



Training in Biodiversity and Biotechnology for sustainable development: projects financed by the Italian Cooperation Agency in Mozambique

2010-2019

PREVIOUS INITIATIVES



Title: ***Training of researchers at the Biotechnology Center of Eduardo Mondlane University of Maputo (AID 9397)***

Duration: ***36 months + 6 (2010-2014)***

Partners: ***CB-UEM, DSBM UNISS, DBBCD SAPIENZA University of Rome***

Title: ***Training in biotechnology applied to the environment and health in Mozambique (AID 10524)***

Duration: ***12 months + 6 (2015-2017)***

Partners: ***CB-UEM, MHN-UEM, DSBM UNISS, DBBCD, Polo Museale SAPIENZA University of Rome***



Main Results of AID10524



Budget	€ 806,950
Duration	12+6 months
Students enrolled at Master School	12
Master fellowships	6
Research fellowships	8
Research projects	15
Italian Professors visiting for training and research	7
Internships in Italy	5
Technical and administrative	13
Laboratories rehabilitated	3



AID 11096
PROJECT DETAILS



Duration: 24 months (2017- 2019)

Budget: Euro 1.430.000

Institution: Department of Biomedical Sciences (DSBM), University of Sassari

Partners

Mozambique:

Centre for Biotechnology, E. Mondlane University

Natural History Museum, E. Mondlane University

Italy:

Department of Biology and Biotechnology “Charles Darwin” (DBBCD), Sapienza University of Rome

Polo Museale, Sapienza University of Rome

University of Parma

Experimental Zooprophyllactic Institute of Sardegna, IZSS

CNR Torino



Scientific Committee

Prof. Piero Cappuccinelli, DSBM University of Sassari

Prof. Salvatore Rubino, DSBM University of Sassari

Prof. Rodolfo Negri, DBBCD, Sapienza University of Roma

Prof. Paolo Audisio, DBBCD, Sapienza University of Roma

Prof. Giorgio Manzi, Polo Museale, Sapienza University of Roma

Prof. Francesco Nonnis-Marzano, University of Parma

Management and Coordination Committee

Project manager, Dr. Joaquim Saide, Director

Coordinator for MHN-UEM, Dr. Lucilia Chuquela, Director

Coordinator for CB-UEM, Prof. Jose' Fafetine, CB-UEM

Italian Coordinator, Prof. Mauro Colombo

Scientific Coordinator, Dr. Elisa Taviani, DSBM, University of Sassari

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OBJECTIVES



General

To contribute to the training of the researchers and teachers of the CB-UEM and MHN-UEM for the solution of environmental and health challenges in Mozambique.

Specific

- 1) To strengthen the research for the control of endemic, transmissible, epidemic and genetic, human, animal and plant diseases;
- 2) To develop the use of natural resources and the conservation of the national biodiversity, through the extensive study of animal and plant species;
- 3) To contribute to train technical and scientific managers of the environment and health at the institutional level (ministries and local administrations) and public and private teachers (universities and colleges);
- 4) To contribute to providing researchers and laboratory technicians for the application of the biotechnologies necessary for advancement of the private sector.





DESIGN AND DEVELOPMENT OF RESEARCH LINES AT THE BIOTECHNOLOGY CENTER AND MUSEUM OF NATURAL HISTORY.

Diagnostics and molecular epidemiology of communicable diseases, concerning man, animals and plants, with a prokaryotic, eukaryotic and viral etiology and their possible vectors. Development of new molecular diagnostic tests, immunological and molecular characterizations of the pathogenic species; identification and molecular characterization of pathogenic organisms present in the environment; development of diagnostic kits with commercial application.

- Profile of the hemoglobinopathies in newborns of the gynecology and obstetrics service of the Central Hospital of Maputo. CB-UEM.
- Reassessment of PCR-RFLP AD2 using isolated strains of *Trypanosoma congolense* resistant and sensitive to acetazine diminazene. CB-UEM.
- Production and evaluation of monoclonal and polyclonal antibodies against the cytoplasmic malate dehydrogenase of *Trypanosoma congolense* for use in the diagnosis of African animal trypanosome. CB-UEM.
- Detection of phytoplasma vectors due to lethal yellowing of the coconut, by transmission test. CB-UEM.
- Search for potential etiologic agents in ticks of the Limpopo National Park, Massingir district. CB-UEM.

