

Wageningen, Netherlands, May 24, 2018

KEYGENE REVOLUTIONIZES CROP INNOVATION USING NANOPORE SEQUENCING TECHNOLOGY

At the yearly London Calling conference, Oxford Nanopore Technologies today announced KeyGene as the first certified PromethION service provider. In KeyGene's aim to deliver the highest quality crop reference genomes this is a major milestone, and builds on KeyGene's own expertise and technology in extraction of ultrapure high molecular weight DNA and *de novo* assembly.

Dr. Gordon Sanghera, CEO of Oxford Nanopore technologies, today presented KeyGene with their certificate and stated: *"We are delighted to see the first PromethION service provider coming online and congratulate KeyGene, whose customers in the plant and agricultural genomics community will benefit hugely from their expertise in long read, direct Nanopore sequencing of plant DNA"*.

At the conference KeyGene is presenting a groundbreaking *de novo* assembly of the lettuce genome that was achieved using only four PromethION flow cells yielding up-to 80 Gbp per cell with an average read length of 38 Kbp. Half of the assembly (N50) was contained in contigs larger than 7.3 Mbp. The total assembly size was 2.6 Gbp, representing nearly the entire lettuce genome with an estimated genome size of 2.7 Gbp. The extreme long Nanopore reads were instrumental in generating this spectacular result.

Integration with optical scaffolding technology and subsequent comparison with the Salinas public genome reference showed very high collinearity, illustrating the high structural quality and completeness of the Nanopore based assembly. The integration yielded just 34 scaffolds with an N50 size of 145.8 Mbp that contained 98.3% of the sequence contigs.

Kees Reinink, Managing Director of the Dutch breeding company Rijk Zwaan congratulated KeyGene on this achievement: *"Identification of resistance genes and understanding of mechanisms of defense are crucial in developing successful varieties in Lettuce. PromethION sequencing at KeyGene, combined with their world leading expertise in DNA isolation and de novo assembly strongly contributes to this objective and enables KeyGene's strategic partners to stay successful in this market"*.

"With the arrival of the PromethION, data production is no longer a bottleneck". Arjen van Tunen, CEO of KeyGene says and adds: *"In order to bring the speed of de novo assembly, comparative genomics and pan genome representation on par with data generation, KeyGene and its partners continue to invest in data science and state-of-the-art compute infrastructure. Combining these achievements we believe that de novo sequencing crop genomes will become the new resequencing. Our proprietary crop innovation technologies in combination with PromethION technology will revolutionize the field of plant breeding."*

While a high-quality genome reference is an important basis for taking advantage of molecular approaches to breeding, additional expertise and activities are required to develop novel varieties. KeyGene supports breeding companies in the translation of these genomic insights to tools and value for breeding.

About KeyGene

The crop innovation company

KeyGene is the go-to AgBiotech company for higher crop yield & quality. With our intellectual capital, solution driven approach and collaborative spirit, we work for the future of global agriculture with partners in the AgriFood sector. Using our proprietary technologies and non-GM approaches, we support customers with the development of new and improved crops. Our goal is to help organizations with their toughest R&D challenges, combining our cutting edge breeding technologies, bioinformatics & data science expertise and plant-based trait platforms. At KeyGene, we work in an international environment with more than 140 professionals from all over the world. Our company is based in Wageningen, Netherlands and Rockville, MD, USA.

www.keygene.com

PRESS RELEASE

About Oxford Nanopore Technologies

Oxford Nanopore Technologies' goal is to enable the analysis of any living thing, by any person, in any environment. The Company has developed the world's only portable, real time DNA/RNA sequencing, the MinION. Nanopore sensing technology is fully scalable. The GridION X5 is a desktop device that includes compute module and the ability to run up to five MinION flow cells. The high throughput, high sample number PromethION is designed to deliver very high yields of data but in an on-demand format that makes workflows more versatile. For more information visit www.nanoporetech.com.

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