europass Curriculum vitae

PERSONAL INFORMATION

Miriam Ruocco

Via Baccoli 3E, 80061 Massa Lubrense (Italy)

(+39) 3391882355

miriam.ruocco2@unibo.it; miriamruocco86@gmail.com;

https://scholar.google.it/citations?user=bK4EzF0AAAAJ&hl=it&oi=ao

https://www.researchgate.net/profile/MiriamRuocco

Sex Female | Date of birth 23 Sep 1986 | Nationality Italian

PERSONAL STATEMENT

Research interests: Molecular Ecology, Marine Ecology, Population Genetics, Molecular Biology, Evolutionary Ecology, Ecological Epigenetics.

ASN (Abilitazione Scientifica Nazionale) **05/C1 (Ecology)** – from 10/3/2025 to 10/03/2037.

ASN (Abilitazione Scientifica Nazionale) **05/A1 (Botany)** – from 10/3/2025 to 10/03/2037.

WORK EXPERIENCE

25 Sept 2023 – to now

Teaching activity: GLOBAL CHANGE OF HUMAN-MODIFIED ECOSYSTEMS; GLOBAL CHANGE AND EVOLUTION OF HUMAN-MODIFIED ECOSYSTEMS (6 CFU) 05/C1 Ecology

(English language) - Second cycle degree programme (LM) in Sciences and Management of Nature, Alma Mater Studiorum - Università di Bologna (Italy)

6 Apr 2023 – 6 Sept 2023

Maternity leave

22 Feb 2023 – to now

Fixed-term Researcher (*RTDA - PNRR*)

Alma Mater Studiorum - Università di Bologna – Fano Marine Center (FMC)
Department of Biological, Geological, and Environmental Sciences (BiGeA)
Academic discipline: 05/C1 Ecology. RTDA-PNRR (NBFC, Spoke 2) - research project: "Interazioni tra cambiamento climatico, inquinanti emergenti ed effetti sulla biodiversità marina".

15 May 2022 – 14 June 2022

Visiting Scientist

Tjärnö Marine Laboratory - Göteborg University, Tjärnö (Sweden)

Project: EPI-DIVERSEA - "**The role of EPIgenetic DIVERsity in SEAgrass ecosystems**"

Main activities: Methyl-RAD analysis (library preparation and bioinformatics analysis) of seagrass samples (*Posidonia oceanica*) collected from natural populations along the Sicilian coast.

1 Mar 2021 – 21 Feb 2023

PostDoc Research Fellow *(Assegno di ricerca 1/2021)*

Stazione Zoologica Anton Dohrn, Naples (Italy)

Main activities: 1) development and validation of early-warning molecular indicators for seagrass stress monitoring; 2) population genetics and epi-genetic analysis of the seagrass *P. oceanica* in the Mediterranean Sea; 3) integration of GIS mapping with genetic information for seagrass monitoring and restoration purposes. All activities are carried out in the framework of the project "MARINE HAZARD - *Sviluppo di tecnologie innovative per l' identificazione, monitoraggio e mitigazione di fenomeni di contaminazione naturale e antropica*"

16 Feb 2020 – 16 Feb 2021

PostDoc Research Fellow *(Assegno di ricerca 1/2020)*

Stazione Zoologica Anton Dohrn, Naples (Italy)

Main activities: 1) Bioinformatic analysis of 2b-RAD genotyping data of seagrass species collected along latitudinal gradients; 2) Investigation of transcriptomic and epi-transcriptomic mechanisms

(i.e., RNA methylation) involved in the regulation of seagrass biological rhythms.

5 Jun 2019 – 21 Jun 2019

Visiting Scientist

Tjärnö Marine Laboratory - Göteborg University, Tjärnö (Sweden)

ASSEMBLE Plus Transnational Access (TA) program 3rd call

Project: *Circa*Grass - "**Adaptation of the seagrass circadian clock to latitudes**" (347.2).

Main activities: 1) Sampling of seagrass and macroalgal specimens (*Zostera marina; Fucus vesiculosus*) at different times of the day for the assessment of daily expression patterns of circadian clock-related genes; 2) Library preparation for 2b-RAD genotyping of seagrass specimens (*Cymodocea nodosa*) collected along a latitudinal gradient of distribution for the identification of candidate genes responsible for local adaptation of populations.

4 May 2019 – 11 May 2019

Visiting Scientist

Centre of Marine Sciences (CCMAR) - University of Algarve, Faro (Portugal)

ASSEMBLE Plus Transnational Access (TA) program 3rd call

Project: *Circa*Grass - "**Adaptation of the seagrass circadian clock to latitudes**" (347.1).

Main activities: 1) Sampling of seagrass and macroalgal specimens (*Zostera marina, Cymodocea nodosa* and *Caulerpa prolifera*) at different times of the day for the assessment of daily expression patterns of circadian clock-related genes; 2) Sampling of the *C. nodosa* population of the Ria Formosa lagoon for 2b-RAD sequencing; 3) Daily measurements of photo-physiological performance of seagrasses and macroalgae through diving-PAM fluorometry.

Dec 2018 – Jul 2019

PostDoc Research Fellow *(Borsa per attività di ricerca)*

Stazione Zoologica Anton Dohrn, Naples (Italy)

Main activities: 1) Analysis of RNA-Seq data from *Posidonia oceanica* exposed to chronic low light; 2) Extraction of carbohydrates from different organs of *P. oceanica* and subsequent data analysis; 3) Analysis of global DNA methylation levels in *P. oceanica* exposed to chronic low light and data analysis.

