

Researchers complete genome sequencing of the Jujube tree

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BGI Tech and Hebei Agricultural University jointly announced the complete, high quality sequencing of the Jujube genome. Jujube is the most economically important member of the Rhamnaceae family, and the Jujube genome is particularly difficult to sequence due the high level of heterozygosity and other complicating factors. It is the first time that a genome in the Rhamnaceae (Buckthorn) family has been sequenced. This study has been recently published in *Nature Communications*.

Jujube is a major commercial fruit with up to 30 million acres under [cultivation](#) – close to that of apple and [citrus](#) – and China accounts for 99% of the 6 million tons of dried fruit produced annually. Jujube has a much higher vitamin C content than other well-known vitamin C-rich fruits such as orange and kiwi fruit, and also high levels of nucleotides, polysaccharides and other important functional components. Furthermore, the jujube tree is highly resistant to salinity and drought, and grows well in sandy, alkaline and arid areas. Therefore, decoding the genome of the jujube tree will have great implications to exploit those important traits.

The Jujube genome has the highest degree of heterozygosity (1.9%) of plants sequenced to date using next generation sequencing (NGS). In addition, the very high density of simple sequence repeats and low GC content make the Jujube genome particularly challenging for whole [genome sequencing](#) and assembly. By using a combination of BAC-to-BAC sequencing and PCR-free whole genome sequencing, the researchers were able to successfully complete the high quality de novo

sequencing of 98.6% of the estimated Jujube genome, identifying 32,808 genes.

"This study has accelerated the functional genomics research of the Jujube tree, and will facilitate the genetic improvement and selective breeding of Buckthorn fruit trees", said Professor Mengjun Liu, head of the research team, for Hebei Agricultural University. "This research not only shows the expertise of the team and the power of sequencing technology, but we also expect its future applications in bring more value and benefits in healthy food production."

More information: *Nature Communications*,
www.nature.com/ncomms/2014/141...full/ncomms6315.html

Provided by BGI Shenzhen

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