



FURFARO GIULIA, Ph.D. – Curriculum vitae

University of Salento
Department of Biological and Environmental Sciences and
Technologies - DiSTeBA
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EDUCATION

- 2019-present Researcher at the University of Salento, Department of Biological and Environmental Sciences and Technologies – DiSTeBA.
- 2014-2017 Ph.D. in Molecular, Cellular and Environmental Biology
University of Roma Tre - 00146 Rome, Italy
Project: An integrative approach to unravel taxonomy and evolution in nudibranchs (Mollusca)
Advisor: Prof. P. Mariottini, Dr D. Salvi, Dr E. Mancini
- 2011-2014 Master's degree in "Biodiversity and ecosystem management" – 110/110 cum laude
University of Roma Tre - 00146 Rome, Italy
Project: Systematic study on Mediterranean and Lusitanic species belonging to Flabellinidae Family (Mollusca, Nudibranchia)
Advisor: Prof. P. Mariottini and Prof. M. A. Bologna
- 2002-2011 Bachelor's degree in Biology – 108/110
University of Roma Tre - 00146 Rome, Italy
Project: Nudibranchs of the Italian fauna with the checklist of the species inhabiting the 2nd biogeographical area of the Italian Seas
Advisor: Prof. P. Mariottini and Prof. M. A. Bologna
- 1997-2002 Graduation at secondary school focusing on sciences – 70/100
Scientific high school Augusto Righi, Via Campania, 63 - 00187 Rome, Italy

TRAINING ACTIVITIES

- 2016 Comparative methods in evolutionary biology.
Advisors: Dr F. Santini & Dr B. Frédéric
Stazione Zoologica "Anton Dohrn" di Napoli, Italy.
- 2016 Molecular Phylogenetics: Then, Now and the Future.
Advisors: Prof. W. Moore & J. Robertson
University of Roma Tre, Rome, Italy.
- 2015 Practical course on Molecular Phylogeny and Population Genetics.
Advisors: Dr E. Mancini
University of Roma Tre, Rome, Italy.

RESEARCH EXPERIENCE

- 2017 Internship
Strait of Messina, Sicily, Italy
Project: The Strait of Messina where deep-sea fishes land on the beach
PI: 'Anton Dohrn' Zoological Marine Station, Naples, Italy

- 2014 Internship
Marine Protected Area (M.P.A.) 'Secche di Tor Paterno'
Project: Taxonomic study of the Opisthobranch Molluscs inhabiting the 'Secche di Tor Paterno' Marine protected area, with the production of a checklist of the living species
PI: 'RomaNatura' regional authority
- 2013 Research Assistant
University of Tor Vergata, 00173 Rome, Italy
Project: Biomonitoring of the *Sabellaria* Bioconstructions (Polychaeta)
PI: Prof. F. Gravina

TEACHING AND SUPERVISING EXPERIENCE

- 2021-present Didactic activity for a total of 18 hours for the master's degree course
- 2021-present Co-advisor of one MSc thesis - University of Salento, Lecce, Italy
- July 2021 Advisor of an external internship for a master's degree student from Università Politecnica delle Marche
- 2020-2021 Didactic activity for a total of 60 hours for bachelor's and master's degrees courses
- 2020-2021 Co-advisor of 2 MSc theses from University of Salento, Lecce, Italy and one MSc thesis from Roma Tre University, Rome, Italy
- 2019-2020 Didactic activity for a total of 50 hours for bachelor's and master's degrees courses
- 2019-present Co-advisor of 1 PhD student - University of Salento, Lecce, Italy
- 2019-present Head of the Molecular Biology laboratory of the Zoology group of the disteba - University of Salento, Lecce, Italy
- 2014-2020 Co-advisor of 2 BSc theses and 2 MSc theses - Roma Tre University, Rome, Italy
- 2014-2017 Instructor for the laboratory of Zoology - Roma Tre University, Rome, Italy
- 2014-2017 Mentor of more than 4 junior members of the Marine Molecular Systematics Lab of the Dept. of Science of the Roma Tre University
- 2014-2017 Lecturer for practical course of Systematic Zoology and Biodiversity of the Dept. of Science of the Roma Tre University