Oct 2015 – Sep 2018

PhD Student

Stazione Zoologica Anton Dohrn, Naples (Italy)

Director of study: Dr. Gabriele Procaccini, Stazione Zoologica Anton Dohrn (Naples, Italy); External supervisor: Prof. Fabio Bulleri, University of Pisa (Pisa, Italy) - **Program: Open University UK, XVII cycle** - Registered discipline: School of Life, Health and Chemical Sciences.

PhD thesis: "**Unravelling the complexity of the molecular and physiological response to environmental change in seagrasses**"

Main activities: I studied the response of the seagrass *Posidonia oceanica* to single and multiple stressors (i.e., chronic low light, heat stress, herbivory and nutrient enrichment) at different scales of biological organization (e.g., within/among plant tissues/organs and between different shoot types) through field and mesocosm-based experiments. A combination of gene expression ("target" and "omics" approaches), epigenetic (DNA methylation), photo-physiological, biochemical and morphological analyses, were applied. Main results included: 1) the identification of the most informative plant tissues/organs to be used as proxies of seagrass stress status; 2) the recognition of the importance of epigenetic variations, as key mechanisms for phenotypic accommodation and adaptive responses to environmental changes in seagrasses; 3) the recognition of the importance of the temporal variability of stressors in determining plant stress response.

Sep 2013 – Apr 2015

Research Fellow *(Borsa per attività di ricerca)*

Centre of Marine Sciences (CCMAR) - University of Algarve, Faro (Portugal)

Project: HighGrass - "**High-CO_2 effects on seagrass photosynthetic ecophysiology**" (PTDC/MAR-EST/3687/2012) funded by the Portuguese Foundation for Science and Technology (FCT).

Main activities: I studied the effects of CO_2-driven ocean acidification on gene expression patterns (via RT-qPCR and RNA-Seq) and genetic diversity in two seagrass species: *Cymodocea nodosa* and

Posidonia oceanica. The project included both field experiments (at CO_2 vent sites in the Mediterranean Sea) and controlled mesocosm studies, and the combination of eco-physiological and eco-genomics techniques. Main results included the first description of major changes in seagrass metabolism under high-CO_2/low pH conditions in terms of gene expression patterns and adaptive genetic variations along ocean acidification gradients.

EDUCATION AND TRAINING

Jun 2011 – Dec 2012

Training in the Functional and Evolutionary Ecology Laboratory

Stazione Zoologica Anton Dohrn, Naples (Italy)

Main activities: I acquired expertise in basic molecular biology techniques (e.g., cloning, DNA/RNA extraction, primer design, sequence analysis, PCR and RT-qPCR).

May 2012 – Jul 2012

Training in the Laboratory of Ecology and Evolution of Plankton

Stazione Zoologica Anton Dohrn, Naples (Italy)

Main activities: I acquired expertise in photosynthetic and photo-protective pigment identification and quantification using High Performance Liquid Chromatography (HPLC).

Oct 2009 – Dec 2012

Master's degree in Biology (curriculum Bio-molecular)

University of Naples "Federico II", Naples (Italy)

110/110 cum laude (equivalent to full grades – First-Class Honours). *Main disciplines*: Molecular Biology and Bioinformatics, Genetics, Applied Biochemistry and Protein Engineering, Molecular Microbiology

Thesis: "**Adaptive response of the seagrass *Posidonia oceanica* to the bathymetric gradient**" - Tutors Prof. Domenico Fulgione - University of Naples "Federico II" and Dr. Gabriele Procaccini - Functional and Evolutionary Ecology Laboratory - Stazione Zoologica Anton Dohrn, Naples (Italy).

Main activities: I studied the expression patterns of target photosynthesis and photoprotection-related genes in *Posidonia oceanica* samples from contrasting depths, and their daily regulation. Gene-expression data (RT-qPCR) have been integrated with photo-physiological measurements (e.g., chlorophyll *a* fluorescence-derived photosynthetic parameters) and biochemical data (photosynthetic and photoprotective pigment composition). Genetic diversity of populations extending along the bathymetric cline was also explored. Main results included the identification of depth-related changes in gene expression patterns between *P. oceanica* plants growing at 5 and 25 m depth, and the genetic differentiation of meadow stands.

Sep 2005 – May 2009

Bachelor's degree in General and Applied Biology (curriculum Molecular and Cellular Biology)

University of Naples "Federico II", Naples (Italy)

108/110. *Main disciplines*: General and Inorganic Chemistry, Organic Chemistry, Plant and Animal Biology, Physiology, Molecular Biology, Genetics, Biochemistry, Ecology

Thesis: "**Environmental effects on the cytoskeleton development in the initial oogenesis of *Rana esculenta***" - Tutor: Prof. Rosa Carotenuto - University of Naples "Federico II".

Main activities: I evaluated the presence of abnormalities in the distribution and organization of cytoskeletal proteins by SDS-PAGE, immunoblotting and immunofluorescence techniques.

PERSONAL SKILLS

Mother tongue(s): Italian

Foreign language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	

English	C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Communication skills

Good communication skills acquired thanks to the participation (talk/poster presenter) in several national and international conferences/workshops, as well as during institutional seminars and lab meetings at Stazione Zoologica Anton Dohrn (Naples, Italy). Good communication skills acquired during several periods as visiting scientist in international research institutions.

Organisational/Managerial skills

Good organisational skills (e.g., laboratory organisation and orders of consumables, planning of Master and PhD students' work). Ability to work independently as well as in team.

Job-related skills

Excellent expertise in molecular biology techniques applicable to ecological studies:

- Sample collection, storage and preparation for molecular analyses;
- DNA and RNA extraction, nucleic acids quantification and qualification via spectrophotometric and electrophoresis analyses. High-quality DNA and RNA preparation for whole genome or transcriptome sequencing;
- Primer design, DNA/cDNA amplification protocols, sequence analysis;
- RT-qPCR experiments and subsequent gene-expression data analysis;
- DNA Genotyping using microsatellite and SNP markers for population genetic/genomic studies;
- Library preparation of samples for Next Generation Sequencing (Illumina) (e.g., RAD sequencing).
- Epigenetic-related techniques, such as global DNA/RNA methylation estimation through ELISA-like assays, and genome-wide techniques for the characterization of DNA methylation patterns (e.g., Methyl-RAD).

