Toxicology (IF: 3.794).

#### *AWARDS AND AFFILIATIONS TO PRESTIGIOUS ACADEMIES*

Since 2017 she is affiliated as Aggregate Member to the Accademia Peloritana dei Pericolanti.  
 In 2017 she achieved the “Highly Cited Paper Award” from Essential Science Indicators for the article “Insights into the mechanisms underlying mercury-induced oxidative stress in gills of wild fish *Liza aurata* combining 1H NMR metabolomics and conventional biochemical assays. *Science of the Total Environment*, 2016, 548-549: 13-24”  
 In 2016 she achieved the “Highly Cited Research Award” from Marine Environmental Research, Elsevier, for the article “Effects of environmental pollution in caged mussels (*Mytilus galloprovincialis*). *Marine Environmental Research*, 2013, 91: 52-60”  
 From 2012 to 2015 she is Board Member of the SETAC Italian Branch of the Society of Environmental Toxicology and Chemistry.