

Soybean 40K Panel

Soybean (*Glycine max* [L.] Merr.) is one of the most important economic crops, which provides main source of oil and protein for human activities. Synergistic improvement in soybean yield and quality has been one of the key breeding trends in recent years.

Molbreeding's R&D team has designed a GenoBaits® Soybean 40K Panel from deep resequencing data of 2898 representative soybean accessions with the team led by Dr. Tian Zhixi from Chinese Academy of Sciences. After several rounds of optimization validation, this panel is made of more than 40,234 marker regions and a total of 59,903 high-quality SNPs, suitable for most of soybean breeding programs and mapping applications.

Product Highlight

- The polymorphic sites were selected and validated in 2,898 sequenced soybean accessions, including 103 wild species (*G.soja*), 1,046 Land race and 1,747 Improved cultivar.
- This panel includes a series of traits and agronomic markers (total 154 functional loci, and 74 genes), such as seed size, pod number, pod density, protein content, oil content, isoflavone level and other quality traits, as well as growth period and plant type.
- Disease resistance and stress resistance related regions are also designed into marker clusters, as well as SMV and SCN etc.

The 40K panel can be used selectively by sequencing less or add-in additional modules to fulfill different application scenarios. We have derived **20K** and **10K** soybean panel available for service.

Application

For Discovery Service

Population genetic study; genetic map construction, gene/QTL mapping, genome-wide association study, functional gene mapping and cloning.

For Breeding Service

Module design can be separated; molecular marker-assisted Selection; Genome-wide selection breeding.



Service process



Submit sample
for DNA QC



Library construction and
sequence capture



High-throughput
sequencing



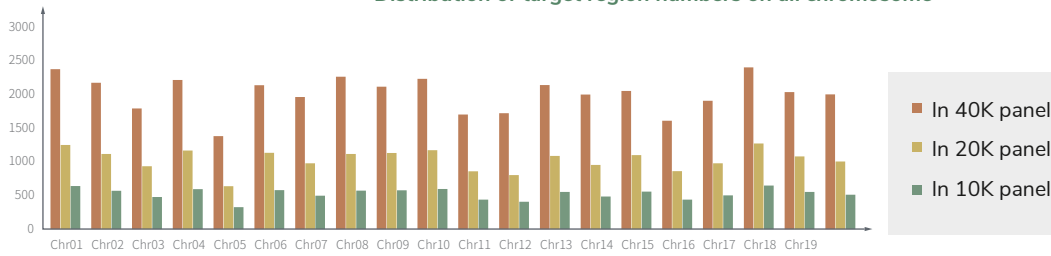
Data quality control and
sequence trimming