Good knowledge of Biochemical analyses, such as pigment extraction and quantification methods from plant tissues, carbohydrate content and C/N ratio determination.

Good knowledge of Diving PAM fluorometry for estimating plant photosynthetic performance and related applications.

Basic knowledge and application of protein extraction/purification and immunoblotting/immunofluorescence techniques, as well as chromatographic techniques (e.g., HPLC).

My main field of research included seagrass molecular ecology. In particular, the application of a multi-level integrative approach combining gene expression, eco-physiological, and biochemical techniques to the study of seagrass responses to environmental changes, through field studies and mesocosm-based experiments. I also conduct population genetics studies (using microsatellite and SNPs) for examining genetic/genotypic diversity and differentiation of natural seagrass populations along environmental clines (e.g., depth, latitudinal, salinity, ocean acidification gradients). I have also applied epigenetic related techniques (e.g., Methyl-RAD) for assessing the role of epigenetic diversity in seagrass ecosystems, its potential role for fostering seagrass resistance in the context of climate change, and its relationship with genetic diversity. I am currently working on molecular ecology of Scleractinian corals and molluscs, focusing on their molecular and physiological responses to environmental changes, in a climate-change scenario.

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem-solving
Independent user	Proficient user	Independent user	Independent user	Independent user

Digital skills - Self-assessment grid

ECDL (European Computer Driving License) certification

Good knowledge of sequence alignment/editor and analysis tools (e.g., BioEdit, Sequence Scanner, BLAST, ClustalW, MEGA). REST and QuantStudio for relative quantification analysis of gene

expression data in RT-qPCR studies. Gene Runner, Primer3 for primers design in PCR/RT-qPCR experiments. Peak Scanner Software for DNA fragment analysis. GraphPad Prism, Past, SigmaPlot, Statistica and PRIMER 6 & PERMANOVA+ software for statistical computing and graphics. GenAlex, Gimlet, Arlequin, Genepop, STRUCTURE, GENECLASS, EDENetworks, BayeScan and LOSITAN for population genetic studies. Efficient use of online databases (e.g., NCBI, Uniprot, TAIR, Plaza). Good knowledge of bioinformatic pipelines for SNPs analyses, R and bash programming language, and Linux operating system. Basic knowledge of ArcGIS.

Driving licence: A, B

ADDITIONAL INFORMATION

Memberships: Member of AIOL APS ETS (Associazione Italiana di Oceanologia e Limnologia) from March 2024.

Reviewing activity: Reviewer for the ISI journals: *Scientific Reports*, *Marine Genomics*, *Aquatic Botany*, *Italian Botanist*, *Marine Pollution Bulletin*, *Proceedings of the Royal Society B, Frontiers in Marine Science.*

Editor activity: Editorial Board Member as Topic Editor of the journal *Diversity*; Review Editor of the journal *Frontiers in Marine Science* specialty “Marine Molecular Biology and Ecology”.

Certifications: Open Water Diver ANIS/CMAS

Courses/Workshops:

1. COST Workshop “Linking ecophysiology and ecogenomics in seagrass systems” - Stazione Zoologica Anton Dohrn - Naples (Italy), 1-2 March 2011
2. School in "Conservation Genetics of Marine Organisms" - Chioggia (Italy), 3-9 Jul 2011
3. COST Training School "Linking seagrass productivity, community metabolism and ecosystem carbon fluxes" - Station de Recherches Sous-Marines et Océanographiques - Stareso, Corsica (France), 10-19 Oct 2011
4. Meeting "Illumina Next Generation Sequencing Technology - A Revolutionary approach to study microbial genetics" - Stazione Zoologica Anton Dohrn - Naples (Italy), 28 Jun 2012
5. COST Training School "Effects of increased CO2/Ocean Acidification on seagrass meadow" - Vulcano (Aeolian islands, Italy), 6-11 May 2013
6. Biorad seminar "La nuova frontiera della PCR quantitativa QX200™ droplet digital PCR" - Stazione Zoologica Anton Dohrn - Naples (Italy), 16 Oct 2014
7. Statistics course: "Statistica - un approccio pratico all'analisi dei dati biologici" - Città della Scienza, Naples (Italy), Jan-Feb 2015 (6 lessons)
8. XX School on "Molecular and Biophysical aspects of Photosynthesis" - Venice (Italy), 25-29 Jan 2016
9. Statistics course: "Statistica - un approccio pratico all'analisi dei dati biologici - Modulo II (statistica: tecniche per l'analisi dei dati biologici)" - Real Orto Botanico, Naples (Italy), Feb-Mar 2017 (4 lessons)
10. Workshop "Molecular Phylogenetics" - Stazione Zoologica Anton Dohrn - Naples (Italy), 10-12 Apr 2017
11. Euromarine Workshop: "Trait-based approach to seagrass ecosystems - TRAITGRASS" - Stazione Zoologica Anton Dohrn - Naples (Italy), 3-5 Oct 2018
12. Data Carpentry Workshop "Introductory course on data management and visualization in R" - Stazione Zoologica Anton Dohrn - Naples (Italy), 6-7 Feb 2019
13. Summer School "Protein Evolution: from Environmental Adaptations to Biotechnological Applications" - Stazione Zoologica Anton Dohrn - Naples (Italy), 24-26 Jul 2019
14. Online course by edx: Dartmouth_IMTx: DART.IMT.C.06: "Linux Basics: The Command Line Interface", April-May 2020
15. Online course by Physalia Courses: “Introduction to Statistics in R”, 30 Sep-3 Oct 2024.

