

# MedSpon

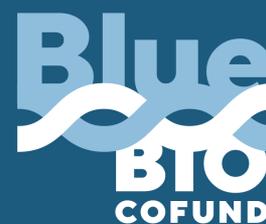
## Characterization of new antibiotic principles against WHO priority pathogens of sustainable produced marine sponges for nutraceutical applications

### About the project

Marine sponges are receiving increasing public, economic and scientific interest as source of bioactive compounds representing pharmaceutical potential. As sessile organisms sponges have developed chemical defence mechanisms to avoid the covering of algae, bacteria and infectious microorganisms. Regarding the development of new drugs, secondary metabolites are of special interest. Project objectives will address the discovery of new sources from sponge secondary metabolites especially of *Chondrosia reniformis* and *Axinella polypoides* in collaboration with the detection of convenient recirculating aquaculture system conditions for sponge fragments to build up a sustainable source for sponge biomass.

In both sponge species novel nucleosidase enzymatic activity was detected, an ATP N-glycosidase and ATP polymerase, respectively. The first enzyme converts adenosine-5'-triphosphate into adenine and ribose-5-triphosphate, which possibly functioning as messenger substances. Project objectives will focus amongst others on the antimicrobial activity of sponge extracts as well as new antibiotic principles in marine sponges against WHO priority pathogens.

Considering the production of secondary metabolites can change during the life cycle of the species (e.g. reproductive period, food availability) vigorous wild populations of the target species will be studied at Italian field sites to assess habitat specifications and providing information for ex-situ cultivassions. Successful mass production of sponges in land-based aquaculture with recirculating technology under controlled environment is aspired. To examine adequate rearing conditions related to amount and content of bioactive compounds, additional tests on abiotic factors and nutrition are conducted. Formation potential of bioactive compounds and microbial communities associated with different sponge species/rearing conditions will be verified with molecular techniques.



### Project Overview

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#### Project Coordinator:

Joachim Henjes, Alfred Wegener, Institute  
Helmholtz Centre for Polar and Marine  
Research, Aquaculture Research,  
Bremerhaven, Germany

#### Project Partners:

- Mrs. Athanasia Balafouti, SpongiPharm EPE Administration, Athens, Greece
- Dr. Wolfgang Schatton, KliniPharm GmbH, R&D, Eschborn, Germany
- Prof. Carlo Cerrano, Polytechnic University of Marche, Department of Life and Environmental Sciences, Ancona, Italy

#### Keywords:

Sponge, aquaculture recirculation systems, antimicrobial activity, nutraceutical

#### Priority Area:

Exploring synergies across sectors

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