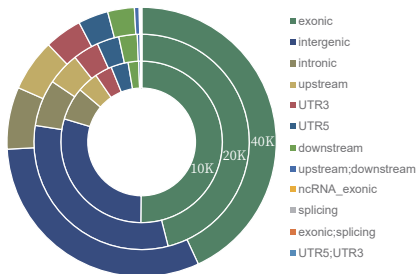
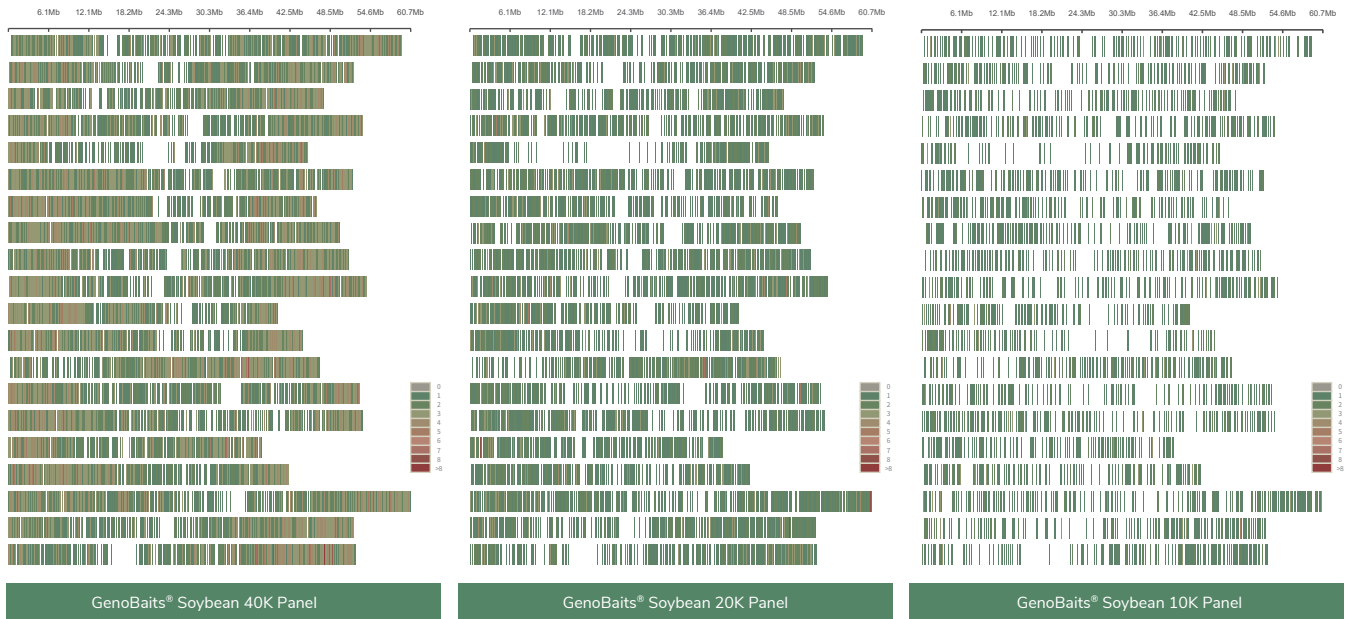
Automatic Bioinformatics
analysis on cloud

The distribution of markers across the genome

Distribution of target region numbers on all chromosome

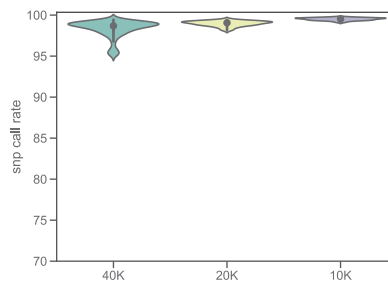


Distribution of SNP numbers (along a window size of 50Kb) on all chromosome



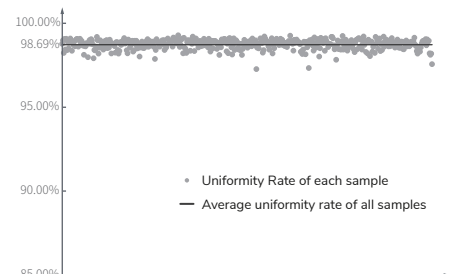
Annotation of the markers

The 40K, 20K, 10K SNPs has the highest distribution percentage in the exonic, 43.09%, 46.04% and 50.17% respectively.



Calling Rate

The average of all samples SNP calling rate are respectively 98.12%, 98.97% and 99.51%.



Uniformity Rate

The average of all samples uniformity rate is 98.69%

Soybean Capture Kit ordering information

Catlog	Product Name	Target Region Number	Target SNP Sites	Marker Type
PHR0097_Gm40K_V1.0	GenoBaits® Soybean 40K Panel	40,234	59,903	mSNP
PHR0097_Gm20K_V1.0	GenoBaits® Soybean 20K Panel	20,656	31,164	mSNP
PHR0097_Gm10K_V1.0	GenoBaits® Soybean 10K Panel	10,531	16,061	mSNP

References

Liu, Y .et al ., GenoBaits Soy40K: A highly flexible and low-cost SNP array for soybean studies. SCIENCE CHINA Life Sciences ,2022. p. 1674-4-7305.