Conferences: 1. 43rd Congress of Italian Society of Marine Biology (S.I.B.M.) - Marina di Camerota (Italy), 4-8 Jun

2012

2. Final Conference of COST Action ES0906: "Seagrasses in Europe: Threats, Responses and Management" - Olhão (Portugal), 4-6 Mar 2014

3. 4th Mediterranean Seagrass Workshop (MSW) - Oristano (Italy), 18-22 May 2015

4. International Seagrass Biology Workshop (ISBW12) - Nant Gwrtheyrn, Wales (UK), 16-21 Oct 2016

5. 1st EPIgenetics in MARine biology congress (EPIMAR) - online congress, 6-9 Oct 2020

6. 1st Italian Congress on Marine Evolution (EvolMar) - online congress, 23-25 Nov 2020

7. 7th European Congress of Conservation Biology – Bologna (Italy), 17-21 Jun 2024

8. XXIX Congress of the Italian Association of Limnology and Oceanography (AIOL APS ETS) – Ancona (Italy), 3-6 Jun 2025.

Oral presentations/Seminars

1. 4th Mediterranean Seagrass Workshop (18-22 May 2015, Oristano, Italy) - *Cymodocea nodosa* response to simulated CO_2-driven ocean acidification: A first insight from global transcriptome profiling. **M. Ruocco**, G. Procaccini, F. Musacchia, R. Sanges, I. Olivé, M. M. Costa, I. Barrote, R. Santos, J. Silva

2. Seminar at the Institute of Evolution and Ecology, Eberhard Karls Universität Tübingen (4 Oct 2019, Tübingen, Germany) - Seagrass plasticity across environmental gradients and multi-level response to climate change impacts. **M. Ruocco**

3. 1st Italian Congress on Marine Evolution (EvolMar) (23-25 Nov 2020, online) - m^6A RNA methylation in seagrasses: first insights and relevance for biological rhythms. **M. Ruocco**, L. Ambrosino, M. Jahnke, M.L. Chiusano, I. Barrote, G. Procaccini, J. Silva, E. Dattolo

4. Invited seminar for the Department of Marine Sciences, Tjärnö Marine Laboratory, University of Gothenburg (22 Apr 2021, online) - Circagrass: Adaptation of the seagrass circadian clock to latitude. **M. Ruocco**

5. 7th European Congress of Conservation Biology (17-21 Jun 2024, Bologna, Italy) - Seagrass movement: oceanographic modelling and genetic data reveal connectivity patterns of *Posidonia oceanica* along the Western coast of Sicily. **M. Ruocco**, G. Lacorata, L. Palatella, I. Provera, A. Zenone, M. Martinez, E. Dattolo, J. Pazzaglia, V. M. Giacalone, F. Badalamenti, G. Procaccini.

6. XXIX Congress of the Italian Association of Limnology and Oceanography (3-6 June 2025, Ancona, Italy) - Adaptive potential of a Mediterranean zooxanthellate coral to ocean acidification: insights from a naturally acidified habitat. **M. Ruocco**, C. Ruscelli, I. P. Royas-Martinez, S. Corneti, A. Mancuso, T. Sani, Z. Dubinsky, G. Falini, E. Caroselli, F. Prada, C. Marchini, M. Marini, S. Goffredo.

Abstract/Poster Co-authoring

1. 43rd Congress of Italian Society of Marine Biology (S.I.B.M.) (4-8 Jun 2012, Marina di Camerota, Italy) - *Posidonia oceanica* photoadaptation to the depth gradient. **M. Ruocco**, C. Brunet, M. Lorenti, C. Lauritano, D. D'Esposito, M. Riccio, G. Procaccini (*poster*)

2. XIV Congress of the European Society for Evolutionary Biology (19-24 Aug 2013, Lisbon, Portugal) - Circadian fluctuation of gene expression along a bathymetrical cline in the marine angiosperm *Posidonia oceanica*. E. Dattolo, D. D'Esposito, C. Lauritano, **M. Ruocco**, G. Procaccini (*poster*)

3. Final Conference COST Action ES0906: "Seagrasses in Europe: Threats, Responses and Management" (4-6 Mar 2014, Olhão, Portugal) - Daily variation in gene expression along a depth-related gradient of light availability in *Posidonia oceanica*. **M. Ruocco**, E. Dattolo, C. Lauritano, G. Procaccini (*poster*)

4. Final Conference COST Action ES0906: "Seagrasses in Europe: Threats, Responses and Management" (4-6 Mar 2014, Olhão, Portugal) - Stress genes in the seagrass *Posidonia oceanica*. C. Lauritano, **M. Ruocco**, E. Dattolo, M.C. Buia, J. Silva, G. Procaccini (*poster*)

5. Final Conference COST Action ES0906: "Seagrasses in Europe: Threats, Responses and Management" (4-6 Mar 2014, Olhão, Portugal) - Insights on adaptation and plasticity of *Posidonia oceanica* along a bathymetric gradient. G. Procaccini, E. Dattolo, D. D'Esposito, C. Lauritano, S. Mazzuca, **M. Ruocco**, R. Sanges (*abstract*)

6. ASLO Aquatic Sciences Meeting (22-27 Feb 2015, Granada, Spain) - Seagrass photosynthetic responses to a natural high-CO_2 environment: physiology meets gene expression. J. Silva, M. M. Costa, I. Olivé, I. Barrote, **M. Ruocco**, C. Lauritano, G. Procaccini, R. Santos (*abstract*)

7. 4th Mediterranean Seagrass Workshop (18-22 May 2015, Oristano, Italy) - *Posidonia oceanica* molecular adaptation to the light environment. G. Procaccini, E. Dattolo, C. Lauritano, **M. Ruocco**, L.

