

South Asia Biosafety Program

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BANGLADESH

Consultation Meeting for the Biosafety Research in Bangladesh Grants Program: Full Proposal Preparation

Aparna Islam, South Asia Biosafety Program



Dr. Andrew F. Roberts, Dr. Aparna Islam, and participants at the Consultation Meeting for the Biosafety Research in Bangladesh Grants Program (April 29, 2019).

In the last two decades, Bangladesh has made considerable strides with genetic transformation research to develop genetically engineered (GE) crops. Research has progressed both at public and private research institutes, as well as at universities. Many of the research outcomes are now ready or will soon be ready for biosafety assessment.

To strengthen local capacity to produce and disseminate information supporting biosafety assessment, the South Asia Biosafety Program (SABP) launched the Biosafety Research in Bangladesh Grants Program (BRBGP) at the beginning of this year. The BRBGP is a competitive grants program managed by the ILSI Research Foundation through SABP and supported by the United States Agency for International

Development. The main objectives of this program is to promote the development of biosafety research capacity and establish baseline information related to current agricultural practice in Bangladesh.

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The BRBGP uses a preproposal evaluation process to provide feedback to potential applicants. After evaluation, qualifying applicants were invited to submit full proposals. On April 29, 2019, a consultation meeting was arranged at the

SABP office in Dhaka with the short-listed applicants to discuss the format of the full proposal. During the consultation meeting, Dr. Andrew F. Roberts, Deputy Executive Director, ILSI Research Foundation explained the format in detail, as well as the review process that will be used to evaluate the proposals. This was followed by an open discussion session with the qualifying applicants.



Dr. Andrew F. Roberts explaining the proposal format to participants (April 29, 2019).



Participants at the Consultation Meeting for the BRBGP (April 29, 2019).

Expert Lecture on Biosafety Regulations of Genetically Modified Organisms at Gautam Buddha University

Vibha Ahuja, Biotech Consortium India Limited



Dr. Vibha Ahuja with the Organizing Committee at the School of Biotechnology, Gautam Buddha University (from left to right: Dr. Siya Ram, Dr. Jitendra Singh Rathore, Dr. Vibha Ahuja, Dr. Deepali Singh, and Dr. Vikrant Nain) (April 23, 2019)

The School of Biotechnology, Gautam Buddha University, Noida, India organized an expert lecture on *Biosafety Regulations of Genetically Modified Organisms (GMOs)* on April 23, 2019. The lecture was delivered by Dr. Vibha Ahuja, Chief General Manager, Biotech Consortium India Limited, New Delhi and attended by more than 100 participants, including faculty, members of the Institutional Biosafety Committee, research scholars, and post-graduate students.

In India, all activities involving GMOs are regulated as per provisions of the *Rules for the Manufacture, Use/Import/Export and Storage of Hazardous Micro Organisms/Genetically Engineered Organisms or Cells (Rules, 1989)*, notified under the *Environment (Protection) Act, 1986*.

The lecture provided insight into biosafety regulations applicable at various stages of research and development in India.



School of Biotechnology, Gautam Buddha University, Noida, Uttar Pradesh.

The lecture provided insight into biosafety regulations applicable at various stages of research and development in India. Dr. Ahuja informed participants about the guidelines that have been notified by regulatory agencies that should be followed by all those engaged in activities involving GMOs to ensure biosafety compliance. She also discussed the status of GMOs in healthcare and agriculture globally, as well as in the Indian context. Information about websites and newsletters for accessing further details on biosafety regulations was shared. The lecture was followed by an interaction wherein attendees sought various clarifications, particularly about new gene technologies.

ANNOUNCEMENT

School of Biotechnology, Gautam Buddha University, Noida, Uttar Pradesh

The School of Biotechnology, Gautam Buddha University, Noida, India was established in 2009 and offers different academic programs in biotechnology, with the aim of developing a premier biotechnology school.

The school has young, enthusiastic, and well-trained faculty who are actively involved in teaching, training, and multidisciplinary research ranging from basic animal, plant, and microbial biotechnology, to advanced branches such as proteomics, structural biology, nano-biotechnology, regenerative medicine, molecular biology, etc. Specific research interests lie in the areas of genome editing, host-pathogen interaction, crop improvement for biotic and abiotic stress, cotton fiber development, computational drug designing and systems biology, cell signalling, stem cell biology, structural biology, stress physiology, cancer biology, respiratory medicine, toxin-antitoxin systems, environmental biotechnology, fermentation technology, nanobiotechnology, molecular medicine, etc.

The school regularly organizes guest lectures by eminent experts from both academia and industry to provide the latest updates in the field. The students are also taken for industrial visits regularly. The school is well equipped with all the necessary equipment.



Sunset view in Gautam Buddha University (Photo Credit: Piyush Kumar - April 29, 2017).

Scientific Breakthroughs by Decoding Genomes and Improving Understanding in Genome Biology of Key Traits, Which Will Help In Developing Climate-Smart Chickpea and Groundnut Varieties

Rajeev K. Varshney, Manish Pandey, Mahendar Thudi, Manish Roorikwal, Anu Chitikineni, Prasad Bajaj, Vanika Garg, and Aamir W. Khan, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)



Arachis hypogaea L. in the field.

