

TÜBİTAK

MARMARA RESEARCH CENTER

Partner Potential for Calls 2 and 3

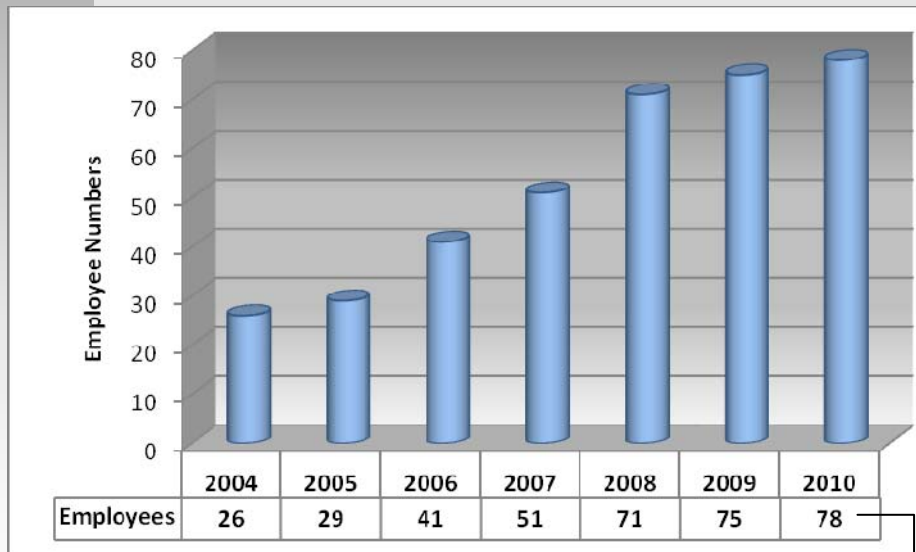
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MRC : EI - MRG and GEBI - EMBG

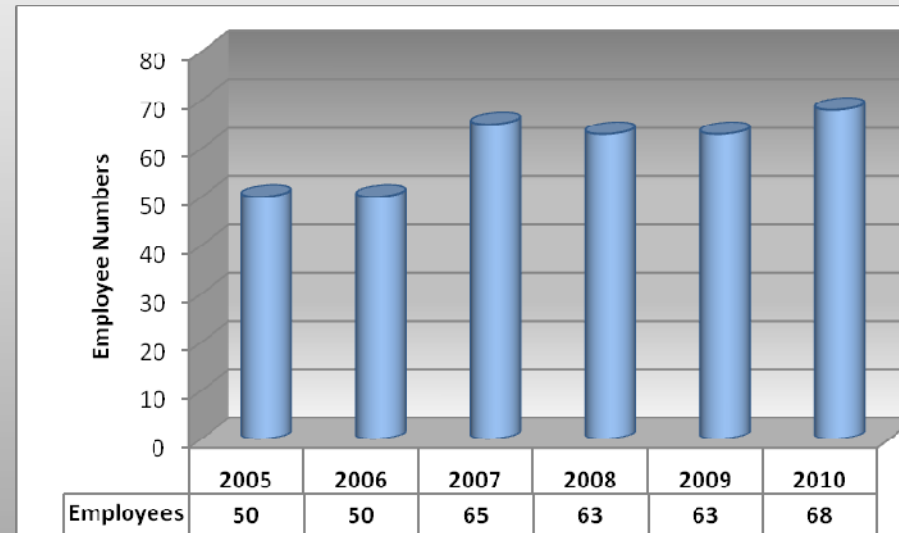
- **Environment Institute** - Marine Research Group
- **Genetic Engineering and Biotechnology Institute** - Enzyme and Microbial Biotechnology Group



Profile of Marine Research Group

Ph.D/MSc/BSc/Tech : 9/7/2/4

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Profile of EMBG

Ph.D/MSc/Tech : 6/6/1

MRC- EI Marine

Projects (2006-2011)

Expertise

- Physical oceanography and ocean modelling,
- Chemical oceanography,
- Biological oceanography (upper pelagic system and benthic)
- Sediment chemistry

More specifically the coastal and marine ecosystem state and impact studies have been focused on:

