Collaborative Research on Microbial Diversity in Costa Rica

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Background and significance of the collaborative research

Microbes predominate in the planet biosphere and are the richest in biodiversity. The diversity of their living strategies and the range of their environmental adaptations indicate that microbes have long ago solved many problems for which scientists are seeking solutions today. Costa Rica, though with a land area of only 51.100 km^2, is believed to possess nearly 5% of the total species estimated worldwide. The state government pays attention on biodiversity conservation and sustainable use. The University of Costa Rica (UCR) is dedicated in the biological diversity study, and the National Biodiversity Institute (INBio) of Costa Rica has made a lot of progresses in the areas of inventory and monitoring, conservation, biodiversity informatics as well as bio-prospecting.

The Institute of Microbiology, Chinese Academy of Sciences (IMCAS) is a national leading institute in microbial resources collection, resources-based biological research and biotechnology development. The institute harbors two state key laboratories, namely State Key Laboratory of Microbial Resources and StateKey Laboratory of Mycology, which dedicate to study of the biodiversity of prokaryotic and eukaryoticmicrobes. In addition, IMCAS-BRC is committed to preserving and managing the microbial strains, which is the largest culture collection center in China.

In the year of 2009, CAS and Costa Rica signeda collaborative MOU on investigating and exploiting the biodiversity in Costa Rica. To investigate the diversities of microbes and their genes in Costa Rican environments, so as to promote the use of microbial resources in

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The Costa Rican hot springs

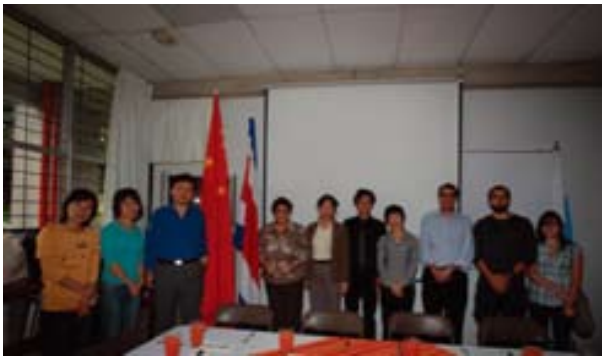
The Costa Rican herbivorous insects

the sustainable development, in 2010, the Institute of Microbiology, CAS and the University of Costa Rica (UCR) signed a research agreement on the microbial diversityin Costa Rican environments, and initiated a joint research:"Microbial resources in Costa Rican environments: diversity, potential assessment and resource management platform development", which is supported bythe CAS International Cooperation Funding.The 3-year project is scheduled from Oct. 2010 till Oct. 2013.

Progress of the joint research:

Based on the common interests of Chinese and Costa Rican scientists,the collaborative project aims to investigate the species and gene diversity of the special ecosystems in Costa Rica.The ecosystems to be investigated are restricted to Costa Rican hot springs and herbivorous insects.

To implement the project, 7 scientists from IMCAS visited Costa Rica in Oct. 2010 and worked together with Costa Rican scientists for 4 weeks. In Oct. 2011, Prof. Mora worked at IMCAS for two weeks on the samples from Costa Rican hot springs. Next, a Costa Rican graduate student, Marcela Fernández Villalobos worked at IMCAS for six weeks. In the undergoing work, we do find distinct microbial diversity in the Costa Rican hot springs and the insect guts, which can harbor potential new microbial species and new genes that are not found in other ecosystems. Our further works will continue the assessment of the microbial diversity in Costa Rican environments, meanwhile, we will learn from Costa Rica onthe regulation of biodiversity and itssustainable use.



IMCAS scientists visited Costa Rica and worked together with Costa Rican scientists

Prof. Mora from the University of Costa Rica worked at IMCAS