Genetic characterization of populations: Collection of specimens, characterization and identification of animal and plant species of scientific, environmental and economic interest, for the study and environmentally sustainable use of natural resources, with particular attention to biodiversity, wildlife and entomology . Observatory for the use of genetic resources. Ethno-anthropology studies on genetic-molecular bases.

- Biology and phylogeny of the Lethrinidae family (genus Lethrinus) of the coral reef of the Mozambican coast: a contribution to the taxonomic revision. MHN-EMU
- Genetic structure of populations of *Teretrius nigrescens* (Coleoptera: Histeridae), predator of the invasive parasite insect of stored cereals *Prostephanus truncatus* (Coleoptera: Bostrichidae), in the districts of Matutuine and Magude, province of Maputo. MHN-EMU.
- Study of the genetics of buffaloes in Mozambique, MHN-UEM
- Study of the variation of *Oreochromis niloticus* (tilapia) in the southern region of Mozambique. MHN-EMU

Study of the anthropic impact on the environment: ecology and climate change, territorial planning for the balance between conservation and agriculture parks and human / wildlife conflict. Development of environmental monitoring methods: assessment of the environmental impact of pollutants through sensitive organisms and development of specific molecular probes; control of genetically modified organisms.



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Activities and results of first semester



Activity:

Training at the Master School in Biotechnology

Results:

- 12 candidates admitted to the 5th cycle of the Master
- 6 scholarships awarded
- 4 Master's thesis (4th cycle) under supervision
- 4 Italian professors for the modules:
 - Biotech Laboratory, DSBM University of Sassari
 - Molecular biology , DBBCD Sapienza University of Rome
 - Pathogenesis and cellular interaction, DSBM University of Sassari
 - Immunology, DSBM University of Sassari
 - Genetic characterization, DBBCD Sapienza University of Rome



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Activities and results of first semester



Activity:

Training of 15 researcher of the Center for Biotechnology and the Natural History Museum

Results:

- Scientific and economic support through **8 research scholarships** awarded to CB-UEM and MHN-UEM researchers
- Seminar of presentation of research scholarships projects
- Support for projects already underway at the CB-UEM in the areas:
 - Epidemiology and molecular diagnostics: 5 projects
 - Genetic characterization of populations: 4 projects
 - Environmental toxicology: 1 project
- Training internships and scientific collaboration in Italy





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Activities and results of first semester



Activity:

Systematization and reorganization of the collections conserved by MHN-UEM

Results:

- Research Unit of the Museum coordinated by the Project: 3 researchers, 3 laboratory technicians and 4 interns
- 3 training/collaboration visits from the DBBCD of the Sapienza Univ. of Rome for the area of **entomology**
- 8 field trips for the collection of entomological specimens
- 1 training/collaboration visit from the University of Parma for the area of **ichthyology**
- Reorganization and restoration of the collection of fish currently in formalin to be transferred into alcohol
- 1 mission of the Sapienza Museums for the evaluation aimed at a rehabilitation intervention of the environments and the MHN-UEM exhibition areas



The Project has promoted the following collaboration agreements with different international partners:

- IHE-DELFT: SMALL
- University of Ferrara e DBBCD Sapienza University of Rome “Human genomes, epigenomas and microbiomes”
- IZS of Abruzzo and Molise, Jembi Health System, Cape Town, South Africa: “*Agreement between the Central Veterinary Laboratory at the Animal Science Directorate of the Mozambican Agricultural Research Institute*”,
- University of Parma: research and training in genetic characterization of fish
- IZS of Sardegna for scientific collaboration and training in the area of zoonosis vectors
- Dep. Veterinary Tropical Diseases, Univ. Pretoria, “*Community on the Move: animal and human health challenges*” in the area of zoonosis vectors, started in previous project AID10524.

