

Maria Vittoria Modica



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Current Position: Researcher – Ricercatore III livello

Current Affiliation:

Department of Biology and Evolution of Marine Organisms (BEOM)

Stazione Zoologica Anton Dohrn, Via Gregorio Allegri 1, 00198, Roma (Italy)

Education/Training/Experience

Institute and Location	Degree/ Function	Year	Field of Study
Sapienza University of Roma, Italy	Laurea (Msc)	2004	Biological Sciences
Sapienza University of Roma, Italy	Ph.D.	2008	Animal Biology
Sapienza University of Roma, Italy – Dept. BBCD	Postdoc	2008-2010	Histochemistry and biochemistry in Neogastropoda evolution
Muséum National d'Histoire Naturelle, Paris, France	Visiting curator	2009	Curation of the Malacological Collection
Sapienza University of Roma, Italy – Dept. BBCD	Postdoc	2010-2011	Phylogenetic analysis of large molecular datasets
Muséum National d'Histoire Naturelle, Paris, France	Visiting curator	2009	Curation Malacological Collection
Sapienza University of Roma, Italy – Dept. BBCD	Postdoc	2013-2015	Feeding-related gene expression in non-model invertebrates
Stazione Zoologica Anton Dohrn, Naples, Italy	Researcher (short-term position)	2016-2017	Integrative Taxonomy
Université de Montpellier, France	Marie Curie Fellow	2017-2019	Chemical Ecology
Stazione Zoologica Anton Dohrn, Roma, Italy	Researcher	2019-present	Phylogeny and Evolution of Marine Organisms

Appointments and awards

2008: Malacological Society of London Research Award

2008: SYNTHESYS EU grant FR-TAF-5161 *Molecular Systematics of Cancellariidae*, PI

2016: SYNTHESYS EU grant FR-TAF-6147 *The evolution of Cancellariidae diversity*, PI

2017: Marie Skłodowska-Curie Individual Fellowship no. 748902 *VIPS: Venomics in Predator-prey Systems*, PI

2017: Abilitazione Scientifica Nazionale a Professore di II Fascia SSD 05/B1 Zoologia e Antropologia

2018: ASSEMBLE Plus grant no. SR02022018103fb Cryptic speciation and larval ecology shift in marine snails of the genus *Rissoa*, PI

2020: EASI-Genomics Grant PID15389 *LEGEND – Legacy genomics: a pipeline for DNA extraction and HTS from museum historical collections*, PI

2020: COST Action CA19144 *European Venom Network – EUVEN*, Chair

2021: AICS RINO project *COREBIOM – Conservation and renovation for biodiversity in Mozambique*, co-PI of SZN unit

Other

Member of scientific societies: *Unitas Malacologica*, Italian Zoological Union (UZI), European Society of Evolutionary Biology (ESEB), Italian Society of Evolutionary Biology (SIBE-ISEB), Société Française pour l'étude des Toxins (SFET)

Board member: Italian Society of Evolutionary Biology (SIBE-ISEB)

Fieldwork: Participation in 14 oceanographic cruises and shore-based expeditions in the Mediterranean, Indo-West Pacific and Tropical Eastern Pacific.

Teaching: teaching activities for the courses of Evolutionary Parasitology, Zoology, Comparative Morphology, Marine Biodiversity and Systematic Zoology at University of Roma Tre and Sapienza University of Roma. Lecturer in Curation of Malacological Collections for the course *Methods of Conservation and Record of Naturalistic Material*, Museo Civico di Zoologia, Roma

Editorial activity: Guest editor Research Topic “Diversity and Evolution of Animal Venoms: Neglected Targets, Ecological Interactions, Future Perspectives” (*Frontiers in Ecology and Evolution*); Research Topic “EVOLMAR 2020” (*Frontiers in Marine Science & Frontiers in Ecology and Evolution*); Special Issue “Venoms in Europe and beyond (*Toxicon X*)”.

Organization of meetings, workshops, courses: Chair of the Organizing Committee of the Italian Congress of Marine Evolution - EVOLMAR 2020; member of the organizing committee of EUVEN 2021 – First Congress of the European Venom Network; organizer of the SZN Workshops “Comparative methods in evolutionary biology” (2016), “Molecular phylogenetics” (2017), “Protein Evolution” (2019)

Current involvement in international projects: *VenomSquad* – PI Jessica Ochoa, *KillerSnails LLC*; ERC Consolidator Grant *HYPERDIVERSE* – Keys to evolutionary success: untangling drivers of hyperdiversification Nicolas Puillandre, MHNH, France

Students' Supervision

Currently, co-advisor of 1 PhD (SZN-Sapienza University of Rome).
Co-tutor of 19 BSc and 7 MSc theses.