SOCIETY MEMBERSHIPS, AWARDS AND HONOURS

- 2020 Member of U.Z.I. (Unione Zoologica Italiana)
- 2018 Winner of two prizes for the poster exhibited at Congress of S.I.B.M. (Società Italiana di Biologia Marina)
- 2018 Member of S.I.B.M. (Società Italiana di Biologia Marina)
- 2016 Member of S.I.B.E. (Società Italiana di Biologia Evoluzionistica)
- 2014 Winner of a grant for the project 'Anatomic and systematic analyses of the Flabellinidae Family (Mollusca, Nudibranchia)' at the University of Cadiz, department of Biology (CEI-MAR), Puerto Real, Spain.

SYNERGISTIC ACTIVITIES

- November 2020 Co-editor in the first online International Congress on Marine Evolution EVOLMAR.
- 2020 Participation to the scientific expedition organized by the Museum of Natural History of Paris and named 'La Planète Revisitée' as the expert of the Heterobranchia mollusc group.
- 2016-present Reviewer for several international journals: Scientific Report, PlosONE, Thalassas, Zootaxa, Molluscan Research, Diversity, Spixiana, Acta Adriatica, Notulae Scientia Biologicae, Mediterranean Marine Science, etc.
- 2014-present Participation to national and international congresses, including the 5th International Workshop on Opisthobranchs (Porto, Portugal, 13th – 15th, July 2015) and the 7th Congresso della Società Italiana di Biologia Evoluzionistica (Rome, Italy, 28th - 31th, August 2017).

- 2012-present Grants writing and scientific collaboration with national and international research groups: Prof. Marco Oliverio (La Sapienza University), Dr Daniele Salvi (CIBIO Porto, Portugal), Dr Maria Vittoria Modica (University of Montpellier), Prof. Genuario Belmonte (University of Salento), Prof. Flavia Gravina (University of Tor Vergata).
- 2007-present Participation to several scientific campaigns and cruises along the Mediterranean basin.

OUTREACH ACTIVITIES

- July 2021 Participation to the 'Prof alla Torre' (2021), a dissemination project organized by the Porto Cesareo Museum
- June 2021 Dissemination seminar within the projects eTwinning, "The oceans' rescuers" e "Together 4ever- the cosmic task for young citizens".
- March 2021 Dissemination seminar for high school students from Lecce (Apulia)
- July 2020 Participation to the 'Prof alla Torre' (2020), a dissemination project organized by the Porto Cesareo Museum
- February 2020 Dissemination seminar for high school students from Tricase, Lecce (Apulia)
- October 2019 Dissemination seminar for high school students from Taranto (Apulia)
- 2013-2015 Scientific manager of the GUE Project Baseline *Corallium rubrum*. Conservation and population analysis of a costal population of *Corallium rubrum* in Mediterranean Sea.
- 2014 Winner of a grant for the project 'Anatomic and systematic analyses of the Flabellinidae Family (Mollusca, Nudibranchia)' at the University of Cadiz, department of Biology (CEI·MAR), Puerto Real, Spain.
- 2010 Collaborator at the *Caretta caretta* marine turtle protection project. Advisor: Prof. Mingozi, *Tartacare* Research Team, University of Cosenza, Italy.

LABORATORY SKILLS

- Molecular biology Preparation and conservation of animal specimens for molecular analyses; nucleic acids (DNA/RNA) extraction methods from animal tissues and cells; gene amplification and genotyping by PCR techniques; cDNA preparation; use of restriction enzymes.
- Morphology Dissections of fresh and preserved samples; anatomical drawings; preparation of samples for critical point technique and for SEM/TEM.

