

## CALL FOR APPLICATION

### Human Resource Development Program in Biotechnology 2009

The National Center for Genetic Engineering and Biotechnology (BIOTEC) invites research scientists from selected developing countries in East Asia, Southeast Asia and the Pacific to participate in the Human Resource Development Program in Biotechnology for year 2009. The Program aims to build up R&D capability for developing countries in this region. The Program places importance on improving research skill, thus it is designed to be an on-the-job and research-based training in BIOTEC's laboratories. Two types of training will be on offer: fundamental courses (3 months) and advanced courses (6 months). The training course consists of classroom session, designing and conducting a mini research project and site visit to factories or project sites. A total of 13 scholarships will be provided.

#### Eligibility

- 1) Must be scientists working in a research or academic institute in the list of eligible countries.
- 2) Must hold at least a **Bachelor's degree in sciences for application to a fundamental course** or at least a **Master's degree in sciences for application to an advanced course**. All applicants must have finished course work in biology, microbiology or any related areas that will be required for particular training topics.
- 3) Must have good command in English.
- 4) Must be able to attend the course, during 1 July – 30 September 2009 for a fundamental course or 1 July – 30 December 2009 for an advanced course.
- 5) Must not be older than 32 years of age as of 1 July 2009.
- 6) Since the training is research-based and trainees will be working in the laboratories, applicants must show on his/her application form that his/her current job involves research, not administrative work.
- 7) Each selected grant recipient will be assigned to ONE of the available courses. Applicants will have to identify only ONE course in their application form.

#### List of Eligible Countries

Applicants from the following countries are eligible to apply for Human Resource Development Program in Biotechnology 2009:

East Asia	Southeast Asia	Pacific Islands	
<ul style="list-style-type: none"> <li>▪ China</li> <li>▪ Mongolia</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cambodia</li> <li>▪ Indonesia</li> <li>▪ Lao PDR</li> <li>▪ Malaysia</li> <li>▪ Myanmar</li> <li>▪ Philippines</li> <li>▪ Vietnam</li> </ul>	<ul style="list-style-type: none"> <li>▪ American Samoa</li> <li>▪ Fiji</li> <li>▪ Kiribati</li> <li>▪ Marshall Islands</li> <li>▪ Micronesia</li> <li>▪ Northern Mariana Islands</li> <li>▪ Palau</li> </ul>	<ul style="list-style-type: none"> <li>▪ Papua New Guinea</li> <li>▪ Samoa</li> <li>▪ Solomon Islands</li> <li>▪ Tonga</li> <li>▪ Timor-Leste</li> <li>▪ Vanuatu</li> </ul>

#### Sponsorship

Selected candidate will be provided with monthly allowance, on-campus accommodation and health insurance.

The international roundtrip airfare funding will only be available for the successful applicants from Laos, Myanmar and Cambodia. However, applicants from those countries who are able to obtain airfare from their own institutes or other funding agencies are strongly encouraged to indicate this fact on the application form.