Publications

List of publications of the last 10 years:

Peer-reviewed journal papers

1. Cioni C., Bonaccorsi di Patti M.C., Venturini G., Modica M.V., Scarpa F., Oliverio M. and Toni M. 2012. Cellular, biochemical, and molecular characterization of nitric oxide synthase expressed in the nervous system of the prosobranch *Stramonita haemastoma* (Gastropoda, Neogastropoda). *Journal of Comparative Neurology* 520: 364-383. <https://doi.org/10.1002/cne.22729>
2. Puillandre N., Modica M.V., Zhang Y., Sirovich L., Boisselier M.-C., Cruaud C., Holford M., Samadi S. 2012. Large-scale species delimitation method for hyperdiverse groups. *Molecular Ecology* 21(11): 2671-91. <https://doi.org/10.1111/j.1365-294X.2012.05559.x>
3. Castelin M., Puillandre N., Kantor Yu.I., Modica M.V., Terryn Y., Cruaud C., Bouchet P., Holford M. 2012. Macroevolution of venom apparatus innovations in auger snails (Gastropoda; Conoidea; Terebridae). *Molecular Phylogenetics and Evolution* 64 (1): 21–44. <https://doi.org/10.1016/j.ympev.2012.03.001>
4. Modica M.V., Mariottini P., Prikic J., and Oliverio M. 2013. DNA-Barcoding of sympatric species of ectoparasitic gastropods of the genus *Cerithiopsis* (Mollusca: Gastropoda: Cerithiopsidae) from Croatia. *Journal of the Marine Biological Association UK* 93(04): 1059-1065. <https://doi.org/10.1017/S0025315412000926>
5. Prikic J., Furfaro, G., Mariottini P., Carmona L., Cervera J.L. Modica M.V., and Oliverio M. 2014. First record of *Calma gobicophaga* Calado and Urgorri, 2002 (Gastropoda: Nudibranchia) in the Mediterranean Sea. *Mediterranean Marine Science*, 15: 423-428. <https://doi.org/10.12681/mms.709>
6. Modica M.V., Puillandre N., Castelin M., Zhang Y., Holford M. 2014. A Good Compromise: Rapid and Robust Species Proxies for Inventorying Biodiversity Hotspots Using the Terebridae (Gastropoda: Conoidea). *PLoS ONE* 9(7): e102160. <https://doi.org/10.1371/journal.pone.0102160>
7. Modica M.V. 2015. The first anatomical description of two trigonostomatine Cancellariidae, *Scalptia androyensis* and *Scalptia foveolata*. *The Italian Journal of Zoology*, 82(3): 398-403. <https://doi.org/10.1080/11250003.2015.1021391> WOS:000359742100011 IF 1.12 Q2 Zoology
8. Modica M.V., Lombardo F., Franchini P., Oliverio M. 2015. The venomous cocktail of the vampire snail *Colubraria reticulata*. *BMC Genomics*, 16(11): 441. <https://doi.org/10.1186/s12864-015-1648-4>.
9. Fassio G., Modica M.V., Alvaro M.C., Schiaparelli S., Oliverio M. 2015. Developmental trade-offs in Southern Ocean mollusk kleptoparasitic species. *Hydrobiologia*, 761: 121-141. <https://doi.org/10.1007/s10750-015-2318-x>
10. 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. *The Italian Journal of Zoology*, 2016: 1-13. <https://doi.org/10.1080/11250003.2016.1150525>
11. Modica M.V., Colangelo P., Hallgass A., Barco A., Oliverio M. 2016. Cryptic diversity in a chirally variable land snail. *The Italian Journal of Zoology*, 83:351-363. <https://doi.org/10.1080/11250003.2016.1186234>
12. Casoli E., Ventura D., Modica M.V., Belluscio A., Capello M., Oliverio M., Ardizzone G. 2016. A massive ingression of the alien species *Mytilus edulis* L. (Bivalvia: Mollusca) into the Mediterranean Sea following the Costa Concordia cruise-ship disaster. *Mediterranean Marine Science*, 17: 404-416. <https://doi.org/10.12681/mms.1619>
13. Aissaoui C., Puillandre N., Bouchet P., Modica M.V., Fassio G., Oliverio M. 2016. Cryptic diversity in Mediterranean gastropods of the genus *Aplus*, with the description of a new species (Neogastropoda, Buccinidae). *Scientia Marina*, 80(4): 521-533. <https://doi.org/10.3989/scimar.04422.12A>
14. Furfaro G., Mariottini P., Modica M.V., Trainito E., Doneddu M., Oliverio M. 2017. Sympatric sibling species: the case of *Caloria elegans* and *Facelina quadrefagesi*. *Scientia Marina*, 80: 511-520. <https://doi.org/10.3989/scimar.04479.09A>
15. Russini V., Fassio G., Modica M.V., DeManteinon M.J., Oliverio M. 2017. An assessment of the genus *Columbella* Lamarck, 1799 (Gastropoda: Columbellidae) from eastern Atlantic. *Zoosystema* 39(2): 197-212. <https://doi.org/10.5252/z2017n2a2>
16. Modica M.V., Russini V., Fassio G., Oliverio M. 2017. Do larval types affect genetic connectivity at sea? Testing hypothesis in two sibling marine gastropods with contrasting larval development *Marine environmental research*, 127: 92-101. <https://doi.org/10.1016/j.marenvres.2017.04.001>
17. Seifert B, D'Eustacchio D., Kaufmann B., Centorame M., Lorite P., Modica, MV. 2017. Four species within the supercolonial ants of the *Tapinoma nigerrimum* complex revealed by integrative taxonomy (Hymenoptera: Formicidae). *Myrmecological News*, 24: 123-144.
18. Modica M.V., Ponte G. 2017. Salivary glands in predatory mollusks: evolutionary considerations. *Frontiers in Physiology – Invertebrate Physiology*, 8:580. <https://doi.org/10.3389/fphys.2017.00580>.
19. Fedosov A, Puillandre N, Herrmann M, Kantor Y, Oliverio M, Dgebuadze P, Modica MV, Bouchet P. 2017. The collapse of *Mitra*: Molecular systematics and morphology of the Mitridae (Gastropoda: Neogastropoda). *The Zoological Journal of the Linnean Society*, 183:253-337. <https://doi.org/10.1093/zoolinnean/zlx073>

