

Sergio Stefanni



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Current Position: Ricercatore III° livello, Research Fellow

Current Affiliation:

Dept. of Biology and Evolution of Marine Organisms, Stazione Zoologica “Anton Dohrn”, Napoli (Italy)

Education/Training/Experience

Institute and Location	Degree/Function	Year	Field of Study
Dept of Biology, University of Genova, Italy	Laurea (M.Sc)	1992	Biological sciences
School of Biological Science, University of Bristol, UK	PhD	2001	Marine Biology
IMAR/DOP, Dept of Oceanography and Fisheries University of the Azores, Portugal	Postdoctoral researcher	2001-2007	Molecular phylogeny and population genetics of marine organisms
IMAR/DOP, Dept of Oceanography and Fisheries University of the Azores, Portugal	Research Fellow	2008-2013	Molecular phylogeny and population genetics of marine organisms
CNR – ISSIA, Genova, Italy	Marie Curie Research Fellow	2013-2015	Metabarcoding of zooplankton and development of an autonomous biosampler

Appointments and awards

Since 2014: national scientific qualification as associate professor in Zoology (BIO/05) in Italian Universities. (Valid until 2020)

- 2014: awarded of an ESF Short Visit Grant within the framework of the ESF Activity 'Conservation Genomics: Amalgamation of Conservation Genetics and Ecological and Evolutionary Genomics' to collaborate with Prof. V. Savolainen at the Imperial College of London (UK).
- 2013: awarded of a grant within the RITMARE Flagship Project call “BANDIERA – Best Action for National Development of International Expert Research Activities” - Co-funded by FP7 Marie Curie Actions - “People” specific programme (EC Contract n. 600407)
- 2013: successful with application project “TALENTS UP for an International House (TALENTS UP)”, co-funded by AREA, by the European Commission in the framework of the 7th Framework Programme for the period 2007-2013 – “People” specific programme – FP7 Marie Curie Actions – Co-Funding of Regional, National and International Programmes (G.A. n. 600204) and with a financial contribution of the Regional Authority of Friuli Venezia Giulia.
- 2007: awarded of a grant from FCT (Portuguese Foundation for Science and Technology) to support part of the cost for attending the Evolution2007 meeting held in Christchurch, NZ, in June 16-20.
- 2007: awarded of a grant from DRCT (Ministry for Science and Technology, Azores, Portugal) to support part of the cost for attending the Evolution 2007 meeting held in Christchurch, NZ, in June 16-20.
- 2006: awarded of a grant from FLAD (Luso-American Foundation) to support part of the cost for attending the Evolution 2006 meeting held at Stony Brook University, New York (USA) in June 23-27.
- 2006: awarded of a grant from FCT (Portuguese Foundation for Science and Technology) to support part of the cost for attending the Evolution 2006 meeting held at Stony Brook University, New York (USA) in June 23-27.
- 2004: awarded of a three years post-doctorate grant on “molecular population genetics” (ref SFRH/BPD/14981/2004) offered by the Portuguese Foundation for Science and Technology (MCT/FCT) and the centre of IMAR (Institute of Marine Research) at the University of the Azores, to be spent at the Dept. of Oceanography and Fisheries, IMAR, based in Horta, Azores.
- 2003: awarded of a grant for access to the facilities at Kristineberg Marine Station, Fiskebäckskil, Sweden, under the EU “Transnational Access to Research Infrastructures” (ARI) scheme.
- 2001: awarded of a three years post-doctorate grant on “molecular population genetics” (ref IMAR/FCT – PDOC – 002/2001 – MoleGen) offered by the Portuguese Foundation for Science and Technology (MCT/FCT) and the centre of IMAR (Institute of Marine Research) at the University of the Azores, to be spent at the Dept. of Oceanography and Fisheries, IMAR, based in Horta, Azores.
- 1998: awarded of a grant from the Systematic Association of the UK to support part of my project on the study of intraspecific variation of the control region in the mt-DNA in *Pomatoschistus minutus*.
- 1998: awarded of a grant to cover travelling expenses from the Alumni Foundation in the UK, and funds for accommodation from the S.I.C.B. (Society for Integrative and Comparative Biology), to present my preliminary results of my PhD project at the annual conference organised by the S.I.C.B., in Boston (USA).
- 1996: awarded of a grant from the University of Padova (Italy) to support my first year of PhD.
- 1995: awarded of a three months grant offered by the University of Venice (Italy) to work at the University of Bristol (UK) with Prof. P.J. Miller. I have been undertaken a comparative study by electrophoretic analysis, morphometrics, and meristics of two different populations of *Pomatoschistus minutus* (Gobiidae, Teleostei), from the Adriatic Sea (Venezia) and Atlantic (Plymouth).

