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South Asia Biosafety Program

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PROVIDE FEEDBACK FOR THE UPCOMING SOUTH ASIA BIOSAFETY CONFERENCE

The 3rd Annual South Asia Biosafety Conference will be convened in Dhaka, Bangladesh on September 20-21, 2015. The organizers are seeking input on topics that should be considered for the agenda as it is important to keep this conference relevant and targeted to the needs of colleagues in South Asia.

Please provide feedback by March 1, 2015, by accessing the survey here: **www.surveymonkey.com/s/SABC2015**

We look forward to hearing from you!

PAKISTAN

Highlights from the Biosafety Workshop in Lahore

DR. AAMER IKRAM, SI(M), PROFESSOR & CONSULTANT, DEPARTMENT OF MICROBIOLOGY, ARMED FORCES INSTITUTE OF PATHOLOGY, RAWALPINDI

The Pakistan Biological Safety Association is a non-governmental organization dedicated to the task of biosafety awareness and training in the country. A project has been initiated in collaboration with the Fogarty International Center, the National Institute of Health and the International Council of Life Scientists (ICLS) for biosafety training and curriculum development in Pakistan. The first workshop of this project was organized at the University of Veterinary and Animal Sciences (UVAS), Lahore, on December 18-20, 2014. The goals of the training workshop were to enhance awareness and understanding of issues related to biosafety and biosecurity training and biorisk management capacity as it relates to safe laboratory methods in pathogen identification, containment and protection in both human and veterinary sciences.

The Vice Chancellor, Prof. Talat Naseer Pasha and Ms. Elizabeth Thomas presented the purpose of this workshop. Prof Aamer Ikram, General Secretary PBSA, highlighted the importance of biosafety in Pakistan.

The participating institutions of this workshop included the Veterinary Research Institute Quetta, University of Balochistan, Poultry Research Institute Rawalpindi, Pir Mehar Ali Shah Arid Agriculture University Rawalpindi, Nuclear Institute of Agriculture and Biology, Baqai Veterinary Medical College Karachi, Veterinary Research Institute Peshawar, University of Agriculture Peshawar, Hazara University Mansehra, Ministry of Foreign Affairs Pakistan, National Reference Lab for Poultry Diseases, Buffalo Research Institute Pattoki, L&DDD, CMH Medical College Lahore, Service Institute of Medical Sciences Lahore, Bahauddin Zakrya University Multan, Islamia University Bahawalpur, College of Veterinary and Animal Sciences Jhang, Veterinary Research Institute Lahore, Riphah College of Veterinary Science Lahore, University of Health Sciences Lahore, National Agriculture Research Council Islamabad, Center of Excellence and Molecular Biology Lahore and UVAS.

A series of lectures and a practical session were conducted during the workshop on various aspects of biosafety by resource persons. During the first day of the workshop, the lectures focused on an introduction to biosafety and biosecurity, the culture of responsibility in the life sciences, hazard identification, biorisk assessment timing and scope, risks from aerosols and protective means, one health principle and biosafety levels.

The second day of the workshop showcased an overview of the European Committee for Normalization Workshop Agreement (CWA) 15793 and the role of UVAS, occupational health and safety in biological labs, the roles and responsibilities of institutional biosafety committees, chemical safety in labs, standard operating procedure writing and signage in labs. Practical sessions were done on risk assessment and personal protective equipment/hand washing.

On the final day of the workshop, lectures were delivered on effective biorisk management and setting priorities. There was a hands-on practical session on waste disposal, spill cleanup, sample packing and transport. In the end, an interactive discussion on future steps regarding biosafety was arranged among participants and resource persons.

Spotlight on the Biosafety Research in Pakistan Grants Program

The Biosafety Research in Pakistan Grants Program (BRPGP) supports laboratory, field, and literature research that will significantly advance knowledge relevant to environmental risk assessment of genetically engineered plants in Pakistan.

