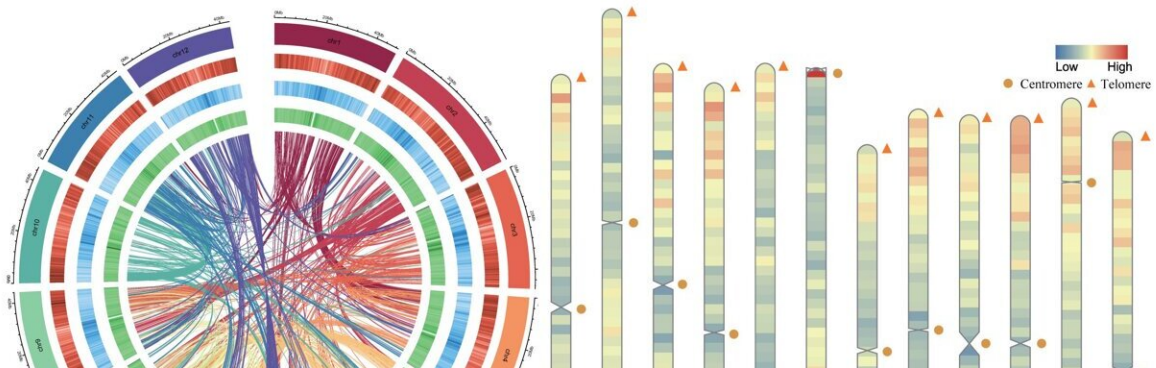
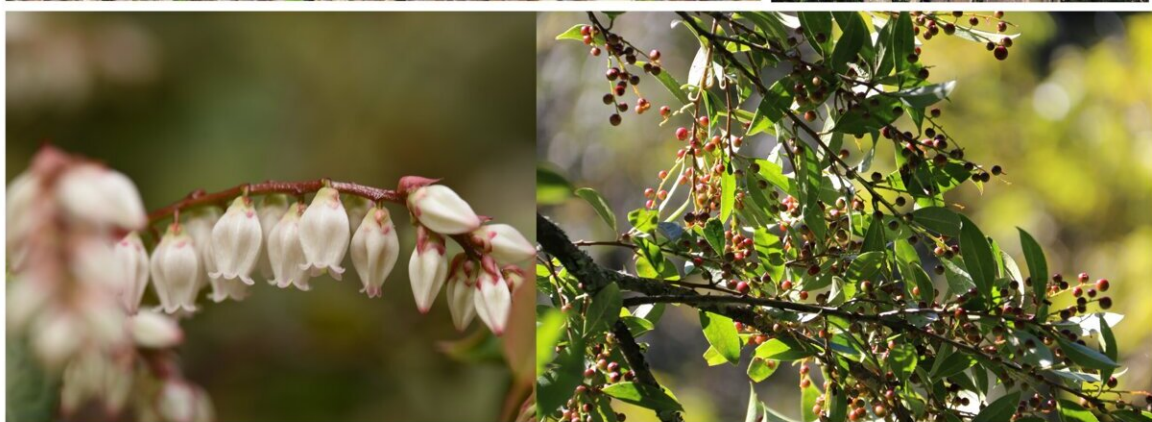


First report on telomere-to-telomere gap-free reference genome of wild blueberry (*Vaccinium duclouxii*)

November 24 2023



Vaccinium duclouxii trees and their high-quality T2T genome assembly. Credit: *Horticulture Research*

Blueberry, a common *Vaccinium* species with small-sized berries, is

known for its delicious taste, balanced sweetness and acidity, and rich nutritional content. It is abundant in various vitamins and antioxidants. However, the limited genetic resources for cultivated blueberries have significantly hindered their development and utilization. Therefore, utilizing wild blueberries' genetic resources for breeding is paramount to enhancing the resilience and quality of cultivated varieties.

Vaccinium duclouxii, native to the southwestern region of China, is an endemic wild blueberry species with high nutritional, medicinal, and ornamental value. It also exhibits strong resistance and environmental adaptability. However, the lack of a high-quality genome severely constrains its application and development.

In October 2023, *Horticulture Research* published a perspective titled by "[The Telomere-to-telomere gap-free reference genome of wild blueberry \(*Vaccinium duclouxii*\) provides its high soluble sugar and anthocyanin accumulation.](#)"

This study employed PacBio HiFi, ONT ultra-long, and Hi-C sequencing data for telomere-to-telomere (T2T) de novo assembly of the *V. duclouxii* genome. The assembled genome size was 573.67 Mb, successfully capturing all 12 gapless chromosomes, with a total annotation of 41,953 genes.

Repetitive sequences accounted for 54.84%, yielding the most complete and high-quality genome for the *Vaccinium* genus. By integrating transcriptomic and metabolomic analyses, the study revealed the [molecular mechanisms](#) underlying sugar and acid accumulation and anthocyanin biosynthesis during the ripening of *V. duclouxii*.

This research lays a foundation for understanding the evolution of the *Vaccinium* genus and provides [valuable insights](#) for future genetic improvement and breeding efforts in [blueberries](#).

More information: Tuo Zeng et al, The Telomere-to-telomere gap-free reference genome of wild blueberry (*Vaccinium duclouxii*) provides its high soluble sugar and anthocyanin accumulation, *Horticulture Research* (2023). [DOI: 10.1093/hr/uhad209](https://doi.org/10.1093/hr/uhad209)

Provided by NanJing Agricultural University

Citation: First report on telomere-to-telomere gap-free reference genome of wild blueberry (*Vaccinium duclouxii*) (2023, November 24) retrieved 28 April 2024 from <https://phys.org/news/2023-11-telomere-to-telomere-gap-free-genome-wild-blueberry.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.