Global Musa Genomics Consortium

The Global Musa Genomics Consortium was an international network of scientists applying genomics tools to the banana that was established in July 2001 during a meeting held at the National Science Foundation in Arlington, in the US[1]. INIBAP, as Bioversity International's group on bananas was then called, was nominated to act as the Secretariat and its director, Emile Frison, became the Consortium's first coordinator. In 2006, he was succeeded by Bioversity International scientist Nicolas Roux. In 2012, the Consortium achieved one of its main objectives, the sequencing of the Musa genome[2].

In November 2015, the Consortium was integrated into the global Musa genetic resources network MusaNet, becoming its fifth thematic group. At the time of the merge, the Consortium was composed of 70 scientists from 40 institutions located in 24 countries.

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Role in the sequencing of the genome

One of the objectives of the Consortium was to have the Musa genome sequenced within 5 years. In 2008, the Consortium submitted a proposal to the US Department of Energy’s Joint Genome Initiative. After JGI passed on the banana[3], the French National Research Agency (ANR) announced in the fall of 2009 that it would fund the project[4]. The sequencing was done by the French sequencing centre Genoscope, in collaboration with the French Agricultural Research Institute for Development CIRAD, under the umbrella of the Consortium. The accession selected for sequencing is DH Pahang[5].

The results of the sequencing were published in Nature[2].
Services

One of the operating principles of the Consortium was to ensure that, whenever possible, the resources developed by its members are placed in the public domain. These resources continue to be available to the scientific community.

Musa Genome Resource Centre

The Musa Genome Resource Centre (MGRC) based at the Instituto of Experimental Botany (IEB) conserves and distributes genomic resources to the scientific community.

Musa Genotyping Centre

The IEB also provides genotyping services (i.e. Ploidy, SSR, ITS, FISH) to the international Musa community under the auspices of Bioversity International.

Bioinformatics

Bioinformatics resources developed by the community, such as The Banana Genome Hub and Greenphil, are accessible from the SouthGreen Bioinformatics Platform[6].

In 2013, the Consortium management committee tasked Bioversity International and CIRAD to organize a training course on the open-source bioinformatics tools they had been developing for the banana[7].

Participation at the Plant and Animal Genome conferences

Since 2005, a workshop on Musa genomics is held at the annual Plant and Animal Genome conference in San Diego[8]. Organized by Bioversity, the session usually consists of 5 to 6 invited speakers presenting the latest findings on genomics applied to Musa. Traditionally, an evening meeting is also held during the conference to summarize the major achievements of the previous year and identify new opportunities and challenges.

Bridging the gap between genomics and breeding

The Consortium also ensured that the resources generated by its members are useful to other scientists, especially breeders. To this end, in 2009, it organized a workshop on Genomics & Breeding at the ISHS/ProMusa symposium that brought together breeders and scientists working in genomics. The participants were asked to identify their respective needs and prioritize the activities that would help bridge the gap between genomics and breeding. The summary of the discussions was published in the proceedings of the symposium[9].

References

4. Sequencing of banana genome has started in the October 2009 issue of InfoMus@
5. First glimpse at the banana genome in the July 2012 of InfoMus@
6. Southgreen, a bioinformatics platform applied to the genomic resource analysis of southern and Mediterranean plants
7. Blog post, A crash course in banana bioinformatics by Mathieu Rouard, published 12 December 2013 in the
ProMusa blog.

8. Website of International Plant and Animal genome


External links

Web page on the Genomics Thematic Group on the MusaNet website
Musa Genotyping Center at the Institute of Experimental Botany (IEB)
The Banana Genome Hub
Greenphyl a web platform for the comparative and functional genomics of plants
SouthGreen Bioinformatics Platform
ANR (French National Research Agency)
Genoscope
CIRAD’s research unit on Banana, Plantain and Pineapple Cropping Systems

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