The Biosafety Research in Pakistan Grants Program is managed by the Center for Environmental Risk Assessment (CERA), ILSI Research Foundation, as part of the biosafety component of the Pakistan Strategy Support Program (PSSP). The PSSP is financially supported by the US Agency for International Development (USAID) through the International Food Policy Research Institute (IFPRI), which manages PSSP. The Biosafety Research in Pakistan Grants Program recognizes the need for biosafety research as part of a broader effort to support science-based decision-making and policy development and will fund research aimed at addressing the effects of agricultural biotechnology, particularly transgenic crops, on the environment and biodiversity in Pakistan.

Grantees come from agricultural or environmental research institutions and universities in Pakistan.

All grantees work to:

- Address the effects of genetically engineered (transgenic) crops on the environment.
- Be relevant to Pakistan and take place in Pakistan.
- Demonstrate applicability to environmental risk assessment of transgenic plants and regulatory decision-making in Pakistan.

In this month's SABP newsletter, we will be featuring Rev. Mohammad Sayyar Khan Kazi's project.

To view all grant projects, visit the CERA website at: http://cera-gmc.org/index.php/The_Biosafety_Research_in_Pakistan_Grants_Program

2014 GRANTEE: Rev. Mohammad Sayyar Khan Kazi

JOB TITLE: Assistant Professor, Institute of Biotechnology and Genetic Engineering (IBGE)

ORGANIZATION: The University of Agriculture Peshawar

PROJECT TITLE: "Environmental Biosafety Assessment on Transgenic Oilseed Rape Lines Harboring The Synthetic Chitinase Gene (Nic) Conferring Fungal Disease Resistance"

PROJECT DESCRIPTION: Due to the growing world population and industrialization, the demand for edible oil is increasing day by day. In this scenario, the cultivation of oilseed crops such as Brassica, which contributes about 10% of the world's edible oil consumption, has gained tremendous importance. However, the productivity of oilseed rape is limited by several environmental factors including biotic stresses. Among biotic stresses, several diseases caused by fungal pathogens are the major constraints on the productivity of this crop. Fungal species such as *Alternaria* blight and *Alternaria brassicae* are among the major fungal pathogens inflicting crop losses ranges from 30 to 70% depending upon severity of the infection. In Pakistan, the indigenous production of edible oil is far below the consumption levels and each year, millions of dollars are spent on the import of edible oil resulting in huge pressure on the economic growth of the country. In addition to other factors, fungal diseases such as *Alternaria* blight, wiltshire white rust and downy mildew are the major limiting factors to oilseed production.

Conventional breeding approaches for development of fungal disease resistant varieties have also been met with limited success due to several limitations associated with the conventional approach. As an alternative, genetic engineering approach for incorporating disease resistance in oilseed rape has got much importance in recent years. In this respect, transgenic oilseed rape lines with the synthetic chitinase gene, *NiC*, which has broad spectrum antifungal activity, were produced. These lines showed disease resistance under laboratory conditions. For further research and deliberate environmental release of these transgenic plants, monitoring must be carried out to determine the potential long term environmental effects. Environmental risk assessment under the guidelines of Cartagena Protocol on Biosafety and other regulatory authorities is a pre-requisite for transgenic plants to pass from laboratory to greenhouse and to enter vigorous field testing and finally commercialization. Allelopathic analysis and survey on rhizosphere microbes are the two important elements of the ERA which are conducted on transgenic plants, step-by-step from controlled conditions to confined and open field trials. In the present project, we will conduct the environmental risk assessment studies on these transgenic plants focusing on the rhizosphere microbial diversity and enzymatic analysis and allelopathic effects on the surrounding vegetation.

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Key Messages from the International Conference on Biotechnology in Health & Agriculture

The two-day International Conference on Biotechnology in Health and Agriculture (ICBHA) 2015 was organized by the Global Network of Bangladeshi Biotechnologists (GNOBB) on January 9-10, 2015, at the Nawab Ali Chowdhury Senate Bhaban of the University of Dhaka. GNOBB is a web based virtual organization for scientists and professionals who work in the field of biotechnology. This virtual organization was formed because of the urgent need to bring together Bangladeshi academics, scientists, researchers and professionals working in various fields of biology around the globe. GNOBB is under the leadership of Prof. Ahmad Shamsul Islam, an eminent scientist of Bangladesh.