20. Modica M.V., Reinoso-Sanchez J., Pasquadibisceglie A., Oliverio M., Mariottini M., Cervelli M. 2018. Anti-haemostatic compounds from the vampire snail *Cumia reticulata*: molecular cloning and in-silico structure-function analysis. *Computational Biology and Chemistry*, 75:168-177. <https://doi.org/10.1016/j.compbiolchem.2018.05.014>
21. Gerdol M., Cervelli M., Oliverio M., Modica M.V. 2018. Piercing fishes: porin expansion and adaptation to hematophagy in the vampire snail *Cumia reticulata*. *Molecular Biology and Evolution*, 35:2654-2668. <https://doi.org/10.1093/molbev/msy156>.
22. Gerdol M., Cervelli M., Mariottini P., Oliverio M., Dutertre S., Modica M.V. 2019. A Recurrent Motif: Diversity and Evolution of ShKT Domain Containing Proteins in the Vampire Snail *Cumia reticulata*. *Toxins* 11(2): 106. <https://doi.org/10.3390/toxins11020106>
23. Fassio G., Modica M.V., Alvaro M.C., Buge B., Salvi D., Oliverio M., Schiaparelli S. 2019. An Antarctic flock under the Thorson's rule: diversity and larval development of Antarctic Velutinidae (Mollusca: Gastropoda). *Molecular Phylogenetics and Evolution*, 132:1-13. <https://doi.org/10.1016/j.ympev.2018.11.017>
24. Fassio G., Modica M.V., Mary L., Zaharias P., Fedosov A.E., Gorson J., Kantor Y.I., Holford M., Puillandre N. 2019. Venom diversity and evolution in the most divergent cone snail genus *Profundiconus*. *Toxins*, 11:623. <https://doi.org/10.3390/toxins11110623>
25. Fassio G., Russini V., Pusateri F., Giannuzzi-Savelli R., Holsaeter T., Puillandre N., Modica M.V., Oliverio M. 2019. An assessment of *Raphitoma* and allied genera (Neogastropoda: Raphitomidae). *Journal of Molluscan Studies*, 85(4): 413-424. <https://doi.org/10.1093/mollus/eyz022>
26. Fedosov A.E., Malcolm G., Terry Y., Gorson J., Modica M.V., Holford M., Puillandre N. 2019. Phylogenetic classification of the family Terebridae. *Journal of Molluscan Studies*, 85(4): 359-388. <https://doi.org/10.1093/mollus/eyz004>
27. Modica M.V., Gorson J., Fedosov A.E., Malcolm G., Terry Y., Puillandre N., Holford M. 2020. Macroevolutionary analyses suggest environmental factors, not venom apparatus, play key role in Terebridae marine snails' diversification. *Systematic Biology*, 69(3): 413-430. <https://doi.org/10.1093/sysbio/sy2059>
28. Russini V., Giannuzzi-Savelli R., Pusateri F., Prkic J., Fassio G., Modica M.V., Oliverio M. 2020. Candidate cases of poecilogony in Neogastropoda: implications for the systematics of the genus *Raphitoma* Bellardi, 1847. *Invertebrate Systematics*, 34(3): 293-318. <https://doi.org/10.1071/IS19039>
29. Modica M.V., Sunagar K., Holford M., Dutertre S. 2020. Editorial: Diversity and Evolution of Animal Venoms: Neglected Targets, Ecological Interactions, Future Perspectives. *Frontiers in Ecology and Evolution*. <https://doi.org/10.3389/fevo.2020.00065>
30. Fassio G., Russini V., Buge B., Schiaparelli S., Modica M.V., Bouchet P., Oliverio M. 2020. High cryptic diversity in the kleptoparasitic genus *Hyalorisia* Dall, 1889 (Gastropoda, Capulidae) with the description of nine new species from the Indo-West Pacific. *Journal of Molluscan Studies*, 86(4): 401-421. <https://doi.org/10.1093/mollus/eyaa028>