Marín-Guirao (*abstract*)

8. 4th Mediterranean Seagrass Workshop (18-22 May 2015, Oristano, Italy) - Circadian fluctuation of gene expression along a bathymetric cline in the marine angiosperm *Posidonia oceanica*. E. Dattolo, C. Lauritano, **M. Ruocco**, G. Procaccini *(abstract)*

9. International Seagrass Biology Workshop (ISBW12) (16-21 Oct 2016, Nant Gwrtheyrn, Wales) - Effects of ocean acidification on seagrass gene expression: insights from *Posidonia oceanica* at CO_2 vents. **M. Ruocco**, C. Lauritano, I. Olivé, MM. Costa, I. Barrote, R. Santos, J. Silva, G. Procaccini (*poster*)

10. 50th Congress of Italian Society of Marine Biology (S.I.B.M.) (10-14 Jun 2019, Livorno, Italy) - Molecular response of the shoot-apical meristem to low-light intensity in *Posidonia oceanica*: a new early warning indicator? **M. Ruocco**, L. Marín-Guirao, L. Entrambasaguas, G. Procaccini (*poster*).

11. 1st EPIgenetics in MARine biology congress (EPIMAR) (6-9 Oct 2020, online). Gene body and environmentally inducible DNA methylation in seagrasses: inter- and intraspecific differences and associations with transcriptome plasticity under warming conditions. L. Entrambasaguas, **M. Ruocco**, K. Verhoeven, G. Procaccini, Marín-Guirao, L. (*abstract*)

12. 1st EPIgenetics in MARine biology congress (EPIMAR) (6-9 Oct 2020, online). Estimation of daily changes of m^6A methylation in the two seagrass species *Z. marina* and *C. nodosa* over a 24h period. **M. Ruocco**, M. Jahnke, J. Silva, I. Barrote, G. Procaccini, E. Dattolo (*poster*)

13. 1st Italian Congress on Marine Evolution (EvolMar) (23-25 Nov 2020, online). Comparative analysis of gene networks in marine and terrestrial angiosperms. E. Dattolo, L. Ambrosino, **M. Ruocco**, G. Procaccini, M.L. Chiusano. (*poster*)

14. 1st Italian Congress on Marine Evolution (EvolMar) (23-25 Nov 2020, online). Transcriptional responses of *Posidonia oceanica* under multiple stresses: the influence of the native environment. J. Pazzaglia, A. Santillan-Sarmiento, **M. Ruocco**, E. Dattolo, A. Terlizzi, L. Marin-Guirao, G. Procaccini. (*poster*)

15. 1st Italian Congress on Marine Evolution (EvolMar) (23-25 Nov 2020, online). Gene body and environmentally inducible DNA methylation in seagrasses: inter- and intraspecific differences and associations with transcriptome plasticity under warming conditions. L. Entrambasaguas, **M. Ruocco**, K.J.F. Verhoeven, G. Procaccini, L. Marin-Guirao. (*abstract*).

16. XXIX Congress of the Italian Association of Limnology and Oceanography (3-6 June 2025, Ancona, Italy). Molecular and physiological acclimatization of the Mediterranean zooxanthellate coral *Balanophyllia europaea* at a natural CO_2 vent. C. Ruscelli, **M. Ruocco**, I. P. Royas-Martinez, S. Corneti, A. Mancuso, T. Sani, Z. Dubinsky, G. Falini, E. Caroselli, F. Prada, C. Marchini, M. Marini, S. Goffredo. (*poster*).

17. XXIX Congress of the Italian Association of Limnology and Oceanography (3-6 June 2025, Ancona, Italy). Molecular, physiological and shell properties of cold-water molluscs (Patellogasteropoda, *Nacella* spp.) from the Southern Ocean under different environmental conditions: implications for resilience to future climate change. A. Tosi, A. Murari, **M. Ruocco**, S. Corneti, S. Goffredo, A. Mancuso. (*poster*).

18. XXIX Congress of the Italian Association of Limnology and Oceanography (3-6 June 2025, Ancona, Italy). Shell properties of the limpet *Patella vulgata* along a wide latitudinal gradient in Norway: responses to environmental conditions in arctic and sub-arctic waters. A. Mancuso, M. Moretti, T. Sani, **M. Ruocco**, S. Goffredo. (*poster*).

Honours and awards

1. Fellowship "**Homo Sapiens Sapiens**" 2010, INPDAP (Italy) for merits during university studies

2. **S.I.B.M. Award** at the 4th Mediterranean Seagrass Workshop (18-22 May 2015, Oristano, Italy)

3. Prize "**100 anni di Ricerca Genomica**" (5000 €) awarded by Accademia Nazionale delle Scienze detta dei XL and Stazione Zoologica Anton Dohrn for Italian young researchers (<35 years old) (15 Sep 2021, Rome, Italy) for the publication "Ruocco *et al.* (2020) A king and vassals' tale: molecular signatures of clonal integration in *Posidonia oceanica* under chronic light shortage. Journal of Ecology 109(1): 294-312"

Grants

1. Grant by **COST** (European Cooperation in Science and Technology) to participate in the COST Training School "Linking seagrass productivity, community metabolism and ecosystem carbon fluxes" - 2011

2. Grant by **COST** (European Cooperation in Science and Technology) to participate in the COST Training School: "Effects of increased CO_2/Ocean Acidification on seagrass meadow" - 2013

3. Horizon 2020 Research and Innovation Action - Grant by **ASSEMBLE Plus Transnational Access program** to perform the project "*CircaGrass* - Adaptation of the seagrass circadian clock to latitudes" - 2019

