

CURRICULUM VITAE
Francesco Regoli, Professor

CONTACT DETAILS:

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University web page: <https://www.disva.univpm.it/content/ecotoxicology-and-environmental-chemistry?language=en>

ACTUAL POSITION AND RESPONSIBILITIES

Director of the Department of Life and Environmental Sciences (DiSVA).

Full Professor in Applied Biology (Scientific Sector BIO13) at Polytechnic University of Marche.

Editor in Chief of the scientific journal "Marine Environmental Research" (Elsevier)

He is or has been in charge of the following institutional responsibilities for Polytechnic University of Marche:

- 2019-actual Director of the Department of Life and Environmental Sciences (DiSVA).
- 2013-2019 Vice Director of the Department of Life and Environmental Sciences (DiSVA).
- 2013-2019 Director of the Specialistic Course Degree in "Environmental Risk and Civil Protection"
- 2016-2019: Member of the Administrative Council of the National Interuniversity Consortium for Marine Sciences (CoNISMa)
- 2013-2019: Representative of the University within the Directive Council of the National Interuniversity Consortium for Marine Sciences (CoNISMa)
- 2010-actual: Member of the Doctorate School in Life and Environmental Sciences of Polytechnic University of Marche.
- 2016-actual: Responsible for the Strategic University project for the new Aquarium Infrastructure
- 2018-2022: Responsible for DiSVA of the Project "Departments of Excellence" (2018-2022)
- 2019-actual: Delegate of Italian Ministry of University and Research (MUR) for Horizon Missions, sub-group Healthy oceans, seas, coastal and inland waters

TEACHING ACTIVITIES:

- During academic years 1995-96 and 1996-97 he was Contract Professor in Environmental Biochemistry at University of Ancona, for the Course of Biological Sciences.
- During academic years 1998-99 and 1999-2000 he had the chair of Environmental Impact Assessment at Faculty of Sciences, University of Ancona.
- From 2000 to 2007 he had the chair of the Course in Cell Biology.

- In 2006, 2007, 2008 and 2009 he organized the International intensive courses on “Oxidative stress in Marine Ecosystems”, Helgoland (Germany) in collaboration with Alfred Wegener Institute for Polar and Marine Research, Bremerhaven.
- He actually has the chair of the following Courses:
 - Marine Ecotoxicology (6 CFU, Specialistic Course in Marine Biology and International Master of Science in Marine Biological Resources IMBRSea)
 - Biological and Ecological Risk (8 CFU, Specialistic Course in Environmental Sustainability and Civil Protection)

Member of the Doctorate School of Faculty of Sciences and Tutor of approximately 15 PhD students

From 2013 to 2019 he has been the Director of the Specialistic Course Degree in Environmental Sustainability and Civil Protection at Polytechnic University of Marche.

INTERNATIONAL AND NATIONAL RECOGNITIONS AND RESPONSABILITIES

Collaborations with international scientific journals

Editor-in-Chief of: Marine Environmental Research (Elsevier), 2011-2021

Editorial Board of: Aquatic Toxicology (Elsevier),
 Chemistry and Ecology (Taylor & Francis),
 Journal of the Brazilian Society of Ecotoxicology (SETAC-Press)
 Archives of Environmental Toxicology and Chemistry (Springer),
 from 1995 to 2013

Frequent activity as Reviewer for approximately 30 international scientific journals (e.g. Aquaculture International, Aquatic Toxicology, Archives Environmental Contamination Toxicology, Biological Reviews, Bulletin Environ. Contamination Toxicology, Chemistry and Ecology, Chemosphere, Comparative Biochemistry Physiology, Comparative Hepatology, Environmental Health Perspectives, Ecotoxicol. Environ. Safety, Environmental Pollution, Environmental Science and Technology, Environmental Toxicology and Chemistry, Estuarine Coastal and Shelf Science, Food And Chemical Toxicology, Free Radical Biology and Medicine, Hydrobiologia, Journal Agriculture and Food Chemistry, Journal Experimental Marine Biology Ecology, Journal of Marine Biology and Ecology, Journal of Thermal Biology, Marine Environmental Research, Marine Pollution Bulletin, Marine Ecology Progress Series, Plos One, Polar Biology, Polar Research, Science of The Total Environment, Scientific Reports.

