Journal of Oceanography

Dr. Conxita Avila
Editorial Board member

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Biography

Dr. Conxita Avila

Dr. Avila finished her PhD in Animal Biology in 1993. She has been awarded many fellowships (pre- and post-doctoral) at national and international level during her research career (ca. 25 years). She was also awarded a Marie Curie TMR and a Ramon y Cajal contract while at the CSIC. She is a Professor at the University of Barcelona since 2007, teaching in the Biology degree, Biotechnology degree, and several Masters (with mention of excellence). She has directed 23 students research projects, 9 master Thesis and 4 Doctoral Thesis, having currently 3 PhD Thesis in process. She has also hosted several foreign postdocs and researchers for short stays in her research group. She has carried out 34 stays abroad, including 7 Antarctic cruises (5 of them as cruise leader). Overall, she has participated in 60 projects, grants and contracts with industries and institutions (at national and international level), of which 21 as PI, and one as Work Package leader of a EU grant. As a result, she has published about 70 papers in SCI journals, 14 papers in other journals, 4 book chapters, and 4 multimedia publications. She also has been PI in the ACTIQUIM project, where a patent (PCT) was produced by Pharmamar SA. Furthermore, she has presented more than 135 communications in congresses and symposia, being Chair person in two cases. She has given 15 conferences at national and international level. She has been reviewer for about 16 SCI journals, and has participated in panels of PhThesis at national and international level, as well as in selecting committees for job contests. Also, she usually participates in committees for evaluation of several Grant Awards, Projects and Fellowships at national and international levels, for different ministries, administrations and institutions. She is a well-considered researcher worldwide in marine chemical ecology, Antarctic marine biology and marine invertebrate biology. Her scientific production includes highly-cited papers on different areas, such as marine natural products, chemical ecology, systematics and biology of marine invertebrates, biodiversity, and biology of molluscs. She participates in the editorial board of the Open Access journal “Oceanography” (OMICS). She is also Rector’s Deputy for Research at the UB since 2009 and Senior Officer of LERU at UB since 2010.

