

Branford, USA, and Kuala Lumpur, Malaysia, May 12, 2009

## 454 Sequencing Systems Enable High Quality De Novo Assembly of Oil Palm Genome

At a press conference held today in Kuala Lumpur, Malaysia, a team of researchers announced the complete sequencing, assembly and annotation of the oil palm genome, a key milestone in an effort to enhance productivity and sustainability of this commercially important plant. The initiative also analyzed gene expression at various stages of development in order to elucidate oil biosynthesis mechanisms through the sequencing of 12 transcriptomes. Officiated by the Prime Minister of Malaysia, Najib Tun Razak, the announcement detailed the partnership between Sime Darby, Synamatix and 454 Life Sciences, a Roche company, to fully characterize the genome of this tropical plant.

Palm oil is harvested from the tree's fruit and is used widely in food, health supplements, cosmetics and increasingly as a biofuel. By uncovering the genome of the oil palm, researchers will eventually be able to develop more sustainable trees with increased oil yield. Dato Azhar Abdul Hamid, Managing Director of Sime Darby Plantations explained, "We are committed to maintaining the highest standards of sustainability in oil palm production. In order to tackle this complex genome, which has a very high repeat content, we turned to Synamatix and the leading next-generation sequencing technology, 454 Sequencing systems. We are extremely happy with the results of the project and are in the process of translating the genetic information into practical agricultural solutions."

While the completion of the 1.7 billion base pair oil palm genome is an important agricultural milestone, it also signals a fundamental shift in the technological approach used for sequencing of large complex plant genomes. The genome was sequenced using only the Genome Sequencer FLX Titanium system and then assembled and analyzed by Synamatix, a leading bioinformatics company based in Malaysia. Importantly, this is the first de novo genome assembly of a large and highly complex plant to be completed without the addition of conventional Sanger sequencing data. This fast and economical approach opens new doors to understanding the genetic makeup of a wide

range of economically important plants, where sequencing has traditionally been prohibitively expensive.

“We are proud to be part of this pivotal plant genomics project,” said Michael Egholm, Chief Technology Officer and Vice President of Research and Development at 454 Life Sciences. “With the ability to generate millions of long, clonal reads, the 454 Sequencing system is an ideal tool for tackling highly complex plant genomes. We look forward to continue working with our bioinformatics partner, Synamatix, to sequence and assemble other commercially important plants.”

454 Life Sciences, a center of excellence of Roche Applied Science, develops and commercializes the innovative 454 Sequencing System for ultra-high-throughput DNA sequencing. Specific applications include de novo sequencing and re-sequencing of genomes, metagenomics, RNA analysis, and targeted sequencing of DNA regions of interest. The hallmarks of the 454 Sequencing System are its simple, unbiased sample preparation and long, highly accurate sequence reads, including paired-end reads. The technology of the 454 Sequencing System has enabled hundreds of peer-reviewed studies in diverse research fields, such as cancer and infectious disease research, drug discovery, marine biology, anthropology, paleontology and many more.

### **About Roche**

Headquartered in Basel, Switzerland, Roche is a leader in research-focused healthcare with combined strengths in pharmaceuticals and diagnostics. Roche is the world’s largest biotech company with truly differentiated medicines in oncology, virology, inflammation, metabolism and CNS. Roche is also the world leader in in-vitro diagnostics, tissue-based cancer diagnostics and a pioneer in diabetes management. Roche’s personalised healthcare strategy aims at providing medicines and diagnostic tools that enable tangible improvements in the health, quality of life and survival of patients.

In 2008, Roche had over 80,000 employees worldwide and invested almost 9 billion Swiss francs in R&D. The Group posted sales of 45.6 billion Swiss francs. Genentech, United States, is a wholly owned member of the Roche Group. Roche has a majority stake in Chugai Pharmaceutical, Japan. For more information: [www.roche.com](http://www.roche.com).

### **About Synamatix**

Synamatix Sdn Bhd is a privately held company whose primary activities are R&D in bioinformatics

and genomics. The company was founded in 2001 by Robert Hercus and initially focused on new approaches for the management, integration and analysis of large genomics data sets. The current phase of technology and product development is heavily geared towards the analysis of data from next-generation DNA sequencers and application of the results for medical, agricultural and synthetic fuel research. Synamatix has a growing number of clients and partners in the USA, Europe, Asia and Australia.

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