Participation to EU/EXTRA-EU projects

1. **COST ACTION ES0906** "Seagrass productivity: from genes to ecosystem management" funded by COST (European Cooperation in Science and Technology) - 2011 (*Participation as master student*)

2. Project: **HighGrass** - "High-CO_2 effects on seagrass photosynthetic ecophysiology" funded by Portuguese Foundation for Science and Technology (FCT) (*Participation as research fellow*)

3. *Project*: **SEAStress** - "Application of molecular tools for detecting early signals of stress in Israeli and Italian seagrass species" funded by Italian Ministry of Foreign Affairs and International Cooperation/Israeli Ministry of Science and Technology (*Participation as PhD student*)

4. *Project*: **CircaGrass** - "Adaptation of the seagrass circadian clock to latitudes" funded by the ASSEMBLE Plus Transnational Access program *(Co-applicant of the project)*

5. *Project*: **MARINE HAZARD** (PON03PE_00203) - "Sviluppo di tecnologie innovative per l' identificazione, monitoraggio e mitigazione di fenomeni di contaminazione naturale e antropica" (*Participation as PostDoc research fellow*)

6. *Project:* **MAGI** - Project Number 504341 "Marine Angiosperm Genomes Initiative" funded by US-Dept. of Energy, Joint Genome Institute (USA) under the Community Sequencing Program 2018 - 2022 (*Participation as research fellow*).

Participation to national/international working research groups

1. Participation to the research group "Molecular Ecology of Seagrasses" led by Dr. Gabriele Procaccini at the Stazione Zoologica Anton Dohrn of Naples (Italy), from 2011 to 2023. Collaborations still ongoing.

2. Participation to the activities of research group "Marine Plant Ecology and Ecophysiology" led by Dr. João Silva and Prof. Prof. Rui Santos at the Centre of Marine Sciences (CCMAR) – University of Algarve, Faro (Portugal), from 2013 to 2019.

3. Participation to the activities of the research group led by Dr. Marlene Jahnke at the Tjärnö Marine Laboratory, Department of Marine Sciences – University of Göteborg (Sweden), from 2019 to 2022. Collaborations still ongoing.

4. Participation to the research group "Marine Science Group" led by Prof. Stefano Goffredo at the University of Bologna (Italy) from 2023 up to now.

Master/PhD students training support

1. Özge Tutar, PhD student Università degli Studi di Milano-Bicocca – 2016-2017

2. Angela Granata, trainee Università degli Studi di Napoli "Federico II" - 2017

3. Salvatore Davide Mammola, Master student Università Politecnica delle Marche (Master internazionale di primo livello in Biologia Marina) - 2017

4. Giuseppe Cambrea, Master student Università degli studi di Messina - 2017

5. Laura Pereda Briones, PhD student University of the Balearic Islands - 2018

6. Jessica Pazzaglia, PhD student Università degli studi di Trieste/Stazione Zoologica Anton Dohrn – 2018-2020

7. Ludovica Pedicini, Master Student Università di Pisa – 2019

8. Isabella Provera, PhD student Open University UK/Stazione Zoologica Anton Dohrn – 2021-2022

9. Camilla Ruscelli, Master Thesis student University of Bologna (Sciences and Management of Nature) – 2024-2025 (*supervisor of the thesis*)

10. Alice Tosi, Master Thesis student University of Bologna (Sciences and Management of Nature) – 2024-2025 (*supervisor of the thesis*)

11. Denis Montanari, Bachelor student University of Bologna (Biological Sciences) – 2024-2025 (*supervisor of the thesis*).

Outreach activities

1. Science communication activity at XXX edition of "Futuro remoto - COSTRUIRE", 7-10 Oct 2016 - Piazza del Plebiscito, Naples (Italy)

2. Science communication activity at XXXI edition of "Futuro remoto - CONNESSIONI", 25-28 May 2017 - Piazza del Plebiscito, Naples (Italy)

3. Science communication activity at II edition of "BookSophia - Festival della Classicità", 5-7 Dec 2018 - Massa Lubrense, Naples (Italy)

4. Science communication activity at "European Researchers' Night - SHARPER", 27 Sep 2019 - Museo Nazionale Ferroviario di Pietrarsa, Naples (Italy)

5. Science communication activity at III edition of "BookSophia - Festival della Classicità", 14-16 Nov 2019 - Massa Lubrense, Naples (Italy).

6. Science communication activity at V edition of "BookSophia - Festival della Classicità", 11-13 Nov 2021 – Massa Lubrense, Naples (Italy)

7. Science communication activity at “Giornate FAI d’autunno”, 14-15 Oct 2023 - Fano Marine Center, Fano (Italy).

8. Seminar for the “Liceo classico Gian Luigi Storoni - La Nuova Scuola" (20 Mar 2025, Fano Marine Center, Fano, Italy). Unique ecological conditions of urban marine ecosystems. **M. Ruocco**

9. Participation to the Podcast “Figlie di Nettuno” by Stazione Zoologica Anton Dohrn - National Biodiversity Future Center. Episode n°17: “Il gemello acido”.