Involvement in funded International Projects

ReDEco “Regional Drivers of Ecosystem Change and its Influence on Deep-Sea Populations in the Mediterranean”. Scope: Understand effects of climate change on deep-sea ecosystems in relation to regional key factors including impact of large-scale episodic events and other anthropogenic impacts. Funding source: Under the MarinERA programme funded by the EU FP6 ERA-NET Scheme (2004-2008) (ref. MARIN-ERA/MAR/0003/2008). Duration: 3 years. Overall budget: 924,753 Euros (Portugal: 207,720 Euros). Project Leader was Dr Nikolaos Lampadariou from Greece. I was the representative leader for Portugal and this project also involved Spain and France (completed)

HERMIONE “Hotspot Ecosystem Research and Man's Impact On European Seas”. Scope: Designed to make a major advance in the knowledge of the functioning of deep-sea ecosystems and their contribution to the production of goods and services. Funding source: Under the European Commission's Framework (FP7-ENV-2008-1 Contract No. 226354). Duration: 3 years. Overall budget: 10,884,787 Euros. Represented by a consortium of 38 partners and coordinated by Phil Weaver, University of Southampton, UK. My contribution to the project was the cross-cutting theme 4 (CCT4: Biogeography and Demographic history of the Portuguese dogfish *Centroscymnus coelolepis*) (completed)

CONDOR “Observatory for long-term study and monitoring of Azorean seamount ecosystems”. Scope: Improving our understanding and the quality of advice for the management of seamounts, through the case study of the Condor seamount, in the Azores. Funding source: Co-financed by the EEA Grants Financial Mechanism, Iceland, Liechtenstein and Norway (proposal No. PT0040). Duration: 3 years. Overall budget: 716,198 Euros. Principal investigator is Dr Gui Menezes (IMAR/DOP, Azores) and I was responsible for the tasks involving genetic components (completed)

DEECON “Unravelling population connectivity for sustainable fisheries in the Deep Sea”. Source: Multidisciplinary approach to unravel population structure and population connectivity in economically important deep-sea fish species. Funding source: approved by the European Science Foundation (ESF) under the EUROCORES programme (proposal No 06-EuroDEEP-FP-008 & SFRHEuroDEEP/0002/2007) Duration: 3 years. Overall budget: 835,000 Euros (Portugal: 166,012 Euros). Project Leader was Sir Nils Christen Stenseth from Norway. I was the representative leader for Portugal and this project also involved the collaboration with Ireland and UK (completed)

BIODEF “Biodiversity of defence molecules in marine invertebrates: looking for new biological factors with biomedical applications”. Scope: Characterizing novel molecules participating in innate immune reactions against microorganisms. Funding source: Luso-American Foundation (FLAD). Duration: 1 year. Overall budget: 50,000 Euros. Project coordinated by Dr. R. Bettencourt (IMAR/DOP, Azores) and the project sees the involvement of myself and Dr. B. Allam from the Marine Science Research Centre, SUNY Stony Brook University, NY (USA). My contribution to the project was represented by the implementation of molecular tools for screening molecules (completed)

MarBEF, a network of excellence “Marine Biodiversity and Ecosystem Functioning” funded by the European Union (contract No GOCE-CT-2003-505446) within the Sustainable development, global change and ecosystems RTD Programme and consisting of 83 European marine institutes, is a platform to integrate and disseminate knowledge and expertise on marine biodiversity, with links to researchers, industry, stakeholders and the general public (completed)