Responsibilities within Scientific International Societies

Member of Directive Council of SETAC-Europe (Society of Environmental Toxicology and Chemistry)-Italian Branch (from foundation to 2015)

Scientific Committee of International and National Conferences

- 2002 Member of the Steering Committee of the International Workshop “Ecotoxicological Tools for Environmental Management” Canberra, Australia.
- 2005 Member of the Organizing Committee of the VIII National Congress AIBG (Italian Association of General and Molecular Biology and Genetics), Sirolo-Ancona
- 2005 Member of Scientific Committee of the 13th International Symposium on “Pollutant Responses in Marine Organisms”, Alessandria, Italy
- 2007 Member of the Organizing Committee for the National Conference of the Italian Society of Ecology, Ancona
- 2007 Member of Scientific Committee of the 14th International Symposium on “Pollutant Responses

in Marine Organisms”, Florianopolis, Brazil

- 2009 Member of Scientific Committee of the 15th International Symposium on “Pollutant Responses in Marine Organisms”, Bordeaux, France
- 2009 Member of the Organizing Committee of the NATO Workshop “Oil spill risk management and decision support system”, 23-25(27) September 2009, Syktyvkar, Russia
- 2011 Member of Scientific Committee of the 16th International Symposium on “Pollutant Responses in Marine Organisms”, Long Beach, USA
- 2012 Member of Scientific Committee of the 5th Edition on the workshop on “Research and Application of Ecotoxicological methodologies in aquatic environments and contaminated matrices”, Livorno, Italy
- 2013 Member of Scientific Committee of the 17th International Symposium on “Pollutant Responses in Marine Organisms”, Faro, Portugal
- 2014 Member of Scientific Committee of the 2nd Marine NanoEcoSafety Workshop (MANET), Palermo, Italy
- 2014 Member of Scientific Committee of the 6th Edition on the workshop on “Research and Application of Ecotoxicological methodologies in aquatic environments and contaminated matrices”, Livorno, Italy
- 2014 Member of the National Experts Committee of the 6th Bilateral Seminar Italy-Japan (6th BSIJ-2014) on “Physical and Chemical Impacts on Marine Organisms Supporting Blue Growth in meaningful mutual symbiosis with the marine environment”, Palermo, Italy
- 2015 Member of Scientific Committee of the 7th Edition on the workshop on “Research and Application of Ecotoxicological methodologies in aquatic environments and contaminated matrices”, Livorno, Italy
- 2015 Member of Scientific Committee of 18th International Symposium on “Pollutant Responses in Marine Organisms”, Trondheim, Norway
- 2017 Member of Scientific Committee of 19th International Symposium on “Pollutant Responses in Marine Organisms”, Matsuyama, Japan
- 2019 Member of Scientific Committee of 20th International Symposium on “Pollutant Responses in Marine Organisms”, Charlotte, North Carolina, USA
- 2021 Member of Scientific Committee of 21st International Symposium on “Pollutant Responses in Marine Organisms”, Goteborg, Sweden

International Commissions

- 2009 Scientific Member of NATO Committee on “Oil spill risk management in Arctic and decision support system”, September 2009, Syktyvkar, Russia
- 2014-2017 Member for Italy of the UNEP-MEDPOL Group of Mediterranean Experts on Contaminants (GMEC)
- 2017. Member of the Mixed Commission for Bilateral agreement Italy-Korea on Science and Technology.
- 2019-actual: Delegate of Italian Ministry of Education, University and Research (MUR) for Horizon Missions, sub-group Healthy oceans, seas, coastal and inland waters

