

Curriculum of Prof. Francesco Regoli

GENERAL INFORMATION

Address:

Dipartimento di Scienze della Vita e dell'Ambiente,
Università Politecnica delle Marche
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Nationality:

Italian, born in Lucca (Tuscany) on 22-04-1964

Education:

1987. Laurea Degree in Biological Sciences at University of Pisa (110/110 cum laude)
1992. PhD in Marine Ecology at University of Pisa
1993. Post Doctoral position at University of Pisa
1995-97. Contract Professor in Environmental Biochemistry at University of Ancona
1998. Permanent Researcher at University of Ancona
2000- Associate Professor at Università Politecnica delle Marche, Ancona (Chair of Ecotoxicology; Biological and Ecological Risk Assessment; Environmental Impact Assessment)

Actual Position and Teaching Activities:

Associate Professor at Faculty of Sciences
Member of Doctorate School in Sciences (curriculum in Marine Biology and Ecology; curriculum in Environmental and Civil Protection)

Professor of the following Courses:

- Ecotoxicology (First Level Degree in Biological Sciences)
- Ecotoxicology and Environmental Impact Assessment (First Level Degree in Sciences of Environmental Control and Civil Protection)
- Methods in Ecotoxicology (Specialistic Degree in Marine Biology and Ecology)
- Biological and Ecological Risk Assessment (Specialistic Degree in Environmental Sustainability and Civil Protection)

Collaborations with Scientific Journals:

Editor-in-Chief of "Marine Environmental Research" (Elsevier)

Member of the **Editorial Board** of the following Scientific Journals:

- "Aquatic Toxicology" (Elsevier)
- "Archives of Environmental Toxicology and Chemistry" (Springer)
- "Chemistry and Ecology" (Taylor & Francis)
- "Journal of the Brazilian Society of Ecotoxicology" (SETAC-Brazil)

Member of the Scientific Panel of **SETAC-Italian Branch**.

He frequently reviews manuscript submitted for publication in the following journals:

Aquaculture International,	Aquatic Toxicology,
Archives Environmental Contamination Toxicology;	Biological Reviews;
Bulletin Environmental Contamination Toxicology;	Chemistry and Ecology,
Chemosphere	Comparative Hepatology
Comparative Biochemistry Physiology;	Environmental Health Perspectives;
Ecotoxicology and Environmental Safety	Environmental Pollution;
Estuarine Coastal and Shelf Science,	Environmental Toxicology Chemistry;
Hydrobiologia;	Marine Environmental Research;
Marine Pollution Bulletin;	Marine Ecology Progress Series;
Polar Biology	Polar Research
Science of the Total Environment	

Major research interests:

The main research interests are related to the use of marine organisms as bioindicators of chemical pollution, with particular emphasis to the influence of biological and environmental factors on the bioaccumulation of trace metals (and chemical speciation of arsenic), aromatic hydrocarbons and polychlorinated biphenyls.

Biological effects induced by 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.

These studies are applied to management and monitoring of coastal areas and brackish environments both at temperate and polar latitudes, impact assessment of off-shore gas and oil production, dredging and disposal activities, environmental management of highly polluted areas, remediation of industrial areas, potential transfer of pollutants and risk to human health, sustainable aquaculture and animal welfare, toxicity risk of electromagnetic fields and urban pollution.

He has a strong experience with the ecotoxicological approach in polar areas, with particular emphasis to characterization of key sentinel species to assess the early occurrence of biological disturbance of both natural and anthropogenic origin, the bioaccumulation and sensitivity to pollutants of cold-adapted organisms. From 1992 he is involved in the Italian National Antarctic Project, he participated in 6 Italian Expeditions to Antarctica and 2 International Expeditions to Arctic.

Mechanisms of adaptation to extreme environmental conditions and biological effects of global changes (i.e. UV radiation and raise of temperature) are investigated in Antarctic and Mediterranean organisms as well as biochemical adaptation of symbioses, storage of toxic metals as anti-predatory strategy and chemical speciation and biotransformation of arsenic compounds.

Oxyradical metabolisms and oxidative stress are investigated also to characterize the scavenging capacity and antioxidant efficiency of natural molecules, food and pharmaceuticals products and the involvement of reactive oxygen species in human pathologies.

List of more recent Peer-reviewed international publications (2006-actual)

He published more than 120 articles in peer reviewed international journals.

