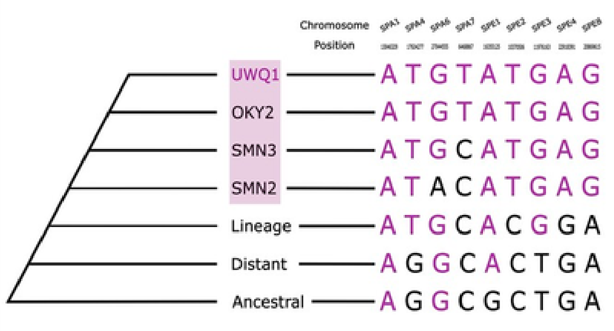
Methods

The closest relatives of the UW trees were identified by comparing their DNA sequences to the genomes of already-sequenced Somei-Yoshino cherry trees in Japan.

By analyzing specific locations in the genome for differences in DNA sequences, known as single nucleotide variants (or SNVs), relative relatedness can be determined.

The example below compares 9 genomic positions between a UW tree, its closest relatives, trees in the same lineage, other distant Yoshinos, and other cherry tree cultivars. Which tree could be the closest relative to the UW tree, UWQ1?



Fewer SNVs between sequences suggests that those genomes are more closely related. In this sample of genomic positions, OKY2 has no SNVs compared to UWQ1 (UW Quad 1), indicating that these trees are likely very closely related. SMN3 and SMN2 (Shimane University 3 and 2) have the next fewest SNVs.

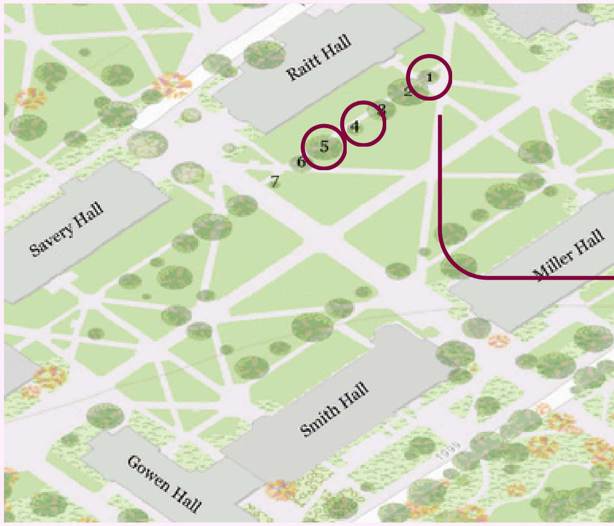
Fun Facts

- The famous UW Quad cherry trees are Somei-Yoshino cherry trees
- The 29 trees are clones! This means that they all originate from a single ancestor, and are propagated through a method known as grafting.
- The trees were planted in 1936 in the Canal Reserve (part of the Washington Park Arboretum).
- In 1962, the trees were transplanted to the the UW Quad due to the construction of SR 520
- The origin of the cherry trees is still unknown! Some think that they were donated to the city of Seattle by Yokohama City in Japan in 1930.

By sequencing the UW cherry tress' genomes, we hoped to identify close relatives in Japan, and shed light on the origin of these trees.

Genomic Analysis of the Origins of UW Cherry Trees

For more information on UW student project studying the origin of the UW cherry trees, please scan the QR code!



Leaf samples from trees 1, 4, and 5 on the UW Quad were collected for DNA and whole genome sequencing

Next Steps

Once the samples from trees 4 and 5 are sequenced, they can also be compared against the 46 Japanese Somei-Yoshinos. Since the trees are clonally propagated, they will likely have similar results, but new information about mutations between trees could come to light!