Publications

ISI Papers

1. Mazzuca S., Björk M., Beer S., Felisberto P., Gobert S., Procaccini G., Runcie J., Silva J., Borges A., Brunet C., Buapet P., Costa M. M., D’ Esposito D., Gullström M., Lejeune P., Lepoint G., Olivé I., Rasmusson L., Richir J., **Ruocco M.**, Serra I.A., Spadafora A., Santos R. (2013) Establishing research strategies, methodologies, and technologies to link genomics and proteomics to seagrass productivity, community metabolism and ecosystem carbon fluxes. Frontiers in Plant Science 4:38

2. Dattolo E*., **Ruocco M***., Brunet C., Lorenti, M., Lauritano C., D’Esposito D., De Luca P., Sanges R., Mazzuca, S., Procaccini G. (2014) Response of the seagrass *Posidonia oceanica* to different light environments: Insights from a combined molecular and photo-physiological study. Marine Environmental Research 101:223-236. ***First two authors share equal responsibility***

3. Lauritano C., **Ruocco M.**, Dattolo E., Buia M.C., Silva J., Santos R., Olivé I., Costa M. M., Procaccini G. (2015) Response of key stress-related genes of the seagrass *Posidonia oceanica* in the vicinity of submarine volcanic vents. Biogeosciences 12(13):4185-4194

4. Procaccini G., **Ruocco M.**, Brunet C., D’ Esposito D., Lauritano C., Marín-Guirao L., Mazzuca S., Piro A., Bernardo L., Serra I.A., Beer S., Bjork M., Gulstrom M., Buapet P., Rasmusson L., Felisberto P., Gobert S., Runcie J., Silva J., Olivé I., Costa M. M., Barrote I., Santos R. (2017) Depth-specific fluctuations of gene expression and protein abundance modulate the photophysiology in the seagrass *Posidonia oceanica*. Scientific Reports 7:42890

5. **Ruocco M.**, Procaccini G., Musacchia F., Sanges R., Olivé I., Costa M. M., Barrote I., Santos R., Silva J. (2017) Genomewide transcriptional reprogramming in the seagrass *Cymodocea nodosa* under experimental ocean acidification. Molecular Ecology 26:4241-4259

6. Olivé I., Silva J., Lauritano C., Costa M.M., **Ruocco M.**, Procaccini G., Santos R. (2017) Linking seagrass gene expression to productivity: long and short-term responses of *Cymodocea nodosa* to CO_2 in volcanic vents. Scientific Reports 7:42278

7. **Ruocco M.**, Marín-Guirao L., Ravaglioli C., Bulleri F., Procaccini G. (2018) Molecular level responses to chronic versus pulse nutrient loading in the seagrass *Posidonia oceanica* undergoing herbivore pressure. Oecologia 188:23

8. Traboni C., Mammola SD., **Ruocco M.**, Ontoria Y., Ruiz J M., Procaccini G., Marín-Guirao L. (2018) Investigating cellular stress response to heat stress in the seagrass *Posidonia oceanica* in a global change scenario. Marine Environmental Research 141:12-23

9. **Ruocco M.**, Marín-Guirao L., Procaccini G. (2019) Within- and among-leaf variations in photo-physiological functions, gene expression and DNA methylation patterns in the large-sized seagrass *Posidonia oceanica*. Marine Biology 166(3):24

10. **Ruocco M.**, De Luca P., Marín-Guirao L., Procaccini G. (2019) Differential leaf age-dependent thermal plasticity in the keystone seagrass *Posidonia oceanica*. Frontiers in Plant Science 10:1556

11. **Ruocco M.**, Entrambasaguas L., Milito A., Marín-Guirao L., Procaccini G. (2020) A king and vassals’ tale: molecular signatures of clonal integration in *Posidonia oceanica* under chronic light shortage. Journal of Ecology 109(1): 294-312

12. **Ruocco M.**, Ambrosino L., Jahnke M., Chiusano M.L., Barrote I., Procaccini G., Silva J., Dattolo E. (2020) m^6A RNA methylation in marine plants: first insights and relevance for biological rhythms. International Journal of Molecular Science 21(20):7508

13. Pazzaglia J., Santillán-Sarmiento A., Helber B. S., **Ruocco M.**, Terlizzi A., Marín-Guirao L., Procaccini G. (2020) Does warming enhance the effects of eutrophication in the seagrass *Posidonia oceanica*? Frontiers in Marine Science 7:1067

14. Pazzaglia J., Nguyen M. H., Santillán S. A., **Ruocco M.**, Dattolo E., Marín-Guirao L., Procaccini G. (2021) The genetic component of seagrass restoration: what we know and the way forwards. Water 13(6):829

15. Entrambasaguas L., **Ruocco M.**, Verhoeven K., Procaccini G., Marín-Guirao L. (2021) Gene body DNA methylation in seagrasses: inter- and intraspecific differences and interaction with transcriptome plasticity under heat stress. Scientific Reports 11(1):1-15.

16. **Ruocco M.**, Barrote I., Hofman J.D., Pes K., Costa M.M., Procaccini G., Silva J., Dattolo E. (2021) Daily regulation of key metabolic pathways in two seagrasses under natural light conditions. Frontiers in Ecology and Evolution 9: 757187

17. Pazzaglia J., Santillán-Sarmiento A., **Ruocco M.**, Dattolo E., Ambrosino L., Marín-Guirao L., Procaccini G. (2022) Local environment modulates whole-transcriptome expression in the seagrass *Posidonia oceanica* under warming and nutrients excess. Environmental Pollution 303:119077

18. **Ruocco M.**, Jahnke M., Silva J., Procaccini G., Dattolo E. (2022) 2b-RAD genotyping of the seagrass *Cymodocea nodosa* along a latitudinal cline identified candidate genes for environmental adaptation. Frontiers in Genetics 13: 866758

19. Tutar O*., **Ruocco M***., Dattolo E., Lacorata G., Corrado R., Watteaux R., Iudicone D., Fach B., Procaccini G. (2022) High levels of genetic diversity and population structure in the Mediterranean seagrass *Posidonia oceanica* at its easternmost distribution limit. ICES Journal of Marine Science 79(8): 2286-2297. ***First two authors share equal responsibility***

20. Pazzaglia J., Dattolo E., **Ruocco M.**, Santillán-Sarmiento A., Marín-Guirao L., Procaccini G. (2023) DNA methylation dynamics in a coastal foundation seagrass species under abiotic stressors. Proceedings of the Royal Society B 290: 20222197

21. Procaccini G., Dattolo E., **Ruocco M.** (2023) Genetic diversity and connectivity in the Mediterranean seagrass *Posidonia oceanica*: state of art and future directions. Cahiers de Biologie Marine 64-1.

