

Genetic secrets of date palm unlocked

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Researchers at Weill Cornell Medical College in Qatar (WCMC-Q) have mapped a draft version of the date palm genome, unlocking many of its genetic secrets.

"We have generated a draft DNA sequence and initial assembly of the date palm using the most advanced technology," says Joel Malek, director of the Genomics Laboratory at Weill Cornell Medical College in Qatar. Genetic information about the date palm is extremely valuable to researchers who are working to improve fruit yield and quality and to better understand susceptibility and resistance to disease.

"This is an important step for our biomedical research program," says Khaled Machaca, Ph.D., professor of physiology and biophysics and associate dean for basic science research at Weill Cornell Medical College in Qatar. "It clearly demonstrates the feasibility and success of the most advanced genomics technologies in Qatar and represents a milestone toward establishing Qatar and Weill Cornell as a regional research center of excellence. In addition, this achievement by the WCMC-Q research team holds great promise for the application of the genomics technology to a better understanding of biomedical problems."

The date palm sequencing work was a proof-of-concept study, according to Mr. Malek, who established the genomics laboratory last year. The goal was to establish and validate the capabilities of the core lab for large-scale genomics projects. The lab is an integral part of a large biomedical research program launched last year by WCMC-Q with support from the Qatar Foundation that aims to make Qatar a hub for research in the

Middle East.

To produce the draft map, the WCMC-Q researchers used a next-generation sequencing approach, which Mr. Malek says offers data quality between that of the expressed sequence tag (EST) method and the traditional whole-genome mapping method. "We were able to develop a relatively unbiased view of the gene space of the entire date palm plant at a fraction of the cost and in a much shorter period of time. Using this approach, which takes advantage of the lower repetitive DNA in the date palm gene regions, we have increased the publicly available knowledge of the date palm gene by about 1,000 fold."

Mr. Malek and his research assistants obtained the DNA from leaves of the date palm provided by the Qatar Plant Tissue Culture Lab in the Department of Agriculture and Water Research (Qatar Ministry of Municipal Affairs and Agriculture).

Date palm trees play a significant role in agriculture throughout the Middle East, Northern Africa and Pakistan. The fruit is a major source of nutrition in those areas, and the tree itself plays an important role in the development of sustainable agriculture in many drought and saline-affected regions of the world. References in the Qur'an have kept alive the use of dates for medicinal purposes over the centuries.

Mr. Malek says he and his colleagues will continue to improve the draft sequence and publish their data. Meanwhile, they are making the information available to scientists and researchers around the world. It is available at <http://www.qatar-weill.cornell.edu/research/datepalmGenome/download.html>.

Source: New York- Presbyterian Hospital

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