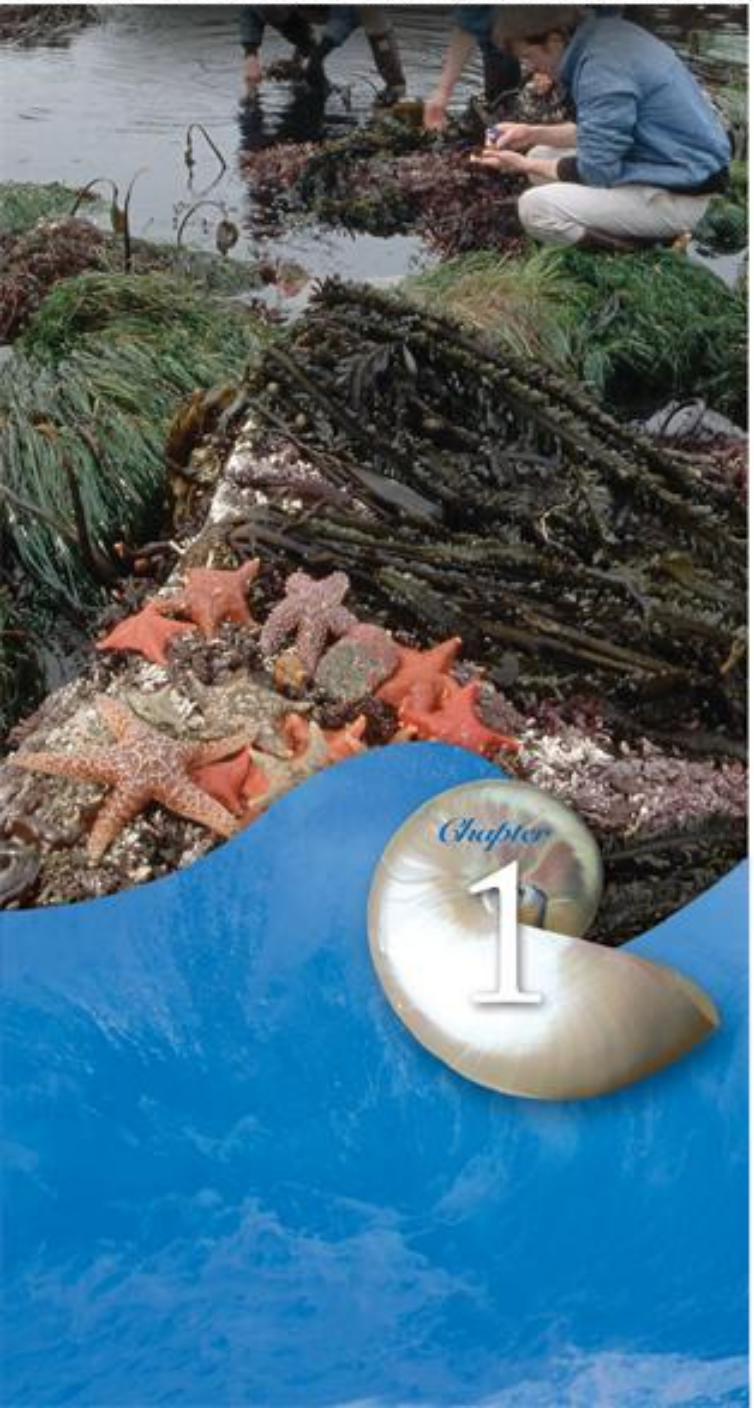
Research Interests

- Animal biology (zoology)
- Animal Ecology
- Biological Oceanography
- Marine Biology

Recent Publications

- Antimicrobial activity of Antarctic bryozoans: an ecological perspective with potential for clinical applications C García-Aljaro, E Mercadé, AR Blanch, C **Avila** - Marine environmental, 2014 - Elsevier
- Defensive metabolites from antarctic invertebrates: does energetic content interfere with feeding repellence? L Núez-Pons, C **Avila** - Marine drugs, 2014 - mdpi.com
- Chemo–ecological interactions in Antarctic bryozoans B Figuerola, L Núñez-Pons, T Monleón-Getino, C **Avila** - Polar Biology - Springer