Evaluation duties in International PhD Theses

- 2002 “International Opponent” at University of Gothenburg for a PhD Thesis on “Glutathione-dependent indicators of oxidative stress in fish”.
- 2006 Member of the Examining Board for the European Doctorate at University of Barcelona (Spain) for a PhD Thesis on “Endocrine disrupters in the marine environment: mechanisms of action and effects in fish”.
- 2007 Member of the Examining Board for the European Doctorate at University of the Basque Country, Bilbao (Spain) for a PhD Thesis on “Contribution to the interpretation of lysosomal biomarkers in marine organisms based on the mechanistic responses to pollutants”

- 2008 Member of the Examining Board for the European Doctorate at University of the Basque Country, Bilbao (Spain) for a PhD Thesis on “Nuclear receptor coding genes and mechanisms of peroxisomal proliferation in marine organisms”
- 2008 Member of the Examining Board for the European Doctorate at University of the Basque Country, Bilbao (Spain) for a PhD Thesis on “Peroxisome Proliferator-Activated Receptors (PPARs) and other nuclear receptors in aquatic organisms: cloning and gene expression studies in relation to environmental contamination”
- 2009 External evaluator for the European Doctorate at University of Cantabria (Spain) for a PhD Thesis on “Development of models and methodologies for environmental assessment and management of contaminated sediments”
- 2009 Opponent Member of the Examining Board for the European Doctorate at University of Oslo (Norway) for a PhD Thesis on “Effects from offshore oil production: chronic exposure of fish to produced water”
- 2010 Member of the Evaluation Committee at University of Tromsø (Norway) for a PhD Thesis on “Biomarker responses in polar cod (*Boreogadus saida*). Application for petroleum monitoring in Arctic waters”
- 2010 Member of the Examining Committee for the European Doctorate at University of Plymouth (UK) for a PhD Thesis on “Effects of oil exposure and oil-related compounds on the immune system of the Arctic and temperate scallops, *Chlamys islandica* and *Pecten maximus*”
- 2013 Examiner for University of New South Wales (UNSW, Sydney Australia) of a PhD Thesis on “The efficacy of cellular biomarkers in marine filter feeding organisms for detecting effects of anthropogenic pollution”
- 2014 Member of the PhD Commission at University of Turku (Finland) for a Thesis on “The role of oxidative stress in environmental responses of Fennoscandian animals”
- 2015 Member of the PhD Commission at University of Cantabria (Spain) for a Thesis on “Assessment of urban, industrial and harbour discharges into estuarine and marine environments using chemical analyses and biological effect measurements (a proposal for the Water Framework Directive).
- 2018 Member of the PhD Commission at University of Aveiro (Portugal) for a Thesis on “Comparative performance of *Crassostrea* species In Portugal and Brazil - Climate Change implications”.
- 2019 President of the Examining Board for the European Doctorate at University of the Basque Country, Bilbao (Spain) for a PhD Thesis on “An integrated study of molecular, cellular, tissue level and transgenerational effects of silver nanoparticles to dietarily exposed mussels at different seasons”

Evaluation of Research Projects for National and International Institutes At National level he is reviewer for National Agency for Evaluation of University and Research (ANVUR), for projects of national relevance funded by Italian Ministry of Research (PRIN, FIRB), and for projects funded by national Universities.

At international level, he acts as international reviewer of Research Projects for several Universities and Institutions including:

- Australian Antarctic Science Program - Application (Round 2014/15)
- Fram Centre (Norway), Scientific Programme 2011-2015 for Hazardous substances- effects on ecosystem and health (2013, 2014, 2015);
- National Council of Norway (Call Petromaks 2012, Petromaks2 2013, MARINFORSK 2015, 2017);
- Woods Hole Sea Grant Program (Call 2014, 2015);
- The Icelandic Research Fund (Call 2015)
- French National Research Agency's (ANR) 2016.
- The VELUX FOUNDATIONS (2015)

COORDINATION OF INTERNATIONAL AND NATIONAL RESEARCH PROJECTS.

He has been scientific coordinator of international and national projects funded by EU, Norwegian Research Council, Italian National Research Council, Ministry of University and Research, Ministry of Environment, Ministry of Health, Institute for Environmental Protection and Research, Italian Civil Protection; Italian Antarctic Program.