INFORMATICS SKILLS

- General purpose Win Office Package (Word, Excel, PPT), photoshop
- Sequence analysis, phylogeny, population genetics DAMBE, JmodelTest, Garli, RaxML, BEAUti, PAUP, Staden Package, MEGA5, DNAsp, Beast, MrBayes, Treefinder, PHYML, TCS, Species Identifier, ABGD, b-PTP, PopArt, FigTree, RasWin
- Database mining NCBI, PUBMED, UniProt/SwissProt, InterPro

SPOKEN LANGUAGES

- Italian Mother tongue
- English Good, written and spoken
- Portuguese Very good, spoken
- Spanish Good, spoken

CERTIFICATIONS

- GUE Global Underwater Explorer - Fundamentals Tech pass **N: #197359103**
- AESD Advanced European Scientific Diver **N: ITAESD00047**
- XR SSI Extended Range Trimix Instructor **N: 79831**
- SSI Basic freediving Instructor **N:79831**
- CDC-CMAS Diving Instructor (M2) **N: ITAF07 M2 006549**

PERSONAL SKILLS

- Communication skills good communication skills gained through my laboratory experience and as diver instructor
- Organisational / managerial skills scientific and logistic manager during underwater scientific sampling
- Driving licence car license: A and B
- Other skills certified in providing first aid, as part of my scuba diving training

RESEARCH INTERESTS

- Marine biodiversity Marine diversity is still largely unexplored, in particular concerning the Mediterranean basin. This is especially true for Heterobranchia, a specialized group of gastropods. In fact, these marine molluscs are frequently characterized by cryptic species complexes which cause an underestimation of the alpha-diversity in this group. During my PhD project I have been working to expand the knowledge of the heterobranchia biodiversity by the use of both morphological, ecological and molecular approaches, in light of an integrative taxonomic framework. I have **re-evaluated the diagnostic usefulness of the commonly used morphological characters** by anatomical analyses and by the observation with optical and SEM microscopes of the hardy internal structures of these invertebrate molluscs. I have **produced a collection of Mediterranean and Atlantic nudibranchs as a reference repository for molecular and morphological analyses** also correlated to a high quality photographic database of specimens to guide users for species identification. I have worked on the development of a **new molecular marker, the nuclear interspacer ITS2**, useful for discriminate at a species level, in order to unravel cryptic species and/or recent speciation events in opisthobranchs.
- Phylogeny and Evolution Results from recent phylogenetic studies exploring the evolutionary history within Heterobranchia yielded contradicting phylogenetic hypotheses or reconstruction, with most of relationships still unresolved. Though resolution of the most basal evolutionary history can be problematic in phylogenetic inference, applying an integrative taxonomy approach can provide statistical supports for relationships at both the family and generic levels. Taking all this into account, I started with a single-locus molecular approach, and my study went on by adding additional markers and by concatenating them for phylogenetic analyses. I have evaluated **the phylogenetic informative power of molecular markers in different Heterobranchia families** and taxa. I analysed the primary sequence of the different molecular marker, and furthermore, I investigated the phylogenetic signal of the secondary (2D) and the tertiary (3D) structures of the 16S mitochondrial marker which revealed to be very useful at both lower and higher taxonomic levels by highlighted important diagnostic molecular characters for the species involved. An additional nuclear marker, the Internal Transcribed Spacer 2 (ITS2) was analysed for its primary sequence and secondary structure. The application of this marker represented a promising approach not only for phylogenetic reconstruction, but also for species diagnosis. I am also interested in understanding how phylogeny correlates with the appearance of evolutionary novelties, as a way to comprehend major evolutionary dynamics in the diversification of taxa.

- Ecological associations and biochemical compounds Many marine gastropods are involved in ecological associations with other organisms. This is particularly true for the heterobranchs since different species are known to be monophagous or with a species-specific diet. Considering this interesting ecological trait, I am also interested in developing modern molecular tool to define the diet of the different Heterobranchia species and finally describing their amazing trophic specializations. Since a lot of heterobranchs are able to store and accumulate toxic and bioactive compounds from their preys (sponges, cnidarians, bryozoans etc.), to know the specific diet of the species will be particularly interesting if we consider the great pharmacological potential and the applications of these molecules.