Marine Biology



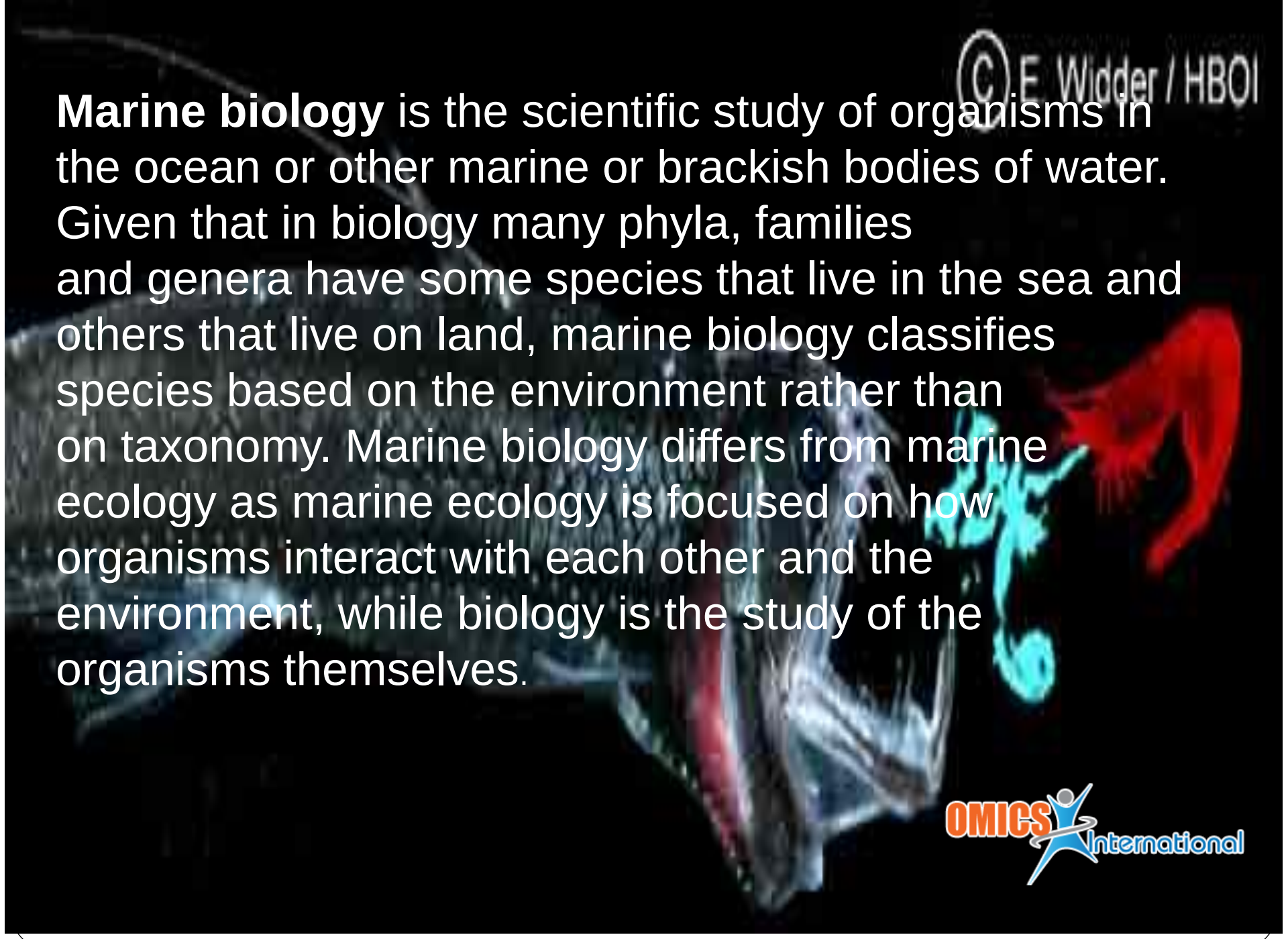
What is Marine Biology?

§Studying organisms that live in the sea (scientific).

Why study it?

§Beauty, mystery, variety, fortune, glory?

§All may be true, but some reasons are also practical!



Marine biology is the scientific study of organisms in the ocean or other marine or brackish bodies of water. Given that in biology many phyla, families and genera have some species that live in the sea and others that live on land, marine biology classifies species based on the environment rather than on taxonomy. Marine biology differs from marine ecology as marine ecology is focused on how organisms interact with each other and the environment, while biology is the study of the organisms themselves.

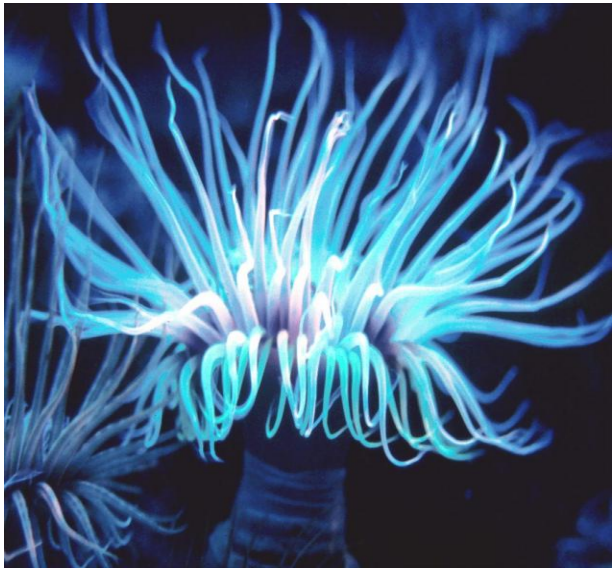
Introduction

- Life may have origins in the sea.

