

Japonica Array: Improved genotype imputation by designing a population-specific SNP array

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The array contains 659,253 SNPs, including tag SNPs for imputation, SNPs of Y chromosome and mitochondria, and SNPs related to previously reported genome-wide association studies and pharmacogenomics. Credit: Tohoku Medical Megabank Organization

A research group, led by Professor Masao Nagasaki and Senior Assistant Professor Yosuke Kawai at Tohoku University Tohoku Medical Megabank Organization, has successfully designed the first ever SNP

array that has been optimized for the Japanese population.

SNP, which stands for Single Nucleotide Polymorphism, is a DNA sequence variation that occurs commonly within a population.

This new [array](#), called the "Japonica Array," covers the whole-genome region from which the SNPs possessed by Japanese people can be obtained with a high degree of accuracy.

The design of the Japonica Array was accomplished by developing and implementing a unique SNP selection algorithm and analyzing, on a supercomputer, all of the genome information from the 1,070 individuals who participated in the cohort studies of the Tohoku Medical Megabank Project.

By using genotype imputation technology, information on a maximum of 20 million SNPs are presumed from only 659,253 SNPs on the Japonica Array.

The Japonica Array has an imputation accuracy that is at least 10% better than other existing SNP arrays that contain an equivalent number of SNPs, and offers a level of performance that is equivalent to or higher than existing SNP arrays that contain three or more times the number of SNPs.

This research has produced a basic analysis tool for the large-scale identification and study of the genes related to the physical constitution and diseases that are peculiar to the Japanese. It has so far yielded important results that can accelerate the research of personalized healthcare and medicine.

The results of this research were released in the online version of the *Journal of Human Genetics* on June 25, 2015.

More information: "Japonica array: Improved genotype imputation by designing a population-specific SNP array with 1,070 Japanese individuals" *Journal of Human Genetics* advance online publication, 25 June 2015; [DOI: 10.1038/jhg.2015.68](https://doi.org/10.1038/jhg.2015.68)

Provided by Tohoku University

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