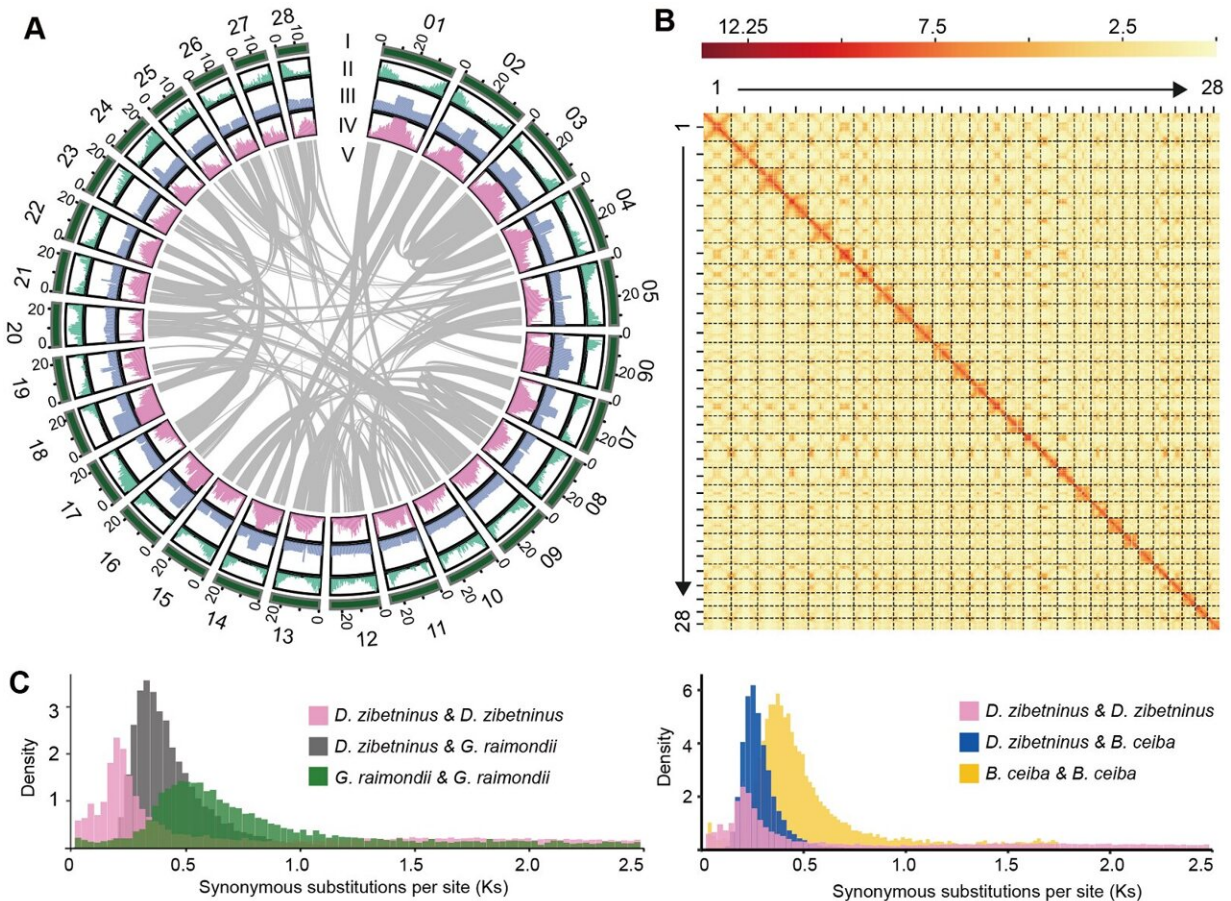


# Durian genome upgrade reveals the role of chromosome reshuffling

July 2 2024



Analysis of genome evolution revealed a recent WGD that resulted in WGT of the *D. zibethinus* genome. Credit: Science China Press