- Ilya Metchnikof (1900) discovered animal immune system in marine anemones.

- Marine biology is a very broad area,

so most researchers select a particular
area of interest and specialize in it.

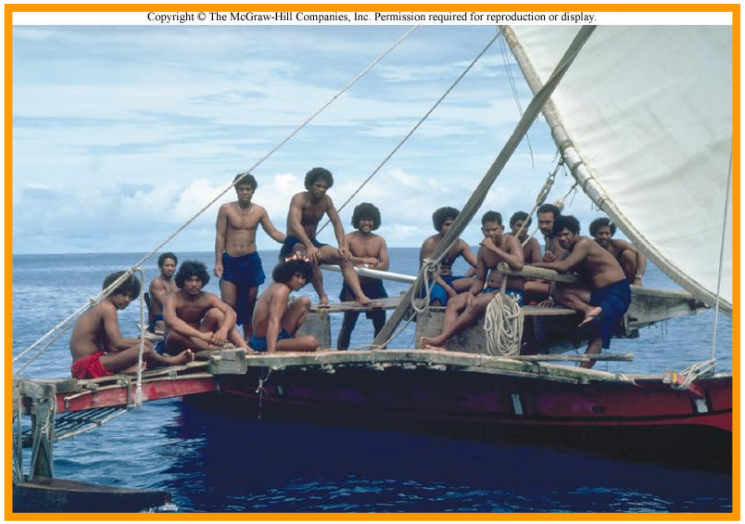


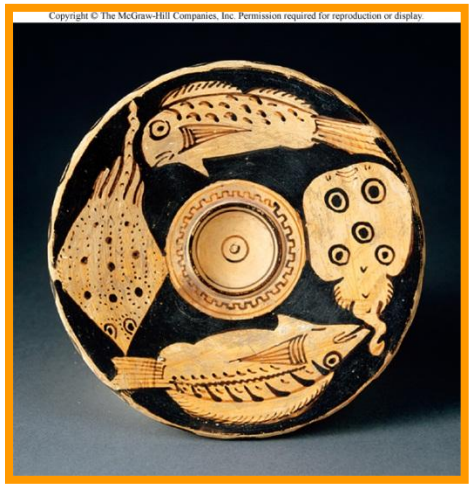
- Marine biology is the study of marine organisms, their behaviors and interactions with the environment.
- Marine biologists study biological oceanography and the associated fields of chemical, physical, and geological oceanography to understand marine organisms.
- Specializations can be based on a particular species, group, behavior, technique, or ecosystem.
- Molecular biology is a related area of specialization in marine biology.
- Researchers apply molecular techniques to many environments ranging from coastal marshes to the deep sea and to various organisms such as viruses, plants, and fish.

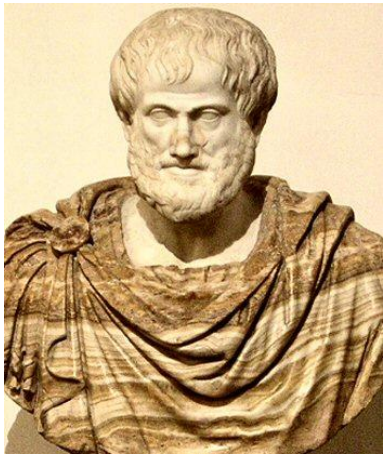
MARINE BIOLOGY

- Life may have origins in the sea.
- Ilya Metchnikof (1900) discovered animal immune system in marine anemones.