BIBLIOMETRIC INDICES (Scholar citations - 25/10/2021)

| | |
|----------------------------|-----|
| Number of ISI publications | 31 |
| Hirsch (H) index | 9 |
| Total Citations | 219 |

My URLs: <https://scholar.google.com/citations?user=fWYhM3AAAAAJ&hl=it&authuser=1>
https://www.researchgate.net/profile/Giulia_Furfaro
<https://publons.com/a/1584079>
<http://orcid.org/0000-0001-8184-2266>

PUBLICATIONS

31. Trainito E., Fantin M., Manganelli E., **Furfaro G.** 2021. What are you doing here? Investigating on an unexpected association in shallow Mediterranean dark caves sheds light on the diet of *Marionia blainvillea* (Mollusca, Gastropoda, Nudibranchia). *Turkish Journal of Zoology*, 45: . doi: 10.3906/zoo-2104-43
30. M. Canessa, G. Bavestrello, R. Cattaneo-Vietti, **G. Furfaro**, M. Doneddu, A. Navone, E. Trainito. 2021. Rocky substrate affects benthic heterobranch assemblages and prey/predator relationships. *Estuarine, Coastal and Shelf Science*, 261, 31. DOI: 10.1016/j.ecss.2021.107568
29. **Furfaro, G.**, & Mariottini, P. (2021). *Nemesignis*, a Replacement Name for *Nemesis* Furfaro & Mariottini, 2021 (Mollusca, Gastropoda, Myrrhinidae), Preoccupied by *Nemesis* Risso, 1826 (Crustacea, Copepoda). *Life*, 11(8), 809. <https://doi.org/10.3390/life11080809>
28. Garzia M, Mariottini P, Salvi D and **Furfaro G** (2021) Variation and Diagnostic Power of the Internal Transcribed Spacer 2 in Mediterranean and Atlantic Eolid Nudibranchs (Mollusca, Gastropoda). *Front. Mar. Sci.* 8:693093. doi: 10.3389/fmars.2021.693093
27. **Furfaro, G.**, Mariottini, P. 2021. Looking at the nudibranch family Myrrhinidae (Gastropoda, Heterobranchia) from a mitochondrial ‘2D folding structure’ point of view. *Life*, 11, 583. <https://doi.org/10.3390/life11060583>
26. **Furfaro G.**, Salvi D., Trainito E., Vitale F., Mariottini P. 2021. When morphology does not match phylogeny: The puzzling case of two sibling nudibranchs (Gastropoda). *Zoologica Scripta*, 00:1–16. <https://doi.org/10.1111/zsc.12484>
25. Trainito E., Fantin M., Torsani F., **Furfaro G.** 2021. So large yet so unnoticed: the case of *Marionia gemmii* Almón, Pérez & Caballer, 2018 (Heterobranchia: Tritoniidae) in the Mediterranean Sea. *Cah. Biol. Mar.*, 62(1): 65-70. DOI: 10.21411/CBM.A.BD5B67F2
24. Chimienti, G., Angeletti, L., **Furfaro, G.**, Canese, S., Taviani, M. 2020. Habitat, morphology and trophism of *Tritonia callogorgiae* sp. nov., a large nudibranch inhabiting *Callogorgia*

verticillata forests in the Mediterranean Sea. *Deep Sea Research Part I: Oceanographic Research Papers*, 103364. <https://doi.org/10.1016/j.dsr.2020.103364>

23. Furfaro G., Chimienti G., Mariottini P. 2020. DNA barcoding unveiling rare species: the case of *Pruvotfolia pselliotes* (Labbé, 1923) (Mollusca: Gastropoda: Nudibranchia) in the Mediterranean Sea. *The European Zoological Journal*, 87(1), 459-462. <https://doi.org/10.1080/24750263.2020.1808099>

22. Doneddu M., Trainito E., **Furfaro G.** 2020. *Trapania graeffei* (Bergh, 1881) (Gastropoda, Nudibranchia) is a valid Mediterranean species. *Boll. Malacol.*, 56: 86-90.