## Available Courses

Course No.	Project title	Course Content
<b>Fundamental Course (3 month)</b>		
F-1	<i>In vitro</i> Culture in Oil Palm: Revised Protocol for Improvement in Growth and Development	<ul style="list-style-type: none"> <li>▪ Preparation of medium and chemical preparation</li> <li>▪ Sterilization techniques</li> <li>▪ Somatic embryogenesis in oil palm</li> <li>▪ Acclimatization of plantlet</li> </ul>
F-2	Genetics and Molecular Biology in Fungi	<ul style="list-style-type: none"> <li>▪ Introduction to basic biology of filamentous fungi particularly insect-pathogenic fungi</li> <li>▪ Basic molecular techniques for filamentous fungi (DNA extraction, PCR, cloning)</li> <li>▪ Advanced molecular techniques including targeted gene disruption or RNA silencing</li> <li>▪ Technique to determine biological activity of fungi against insect larva or adults</li> </ul>
F-3	Identification of Acetic Acid Bacteria by DNA-DNA Hybridization	<ul style="list-style-type: none"> <li>▪ DNA isolation and purification for DNA-DNA hybridization</li> <li>▪ DNA-DNA hybridization</li> <li>▪ Result discussion</li> </ul>
F-4	Salt and Drought Stresses in Crop Plants: Classification	<ul style="list-style-type: none"> <li>▪ Plant material preparation</li> <li>▪ Experimental design</li> <li>▪ Salt or drought stress treatments</li> <li>▪ Physiological and biochemical data collection</li> </ul>
F-5	Collection, Isolation and Identification of Insect Fungi	<ul style="list-style-type: none"> <li>▪ Introduction on taxonomy and diversity of fungi</li> <li>▪ Sample collection of insect fungi</li> <li>▪ Media preparation, isolation and preservation of insect fungi</li> </ul>
F-6	Chemical and Biological Screening of Non-ribosomal Peptide Producing Fungi	<ul style="list-style-type: none"> <li>▪ Fermentation of fungal culture</li> <li>▪ Detection of the related peptide synthetase genes</li> <li>▪ Chemical extraction of fungi</li> <li>▪ Separation of peptides by chemical methods</li> <li>▪ Establishment a library and bioassay test</li> </ul>
<b>Advanced Course (6 month)</b>		
A-1	Investigating the Proteome of Cassava FEC	<ul style="list-style-type: none"> <li>▪ Protein techniques</li> <li>▪ DNA techniques</li> <li>▪ Plant molecular genetics</li> <li>▪ Plant cell technology</li> </ul>
A-2	Genetics and Molecular Biology in Fungi	<ul style="list-style-type: none"> <li>▪ Introduction to basic biology of filamentous fungi particularly insect-pathogenic fungi</li> <li>▪ Basic molecular techniques for filamentous fungi (DNA extraction, PCR, cloning)</li> <li>▪ Advanced molecular techniques including targeted gene disruption or RNA silencing</li> <li>▪ Technique to determine biological activity of fungi against insect larva or adults</li> </ul>
A-3	Cysteine Scanning Mutagenesis in a Mosquito-larvicidal Protein from <i>Bacillus sphaericus</i>	<ul style="list-style-type: none"> <li>▪ Introduction to mosquito-larvicidal bacteria and proteins</li> <li>▪ DNA manipulations</li> <li>▪ Basic genetic engineering (site-directed mutagenesis, restriction enzyme digestion, transformation, PCR, etc.)</li> <li>▪ Protein purification, characterizations and labeling</li> <li>▪ Biophysical and biological activity assays</li> </ul>
A-4	Ecology Study of Insect Pathogenic Fungi	<ul style="list-style-type: none"> <li>▪ Introduction on taxonomy and diversity of fungi</li> <li>▪ Sample collection of insect fungi</li> <li>▪ Media preparation, isolation and preservation of insect fungi</li> <li>▪ Follow up the development, longevity, quantity and distribution of selected insect fungal species in the forest</li> </ul>
A-5	Investigation of Autophagy in Invertebrate Shrimp <i>Penaeus monodon</i> and <i>Penaeus vannamei</i> , and Crab <i>Scylla serrata</i>	<ul style="list-style-type: none"> <li>▪ Review on autophagy and invertebrate innate immune responses</li> <li>▪ Species identification of <i>Penaeus</i> and <i>Scylla</i> genera</li> <li>▪ Surveillance of genes involved in autophagic pathway among <i>P. monodon</i>, <i>P. vannamei</i>, and <i>S. serrata</i> by nucleotide and amino acid sequences analyses</li> <li>▪ Determination of phylogenetic relatedness, putative structure, function of the shrimp and crab autophagic genes using bioinformatic analyses</li> </ul>

## Application Procedure

Each applicant should submit a completed application form along with an English university-transcript, full Curriculum Vitae, certificate of health and copy of passport (if any) to BIOTEC. The deadline for receipt of application is 15 March 2009. Selected applicant will be notified by 15 April 2009. For application submission and further inquiries, please contact:

International Cooperation Division  
 c/o Ms. Udomrat Vatanakun  
 National Center for Genetic Engineering and Biotechnology (BIOTEC)  
 113 Thailand Science Park, Phahonyothin Road  
 Klong 1, Klong Luang, Pathumthani 12120 Thailand  
 Tel: (66) 2 564 6700 ext.3515 Fax: (66) 2 564 6705  
 E-mail: [udomrat.vat@biotec.or.th](mailto:udomrat.vat@biotec.or.th)