- Benedetti M., Ciaprini F., Piva F., Onorati F., Fattorini D., Notti A., Ausili A., **Regoli F.** (2012). A multidisciplinary weight of evidence approach toward polluted sediments: integrating sediment chemistry, bioavailability, biomarkers responses and bioassays. *Environ. Intern.* 38: 17-28

- Campanati A., Orciani M., Gorbi S., **Regoli F.**, Di Primio R., Offidani A. (2012). Effect of biologic therapies targeting TNF-alpha on cutaneous mesenchymal stem cells in psoriasis. *British Journal of Dermatology*, in press

- Alvarez-Suarez, J.M., Giampieri, F., Damiani, E., Astolfi, P., Fattorini, D., **Regoli, F.**, Quiles, J.L., Battino, M. (2012). Radical-scavenging Activity, Protective Effect Against Lipid Peroxidation and Mineral Contents of Monofloral Cuban Honeys. *Plant Foods for Human Nutrition*, 67:31–38

- Feline S., Caricato R., Cutignano A., Gorbi S., Lionetto M.G., Mollo E., **Regoli F.**, Terlizzi A. (2012). Subtle effects of biological invasions: cellular and physiological responses of fish eating the exotic pest *Caulerpa racemosa*. *Plos One* 7(6): e38763. doi:10.1371/journal.pone.0038763

- Gorbi S., Bocchetti R., Binelli A., Bacchiocchi S., Orletti R., Nanetti L., Raffaelli F., Vignini A., Accoroni S., Totti C., **Regoli F.** (2012). Biological effects of palytoxin-like compounds from *Ostreopsis cf. ovata*: A multibiomarkers approach with mussels *Mytilus galloprovincialis*. *Chemosphere*, 89: 623-632

- Ventura-Lima J., Ramos Bapstista P., Fattorini D., **Regoli F.**, Ferraz L., Machado de Carvalho L., Monserrat J.M. (2011). Accumulation, biotransformation and biochemical responses after exposure to arsenite and arsenate in the estuarine polychaeta *Laeonereis acuta* (Nereididae). *Environ. Sci. Pollut. Res.* 18:1270–1278

- Hegseth M.N., Camus L., Helgason L.B., Bocchetti R., Gabrielsen G.W., **Regoli F.** (2011).

Hepatic antioxidant responses related to levels of PCBs and metals in chicks of three Arctic seabird species. *Comp. Biochem. Physiol. C* 154: 28-35

- Hegseth M.N., Camus L., Gorbi S., Gabrielsen G.W., **Regoli F.**, (2011). Effects of exposure to halogenated organic compounds combined with dietary restrictions on the antioxidant defense system in herring gull chicks. *Sci. Total Environ.* 409 (14), pp. 2717-2724

- Hegseth M.N., **Regoli F.**, Gorbi S., Bocchetti R., Gabrielsen G.W., Camus L., (2011). Lysosomal and lipid-associated parameters in the livers of three species of arctic seabird chicks: Species differences and relationships with contaminant levels. *Mar. Pollut. Bull.* 62: 1652-1660

- **Regoli F.**, Giuliani M.E., Benedetti M., Arukwe A. (2011). Molecular and biochemical biomarkers in environmental monitoring: A comparison of biotransformation and antioxidant defence systems in multiple tissues. *Aquat. Toxicol.* 105S (2011) 56– 66

- Fattorini D., Notti A., Nigro M., **Regoli F.** (2010). Hyperaccumulation of vanadium in the Antarctic polychaete *Perkinsiana littoralis* as a natural chemical defence against predation. *Environ. Sci. Pollut. Res.* 17:220–228

- Galloway T., Lewis C., Dolciotti I., Johnston B.D., Moger J., **Regoli F.** (2010). Sublethal toxicity of nano-titanium dioxide and carbon nanotubes in a sediment dwelling marine polychaete. *Environ. Pollut.* 158: 1748-1755

- Zucchi S., Corsi I., Luckenbach T., Bard S.M., **Regoli F.**, Focardi S. (2010). Identification of five partial ABC genes in the liver of the Antarctic fish *Trematomus bernacchii* and sensitivity of ABCB1 and ABCC2 to cadmium exposure. *Environ. Pollut.* 158: 2746-2756

- Orciani M., Gorbi S., Benedetti M., Di Benedetto G., Mattioli-Belmonte M., **Regoli F.**, Di Primio R. (2010). Oxidative stress defence in human skin derived-mesenchymal stem cells versus human keratinocytes: different mechanism of protection and cell selection. *Free Radic. Biol. Med.* 49 (5), pp. 830-838

- Beolchini F., Rocchetti L., **Regoli F.**, Dell'Anno A. (2010). Bioremediation of marine sediments contaminated by hydrocarbons: experimental analysis and kinetic modelling. *Journal of Hazardous Materials* 182 (1-3), pp. 403-407

- Barucca M., Biscotti M.A., Forconi M., **Regoli F.**, Olmo E., Canapa A. (2010). Characterization and phylogenetic analysis of vitellogenin coding sequences in the Antarctic fish *Trematomus bernacchii*. *J. Exp. Zool. (Mol. Dev. Evol.)* 314 (8): 645-652.