At the international level, coordinated projects include:

- National Scientific Coordinator of European Project "Biodiversity and Adaptation Strategies of Arctic Coastal Marine Benthos" (INTAS 94-391).
- National Scientific Coordinator of the Project "Effects of off-shore oil industry related discharges in the Arctic", Norwegian Research Council (2004-2006).
- National Scientific Coordinator of the Project "Biotransformation of halogenated organic compounds and associated biological effects in Arctic seabirds", Norwegian Research Council (2006-2009).
- National Scientific Coordinator of the Project "Polar cod, lipid metabolism and disruption by polycyclic aromatic hydrocarbons (POLARISATION)" Norwegian Research Council (2012–2015).
- National Responsible of the project "Ecotoxicological Effects of Microplastics in Marine Ecosystems (EPHEMARE)", funded by JPI-Oceans (2015-2018).
- National Responsible of the project funded by Fram Centre (Norway) on "Toxicity of salmon lice pesticides on a key North-Norwegian marine species, *Pandalus borealis*" (2019-20)
- International Coordinator of the Project "Towards a risk-based assessment of microplastic pollution in marine ecosystems (RESPONSE)", JPI Oceans, 2019-22
- International Coordinator of the Project "Presence, behavior and risk assessment of pharmaceuticals in marine ecosystems (PHARMASEA)" JPIs, AquaticPollutants, 2020-23

At the national level he has coordinated several projects including:

- 1999. Funded by Polytechnic University of Marches. Antioxidant defences and oxidative stress in marine organisms exposed to anthropogenic and natural disturbance.
- 1999-2000. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Characterization of biomarkers in marine organisms exposed to chemical pollutants.
- 1999-2001. Funded by Programma Nazionale di Ricerche in Antartide (PNRA). Ecophysiological and ecotoxicological responses to natural and anthropogenic pressures in the Antarctic marine environment.
- 2000. National Council of Research, Agenzia CNR 2000. Development of new, low-cost technologies to assess the impact of aquaculture on fish species with high commercial value.
- 2000. Funded by Polytechnic University of Marches. Application of biomarkers in specific bioindicator organisms to assess the impact of harbour sediments.
- 2001-2003. Funded by Programma Nazionale di Ricerche in Antartide (PNRA). Use of bioindicators to detect environmental disturbance in the Antarctic marine environment.
- 2000-2002. Funded by Ministero dell'Università e della Ricerca Scientifica e Tecnologica. Development of an expert system based on a battery of biomarkers to define the stress syndrome in the sentinel species (*Mytilus* sp.).
- 2000-2003. Funded by Ministero delle Politiche Agricole e Forestali. Standardization of a new protocol for assessing the quality of farmed fish.
- 2001. Funded by Polytechnic University of Marches. Definition of a battery of biomarkers in the sentinel organism *Mytilus galloprovincialis* to detect ecotoxicological effects.
- 2001-2002. Funded by Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche - Ministero della Sanità. Cellular indice to rapidly evaluate stress conditions and nutritional characteristics of bivalve molluscs for human consumption.
- 2001-2005. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Ecotoxicological effects induced by produced water released by off-shore platforms on *Mytilus galloprovincialis*.
- 2002. Funded by Polytechnic University of Marches. Use of molecular and cellular biomarkers to characterize the effects of toxic chemicals.