21. Furfaro G., Vitale F., Licchelli C., Mariottini P. 2020. Two Seas for One Great Diversity: Checklist of the Marine Heterobranchia (Mollusca; Gastropoda) from the Salento Peninsula (South-East Italy). *Diversity*, 12(5), 171. doi:10.3390/d12050171

20. Furfaro G. & Mariottini P. 2020. A new *Dondice* Marcus Er. 1958 (Gastropoda: Nudibranchia) from the Mediterranean Sea reveals interesting insights into the phylogenetic history of a group of Facelinidae taxa. *Zootaxa*, 4731 (1), 001-022. <https://doi.org/10.11646/zootaxa.4731.1.1>

19. Trainito E., Doneddu M., **Furfaro G.** 2019. *Tritoniopsis cincta* (Pruvot-Fol, 1937) (Gastropoda, Nudibranchia): first record for the Sardinian Sea (Italy) and new additional notes on its distribution and diet. *Studia Marina*, 32 (2), 5-11. DOI: 10.5281/zenodo.3584272

18. Smriglio C., **Furfaro G.**, Trillò P., Appolloni M., Mariottini P. 2019. A review of the Atlantic-Mediterranean *Bursa scrobilator* (Linnaeus, 1758) species complex. *Molluscan Research*, 1–14. <https://doi.org/10.1080/13235818.2019.1600397>

17. Furfaro G., Mariottini P. 2019. Less rare than we thought: two new localities for *Piseinotecus soussi* Tamsouri, Carmona, Moukrim & Cervera, 2014 along the Tyrrhenian coast. *Turkish Journal of Zoology*, 43 (3), 287–289. doi:10.3906/zoo-1809-18

16. Korshunova T., Picton B., **Furfaro G.**, Mariottini P., Pontes M., Prkić J., Fletcher K., Malmberg K., Lundin K., Martynov A. 2019. Multilevel fine-scale diversity challenges the ‘cryptic species’ concept. *Scientific reports*, 9 (1), 6732. <https://doi.org/10.1038/s41598-019-42297-5>

15. Trainito E., Fantin M., **Furfaro G.** 2018. *Trapania pallida* Kress, 1968 (Gastropoda, Nudibranchia): first record for Italian waters and new additional notes on its diet and on Mediterranean records. *Studia Marina*, 31 (2), 32–37. DOI: 10.5281/zenodo.2412558

14. Furfaro G., De Matteo S., Mariottini P., Giacobbe S. Ecological notes of the alien species *Godiva quadricolor* (Gastropoda, Nudibranchia) occurring in Faro Lake (Italy). 2018. *Journal of Natural History*, 52 (11-12), 645–657. <https://doi.org/10.1080/00222933.2018.1445788>

13. Mancini E., **Furfaro G.**, Cervelli M., Di Giulio A., Oliverio M., Salvi D., Mariottini P. 2018. Molecular detection of parasites (Trematoda, Digenea: Bucephalidae and Monorchidae) in the European flat oyster *Ostrea edulis* (Mollusca: Bivalvia). *The European Zoological Journal*, 85 (1), 8–16. <https://doi.org/10.1080/24750263.2017.1420829>

12. Furfaro G., Salvi D., Mancini E., Mariottini P. 2018. A multilocus view on Mediterranean aeolid nudibranchs (Mollusca): systematics and cryptic diversity of Flabellinidae and Piseinotecidae. *Molecular Phylogenetic and Evolution*, 118, 13–22. <https://doi.org/10.1016/j.ympev.2017.09.001>

11. Furfaro G., Trainito E., De Lorenzi F., Fantin M., Doneddu M. 2017. *Tritonia nilsodhneri* Marcus Ev., 1983 (Gastropoda, Heterobranchia, Tritoniidae): first records for the Adriatic Sea and new data on ecology and distribution of Mediterranean populations. *Acta Adriatica*, 58 (2), 261–270.

10. Furfaro G., Trainito E. 2017. A new species from the Mediterranean Sea and North-Eastern Atlantic Ocean: *Knoutsodonta pictoni* n. sp. (Gastropoda Heterobranchia Nudibranchia). *Biodiversity Journal*, **8** (2), 725–738.

9. Furfaro G., Di Giulio A., Mantoni C., Mariottini P. 2017. On the occurrence of *Porpita porpita* (Cnidaria: Hydrozoa) in the Tyrrhenian sea: COI and ITS2 DNA barcoding identification. *Spixiana*, **40**, 1–138.