Acknowledgements

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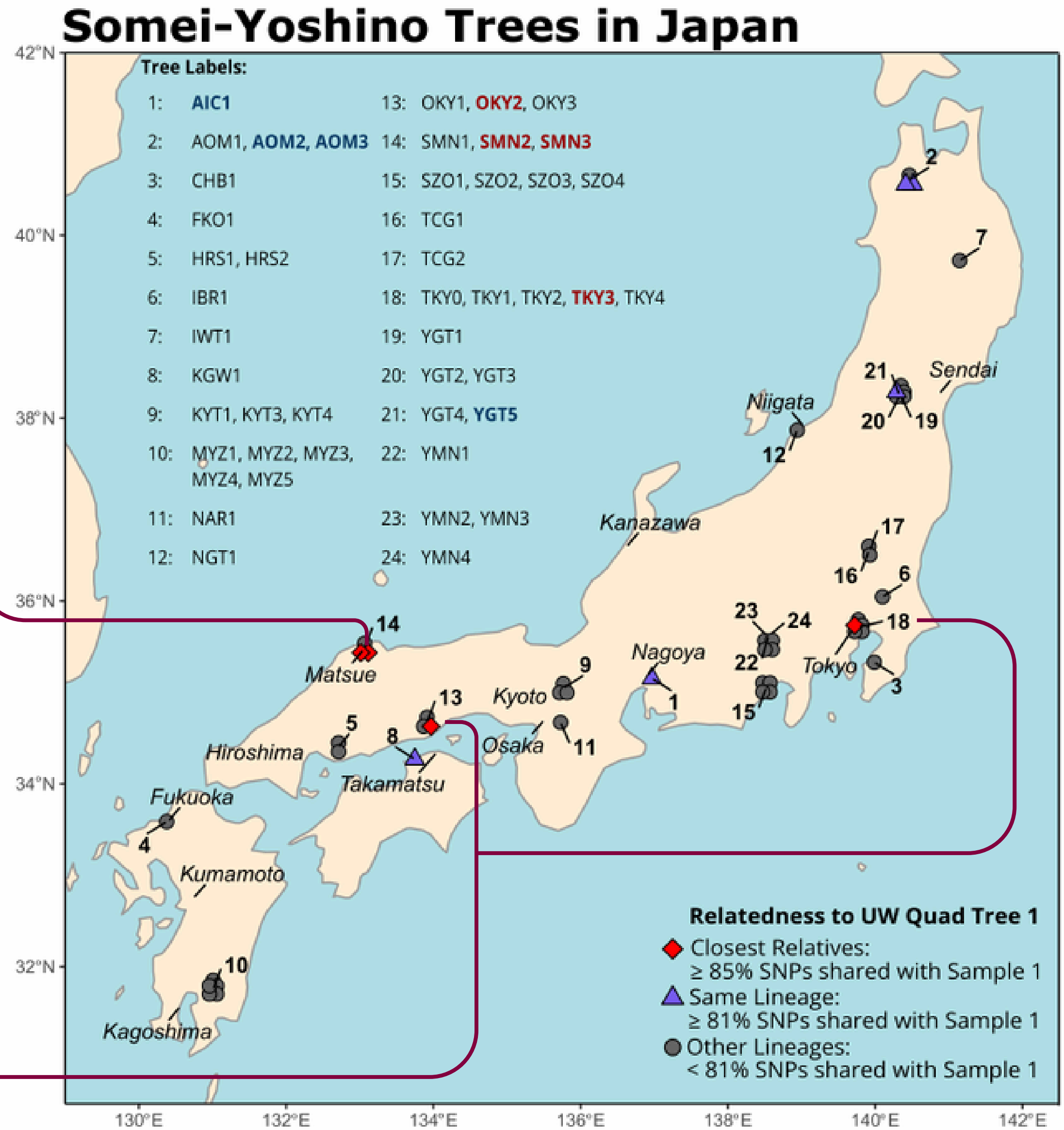
Conclusions: Closest Japanese Relatives to the UW Quad Yoshino Cherry Trees

By comparing the DNA sequencing results of Tree 1 from the UW Quad to the genomes of 46 Somei-Yoshino cherry trees across Japan, published by Shirasawa, et al. in 2024, we identified some of the closest relatives, including cherry trees found near Shimane University in the city of Matsue.



A map of the 46 Somei-Yoshino trees sequenced by Shirasawa, et al.