- 2002-2004. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Validation of ecotoxicological protocols and biomarkers in harbour areas.
- 2003. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Bioaccumulation of trace metals in mussels (*Mytilus galloprovincialis*) from an off-shore platform.
- 2003. Funded by Polytechnic University of Marches. Use of biomarkers in harbour areas subjected to remediation.
- 2003-2004. Funded by Ministero dell'Ambiente e della Tutela del Territorio. Development of biosensors to evaluate biological effects and ecotoxicological risk caused by extremely low frequency electromagnetic fields at 50 Hz.
- 2004. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Bioaccumulation of trace metals (As, Cd, Zn, Cr, Hg, Ni, Pb, Cu, Ba) in mussels (*Mytilus galloprovincialis*) from an off-shore platform.
- 2004. Funded by Polytechnic University of Marches. Dynamics of trace metal accumulation in tissues of marine organisms.
- 2004-2007. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Experimental study on molecular and cellular responses induced in caged organisms in proximity of off-shore platforms.
- 2004-2006. Funded by Programma Nazionale di Ricerche in Antartide (PNRA). Use of bioindicators to detect environmental disturbance in the Antarctic marine environment.
- 2004-2007. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Cellular and molecular time-course responses in marine organisms caged in harbour areas.
- 2005. Funded by Polytechnic University of Marches. Biological effects caused by produced water on marine organisms.
- 2005-2006. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Molecular and cellular responses to organic and inorganic chemicals in mussels caged in Piombino harbour during dredging activities.
- 2005-2006. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Toxicological effects of diethylene glicole on marine organisms.
- 2005-2006. Funded by Marche Region, Agenzia Servizi Settore Agroalimentare Nelle Marche, Assam. Adriatic Fish Observatory, AFO.
- 2006. Funded by Polytechnic University of Marches. Toxicological effects of diethylene glicole in produced waters.
- 2006-2007. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Characterization of basal and seasonal variability of molecular and cellular responses in marine organisms during the installation of a gas processing plant.
- 2006-2010. Funded by Istituto Centrale di Ricerca Applicata al Mare, ICRAM. Biological effects caused by discharge of produced waters on the sentinel species *Mytilus galloprovincialis*.
- 2007. Funded by Polytechnic University of Marches. Biomarkers in marine organisms.
- 2007-2008. Funded by Cariverona. Development of a pilot system with molecular and cellular responses in bioindicator organisms to characterize air quality in urban areas and possible risk for human health in the area of Ancona.
- 2008. Funded by Polytechnic University of Marches. Toxicological risk during dredging activities.
- 2009. Funded by Polytechnic University of Marches. Development of a risk assessment model to characterize quality of polluted sediments.
- 2009-2010. Funded by Edison SpA. Environmental and toxicological risk of natural and shallow hydrocarbons seepage in the coastal area of Civitanova Marche (Fontespina).
- 2010. Funded by Polytechnic University of Marches. Development of models of ecological risk assessment in polluted sediments.
- 2010-2011. Funded by Istituto Superiore per la Ricerca e la Protezione Ambientale ISPRA. Ecotoxicological study to characterize molecular and cellular responses in marine organisms due to the activity of the gas processing plant Adriatic GNL at Porto Viro.
- 2010-2011. Funded by Istituto Superiore per la Ricerca e la Protezione Ambientale ISPRA. Experimental study to evaluate toxicological responses and transfer of chemical pollutants along food webs in the Lagoon of Grado and Marano.