OASIS “Oceanic Seamounts: An Integrated Study”. Scope: A holistic approach to yield an advanced understanding of the processes characterizing seamount ecosystems. Funding source: European Commission, under the fifth Frame Programme (contract No EVK3-CT-2002-00073-OASIS). Duration: 3 years. Overall budget: 2,813,849 Euros. Project coordinated by Bernd Christiansen (University of Hamburg, Germany) and my contribution was included in the work package aiming to explore genetic diversity of marine organisms from Atlantic seamounts (completed)

MAR-ECO “Mid-Atlantic Ecosystem Project, patterns and processes of the ecosystems of the northern mid-Atlantic” coordinated by the University of Bergen (Norway) and part of the The Census of Marine Life pilot program (CoML) funded by Alfred P. Sloan Foundation. My contribution to the project was included in the work package aiming to explore population structure of fish and sharks from Atlantic seamounts (completed)

Involvement in funded National Projects

LIFEWATCH “Detection of alien species from gut contents of two commercially important fish in the Adriatic Sea and how food chain is affected”. Funding provided by Bio4IU - multidisciplinary infrastructure for study and enhancement of marine and terrestrial Biodiversity in the perspective of the "Innovation Union" aiming to cover up to 20K € costs for Illumina MiSeq sequencing at the IBBE-CNR of Bari (Italy) (ongoing)

METAFISHCODE “Fish genetic diversity and meta-species phylogeography at global and regional scales: implications for fisheries management”. Funding source: FCT, Portugal, (PTDC/MAR/101795/2008). Duration: 3 years. Overall budget: 109,854 Euros. Project leader was Filipe Costa, University of Minho, and I represented the partnership with the Azores (completed)

BIODEEPSEA “Biodiversity of defense, stress-related and environmental molecular responses in deep-sea organisms from the Azores: looking for new biological factors with a potential use in marine biotechnology”. Funding source: Regional Government of the Azores (Dept of Science and Technology) to launch research at IBBA (Institute of Biotechnology and Biomedicine of the Azores). Duration: 1 years. Overall budget: 50,000 Euros. I was responsible for a component of the project aiming to screen molecules with potential value for biotechnology from deep sea organisms. (completed)

Cruises experience

2001-2013: taking part to yearly cruises onboard of the R/V “Arquipelago” for demersal and deep sea fishery campaigns.

May 29–June 15, 2009: took part to the BIOFun Trans-Med cruise on board of the R/V “Sarmiento de Gamboa” sampling for deep sea fishes and sharks.

July 3-13, 2008: organised and coordinated the DEECON cruise 2008, a fishing campaign on board of the oceanographic ship "R/V Arquipelago" and funded by FCT (Foundation for Science and Technology) aiming to deep-sea fishery on four seamounts located west of the Azores: Voador, Cavala, Monte Alto and Gigante.

July 3-13, 2007: organised and coordinated the DEECON cruise 2007, a fishing campaign on board of the oceanographic ship R/V “Arquipelago" and funded by FCT (Foundation for Science and Technology) aiming to deep-sea fishery on four seamounts located south of the Azores: Atlantis, Plato, Irving and Great Meteor.

October 1999: took part to the D243/99 campaign organised by Dr. J.C. Partridge (University of Bristol, UK) on board of the R/V “Discovery" with the project of collecting deep sea organisms offshore western Africa.

Courses/Workshops (organised)

November, 2015: “introductory course on comparative methods in evolutionary biology” held at the Dept of Life Sciences, University of Trieste, Italy.

September, 2004: 1^o Workshop in Marine Molecular Phylogenetics: “Use of Molecular Markers for the Study of Marine Biodiversity” held at the “Centro do Mar”, Azores.

Courses/Workshops (attended)

June, 2015: Workshop: “RADseq data analyses”, held in Edolo, Italy

May, 2015: Workshop: Population Structure Inference in R, held in Faro, Portugal

March, 2015: Workshop: Biodiversity in the Mediterranean Basin, held in Koper, Slovenia.