More than four hundred researchers, academics, entrepreneurs and distinguished international scientists participated in the conference. The registered participants were from various countries of the world, including Bangladesh, England, India, Japan, Malaysia and Nepal working in different fields of biotechnology. The conference focused on the contemporary issues in health and challenges of climate change on agriculture. The conference was designed to accommodate basic and applied research as well as the current status of industry-academia linkage in Bangladesh under two different thematic topics.

GNOBB is paving the walkway for Bangladeshi biotechnologists and the business community to embark on a solid platform where they can synergize their effort to unleash the potential of biotechonology for the future development of Bangladesh.

The theme of the first day of the conference was "Translational Medicine", which started with a plenary presentation by Dr. Firdausi Qadri, the Director of Vaccine Sciences at the International Centre for Diarrhoeal Disease Research Bangladesh (ICDDR'B). She emphasized the application of biotechnology in order to improve lives by combating infectious diseases in a developing country like Bangladesh. She showed how biotechnology is playing a pivotal role in developing interventions for public health such as low cost vaccines and also its prospect and challenges in the field of treatment and prevention of diseases.

Dr. Talat Nasim from the University of Bradford, UK, focused on the integrated national programme in translational medicine under which interdisciplinary research can be undertaken. Dr. Mohammad Tariqur Rahman from the International Islamic University Malaysia (IIUM) shed light on the prospect of stem cells in the emerging discipline of regenerative medicine. Dr. Renu Tuteja from ICGEB, India, showed how the drug target paradigm is evolving using the classic example of DNA helicase targeting to control malaria. Dr. Iqbal Hassan Khan from Incepta Biotech Ltd. presented the development of biodegradable bilayer approach to replace the current synthetic wound dressing. This presentation exemplified the fact that basic local research is being applied and translated by local entrepreneurs. Similarly, Mahbuba Khatun from the Department of Microbiology, University of Dhaka, talked about the development of a polymerase chain reaction based approach to diagnose visceral leishmaniasis in Bangladesh. He showcased how academia in Bangladesh is also building capacity for applied research in biotechnology.

Mr. Abdul Muktadir, Chairman of Incepta Pharmaceuticals Ltd., fascinated attendees with the vision and mission of his endeavour to apply biotechnology in the pharmaceutical industry as well as his promise to translate local basic research into an affordable solution. Dr. Masih Alam, Director of ImmunoSys Ltd., UK, emphasized that capacity building in Bangladesh is of crucial importance in order to enhance the credibility and standards of the bioindustry and this is the prerequisite to attract potential investments from the EU and the UK. Appropriate biosafety and biosecurity measures are critical for maintaining standards and discovery capabilities in both industry and academia was echoed by Dr. Asadulghani from ICDDR'B. In the first day, 36 posters were presented by students and early career researchers that included approaches to develop diagnostic tools against emerging pathogens as well as potential therapeutics.

On the second day of the conference, the impetus was on the effect of climate change in agriculture, particularly focusing on abiotic stresses. An accomplished expert in this field, Dr. Narendra Tuteja from ICGEB, India, delivered his plenary speech focused on developing strategies to ensure food security by combating abiotic stresses. His tremendous work on DNA helicase showed us how we could be able to overcome the effect of climate change by developing salinity and drought tolerant crops. Dr. Hiroyuki Shimono's work clearly indicated the possibility of using the rising CO_2 level in the atmosphere as a resource for enhanced carbon assimilation and a resulting yield of food crops by metabolic engineering. Dr. Keitaro Tawaraya provided evidence in favor of utilizing mychorrhizal symbiosis to reduce the burden of synthetic phosphate fertilizer in agricultural systems, which may play a significant role in reforestation. Dr. Abidur Rahman from Iwate University of Japan pointed out that understanding plant developmental biology is the key to engineer plants against thermal stress.