22. Moreira-Saporiti A., Teichberg M., Garnier E., Cornelissen J.H.C., Alcoverro T., Björk M., Boström C., Dattolo E., Eklöf J., Hasler-Sheetal H., Holmer M., Marbà N., Marín-Guirao L., Meysick L., Olivé I., Reusch T.B.H., **Ruocco M.**, Silva J., Sousa A.I., Procaccini G., Santos R. (2023) A trait-based framework for seagrass ecology: trends and prospects. Frontiers in Plant Science 14.

23. Santillán-Sarmiento A., Pazzaglia J., **Ruocco M.**, Dattolo E., Ambrosino L., Winters G., Marin-Guirao L., Procaccini G. (2023) Gene co-expression network analysis for the selection of candidate early warning indicators of heat and nutrient stress in *Posidonia oceanica*. Science of the Total Environment 877: 162517

24. Nguyen M.H., **Ruocco M.**, Dattolo E., Cassetti F.P., Calvo S., Tomasello A., Marín-Guirao L., Pernice M., Procaccini G. (2023) Signs of local adaptation by genetic selection and isolation promoted by extreme temperature and salinity in the Mediterranean seagrass *Posidonia oceanica*. Molecular Ecology 32, 4313–4328.

25. Ma X., Vanneste S., Chang J., Ambrosino L., Barry K., Bayer T., …**Ruocco M.**, … & Van de Peer Y. (2024) Seagrass genomes reveal ancient polyploidy and adaptations to the marine environment. Nature Plants 1,16.

26. Nguyen H. M., Hong U. V., **Ruocco M.**, Dattolo E., Marín-Guirao L., Pernice M., & Procaccini G. (2024) Thermo-priming triggers species-specific physiological and transcriptome responses in Mediterranean seagrasses. Plant Physiology and Biochemistry 210, 108614.

27. **Ruocco M.**, Lacorata G., Palatella L., Provera I., Zenone A., Martinez M., ... & Procaccini, G. (2025). Movement Ecology of a Coastal Foundation Seagrass Species: Insights From Genetic Data and Oceanographic Modelling. Diversity and Distributions, 31(2), e13944.

Non-ISI Papers

1. **Ruocco M.**, Brunet C., Lorenti M., Lauritano C., D'Esposito D., Riccio M., Procaccini G. (2012) *Posidonia oceanica* photoadaptation to the depth gradient. Biol. Mar. Mediterr. 19 (1): 63-64

2. Dattolo E., Lauritano C., **Ruocco M.**, Procaccini G. (2015) Circadian fluctuation of gene expression along a bathymetric cline in the marine angiosperm *Posidonia oceanica*. PeerJ PrePrints 3:e1298

3. Procaccini G., Dattolo E., Lauritano C., **Ruocco M.**, Marín-Guirao L. (2015) *Posidonia oceanica*

molecular adaptation to the light environment. PeerJ PrePrints 3:e1296

4. **Ruocco M.**, Procaccini G., Musacchia F., Sanges R., Olivé I., Costa M. M., Barrote I., Santos R., Silva J. (2015) *Cymodocea nodosa* response to simulated CO_2-driven ocean acidification: a first insight from global transcriptome profiling. PeerJ PrePrints 3:e1297

5. **Ruocco M**. (2019) Unravelling the complexity of the molecular and physiological response to environmental change in seagrasses. The Open University http://oro.open.ac.uk/59218/ (*PhD thesis*)

6. **Ruocco M.**, Marín-Guirao L., Entrambasaguas L., Procaccini G. (2019) Molecular response of the shoot-apical meristem to low-light intensity in *Posidonia oceanica*: a new early warning indicator? Biol. Mar. Mediterr. 26 (1): 322-323

7. Santillán-Sarmiento A., Pazzaglia J., Ruocco M., Dattolo E., Ambrosino L., Winters G., Marin-Guirao L., Procaccini G. (2023) Gene Co-Expression Network Analysis for the Selection of Candidate Early Warning Indicators of Heat and Nutrient Stress in *Posidonia oceanica*. Available at SSRN: https://ssrn.com/abstract=4182818 or http://dx.doi.org/10.2139/ssrn.4182818

8. Ma X., Vanneste S., Chang J., Ambrosino L., Barry K., Bayer T., … **Ruocco M.**, … & Van de Peer Y. (2023). Seagrass genomes reveal a hexaploid ancestry facilitating adaptation to the marine environment. bioRxiv, 2023-03.

Scientometric indexes

Google Scholar *(24/07/2025)*

Total N° of products: **36**

H-index: **18**

i10 index: **16**

Total citations: **904**

Scopus *(24/07/2025)*

N° of products: **26**

H-index: **17**

Total citations: **664**

"A conoscenza di quanto prescritto agli art 46 e seguenti del D.P.R. 28 dicembre 2000 n. 445, sulla responsabilità penale cui può andare incontro in caso di falsità in atti e di dichiarazioni mendaci, nonché di quanto prescritto dall' art. 75 del D.P.R. 28 dicembre 2000 n. 445, sulla decadenza dai benefici eventualmente conseguenti al provvedimento emanato sulla base di dichiarazioni non veritiere, ai sensi e per gli effetti del citato D.P.R. n. 445/2000 art 46, e sotto la propria personale responsabilità dichiaro che tutte le informazioni contenute nel proprio curriculum vitae sono veritiere. Presto consenso all'utilizzo dei dati personali ai sensi del Decreto legislativo 196/2003 e s.m.i."

Date
24/07/2025

Signature