- 2010-2011. Funded by Istituto Superiore per la Ricerca e la Protezione Ambientale ISPRA. Biological risk of dredging polluted sediments due to release and transfer to biotic compartment of toxicologically relevant compounds.
- 2010-2011 Funded by Ministry of Health. Control of waters for production and depuration of mussels through the use of cellular biomarkers”.
- 2011. Funded by Polytechnic University of Marche. Mercury in coastal food webs.
- 2012-2013. Funded by Ministero delle Infrastrutture e dei Trasporti. Development and validation of new criteria for characterization and definition of biological risk in harbour areas.
- 2012-2013. Funded by Istituto Superiore per la Ricerca e la Protezione Ambientale ISPRA. Biological and toxicological risk in marine organisms after the wreck of Costa Concordia.
- 2012-2013. Funded by Istituto Superiore per la Ricerca e la Protezione Ambientale (ISPRA) and National Interuniversity Consortium on Marine Sciences (CoNISMa). “Marine Strategy Framework Directive (MSFD). Elaboration of data related to Descriptor 8 (presence and effects of chemical pollutants”.
- 2013. Funded by SAIPEM S.p.A. “Development of a practical model for Ecological Risk Assessment in freshwater areas and soils”.
- 2013-2015. Funded by Ministry of University, “Observation, experimental analyses and models for multiple impacts in coastal ecosystems (TETRIS)”, PRIN 2010-11.
- 2013-2016. Funded by Istituto Superiore per la Ricerca e la Protezione Ambientale ISPRA. “Ecotoxicological risk from dredging activities in the harbour of Leghorn”.
- 2013-2015 Funded by National Project for Antarctic Research PNRA. “Adaptation and vulnerability to climate change in key Antarctic species: role of lipid metabolism and oxyradical network”.
- 2016-2017 Funded by EDISON SpA. Monitoring the impact of offshore activities in the Adriatic Campo Rospo field.
- 2016-2018 Funded by National Project for Antarctic Research PNRA. “Vulnerability to global change and anthropogenic disturbance in key Antarctic species: modulation of antioxidant defences and lipid metabolism”
- 2016. Collaboration funded by CoNISMa in the framework of Marine Strategy Framework Directive (MSFD) for obtaining and elaborating data on Descriptor 8.1 (Concentrations of pollutants) and 8.2 (Effects of pollutants) for Adriatic Sea, Western Mediterranean and Eastern Mediterranean.
- 2017-2019. Funded by Istituto Superiore per la Ricerca e la Protezione Ambientale ISPRA “Assessment of ecological risk in harbour environments related to dredging activities and water currents”.
- 2013-actual. Scientific collaboration with Istituto Superiore per la Ricerca e la Protezione Ambientale (ISPRA) for the development of a risk assessment model and informatic tool (Sediqualssoft). The developed weighted criteria for data elaboration have been included in the new Italian law on characterization of quality in sediments during dredging operations (DM 173/2006).
- 2016-2019. Coordinator of the University Strategic Project for the Research Infrastructure “The “Aquarium” Laboratory: a new Research Infrastructure for marine aquaria and mesocosms facilities”. Funded by Università Politecnica delle Marche
- 2018-21. Coordinator of the project funded by Istituto Superiore per la Ricerca e la Protezione Ambientale, ISPRA for “Implementation of weighted criteria to elaborate chemical, biological and ecotoxicological data of harbor sediments”
- 2019-20. Coordinator of the project funded by EDISON SpA on “Monitoring the impact of offshore activities in the Adriatic Campo Rospo field” ().
- 2018-2022. Coordinator of the Project “Departments of Excellence” funded by Italian Ministry of Education, University and Research MIUR)
- 2019-2022. National Coordinator of the Project of Relevant National Interest PRIN “Exploring the fate of Mediterranean microplastics: from distribution pathways to biological effects (EMME)” funded by Italian Ministry of Education, University and Research MIUR.
- 2019-2020. Scientific collaboration with CNR-IAS within the project “International Center for Advanced Studies on Environmental, Ecosystem and Human Health - CISAS”.
- 2019. Ministry of Health. Ricerca Finalizzata “MicroPLASTICs in edible aquatic organisms: ecotoxicological effects, transfer of chemical and biological CONTaminants and susceptibility to bacteria

biodegradation (PLASTICON)”.

-2020-21. Scientific Collaboration with Harbor Authority of Central Adriatic Sea, Istituto Superiore per la Ricerca e la Protezione Ambientale-ISPRA, and Environmental Regional Agency ARPAM for a study on “Application of weighted criteria for classification of sediments in Ancona harbour area”.

- 2020-21. Scientific Collaboration with Zoological Station Anton Dohrn (Naples) for a research project on “Chemical and ecotoxicological hazards from sediments dredged in Salerno harbour and possible impacts following disposal activities”.

- 2021-2024. Research project “MicroPLASTICs in edible aquatic organisms: ecotoxicological effects, transfer of chemical and biological CONTaminants and susceptibility to bacteria biodegradation (PLASTICON)”, funded by Ministry of Health

- 2021-2024. Coordinator of the Research Project “Development of innovative technologies and circular economy to mitigate the impact of plastic pollution in rocky shores with elevated environmental value (SOLVING)”, funded by Fondazione Cariverona, Bando Habitat.

SUMMARY OF RESEARCH INTERESTS.

The main research interests are related to the use of marine organisms as bioindicators of chemical pollution and environmental disturbance, with particular emphasis to the influence of biological and environmental factors on the bioaccumulation of traditional and emerging compounds.

