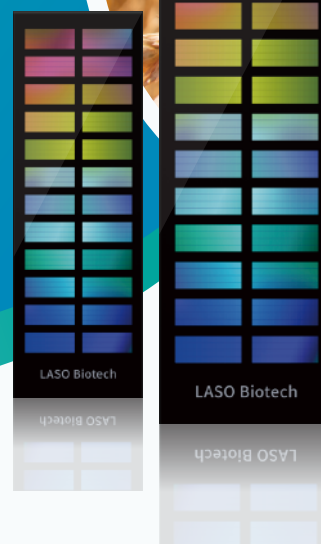


Chi-Wheat Array 65K

Triticum Aestivum Screening Array - 65K

China's First Wheat Breeding Microarray with Full Intellectual Property Rights

(On SNP markers, microarrays, reagent kits and microarray scanners.)



Chi-Wheat Array 65K

The Chi-Wheat Array 65K has been designed based on an industry standard - Wheat (*Triticum aestivum* L.) variety genuineness identification - SNP based method (NY/T 4021-2021), encompassing all necessary SNPs for both variety authentication and the construction of high-density DNA fingerprint databases for known varieties. Moreover, it integrates specific markers for GMO testing and markers closely linked to wheat quality, resistance, yield, and other related functional genes.

Using Chinese Spring v2.1 as the reference genome, it presently features 54,993 meticulously chosen molecular markers which can be extended to 65K, covering 196 trait-related markers. With balanced SNP distribution across A, B, and D chromosomes and a polymorphic site ratio as high as 99.127%, it ensures superior differentiation and stability. Each SNP is tested by 15-30 microbeads for repeated testing, achieving a 99% call rate and a 99.5% reproducibility rate on average.

Applications

- Variety Authentication
- Essentially Derived Variety (EDV) Identification
- Genetically Modified Organism (GMO) Testing
- Genetic Map Construction
- Quantitative Trait Loci (QTL) Mapping
- Genomic Selection Breeding
- Marker-assisted Selection Breeding

Features



Extendable

The technology allows researchers to add new custom content to existing panels, enabling researchers to keep up to date with recent discoveries.



Versatile

An integrated, one-stop screening platform combining background screening, variety identification, and GMO testing for comprehensive analysis.



Cost-effective

Demonstrates significant cost benefits during large-scale testing. As the number of samples increases, the cost per sample decreases.



Efficient

Fast turnaround time: within 72h per experiment.
Each marker is assayed 15-30 times.
Average call rate > 99.0%, reproducibility > 99.5%.



Cooperative Institutes

Institute of Hybrid Wheat, Beijing Academy of Agriculture and Forestry Sciences, China Agricultural University, Northwest A&F University

Data Performance

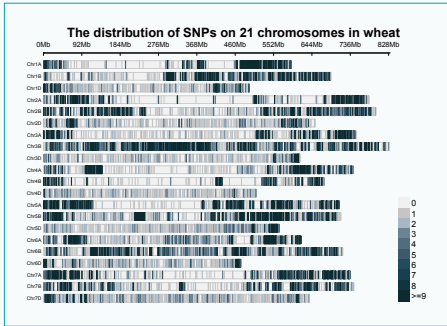


Figure1: The distribution of markers on 21 chromosomes in wheat.
*The markers cover all 21 chromosomes of wheat.

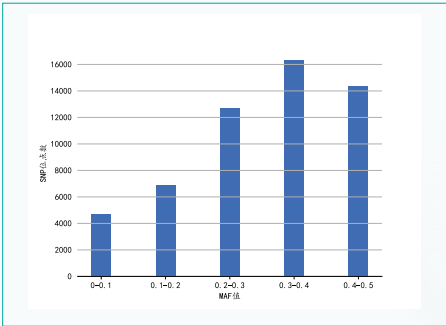


Figure 2: The distribution of minor allele frequency (MAF) of markers in the Chi-Wheat Array 65K.

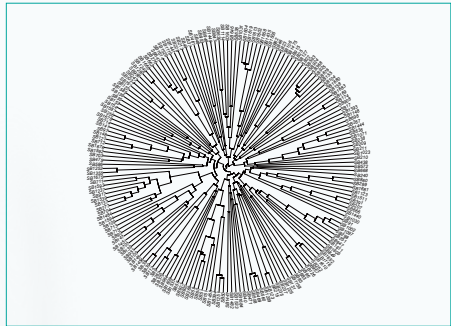


Figure 3: Cluster Analysis of SNP Fingerprinting from 187 certified wheat cultivar samples with Chi-Wheat 65K Array.

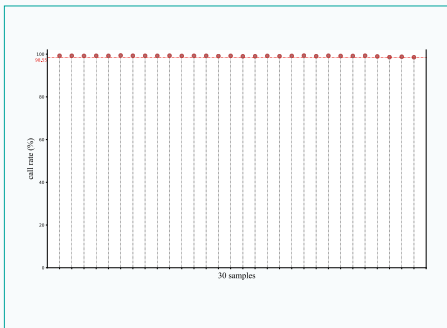


Figure 4: Genotype call rate for test samples with the Chi-Wheat 65K Array. Mean call rate: 99.13%.

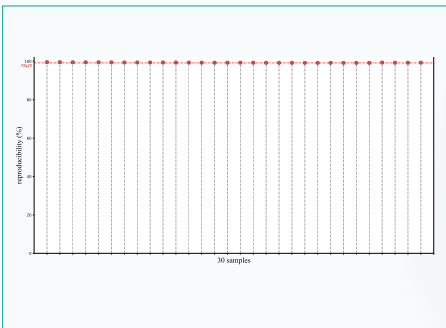


Figure 5: Genotype reproducibility for test samples with the Chi-Wheat 65K Array. Mean reproducibility: 99.34%.

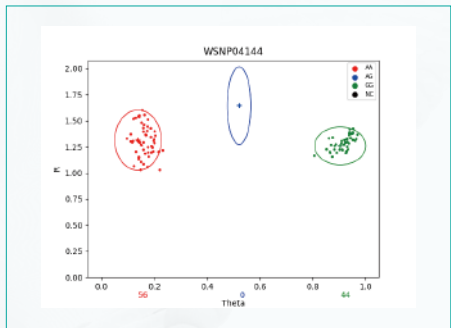


Figure 6: Genotyping clustering plot of a single SNP in the Chi-Wheat 65K Array.

Collaborating Team Introduction

Institute of Hybrid Wheat, Beijing Academy of Agriculture and Forestry Sciences is the only specialized research institute on hybrid wheat in China. The main research directions are utilization of heterosis, common wheat breeding, molecular breeding, DH (Doubled Haploid) breeding, DNA fingerprint authenticity test, and cultivation technology in high-yield and stress-resistant, and so on.

Since the "Tenth Five-Year Plan", it has taken the lead in the National High-tech R&D Program of China (863 Program), the National Key R&D Program of China and other national projects in the field of hybrid wheat. The "Chinese Two-line Hybrid Wheat Technology System" was created and awarded the first prize of Beijing Science and Technology Progress Award (Basic Category) in 2011. It has presided over more than 80 national, provincial and city research projects in the past five years.



The institute has developed more than 40 new wheat varieties in the "Jingmai", "Jingdong" and "Jinghua" series, including 18 China-validated varieties and one Uzbekistan-validated variety. More than one million mu of new wheat varieties per year have been popularized and a hybrid wheat associated testing demonstration network in countries along the "Belt and Road" has been established, realizing the "zero" breakthrough of China's hybrid wheat in the international validation.