November, 2014: Workshop: bilateral exchange between researchers of Italy (National Research Council) and Korea (National Research Foundation) held at KIOST (Korean Institute of Ocean Science & Technology) in Geoje, Korea.

May, 2013: Workshop on population biology and population genetics, UZI Spring School, Venice, Italy.

March, 2012: Introductory course on bioinformatics held at the Gulbenkian Institute of Science, Oeiras, Portugal

November, 2011: Workshop on Biogeography and Phylogeny of Atlantic Fish organised by ISPA and CCMAR and held in Lisbon, Portugal.

March, 2010: course PopABC “Approximate Bayesian Computation” organised CCMAR (University of the Algarve, Portugal) and held by João Sollari Lopes.

May, 2007: International advance course “Practical approaches to Ecotoxicogenomics” organised by the University of Aveiro, Portugal.

May, 2005: II Molecular Evolution workshop organised by CCMAR (University of the Algarve, Portugal) and held by David Swofford, Gavin Naylor and Mark Holder.

Students’ Supervision

PhD supervisor of three Ph.D. students (University of the Azores, Portugal), one PhD intership and two Postdoctoral researchers (IMAR/DOP, University of the Azores, Portugal).

Summary of past professional experience

2013-2015: Marie Curie Research Fellow at CNR-ISSIA, Genova (Italy) under the RITMARE project. During this period I was involved in the molecular screening of marine zooplankton using high throughput sequencing technology as well as contributing to the development of an autonomous biosampler.

2008-2013: research fellow at IMAR/DOP, Dept of Oceanography and Fisheries, University of the Azores (Portugal). I was hired by IMAR/DOP to set up the molecular laboratory facilities and start a new line of research on phylogeny, phylogeography and population structure of marine organisms. During this period I carried out studies on marine organisms, mainly fish and sharks from coastal to the deep-sea. The focus of my research was addressed to understanding speciation processes, contribute to the knowledge of biodiversity and conservation, and provide molecular tools for fishery management. My research was carried out thanks to several high profile European projects granted for funding during these years. My teaching experience included lecturing "evolution and phylogeny" and "population genetics" classes with a compendium of practical laboratory classes on DNA extraction, PCR amplification and sequence alignment. I was also involved in supervision of undergrads, PhD students and postdoctoral fellows.

February-March 2006: spent a period of 6 weeks in the molecular lab at the Marine Science Research Centre, SUNY Stony Brook University (USA) collaborating with Dr B. Allam with the objective of detecting genetic variability among Quahog Parasite Unknown (QPX) strains.

2001-2007: postdoctoral researcher for the position of “molecular phylogeny and population genetics” at the University of the Azores, Dept of Oceanography and Fisheries under the supervision of Dr. R.S. Santos.

1999-2001: contracted by Brown Partworks Ltd, London (UK), for revising and updating articles on fish for the new edition of the Marshall Cavendish International Wildlife Encyclopedia, published in the USA. For the same company I was also involved in writing the fish section for the 10 volumes series "Aquatic Life" that was published in the USA.

1997-2000: demonstrator for the practical laboratories for undergraduates in their 1st year: "taxonomy and classification of the chordate" and "fish dissection"; and for the ones in their 2nd year: "evolutionary biology" and "aquatic ecology" at the University of Bristol (UK).

29 May 1998: invited to a private meeting with His Majesty Akihito Emperor of Japan, expert in systematics of Japanese gobies, organised by the Linnean Society of London (UK).

From November 1995 to March 1996: granted with a fellowship from the University of Venice (Italy) to spend at the University of Bristol (UK) under the supervision of Prof. P.J. Miller

From June 23 to July 22, 1995: participated in the comparative study of fish populations between “Parc National de l’Archipelago de Cabrera” (Mallorca) and the “Isla de el Toro” (Mallorca) in collaboration with Josep Coll from the University of the Balearic Islands (Spain).