In a series of scientific breakthroughs, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), together with partners from several leading research institutes, has decoded the very complex genome of cultivated groundnut, as well as provided insights and developed a better understanding of important traits in chickpea. With rising temperatures and increasing climatic fluctuations due to climate change, the identification of climate-resistant genes will help in developing newer chickpea and groundnut varieties, which can tolerate high temperatures, to feed a growing population that is estimated to reach more than 9.6 billion by 2050.

It is important to note that there are two subspecies (*hypogaea* and *fastigiata*) of cultivated groundnut and the high quality reference genome for both the subgenomes have been published back-to-back in the same volume of *Nature Genetics*, one of the top international scientific journals¹. These discoveries are very significant as the cultivated groundnut genome is home to two different genomes, and their co-ordination and interaction decide the actual phenotype of groundnut that we see in the field. Decoding the cultivated groundnut genome will facilitate better understanding of trait biology, as well as accelerate gene discovery and development of improved groundnut cultivars with enhanced pod and oil yield, greater disease resistance,

It is very rare for any research group to publish three research breakthrough discoveries back-to-back in the same issue of *Nature Genetics*. However, ICRISAT researchers have achieved this feat in the volume that was published on May 1, 2019.



Chickpea in the field.

drought and heat tolerance, improved nutrition, immunity to aflatoxin, and improved oil quality.

The resequencing of 429 diverse chickpea lines from 45 countries enable a better understanding of securing the diversity for future nutritional food security and genes associated with economically important traits and resistance to pathogens and environmental stresses. Several million single nucleotide variations identified in the study enabled the understanding of the genetics of drought and heat tolerance in this important pulse crop. These findings are also published in the same volume of

*Nature Genetics*². This study sheds light on the origin of chickpea and confirms that the crop was introduced in India from the Mediterranean/Fertile Crescent via Afghanistan and may have been re-introduced to the primary center of its origin after 200 years. The study indicates Ethiopia as a secondary center of diversity and maps a migration route from the Mediterranean/Fertile Crescent to Central Asia, and in parallel, from Central Asia to East Africa (Ethiopia) and South Asia (India).

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For more information, please contact Prof. Rajeev K. Varshney, Project Lead, ICRISAT. Email: R.K.Varshney@CGIAR.ORG

¹ Bertoli, D.J. et al. The genome sequence of segmental allotetraploid peanut *Arachis hypogaea*. *Nature Genetics*. **51**, 877–884 (2019). <https://www.nature.com/articles/s41588-019-0405-z> & Zhuang, W. et al. The genome of cultivated peanut provides insight into legume karyotypes, polyploid evolution and crop domestication. *Nature Genetics*. **51**, 865–876 (2019). <https://www.nature.com/articles/s41588-019-0402-2#Bib1>.

² Varshney, R.K. et al. Resequencing of 429 chickpea accessions from 45 countries provides insights into genome diversity, domestication and agronomic traits. *Nature Genetics*. **51**, 857–864 (2019). <https://www.nature.com/articles/s41588-019-0401-3#Bib1>.

EVENT	ORGANIZED BY	DATE	WEBSITE
BANGLADESH			
7 th Annual South Asia Biosafety Conference	South Asia Biosafety Program (SABP), ILSI Research Foundation, and Biotech Consortium India Limited (BCIL)	September 14-16, 2019 Dhaka	http://ilsirf.org/sabp
4 th IPFS-ICBHA 2019-GNOBB Conference	Global Network of Bangladeshi Biotechnologists (GNOBB)	November 11-13, 2019 Dhaka	http://gnobb.org/conference/IPFS-ICBHA-2019
INDIA			
International Conference on Pharmaceutical Sciences and Biotechnology (ICOPSB-2019)	International Conference on Pharmaceutical Sciences and Biotechnology	July 11-12, 2019 Goa	http://biopharmameeting.com/
International Conference on Plant Protection in Horticulture – Advances and Challenges	Association for Advancement of Pest Management in Horticultural Ecosystems; ICAR-Indian Institute of Horticultural Research, Bengaluru; National Institute of Plant Health Management, Hyderabad; Indian Council of Agricultural Research, New Delhi	July 24-27, 2019 Bengaluru	https://icar.org.in/sites/default/files/ICPPH%202019-Final%20circular.pdf
3 rd Annual AgriBiotech India Summit 2019	Inventicon Business Intelligence	July 25-26, 2019 Hyderabad	https://agribiotechindia.com/
Seed World 2019	Indian Council of Food and Agriculture	September 4-7, 2019 Bengaluru	http://icfa.org.in/event.php
INTERNATIONAL			
6 th Plant Genomics and Gene Editing Congress	University of Nottingham and Crops for the Future	July 29-30, 2019 Kuala Lumpur, Malaysia	http://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=17364 and http://www.global-engage.com/event/plant-genomics-asia/#register
Course: Basic Laboratory Training on GMO Analysis	International Centre for Genetic Engineering and Biotechnology (ICGEB) and National Biotechnology Development Agency, Abuja, Nigeria	September 15-21, 2019 Abuja, Nigeria	https://www.icgeb.org/courses/course-basic-laboratory-training-on-gmo-analysis/



SOUTH ASIA
BIOSAFETY PROGRAM

The South Asia Biosafety Program (SABP) is an international developmental program implemented in India and Bangladesh 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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