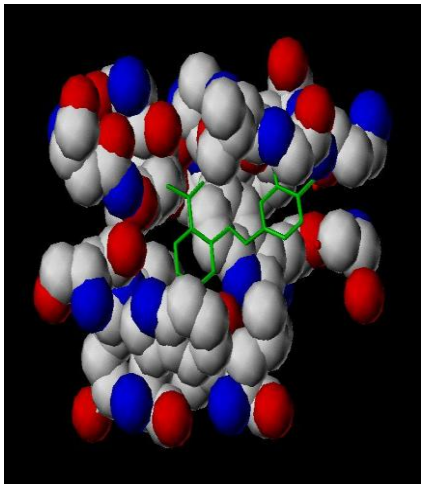
- **History of Marine Biology:**
  - Since we discovered the ocean, we've been marine biologists!
  - Pacific Islanders—ocean subsistance
  - Greeks—Aristotle (described marine life)

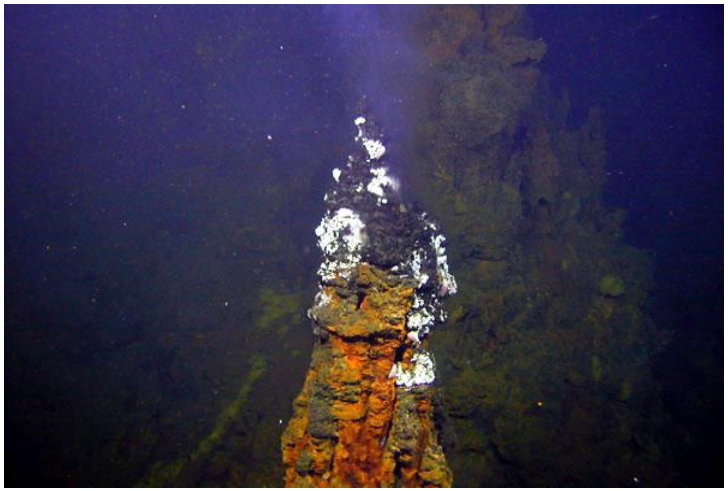






- **What do we get ???**
  - Seafood
  - Medicine: alginates, vaccines, essential oils, proteins, etc.
  - The cure for cancer may very well lie within sharks or other marine life!
  - Raw materials:
  - Iron, Sulfhur, Oil, Salt (more later), Etc.





Who Can Be a Marine Biologist?

- Anyone!

- It's really basic science applied to the sea, not the sea applied to science.

- Nearly *ALL* disciplines are represented in Marine Science (Biology)

- Archeaology
- Biology
- Botany
- Chemistry
- Geology
- Ichthyology
- Oceanography
- Physiology
- Physics
- Seismology
- Medicine
- Welding
- Diving
- Research
- Education
- Recreation

The list goes on and on…

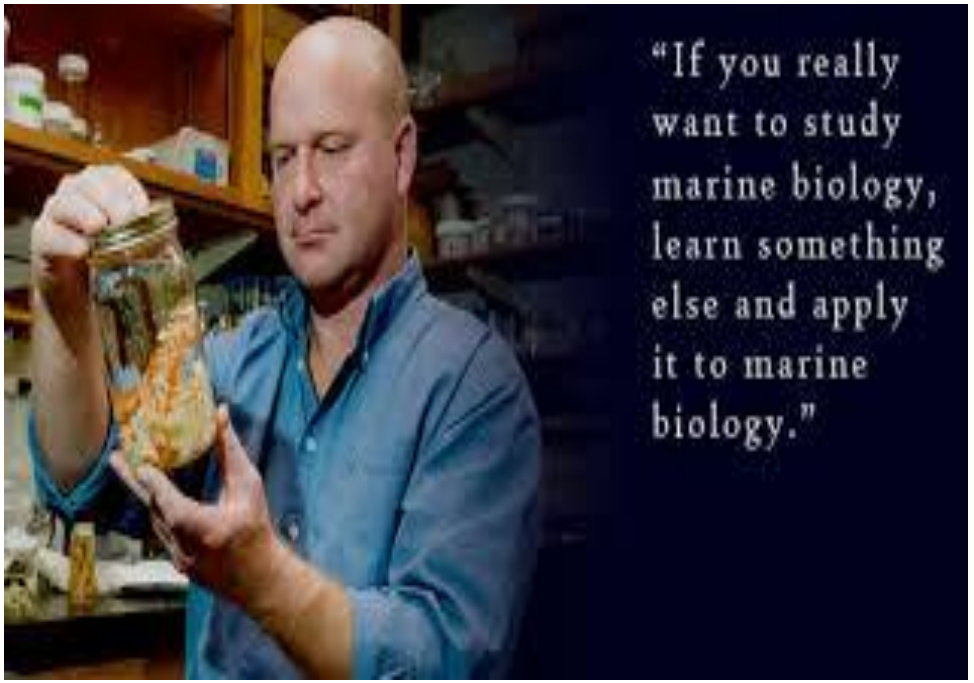
Careers in Marine Science - What can you do with your degree?

