Geomicrobiological and Metagenomic Studies (GeMS) of Puerto Rican Soils.

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AWARD NUMBER: 2007-02386

FUNDS ASSIGNED: $275,000

ABSTRACT

GeMS is a joint cooperative initiative with professionals and students from the University of Puerto Rico at Mayagüez and Humacao to train a new generation of more competitive students in functional genomics, bioprospecting, geomicrobiology and natural resources conservation. The students will participate in exchange programs with the University of Wisconsin-Madison, and the Center for Integrative Geosciences at the University of Connecticut. GeMs project will enrich the curriculum at the UPR-system by developing and implementing the first Metagenomic course, and will provide to the participating students the opportunity of visiting schools in Puerto Rico to share what they have learned.

Institutions and Agencies/Organizations Involved and USDA Collaborators

Animal and Plant Health Inspection Services

Forest service

UPR-Mayagüez

Cooperative State Research, Education, and Extension Service

Hispanic Service Institutions

UPR-Humacao

CoHemis

CSREES\USDA Relevant Priority or Mission Area

A. Students Experimental Learning

B. Student recruitment, retention & educational equality

C. Expanding Career opportunities

D. Facilitating interaction with other academic institutions

GeMS-USDA-HSI-CSREES Objectives

A. To train and educate a new generation of professionals in the field of metagenomics.

B. To generate metagenomic libraries from different forest soils in Puerto Rico and discover new genes and enzymes with Biotechnological and Biomedical applications.

C. To develop and implement in the curriculum, an Introductory Course in Metagenomics at the UPRM, and a comparison and a course in Topics in Functional Genomics at UPR-H.

D. Expand students' career opportunities involving them in emerging disciplines research, combined with natural resources conservation awareness.

E. To visits fifteen rural elementary and secondary school within Puerto Rico to teach soil Microbiology and forest conservation, to change the overall perception of our forest importance.

F. To develop responsive, and responsible team of young and future scientists that understand the importance of natural resources conservation and reconcile it with the new emerging technologies and their applications.

Beneficiaries

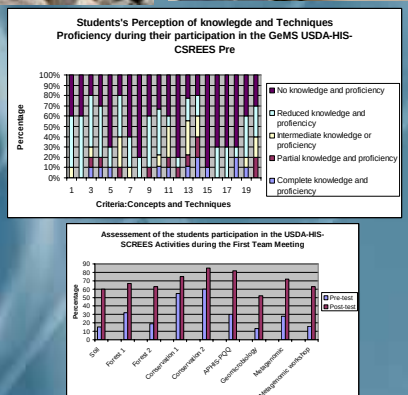
A. Nine Students from UPR-Mayagüez, and four students from UPR- Humacao.

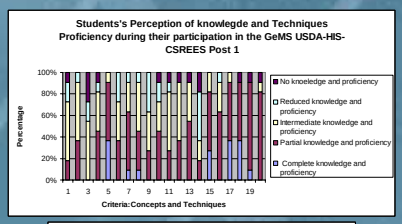
B. Secondary School students, teachers and Special programs from several regions in Puerto Rico.

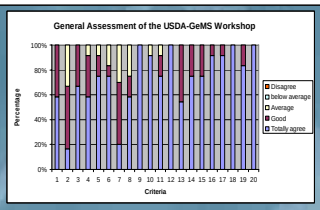
C. College students and faculty from UPR-system.

Activities and Evaluation

First Team Meeting for Geomicrobiological and Metagenomic Studies (GeMS) of Puerto Rican Soils







GeMS-USDA-HIS-CSREES Outreach Activities

Visit to Petra Mercado Secondary School, Humacao

Biotechnology day Conference to High School Teachers of the Eastern Region of Puerto Rico

Art School at Humacao

Expected impact

A. Discovery of novel bioactives compounds which will allow possible interdisciplinary collaboration with educational and research centers with industries, including technology transfer.

B. More than 500 students from K-12 will be impacted, by knowing about soils, metagenomics, Geomicrobiology, Bioprospecting, conservation of natural resources and career opportunities affected or generated by those emerging disciplines.

C. Expand careers opportunities, and increase the number of students that enroll in doctoral programs related to the propose research project.