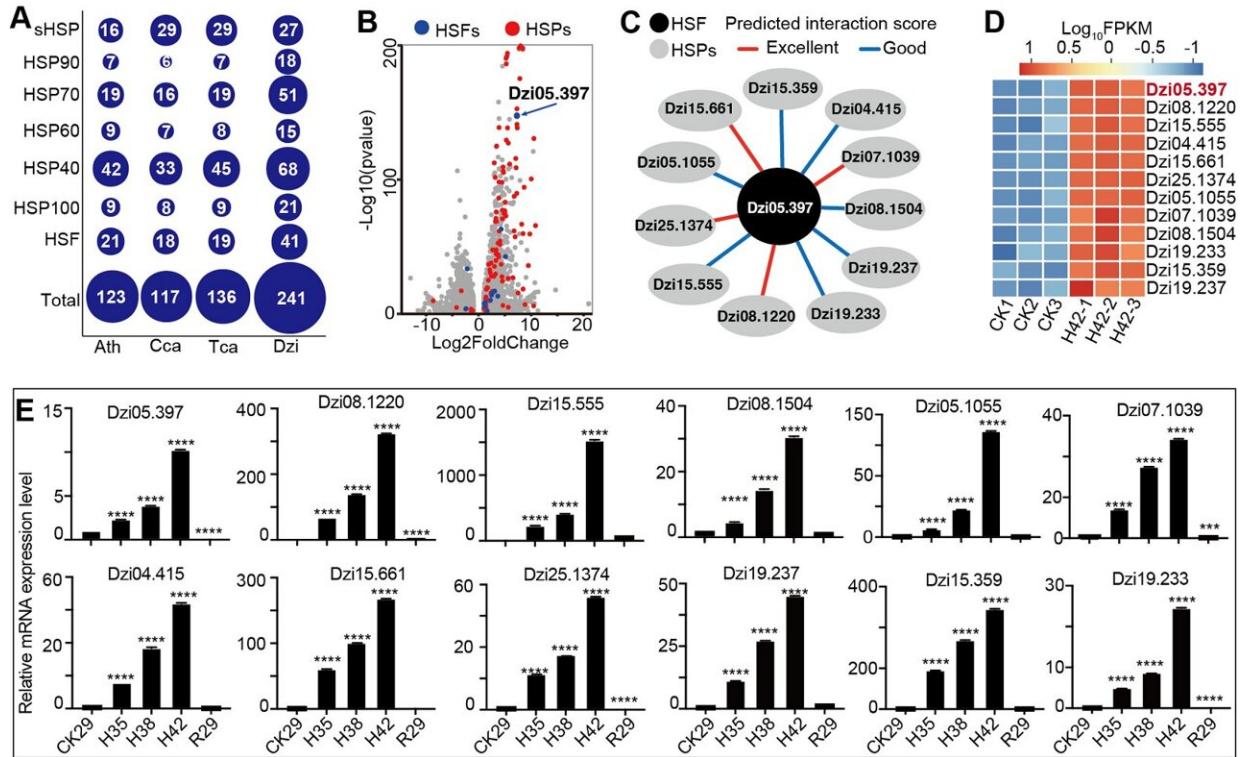
In a study [published](#) in the journal *Science China Life Sciences*, Jianing

Yu's group from Shaanxi Normal University and Yuxian Zhu's group from Wuhan University assembled a reference durian genome of 777.8 Mb with 28 chromosomes and 38,728 protein-coding genes.

The high-quality durian genomes allowed authors to reconstruct an ancestral karyotype from 11 protochromosomes shared by Malvaceae plants and the evolution trajectories to form its current genomic structure. Through comparative genomic analysis, authors identified that durian underwent a WGT event around 20 (17–24) million years ago.

The authors further found that expanded WGD genes were notably enriched in the lignin biosynthesis module of the phenylpropane pathway, suggesting that the recent WGD in durian may have promoted the [diversification](#) and specialization of this particular pathway, which is important for the development of its characteristic fruit spines.

And the expansion of transcription factors gene families, along with the notable upregulation of a specific heat shock factor family and several [heat shock proteins](#), potentially resulted in durian with a sophisticated and robust system capable of withstanding extreme thermal conditions.



Transcriptome-based analysis of heat stress-tolerance in durian. Credit: Science China Press

**More information:** Wanwan Li et al, Upgraded durian genome reveals the role of chromosome reshuffling during ancestral karyotype evolution, lignin biosynthesis regulation, and stress tolerance, *Science China Life Sciences* (2024). [DOI: 10.1007/s11427-024-2580-3](https://doi.org/10.1007/s11427-024-2580-3)

Provided by Science China Press

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