- C, N, P cycling in semi-enclosed sea basins
- Primary productivity and limiting nutrients
- Phytoplankton speciation/isolation/cultivation
- Chemotaxonomic approach to characterize phytoplankton assemblages
- Bioassays with phytoplankton on nutrient consumption and DOC/CH production
- Chemical and biological investigations on mucus/mucilage aggregates
- Chemical pollution (water/sediment/biota)
- Ecotoxicology (Biomarkers ve toxicity tests)
- Macro-benthic species diversity and abundance

Tools and Products:

- M & A of coastal waters – Classification
- ICZM – ESE systems approach
- Management of accidental pollution -oil spills and ballast waters : Decision support systems with IT contribution
- Development and utilization of environmental and simulation models
- Ocean-ecosystem numerical modelling

: Pollution, eutrophication, biodiversity loss

Sea-going experience :

- Black Sea , Marmara Sea and the Straits, Mediterranean
- Baltic, N-E and S-W Atlantic Ocean
- Southern Ocean and Antarctica

MRC- GEBI Enzyme and Microbial Biotech

Projects (2006-2011)

- RD and IR projects: 6 + 3
- **Scale and type of RD projects:**
integrated/small;
national/ international



Expertise

Microbial Biotechnology

- Microorganism screening and identification
- Microbial fermentation processes
- Immobilized microorganism technology
- Estimation of microbial biodiversity

Enzyme Technology

- Industrial enzyme production
- Purification and characterization of industrial enzymes
- Enzyme immobilization and stabilization
- Enzyme engineering
- Proteomic studies
- Protein structure-function relationships

Enzyme and Microorganism Genetics

- Molecular identification of microorganisms
- Recombinant DNA technology
- Site-directed mutagenesis
- Mutations

Technological and Scientific Support

- Development of enzyme activity measurement techniques
- Molecular biologic analyses
- Microbiological analyses
- Biotechnological applications
- Enzyme technology and molecular biology training

MRC Potential Contribution to Call Ocean.2011-3

- “...expert systems...built on GMES, GEO, EMODNET, DCF...to fill short and long term data gaps...via R/V and integrated observation..”
 - MRC provides expertise in IT applications re: emergency response, operational oceanography
 - A regional class R/V is currently in acquisition
 - Close connection to existing networks and experience with the directives
- “...develop science-base...to understand how the natural and the anthropogenic interaction”
 - MRC, locationwise, provides a testbed to build an ‘integrated knowledge-base’
 - Access to distributed nat’l and int’l sources; opportunities to integrate
- “...a scientific rationale...to implement GES via the promotion of MSFD..improving prediction and management...”
 - MRC is closely connected to both the research and the policy domain
 - Past experience blends research, technology, policy and management
- “...cover both MED and BS to foster international cooperation..”
 - MRC provides the actual morphological, physical and political connection between the MED and BS,
 - already substantially involved in regional networks and collaborative projects

MRC Potential Contribution to Call Ocean.2011-2

- “...sequencing of marine environmental samples...microbial biodiversity ”
 - MRC provides capacity on microorganisms screening and identification
 - Application of techniques for molecular identification
- “...a better understanding of ...marine microbial influence on biogeochemical cycles and hence on climate change.....”
 - Biogeochemistry of C, N, P have been studied in semi-enclosed sea basins , but the microbial loop not properly studied and understood
 - Offers experience in regional and basin-scale coupled ocean-ecosystem numerical modelling
 - Also the use of proteomic and metabolic engineering tools
- “...To interpret these data in their environmental context is a prerequisite...”
 - MRC provides qualified sampling/analysis techniques for marine environment descriptors to collect biogeochemical/oceanographic data
 - And capable to link environmental information with laboratory experiments to test hypothesis
- “...biotechnological applications...”
 - MRC has the potential to investigate microorganisms for biotechnological applications as production of enzymes, microbial polymers and other metabolic materials
 - Finally, MRC offers a multi-disciplinary approach with its institutional structure and a multi-sectorial partnership with industry and SMEs having an active interaction with TUBITAK’s technology development zone.