EMPLOYERS OF MARINE SCIENCE GRADUATES

- Universities And Colleges
- International Organizations
- Federal And State Agencies
- Private Companies/Consulting Firms
- Marine Related Industries
- Nonprofit Laboratories
- Local Governments
- Self-employed

MARINE RELATED CAREERS

- Researcher
- Professor Or Teacher
- Environmental Consultant
- Natural Resource Manager
- Fisheries Biologist
- Environmental Lobbyist
- Naturalist
- Marine Illustrator
- Aquarium Employee
- Biotechnology Specialist
- Aquaculturist



Why is Marine Science Important?

- As growing global population stresses the ability of our society to produce food, water, and shelter, we will continue to look to the oceans to help sustain our basic needs.

- Advances in technology, combined with demand, will improve our ability to derive food, drinking water, energy sources, waste disposal, and transportation from the ocean.

- It will be up to this and future generations to build upon our existing knowledge of the ocean and its potential to help meet the needs of the world and its inhabitants.

The Contribution of OMICS International to the Topic of Marine Litter and Micro Plastic Studies

- The environmental problem of marine litter is gaining even more scientific attention as more data are becoming available on its occurrence, abundance and geographical distribution.
- Due to its versatile chemical structure, plastic is extensively exploited in several industrial, commercial and medical applications. Approximately 50 percent of total production is made up of goods disposed of within one year of purchase and breaking down in the environment at an uncontrollable rate.
- Macroplastic litter (>5 mm, NOAA) often undergoes to mechanical, chemical and photo-degradation reaching microscopic size and thus harming marine organisms as it can be easily ingested or filter-fed.
  - On this context, the OMICS Intenational supports this drive to knowledge by prompt publication and high-rise visibility of research.
  - In contrast to the traditional model where access to content can cost hundreds or thousands of dollars, its access to publications is free

According to Avila's research ,

Many bioactive products from benthic invertebrates mediating ecological interactions have proved to reduce predation, but their mechanisms of action, and their molecular identities, are usually unknown. It was suggested, yet scarcely investigated, that nutritional quality interferes with defensive metabolites. This means that antifeedants would be less effective when combined with energetically rich prey, and that higher amounts of defensive compounds would be needed for predator avoidance. We evaluated the effects of five types of repellents obtained from Antarctic invertebrates, in combination with diets of different energetic values. The compounds came from soft corals, ascidians and hexactinellid sponges; they included wax esters, alkaloids, a meroterpenoid, a steroid, and the recently described organic acid, glassponsine. Feeding repellency was tested through preference assays by preparing diets (alginate pearls) combining different energetic content and inorganic material. Experimental diets contained various concentrations of each repellent product, and were offered along with control compound-free pearls, to the Antarctic omnivore amphipod Cheirimedon femoratus. Meridianin alkaloids were the most active repellents, and wax esters were the least active when combined with foods of distinct energetic content. Our data show that levels of repellency vary for each compound, and that they perform differently when mixed with distinct assay foods. The natural products that interacted the most with energetic content were those occurring in nature at higher concentrations. The bioactivity of the remaining metabolites tested was found to depend on a threshold concentration, enough to elicit feeding repellence, independently from nutritional quality.

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