8. Furfaro G., Picton B., Martynov A., Mariottini P. 2016. *Diaphorodoris alba* Portmann & Sandmeier, 1960 is a valid species: molecular and morphological comparison with *D. luteocincta* (M. Sars, 1870) (Gastropoda: Nudibranchia). *Zootaxa*, **4193** (2), 304–316. DOI: 10.11646/zootaxa.4193.2.6

7. Furfaro G., Mariottini P., Modica M.V., Trainito E., Doneddu M., Oliverio M. 2016. Sympatric sibling species: the case of *Caloria elegans* and *Facelina quatrefagesi* (Gastropoda: Nudibranchia). *Scientia Marina*, **80** (4), 511–520. <https://doi.org/10.3989/scimar.04479.09A>

6. Furfaro G., Mariottini P. 2016. Check-list of the Nudibranchs (Mollusca Gastropoda) from the biodiversity hot spot “Scoglio del Corallo” (Argentario promontory, Tuscany). *Biodiversity Journal*, **7** (1), 67–78.

5. Furfaro G., Oliverio M., Mariottini P. 2016. The southernmost record of *Felimida elegantula* (Philippi, 1844) (Gastropoda: Nudibranchia). *Marine Biodiversity*, **47** (2), 579–584. <https://doi.org/10.1007/s12526-016-0480-7>

4. Furfaro G., Modica M.V., Oliverio M., Mariottini P. 2016. A DNA-barcoding approach to the phenotypic diversity of Mediterranean species of *Felimare* Ev. Marcus & Er. Marcus, 1967 (Mollusca: Gastropoda), with a preliminary phylogenetic analysis. *Italian Journal of Zoology*, **83** (2), 195–207. <https://doi.org/10.1080/11250003.2016.1150525>

3. Furfaro G., Modica M.V., Oliverio O., Cervera J.L., Mariottini M. 2014. Phenotypic diversity of *Thuridilla hopei* (Vérany, 1853) (Gastropoda Heterobranchia Sacoglossa). A DNA-barcoding approach. *Biodiversity Journal*, **5**, 117–130.

2. Prkic J., Furfaro G., Mariottini P., Carmona L., Cervera J.L., Modica M.V., Oliverio M. 2014. First record of *Calma gobioophaga* Calado and Urgorri, 2002 (Gastropoda: Nudibranchia) in the Mediterranean Sea. *Mediterranean Marine Science*, **15** (2), 423–428. <https://doi.org/10.12681/mms.709>

1. Crocetta F., Macali A., Furfaro G., Cooke S., Villani G., Valdes A. 2013. Alien molluscan species established along the Italian shores: an update, with discussions on some Mediterranean “alien species” categories. *Zookeys*, **277**, 91. doi: 10.3897/zookeys.277.4362

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|-----------------------------------|-------------------|
| Year of PhD | 2018 |
| Year of the first ISI publication | 2013 |
| ISI production normalized | 31/8 = 3.9 |

MANUSCRIPTS SUBMITTED

- 1. Furfaro G.**, D'Elia M., Mariano S., Trainito E., Solca M., Piraino S., Belmonte G. Snacking on a polluted seafloor: SEM/EDX analysis of stomach contents reveal microplastics as a common component of the diet of *Bursatella leachii* Blainville, 1817 (Gastropoda, Heterobranchia), *PeerJ*, submitted.
- Trainito E., Doneddu M., **Furfaro G.** Aliens on the move in changing landscapes: new alien molluscs from north-eastern Sardinia (central Mediterranean Sea). *Journal of Natural History*, under review.

3. Işinibilir M., Yuksel E., Torkeri E.E., Doğan O., Karakulak F.S., Uzer U., Dalyan C., **Furfaro G.**, Piraino S. The biodiversity changes of jellyfish in the Sea of Marmara. *Aquatic Sciences and Engineering*, under review.

MANUSCRIPTS IN PREPARATION

1. **Furfaro G.**, Trainito E., Giacobbe S., Garzia M., Mariottini P. A review of the *Polycera* genus (Mollusca, Heterobranchia, Nudibranchia) with new record for the Mediterranean Sea. *Organism Diversity and Evolution*, in prep.

Roma, 25/10/2021



I consent to the use of my personal data in accordance with the provisions of decree 196/2003