1994-1997: collaborated on a three years project funded by the Ministero delle Risorse Agricole, Alimentari, Forestali and directed by Prof. P. Torricelli from the University of Venice (Italy), to estimate fish eggs and larvae in the south part of Venetian lagoon and neighbour sea area.

1993-1996: collaborated on projects on fish population structure in the Venetian lagoon's fishes using fishery data and visual census techniques for marine protected areas under the supervision of Dr. A. Marconato from the University of Padova (Italy).

1993-1996: collaborated with AQUAPROGRAM srl (Vicenza) for the study of applied ecology in fresh water and joining several field work expeditions.

Publications

Google Scholar - All citations: 477; h-index: 13; i10-index: 16

List of publications of the last 10 years (2006-present):

- Ciezarek A.G., Dunning L.T., Jones C.S., Noble L.R., Humble E., **Stefanni S.**, Savolainen V. 2016. Evolution of glycogenin-1 gene underlies endothermy in sharks and tunas. *Genome Biology and Evolution* (submitted)
- Catarino D, Stanković D, Menezes G, Stefanni S, 2016. Insights into the genetic structure of *Chimaera monstrosa* (Holocephali) from the Atlantic and Mediterranean Sea. *Journal of Fish Biology* (submitted)
- Catarino D., Knutsen H., Veríssimo A., Olsen E.M., Jorde P.E., Menezes G., Sannæs H., Company J.B., Neat F., Danovaro R., Dell’Anno A., Rochowski B., **Stefanni S.** 2015. The Pillars of Hercules as a bathymetric barrier to gene-flow promoting isolation in a global deep-sea shark (*Centroscymnus coelolepis*). *Molecular Ecology* 24: 6061-79

- Stefanni S.**, Castilho R., Sala-Bozano M., Robalo J.I., Francisco S.M., Santos R. S., Marques N., Brito A., Almada V.C., Mariani S. 2015. Establishment of a coastal fish in the Azores: recent colonisation or sudden expansion of a relict population? *Heredity* 115: 527-537
- Stefanni S.**, Bettencourt R., Pinheiro M., Bongiorni L., Pallavicini A. 2014. Transcriptome of the Deep-Sea Black Scabbardfish, *Aphanopus carbo* (Perciformes: Trachiuiridae): Tissue-Specific Expression Patterns and characterization of depth-related functional genes. *International Journal of Genomics* 2014: Article ID 267482, 1-21. doi:10.1155/2014/267482
- Francisco S.M., Robalo J.I., **Stefanni S.**, Almada V.C. 2014. Phylogeny of the genus *Gaidropsarus* (Gadidae, Teleostei). *Journal of Fish Biology* 85: 473-487
- Longmore C., Trueman C.N., Neat F., Jorde P.E., Knutsen H., **Stefanni S.**, Catarino D., Milton J.A., Mariani S. 2014. Oceanic scale connectivity and life cycle reconstruction in a deep-sea fish; *Aphanopus carbo*. *Canadian Journal of Fisheries and Aquatic Sciences* 71: 1-12
- Monteiro J.G., Costa C.F., Gorch-Lira K., Fitt W.K., **Stefanni S.**, Sassi R., Santos R.S., LaJeunesse T.C. 2013. Ecological and biogeographic implications of *Siderastrea* symbiotic relation with *Symbiodinium* sp. C46 in Sal Island (Cape Verde, East Atlantic Ocean). *Marine Biodiversity* 43: 261-271
- Catarino D., **Stefanni S.**, Menezes G. 2013. Genetic diversity and length distribution of the Offshore Rockfish (*Pontinus kuhlii*) from three Atlantic archipelagos and seamounts. *Deep-Sea Research Part II* 98: 160-169
- Cunha R.L., Madeira C., Coscia I., Mariani S., **Stefanni S.**, Castilho R. 2012. Ancient mitochondrial DNA divergence in the trans-oceanic deep-sea shark *Centroselachus crepidater*. *PlosONE* 7(11): e49196. DOI:10.1371/journal.pone.0049196
- Psomadakis P.N., **Stefanni S.**, Merella P., Ferrando S., Amato A., Vacchi M. 2012. Additional records of *Beryx splendens* (Osteichthyes: Berycidae) from the Mediterranean Sea, with notes on molecular phylogeny and parasites. *Italian Journal of Zoology* 79: 111-
- Biscoito M., Delgado J., González J.A., **Stefanni S.**, Tuset V.M., Isidro E., García-Mederos A. and Carvalho D. 2011. Morphological identification of two sympatric species of Trachiuiridae, *Aphanopus carbo* and *A. intermedius*, in NE Atlantic. *Cybium* 35: 19-32
- Knutsen H., Catarino D., Sannæs H., **Stefanni S.** 2009. Development of eleven microsatellite loci in the deep-sea black scabbardfish (*Aphanopus carbo*). *Conservation Genetics Resources* DOI 10.1007/s12686-009-9021-z
- Knutsen H., Jorde P.E., Sannæs H., Hoelzel A.R., Bergstad O.A., **Stefanni S.**, Johansen T. and Stenseth N.C. 2009. Bathymetric barriers promoting genetic structure in the deepwater demersal fish tusk (*Brosme brosme*). *Molecular Ecology* 18: 3151-3162
- White T.A., **Stefanni S.**, Stamford J. and Hoelzel A.R. 2009. Unexpected panmixia in a long-lived, deep-sea fish with well-defined spawning habitat and relatively low fecundity. *Molecular Ecology* 18: 2563-2573
- Stefanni S.**, Bettencourt R., Knutsen H. and Menezes G. 2009. Rapid PCR-RFLP method for discrimination of the two Atlantic cryptic deep-sea species of scabbardfish. *Molecular Ecology Resources* 9: 528-530
- Francisco S.M., Congiu L., **Stefanni S.**, Castilho R., Brito A., Ivanova P.P., Levy A., Cabral H., Kiliass G. and Almada V.C. 2008. Phylogenetic relationships of the north-eastern Atlantic and Mediterranean forms of *Atherina* (Pisces, Atherinidae). *Molecular Phylogenetics and Evolution* 48: 782-788