Biological effects induced by traditional and emerging pollutants are investigated at the molecular, cellular and biochemical levels through a wide panel of biomarkers reflecting the main detoxification and metabolization pathways or the occurrence of toxic alterations. These studies are carried out on fish and invertebrates and the main investigated biological responses include: destabilization of lysosomal system, modulation of cytochrome P-450 system, metallothioneins, acetylcholinesterases, peroxisomal proliferation, variations of antioxidant defenses and susceptibility to oxidative stress, assessment of total antioxidant capacity, peroxidative processes, genotoxicity and oxidative DNA damage, endocrine effects and vitellogenin gene induction. Modulation of these systems is investigated to highlight links, cross-talks and interactions between pre-transcriptional level, gene expression, translation and functional-catalytic levels.

These studies are applied to management and monitoring of coastal areas, potential transfer of pollutants and risk to human health, sustainable aquaculture and animal welfare, dredging and disposal activities, impact assessment of off-shore gas and oil production, environmental management of highly polluted areas, remediation of industrial areas, biological effects of global changes in temperate and polar latitudes, molecular mechanisms of adaptation to extreme environmental conditions.

The main scientific lines include:

- Intracellular generation of reactive oxygen species, antioxidant defences and oxidative stress in biological models.
- Mechanisms of toxicity and detoxification of chemicals at molecular, biochemical and cellular levels, particularly for lysosomal system, cytochrome P450, metallothioneins, acetylcholinesterase, peroxisomal proliferation, antioxidant system, lipid peroxidation, structural integrity and oxidative damages to DNA, endocrine effects and gene expression.
- Relationships between pre-transcriptional control, gene expression, post-transcriptional modification, catalytic activities and functional efficiency of cellular defences.
- Development of new cellular biomarkers, with emphasis on total antioxidant capacity, DNA oxidation, endocrine effects.
- Cellular mechanisms involved in adaptation or vulnerability to extreme conditions and symbioses.
- Cellular and tissue accumulation of trace metals, polycyclic aromatic hydrocarbons, halogenated compounds.
- Cellular effects of microplastics in marine organisms.
- Pharmaceuticals in the marine environment, bioaccumulation and molecular to functional effects in marine species.

- Chemical speciation and cellular metabolism of arsenic.
- Biomagnification, trophic transfer of pollutants and possible sanitary risk to humans.
- Use of molecular and cellular biomarkers in several scenarios of environmental impact assessment, such as management of dredged or polluted sediments, remediation, off-shore exploitation, petrol-chemical installations, coastal lagoons, aquaculture.
- Development and validation of risk assessment models.
- Use of bioindicators and cellular biomarkers for soil and air pollution, and for ecotoxicological effects of electromagnetic fields.
- Antioxidant potential of natural products, pharmaceuticals and biological fluids.

PUBLICATIONS OF PROF. FRANCESCO REGOLI

Author of approximately 230 peer-reviewed publications in international journals and book chapters. He has an *h* index= 71, i10-index= 181 with 17473 citations (from Google Scholar, <http://scholar.google.it/citations>); *h* index=61 with 12686 citations (from Scopus).