- Guidi P., Frenzilli G., Benedetti M., Bernardeschi M., Falleni A., Fattorini D., **Regoli F.**, Scarcelli V., Nigro M. (2010). Antioxidant, genotoxic and lysosomal biomarkers in the fresh water bivalve (*Unio pictorum*) transplanted in a metal polluted river basin. *Aquat. Toxicol.* 100: 75-83.

- Benedetti M., Nigro M., **Regoli F.** (2010). Characterisation of antioxidant defences in three Antarctic notothenioid species from Terra Nova Bay (Ross Sea). *Chem. & Ecol.* 26: 305-314.

- Galetta F., Franzoni F., Cervetti G., **Regoli F.**, Fallahi P., Tocchini L., Carpi A., Antonelli A., Petrini M., Santoro G. (2010). In vitro and in vivo study on the antioxidant activity of dexrazoxane. *Biomed. Pharmacother.* 64: 259-263

- Pisanelli B., Benedetti M., Fattorini D., **Regoli F.** (2009). Seasonal and inter-annual variability of DNA integrity in mussels *Mytilus galloprovincialis*: a possible role for natural fluctuations of trace metal concentrations and oxidative biomarkers. *Chemosphere* 77: 1551–1557

- Ventura-Lima J., Fattorini D., **Regoli F.**, Monserrat J.M. (2009). Effects of different inorganic arsenic species in *Cyprinus carpio* (Cyprinidae) tissues after short-time exposure: bioaccumulation, biotransformation and biological responses. *Environ. Poll.* 157: 3479–3484

- Gorbi S., Benedetti M., Virno Lamberti C., Pisanelli B., Moltedo G., **Regoli F.** (2009). Biological effects of diethylene glycol (DEG) and produced waters (PWs) released from off-shore activities: a multi-biomarker approach with the sea bass *Dicentrarchus labrax*. *Environ. Poll.* 157: 3166-3173

- Ventura-Lima J., de Castro M.R., Acosta D., Fattorini D., **Regoli F.**, de Carvalho L.M., Bohrer D., Geracitano L.A., Barros D.M., Marins L.F.F., da Silva R.S., Bonan C.D., Bogo M.R., Monserrat J.M. (2009). Effects of arsenic exposure on the antioxidant status of gills of the zebrafish *Danio rerio* (Cyprinidae). *Comp. Biochem. Physiol. C* 149: 538-543

- Benedetti M., Fattorini D., Martuccio G., Nigro M., **Regoli F.** (2009). Interactions between trace metals (Cu, Hg, Ni, Pb) and 2,3,7,8-tetrachlorodibenzo-p-dioxin in the Antarctic fish *Trematomus*

