# RITMARE ITALIAN RESEARCH AND INDUSTRY FOR THE SEA : IAMC CNR ACTIVITIES IN THE FIELD OF MARINE BIOTECHNOLOGY

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Ministero dell'Istruzione, dell'Università e della Ricerca

Public institutions

Private sector

Stakeholders

Istituto Nazionale di Oceanografia e di Geofisica Sperimentale

ARPA regionali

RITMARE is the principal National Projec about the Sea, 2012-2016 funded by the Ministry of Education, University and Research. is coordinated by the National Research Council and brings together an integrated effort in the Italian scientific community involved in research on marine and maritime issues, as well as a significant representation of the private sector

## Objectives

To support integrated policies for the safeguard of the environment (the health of the sea);

To implement a strategy of prevention and mitigation of natural impacts (the sea as a risk factor)

To strengthen cooperation between the world of research and Italian Industry in two complementary directions

To enable sustainable use of resources (the sea as a system of production);

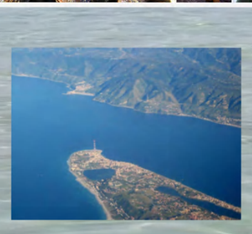
To Increase synergies between those Research Bodies and University Consortia that are involved in marine research, facilitating the emergence of excellence and promoting cooperation

To enhance Italian participation in European projects and initiatives, increasing the number of Italian scientists appointed as project coordinators and promoting participation in joint programmes (e.g. JPIs) where the resources made available by the participants are matched by contributions from the EU.

## Structure of the project: 7 sub-project

1 - Maritime Technologies for the development and construction of a Demonstration Vessel

2 - Technologies for Sustainable Fishing



3 - Planning of the Maritime Space in Coastal Waters

4 - Planning of the Deep Marine Environment and the Open Sea

5 - Observation System for the Marine Mediterranean Environment

6- Research, Training and Dissemination Structures

7 - Interoperable Infrastructure for the Observation Network and Marine Data

RITMARE provides a platform to strengthen and disseminate at national level outcome from other projects intensifying the occasions for the collaboration with industry and stakeholders. IAMC-CNR is implementing a multidisciplinary approach in the field of marine biotechnology. Moreover By means of its network, which includes researchers of various disciplines and industrial partners, RITMARE will facilitate new multi-sector partnerships (i.e. including those concerned by bio-medicals/pharmacology). More particularly, the transfer of knowledge and technology across the various collaborating sectors, relying on the National Research Council facilities, will be carried out by means of a targeted dedicated office.

## DeepSea

Definitive list of products

Gene expression II

Positive isolates

Collection of isolates

Gene expression I

Bioinformatic platform

Metagenomic data

WHAT

WHO

HOW

Study of unknown genes function

Correlation between sequence and activity in specific classes of enzymes of biotechnological interest

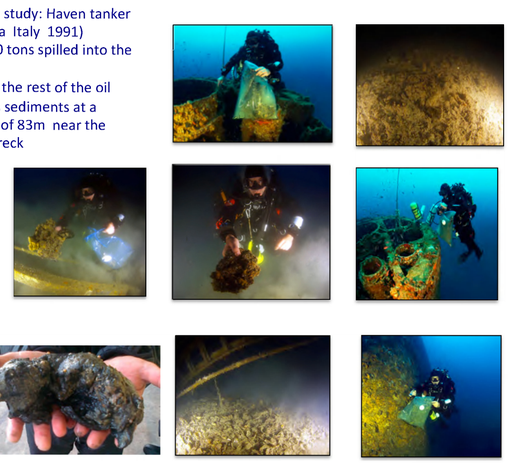
Discovery of new clusters of genes involved in the pathwa for the synthesis of bioactive compounds

Identification of new bioactive compounds (antibiotics, antifungal compounds and cytotoxic agents (eg anti - cancer).

## Bioremediation

**Sampling**

A case study: Haven tanker (Genoa Italy 1991) 80.000 tons spilled into the sea
Today the rest of the oil covers sediments at a depth of 83m near the shipwreck



**Sample analyses**


Schematic overview of metabolism and transport in A. borkumensis SK2. One of the most active member of marine microbial community during the natural occurring biodegradation processes

**In situ application**


Study of the relevant molecular microbial diversity and the processes related to the removal of Hydrocarbons contaminants from sediments, seawater and wastewaters.

Identification of in situ biodegradation pathways and isolation of key microrganisms

Understanding on systematics and new genes, pathways useful for industrial biotechnology

Understanding on systematics, microrganisms, enzymes, new genes, pathways useful for industrial biotechnology

Design and validation of models and different types of clean-up strategies
Exploring the application fields in collaboration with industry and stakeholders.

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