Prof. Haseena Khan presented work on an artificial microRNA based strategy to reduce lignin content of jute in collaboration with ICGEB, which could have far reaching impact on commercial usability of the crop. Prof. Anwar Hossian eloquently described the effort of his team in tackling foot and mouth diseases by developing a vaccine where academic research and industry are working in collaboration. Prof. Mozammel Haque vowed to remove the barriers between industry and academia so that collaborative research can be accelerated to develop bioprocesses and bioproducts that he has been working on for several years. Dr. F. H. Ansarey depicted the portfolio of ACI Agribusiness and their strategy on commercializing important crop varieties developed through academic research in home and abroad. Prof. Rakha Hari Sarker subsequently added an example of an industry-academia partnership where the Department of Botany, DU and ACI Agribusiness has been working together to deliver sustainable crop varieties to the market. Approximately 38 posters were presented on the second day of the conference which mainly focused on basic and applied aspects of crop development, growth promotion and agro-based bioproducts.

To encourage the scientific work of Bangladeshi scientists, GNOBB recently introduced the GNOBB Award for Scientific Achievements. This award will recognize the outstanding scientists based on their scientific achievements and activity over the last five years. The award has two categories: one for a resident Bangldeshi scientist and the other for a

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non-resident Bangladeshi scientists in every alternate year. This year Dr. Mohammad Akhter Hossain and Dr. Mustafizur Rahman received the prestigious awards.

Additionally, a newly formed research organization in Bangladesh, "Institute for Developing Science and Health Initiatives" (ideSHi), also declared an award for the first time. Professor Khaled Hossian from Rajshahi University was selected for the ideSHi Award 2015 in recognition for his significant contribution in research on the effect of arsenic in human health in Bangladesh.

The event ended with a unanimous consensus of members on organizing the conference in every two years. In this way, the GNOBB is paving the walkway for Bangladeshi biotechnologists and the business community to embark on a solid platform where they can synergize their effort to unleash the potential of biotechonology for the future development of Bangladesh.

CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
INDIA			
5th International Conference on Next Generation Genomics and Integrated Breeding for Crop Improvement	International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	February 18-20, 2015 Patancheru	www.ceg.icrisat.org/v-nggibci
International Congress on the "Role of Agri-Science, Forestry, Food Technology and Participatory Natural Resource Management for Mitigation of Climate Change" (AF-Nature2015)	Krishi Sanskriti in association with the Social Welfare Foundation	February 21-22, 2015 New Delhi	www.krishisanskriti.org/afbc.html
Workshop on Opportunities and Challenges in Commercialization of Biotechnology in India	Biotech Consortium India Limited (BCIL) and the Department of Biotechnology, Government of India	February 25, 2015 New Delhi	www.bcil.nic.in
Conference on Food & Nutritional Security	Confederation of Indian Industry (CII)	March 17, 2015 Chennai	www.cii.in
INTERNATIONAL			
Theoretical and Practical Course on Molecular Plant Breeding for Crop Improvement	Agricultural Genetic Engineering Research Institute (AGERI)	March 8-19, 2015 Giza, Egypt	www.icgeb.org/meetings-2015.html
The 2nd Plant Genomic Congress: Asia	Global Engage	March 19-20, 2015 Kuala Lumpur, Malaysia	www.globalengage.co.uk/plantgenomicsasia.html
IOSBC/WPRS Group "GMOs in Integrated Plant Production"	Agroscope	June 1-3, 2015 Sofia, Bulgaria	Contact: michael.meissle@agroscope.admin.ch
3rd Annual South Asia Biosafety Conference	South Asia Biosafety Program (SABP)	September 20-21, 2015 Dhaka, Bangladesh	www.cera-gmc.org/Upcoming_Meetings_&_Events

SOUTH ASIA BIOSAFETY PROGRAM

The South Asia Biosafety Program (SABP) is an international developmental program implemented in India, Bangladesh and Pakistan with support from the United States Agency for International Development. SABP aims to work with national governmental agencies and other public sector partners to facilitate the implementation of transparent, efficient and responsive regulatory frameworks for products of modern biotechnology that meet national goals as regards the safety of novel foods and feeds, and environmental protection.

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