31. Fassio G., Bouchet P., Lozouet P., Modica M.V., Russini V., Schiaparelli S., Oliverio M. 2020. Becoming a limpet: an 'intermittent limpetization' process driven by host features in the kleptoparasitic gastropod family Capulidae. *Molecular Phylogenetics and Evolution*. <https://doi.org/10.1016/j.ympev.2020.107014>
32. Modica M.V., Ahmad R., Ainsworth S., Anderluh G., Antunes A., Beis D., Caliskan F., Dalla Serra M., Dutertre S., Moran Y., Nalbantsoy A., Oukkache N., Pekar S., Remm M., von Reumont B.M., Sarigiannis Y., Tarallo A., Tytgat J., Undheim E.A.B., Utkin Y., Verdes A., Violette A., Zancolli G. 2021. The new COST Action European Venom Network (EUVEN) — synergy and future perspectives of modern venomics. *GigaScience*, 10(3), <https://doi.org/10.1093/gigascience/giab019>
33. Santoro M., Palomba M., Modica M.V. 2021. Larvae of *Sulcascaaris sulcata* (Nematoda: Anisakidae), a parasite of sea turtles, infect the edible purple dye murex *Bolinus brandaris* in the Tyrrhenian Sea. *Food control* 132: 108547. <https://doi.org/10.1016/j.foodcont.2021.108547>
34. Stefanni S., Mirimin L., Stanković D., Chatzievangelou D., Bongiorno L., Marini S., Modica M.V., Manea E., Bonofiglio F., del Rio Fernandez J., Cukrov N., Gavrilović A., Cabrera De Leo F., Aguzzi J. 2022. Framing cutting-edge integrative deep-sea biodiversity monitoring via eDNA and optoacoustic augmented infrastructures. *Frontiers in Marine Science*, 8:797140. <https://doi.org/10.3389/fmars.2021.797140>.
35. von Reumont B.M., Anderluh G., Antunes A., Ayvazyan N., Beis D., Caliskan F., Crnković A., Damm M., Dutertre S., Ellgaard L., Gajski G., German H., Halassy B., Hempel B.-F., Hucho T., Igci N., Ikonopoulou M.P., Karbat I., Klapa M.I., Koludarov I., Kool J., Lüddecke T., Ben Mansour R., Modica M.V., Moran Y., Nalbantsoy A., Pachón Ibáñez M.E., Panagiotopoulos A., Reuveny E., Sánchez Céspedes J., Sombke A., Surm J.M., Undheim E.A.B., Verdes A., Zancolli G. 2022. Modern venomics—Current insights, novel methods, and future perspectives in biological and applied animal venom research. *GigaScience*, 11: giac048, <https://doi.org/10.1093/gigascience/giac048>
36. Fassio G., Russo P., Bonomolo G., Fedosov A. E., Modica, M.V., Nocella, E., & Oliverio, M. 2022. A molecular framework for the systematics of the Mediterranean spindle-shells (Gastropoda, Neogastropoda, Fascioliariidae, Fusiniinae). *Mediterranean Marine Science*, 23(3), 623–636. <https://doi.org/10.12681/mms.29935>
37. Fassio G., Stefani M., Russini V., Buge B., Bouchet P., Treneman N., Malaquias M.A.E., Schiaparelli S., Modica M.V., Oliverio M. 2022. Neither slugs nor snails: a molecular reappraisal of the gastropod family Velutinidae. *Zoological Journal of the Linnean Society*. zlac091. <https://doi.org/10.1093/zoolinnean/zlac091>
38. Koritnik, N., Gerdol M., Šolinc G., Švigelj T., Caserman S., Merzel F., Holden E., Benesch JLP, Trenti F., Guella G., Pallavicini A., Modica M.V., Podobnik M., Anderluh G. 2022. Expansion and Neofunctionalization of Actinoporin-like Genes in Mediterranean Mussel (*Mytilus galloprovincialis*). *Genome Biology and Evolution*, 14,11: evac151. <https://doi.org/10.1093/gbe/evac151>
39. Chiappa G., Fassio G., Corso A., Crocetta F., Modica M.V., Oliverio M. 2022. How many abalones live in the Mediterranean Sea? Diversity, in press