

Wheat genome sequencing on track

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The International Wheat Genome Sequencing Consortium (IWGSC) announced today that it has completed high quality physical maps for 6 additional wheat chromosome arms. This major achievement on the path towards a high quality reference sequence of the bread wheat genome will provide invaluable tools to speed up breeding of new wheat varieties.

Physical maps are the foundation to obtain a complete reference sequence of the bread wheat genome, expected by 2017-18 if funding is available. As part of its roadmap, the IWGSC is currently working on establishing physical maps of the 21 chromosomes of bread wheat. The results announced today concern the chromosome arms 2BL, 2BS, 4BL, 4BS, 5DL and 5BL, which complement the physical maps already available for 12 chromosomes.

IWGSC adopted the Keygene Whole Genome Profiling (WGP™) technology as its standard since it provides a robust framework for physical mapping and sequencing individual chromosomes of the highly complex and repetitive wheat genome. Edwin van der Vossen, Vice President Field Crops at KeyGene comments: "Together with the IWGSC, we are convinced that the physical maps that we generated using the KeyGene's WGP™ sequence based method provide a sound foundation for the reference quality genome sequence of hexaploid wheat, irrespective of the sequencing platform and strategy used. I am confident that these results will play an important role in increasing wheat production for future generations."

This achievement was made possible by a € 1 million contribution from Bayer Crop Science. "With this new piece of information now available to us we can speed up our breeding efforts and map based cloning projects for trait improvement," says Catherine Feuillet, head of trait R&D at Bayer Crop Sciences.

"We would not have been able to achieve this milestone without the financial support of Bayer CropScience and the scientific leadership of KeyGene. We were faced with a difficult challenge of completing these physical maps in a short time period and KeyGene stepped up and delivered high quality physical maps that can now serve as a substrate for reference sequencing", says Kellye Eversole, IWGSC executive director.

The next step is to obtain a high quality reference sequence for each bread wheat chromosome. This will provide an accurate representation of the structure and organization of sequences along individual chromosomes and enable the precise locations of genes, regulatory elements, repetitive elements and sequence-based markers of different kinds to be identified. With a chromosome-based full sequence in hand, plant breeders will have high quality information at their disposal to accelerate breeding programs and to determine how genes control complex traits such as quality, yield, drought tolerance or durable disease resistance.

Wheat is the most widely grown cereal crop in the world, with almost 700 millions tons produced on over 210 million hectares. Each year, nearly US \$50 billion-worth of wheat is traded globally. The world's top producers are the European Union, followed by China, India and the USA. Wheat is currently the staple food for more than 35% of the global human population. With the world's population estimated to reach 9.6 billion by 2050, the World Bank has estimated that global wheat production would need to increase by 60 % by 2050. To meet this rising demand, plant scientists will need new tools such as a reference genome sequence to produce a new generation of wheat varieties with higher yields and improved sustainability.

About the IWGSC:

The IWGSC, with more than 1,000 members in 57 countries, is an international, collaborative consortium, established in 2005 by a group of wheat growers, plant scientists, and public and private breeders. The goal of the IWGSC is to make a high quality genome sequence of bread wheat publicly available, in order to lay a foundation for basic research that will enable breeders to develop improved varieties. www.wheatgenome.org

About Keygene:

KeyGene is a privately owned, innovative molecular genetics Ag Biotech company with a primary focus on the improvement of 6F (Food, Feed, Fiber, Fuel, Flowers and Fun) crops. KeyGene's passion is to explore and exploit natural genetic variation in vegetable and other 6F crops. KeyGene delivers sustainable responses to the world's needs for yield stability & quality of vegetable and field crops. KeyGene supports its strategic partners with cutting edge breeding technologies and plant-based trait platforms, with more than 135 employees from all over the world, with state of the art facilities and equipment. KeyGene has its headquarters in Wageningen, the Netherlands, a subsidiary in Rockville, USA and a Joint Lab with the Shanghai Institute of Biological Sciences in Shanghai, China. www.keygene.com

The WGP™ technology is protected by patents and patent applications owned by Keygene N.V. WGP is a trademark of Keygene N.V.

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