

Penzberg, January 9th, 2006

## **Fast sequencing technology Genome Sequencer 20 System now also used in genotyping**

Roche Diagnostics and Keygene N.V., the Netherlands based Research & Development company active in the genetic analysis of plants, animals, and microorganisms, today announced that Keygene purchased Roche's Genome Sequencer 20 system, providing Keygene with hands-on access to this new high throughput sequence technology. Keygene, the first European customer of the Roche sequencing system, will work in close collaboration with 454 Life Sciences and Roche Diagnostics to develop novel applications in the field of plant genetics that are unlocked by the use of 454 Life Sciences technology in combination with Keygene's existing DNA expertise and AFLP<sup>®</sup> and SNPWave<sup>™</sup> technologies. Besides high throughput sequencing of genomic DNA and EST's in plants, new applications are directed to high throughput SNP and microsatellite discovery and other non-disclosed applications.

"The Genome Sequencer 20 System by now found its application mainly in the field of whole genome sequencing. Keygene is going to proof that it also can be a very useful tool for High Throughput genotyping," states Dr. Volker Pfahlert, Head of Roche Applied Science.

"The newly available sequence technologies fit extremely well with the genotyping and DNA technologies that Keygene developed over the years. The new GS20 technology will open up many new applications for plant biotech and breeding industries," says Prof. Dr. Arjen van Tunen, CEO of Keygene.

The hallmark of the Genome Sequencer 20 System, which had been developed by 454 Life

Sciences, is the nanotechnology based approach to sequencing. This allows the Genome Sequencer 20 Instrument to sequence over 20 million bases within a four and a half hour run, a throughput more than 100 times that of instruments using current Sanger technology. The technology integrates proprietary picoliter-technologies, patented light emitting sequencing chemistries, and state-of-the-art informatics. The resulting patented Genome Sequencer 20 instrument is ultra-fast and cost-effective. The method is fast thanks to a high degree of parallelization: the entire process sequences thousands of DNA molecules simultaneously.

The simultaneous amplification of fragments is achieved by isolating individual DNA-carrying beads in separate aqueous droplets formed through the creation of a PCR-reaction-mixture oil emulsion. The droplets act as separate microreactors in which parallel DNA amplifications are performed. The template-carrying beads are deposited by centrifugation into open wells of a PicoTiterPlate device – one bead to a well. The plate is then inserted into the Genome Sequencer 20 Instrument. Nucleotides are sequentially flowed over the plate. The incorporation of the appropriate nucleotide results in a chemical reaction that generates a light signal. The chemiluminescent light information from all the active wells is captured by the CCD camera, and processed in real time by the onboard computer. The raw data consists of a set of digital images from which the sequence of each fragment is determined

### **About Roche and the Roche Diagnostics Division**

Headquartered in Basel, Switzerland, Roche is one of the world's leading research-focused healthcare groups in the fields of pharmaceuticals and diagnostics. As a supplier of innovative products and services for the early detection, prevention, diagnosis and treatment of disease, the Group contributes on a broad range of fronts to improving people's health and quality of life. Roche is a world leader in diagnostics, the leading supplier of medicines for cancer and transplantation and a market leader in virology. In 2004 sales by the Pharmaceuticals Division totalled 21.7 billion Swiss francs, while the Diagnostics Division posted sales of 7.8 billion Swiss francs. Roche employs roughly 65,000 people in 150 countries and has R&D agreements and strategic alliances with numerous partners, including majority ownership interests in Genentech and Chugai. Roche's Diagnostics Division offers a uniquely broad product portfolio and supplies a wide array of innovative testing products and services to researchers, physicians, patients, hospitals and laboratories world-wide. For further

information, please visit our websites [www.roche.com](http://www.roche.com), [www.roche-diagnostics.com](http://www.roche-diagnostics.com) and [www.roche-applied-science.com](http://www.roche-applied-science.com).

### **About Keygene**

Keygene N.V. ([www.keygene.com](http://www.keygene.com)) is a R&D company with the mission to be the leading company in developing and applying molecular genetics in plant breeding. Keygene has developed a strong proprietary technology platform based on AFLP<sup>®</sup>, a DNA marker technology for genome analysis, transcript profiling and genetic analysis. For diagnostic purposes, SNPWave<sup>™</sup>, a multiplexed SNP detection technology was developed. Keygene exploits its proprietary technologies, databases and know-how through contract research and products for applications in the Life Sciences industry and more specifically in innovative breeding applications such as Breeding by Design<sup>™</sup>. Keygene has five shareholders consisting of major vegetable seed companies that collaborate in a strategic alliance: DeRuiter Zonen, ENZA Zaden, Rijk Zwaan, Vilmorin, Clause & Cie and Takii & Co Ltd. Keygene has around 100 researchers and staff.

AFLP<sup>®</sup> is a registered trademark of Keygene N.V. The AFLP<sup>®</sup> technology is covered by patents and patent applications of Keygene N.V. SNPWave<sup>™</sup>, is a trademark of Keygene N.V.

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