- bernacchii*: oxidative effects on biotransformation pathway. Environ. Toxicol. Chem. 28: 818–825
- Bocchetti R., Fattorini D., Pisanelli B., Macchia S., Oliviero L., Pilato F., Pellegrini D., **Regoli F.** (2008). Contaminant accumulation and biomarkers responses in caged mussels, *Mytilus galloprovincialis*, to evaluate bioavailability and toxicological effects of remobilized chemicals during dredging and disposal operations in harbour areas. Aquat. Toxicol. 89: 257-266
 - Frenzilli G., Falleni A., Scarcelli V., Del Barga I., Pellegrini S., Savarino G., Mariotti V., Benedetti M., Fattorini D., **Regoli F.**, Nigro M. (2008). Cellular responses in the cyprinid *Leuciscus cephalus* from a contaminated 1 freshwater ecosystem. Aquat. Toxicol. 89 (2008) 188–196
 - Fattorini D., Notti A., Di Mento R., Cicero AM., Gabellini M., Russo A., **Regoli F.** (2008). Seasonal and inter-annual variations of trace metals in mussels from the Adriatic Sea: a regional gradient for arsenic and implications for monitoring the impact of off-shore activities. Chemosphere 72: 1524-1533
 - Bocchetti R., Virno Lamberti C., Pisanelli B., Razzetti E.M., Maggi C., Catalano B., Sesta G., Martuccio G., Gabellini M., **Regoli F.** (2008). Seasonal variations of exposure biomarkers, oxidative stress responses and cell damages in the clams, *Tapes philippinarum*, and mussels, *Mytilus galloprovincialis*, from Adriatic sea. Mar. Environ. Res. 66: 24-26
 - Ausili A., Gabellini M., Cammarata G., Fattorini D., Benedetti M., Pisanelli B., Gorbi S., **Regoli F.** (2008). Ecotoxicological and human health risk in a petrochemical district of southern Italy. Mar. Environ. Res. 66: 215-217
 - Sandrini J.Z., Ventura Lima J., **Regoli F.**, Fattorini D., Notti A., Marins L.F., Monserrat J.M. (2008). Antioxidant responses in the nereidid *Laeonereis acuta* (Annelida, Polychaeta) after cadmium exposure. Ecotox. Environ. Saf. 70: 115-120
 - Gorbi S., Virno Lamberti C., Notti A., Benedetti M., Fattorini D., Moltedo G., **Regoli F.** (2008). An ecotoxicological protocol with caged mussels *Mytilus galloprovincialis*, for monitoring the impact of an offshore platform in the Adriatic sea. Mar. Environ. Res. 65:34-49
 - Canesi L., Lorusso L.C., Ciacci C., Betti M., **Regoli F.**, Poiana G., Gallo G., Marcomini A. (2007). Effects of blood lipid lowering pharmaceuticals (bezafibrate and gemfibrozil) on immune and digestive gland functions of the bivalve mollusc, *Mytilus galloprovincialis*. Chemosphere 69: 994-1002
 - Benedetti M., Martuccio G., Fattorini D., Canapa A., Barucca M., Nigro M., **Regoli F.** (2007). Oxidative and modulatory effects of trace metals on metabolism of polycyclic aromatic hydrocarbons in the Antarctic fish *Trematomus bernacchii*. Aquat. Toxicol. 85: 167-175
 - Di Bello D., Vaccaio E., Longo V., **Regoli F.**, Nigro M., Benedetti M., Gervasi PG, Pretti C. (2007). Presence and inducibility by β -Naphthoflavone of CYP 1A1, CYP 1B1, UDP-GT, GST and DT-Diaphorase enzymes in *Trematomus bernacchii*, an Antarctic fish. Aquatic Toxicol. 84: 19-26
 - Notti A., Fattorini D., Razzetti E., **Regoli F.** (2007). Bioaccumulation and biotransformation of arsenic in the Mediterranean polychaete *Sabella spallanzanii*: experimental observations. Environ. Toxicol. Chem. 26: 1186-1191
 - Ventura-Lima J., Sandrini JZ., Ferreira Cravo M., Piedras FR., Moraes TB., Fattorini D., Notti A., **Regoli F.**, Geracitano LA., Marins LFF., Monserrat JM. (2007). Toxicological responses in Nereidid *Laeonereis acuta* (Annelida, Polychaeta) after arsenic exposure. Env. Int. 33: 559-564
 - Canapa A., Barucca M., Gorbi S., Benedetti M., Zucchi S., Biscotti M.A., Olmo E., Nigro M., **Regoli F.** (2007). Vitellogenin gene expression in males of the Antarctic fish *Trematomus bernacchii* from Terra Nova Bay (Ross Sea): a role for environmental cadmium? Chemosphere 66: 1270-1277
 - Fattorini D., Notti A., **Regoli F.** (2006). Characterization of arsenic content in marine organisms from temperate, tropical and polar environments. Chem. & Ecol. 22: 405-414
 - Machella N., Battino M., Pisanelli B., **Regoli F.** (2006). Influence of the SCGE protocol on the amount of basal DNA damage detected in the Mediterranean mussel, *Mytilus galloprovincialis*. Environ. Mol. Mutagen. 47: 579-586
 - Bocchetti R., **Regoli F.** (2006). Seasonal variability of oxidative biomarkers, lysosomal parameters, metallothioneins and peroxisomal enzymes in the Mediterranean mussel *Mytilus galloprovincialis* from Adriatic Sea. Chemosphere 65: 913-921
 - Nigro M., Falleni A., Del Barga I., Scarcelli V., Lucchesi P., **Regoli F.**, Frenzilli G. (2006). Cellular biomarkers for monitoring estuarine environments: transplanted versus native mussels. Aquat. Toxicol. 77: 339-347

- Sandrini J.Z., **Regoli, F.**, Fattorini, D., Notti A., Inácio A.F., Linde-Arias A.R., Laurino J., Bainy A.C.D., Marins L.F.F., Monserrat, J.M. (2006) Short-term responses to cadmium exposure in the estuarine polychaete *Laeonereis acuta* (Polychaeta, Nereididae): sub cellular distribution and oxidative stress generation. *Environ. Toxicol. Chem.* 25: 1337-1344
- Barucca M., Canapa A., Olmo E., **Regoli F.** (2006). Analysis of vitellogenin gene induction as a valuable biomarker of estrogenic exposure in various Mediterranean fish species. *Environ. Res.* 101: 68-73
- Franzoni F., Colognato R., Galetta F., Laurenza I., Barsotti M., Di Stefano R., Bocchetti R., **Regoli F.**, Carpi A., Balbarini A., Migliore L., Santoro G. (2006). An in vitro study on the free radical scavenging capacity of ergothioneine: comparison with reduced glutathione, uric acid and trolox. *Biomed. Pharmacother.* 60: 453-457