

SPECIAL - SPONGE CELLS AND ENZYMES FOR INNOVATIVE APPLICATIONS

SPECIAL project consortium

University of Minho, Portugal; Tel Aviv University, Israel; Porifarma BV, Netherlands; Studio Associato Gaia SNC dei Dottori Antonio Sara e Martina Milanese, Italy; Università degli Studi di Genova, Italy; Universitätsmedizin der Johannes Gutenberg-Universität Mainz, Germany; National Research Center for Geoanalysis, China (People's Republic of); Karolinska Institutet, Sweden; Atrahasis SRL, Italy; University of Azores, Portugal; NanotecMARIN GmbH, Germany
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Project partners present at this conference:

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The SPECIAL project aims at delivering breakthrough technologies for the biotechnological production of cellular metabolites and extracellular biomaterials from marine sponges. These include a platform technology to produce secondary metabolites from a wide range of sponge species, a novel *in vitro* method for the production of biosilica and recombinant technology for the production of marine collagen.

Research on cellular metabolites is based upon our recent finding that non-growing sponges continuously release large amounts of cellular material. Production of biosilica is being realized through biosintering, a novel enzymatic process that was recently discovered in siliceous sponges. Research on sponge collagen is focussed on finding the optimal conditions for expression of the related genes.

Alongside this research, the project is identifying and developing new products from sponges, thus fully realizing the promises of marine biotechnology. Specifically, the project is focussed on potential anticancer drugs and novel biomedical/industrial applications of biosilica and collagen, hereby taking advantage of the unique physico-chemical properties of these extracellular sponge products.

The consortium unites seven world-class research institutions covering a wide range of marine biotechnology-related disciplines and four knowledge-intensive SMEs that are active in the field of sponge culture, drug development and nanobiotechnology.

The project is clearly reflecting the strategic objectives outlined in the position paper European Marine Strategy (2008); it will enhance marine biotechnology at a multi-disciplinary, European level and provide new opportunities for the European industry to exploit natural marine resources in a sustainable way. In particular, the biotechnological potential of marine sponges, which has for a long time been considered as an eternal promise, is definitely being realized through the SPECIAL project.

Up to now, some project results can be highlighted:

- Collection and characterisation of various species of sponges from different habitats, namely Mediterranean Sea, Red Sea, Azores and Caribbean Sea (Curaçao);
- Successful mariculture of two species of marine sponges;
- Extraction and characterisation of collagen from one species of sponge;
- Characterisation of genes regulating collagen expression on sponges;
- *In-vitro* culture of sponge cells with a primmorph development state;
- Screening of sponge extracts and subsequent fractions for anti-tumor activity in order to identify bioactive compounds;
- Development of nature made scaffolds for tissue engineering approaches from the collagen native structure of several sponge species;
- Delivery of newsletters, available through the project website (<http://www.project-special.eu/>)
- Production of videos on project topics (within Marine Biotechnology), available through the project SPECIAL YouTube channel (<http://www.youtube.com/user/projectSPECIALeu>);
- Organisation of Open Days about project outputs and Marine Biotechnology (Italy and Israel).