- Domingues V.S., **Stefanni S.**, Brito A., Santos R.S. and Almada V.C. 2008. Phylogeography and demography of the Blenniid *Parablennius parvicornis* and its sister species *P. sanguinolentus* from the northeastern Atlantic Ocean and the western Mediterranean Sea. *Molecular Phylogenetics and Evolution* 46: 397-402
- Domingues V.S., Faria C., **Stefanni S.**, Santos R.S., Brito A. and Almada V.C. 2007. Genetic divergence in the Atlantic-Mediterranean Montagu's blenny *Coriphoblennius galerita* (Linnaeus 1758) revealed by molecular and morphological characters. *Molecular Ecology* 16: 3592-3605
- Stefanni S.**, Porteiro F., Bettencourt R., Gavaia P. and Santos R.S. 2007. Molecular insights indicate that *Pachycara thermophilum* (Geistdoerfer, 1994) and *P. saldanhai* (Biscoito and Almeida, 2004) (Perciformes: Zoarcidae) from the Mid-Atlantic Ridge are synonymous species. *Molecular Phylogenetics and Evolution* 45: 423-426
- Bettencourt R., Roch P., **Stefanni S.**, Rosa D., Colaço A., and Santos R.S. 2007. Deep sea immunity: unveiling immune constituents from the hydrothermal vent mussel *Bathymodiolus azoricus*. *Marine Environmental Research* 64: 108-127
- Stefanni S.** and Knutsen H. 2007. Phylogeography and demographic history of the deep-sea fish, *Aphanopus carbo* (Lowe, 1839), in the NE Atlantic: vicariance followed by secondary contact or speciation? *Molecular Phylogenetics and Evolution* 42: 38-46
- Stefanni S.**, Domingues V., Bouton N., Santos R.S., Almada F., and Almada V., 2006. Phylogeny of the shanny, *Lipophrys pholis*, from the NE Atlantic using mitochondrial DNA markers. *Molecular Phylogenetics and Evolution* 39: 282-287