Peer-reviewed publications in international journals

1. -Mauri M., Orlando E., Nigro M., **Regoli F.** (1990). Heavy metals in Antarctic scallop *Adamussium colbecki*. Mar. Ecol. Prog. Ser. 67: 27-33
2. -**Regoli F.**, Orlando E.,Mauri M.,Nigro M., Alfinito Cognetti G. (1991). Heavy metal accumulation and calcium content in the bivalve *Donacilla cornea*. Mar. Ecol. Prog. Ser. 74: 219-224
3. -Nigro M., Orlando E., **Regoli F.** (1992). Ultrastructural localization of metal binding sites in the kidney of the Antarctic scallop *Adamussium colbecki* (Smith). Mar. Biol. 113: 637-643
4. -**Regoli F.**, Nigro M., Orlando E. (1992). Effects of copper and cadmium on the presence of renal concretions in the bivalve *Donacilla cornea*. Comp. Biochem. Physiol. 102C:189-192
5. -**Regoli F.** (1992). Lysosomal responses as a sensitive stress index in biomonitoring heavy metal pollution. Mar. Ecol. Prog. Ser. 84: 63-69
6. -**Regoli F.**, Orlando E. (1993). *Mytilus galloprovincialis* as bioindicator of lead pollution: biological variables and cellular responses. Sci. Total Envir. Supplement, Vol. 2: 1283-1292
7. -**Regoli, F.**, Orlando, E. (1994). Seasonal variation of trace metal concentrations (Cu, Fe, Mn, Pb, Zn) in the digestive gland of the Mediterranean mussel *Mytilus galloprovincialis*: comparison between a polluted and a non polluted site. Arch. Environ. Contam. Toxicol. 27(1):36-43
8. -**Regoli F.**, Orlando E. (1994). Bioavailability of "biologically detoxified" lead: risks arising from consumption of polluted mussels. Environ. Health Persp. 102, Supplement 3: 335-338
9. -**Regoli F.**, Orlando E. (1994). Accumulation and subcellular distribution of metals (Cu, Fe, Mn, Pb and Zn) in the mediterranean mussel *Mytilus galloprovincialis* during a field transplant experiment. Mar. Pollut. Bull. 28(10):592-600
10. -**Regoli F.**, Principato G. (1995). Glutathione, glutathione-dependent and antioxidant enzymes in mussel, *Mytilus galloprovincialis*, exposed to metals in different field and laboratory conditions: implications for a proper use of biochemical biomarkers. Aquat. Toxicol. 31:143-164
11. -**Regoli F.**, Saccucci F., Principato G. (1996). Mussel glyoxalase I as a possible marker for ecotoxicological studies: purification and preliminary characterization. Comp. Biochem. Physiol. 113C: 313-317
12. -**Regoli F.**, Principato G., Bertoli E., Nigro M., Orlando E. (1997). Biochemical characterization of the antioxidant system in the scallop *Adamussium colbecki*, as a sentinel organism for monitoring the Antarctic environment. Polar Biol. 17:251-258
13. - **Regoli F.**, Nigro M., Bertoli E., Principato G., Orlando E. (1997). Defenses against oxidative stress in the Antarctic scallop *Adamussium colbecki* and effects of acute exposure to metals. Hydrobiologia, 355: 139-144
14. -**Regoli F.** (1998). Trace metals and antioxidant mechanisms in gills and digestive gland of the

- Mediterranean mussel *Mytilus galloprovincialis*. Arch. Envir. Contam. Toxicol. 34(1): 48-63
15. - Winston G.W., Regoli F., Dugas A.J., Blanchard K.A., Fong J.H. (1998). A rapid gas chromatographic assay for determining oxyradical scavenging capacity of antioxidants and biological fluids. Free Radic. Biol. Med. 24(3): 480-493
 16. - Amiard-Triquet C., Rainglet F., Larroux C., **Regoli F.**, Hummel H., Margolina S. (1998). Metallothioneins in Arctic Bivalves. Ecotox. Envir. Saf. 41B: 96-102
 17. - **Regoli F.**, Nigro M., Orlando E. (1998). Lysosomal and antioxidant responses to metals in the antarctic scallop *Adamussium colbecki*. Aquat. Toxicol. 40: 375-392
 18. - **Regoli F.**, Winston G.W. (1998). Application of a new method for measuring the Total Oxyradical Scavenging Capacity in marine invertebrates. Mar. Envir. Res. 46(1-5): 439-442
 19. - **Regoli F.**, Winston G.W., Mastrangelo V., G. Principato, Bompadre S. (1998). Total Oxyradical Scavenging Capacity in mussel *Mytilus sp.* as a new index of biological resistance to oxidative stress. Chemosphere 37: 2773-2783
 20. - **Regoli F.**, Hummel H., Amiard-Triquet C., Larroux C., Sukhotin A. (1998). Trace metals and antioxidant enzymes in Arctic bivalve populations. Arch. Envir. Contam. Toxicol. 35(4): 594-601
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