

**GenoBaits[®]
Bovine 40K SNP Panel**

The GenoBaits® Bovine 40K SNP Panel is specifically designed for large-scale, whole-genome selection breeding applications in dairy cattle populations. The panel features carefully selected elite SNPs from the most popular commercial array, optimized to provide the best ROI for genomic breeding and research. With this panel, we offer an efficient and accurate genetic evaluation tool for cattle breeding, enabling more effective breeding decisions and improved genetic progress.

The GenoBaits® Bovine 40K SNP Panel has a wide variety of applications, including:

- Whole-genome selection breeding
- Parentage / Kinship verification
- Accurate identification of A2 cattle gene
- Screening for genetic defects
- Whole-genome association analysis / Key trait related gene localization
- Breeds identification/population genetic diversity analysis
- Improvement and protection of germplasm resource

The MolBreeding GenoBaits® Bovine 40K SNP Panel is the result of a joint effort between the team of scientists from China Agricultural University and the MolBreeding R&D team. This cutting-edge product houses about 41K target SNPs and about 75K mSNPs (total capture SNPs), including the main core sites used for genetic evaluation of Holstein cattle around the world. It also includes parentage verification SNP sets recommended by ISAG and ICAR. In fact, 3543 out of 3552 CDCB request validation SNPs were even included in this panel. With such a comprehensive collection of SNPs, the MolBreeding GenoBaits® Bovine 40K SNP Panel is a valuable tool for researchers and breeders alike who seek to improve the genetic evaluation of dairy cattle.

Product Highlight:

- The panel contains numerous common SNP sites, making it suitable for domestic and international genomic evaluations of dairy cattle populations.
- It includes international parentage identification sites for cattle, meeting global parentage identification certification requirements.
- The panel is designed to target important functional sites in cattle, enabling comprehensive and accurate screening of breeding bulls early on.
- It provides multiple genotyping formats, achieving easy compatibility between different genotyping platform.
- The mean call rate for target SNP sites was 99.68%.
- Mean Minor Allele Frequency (MAF) was 0.265.

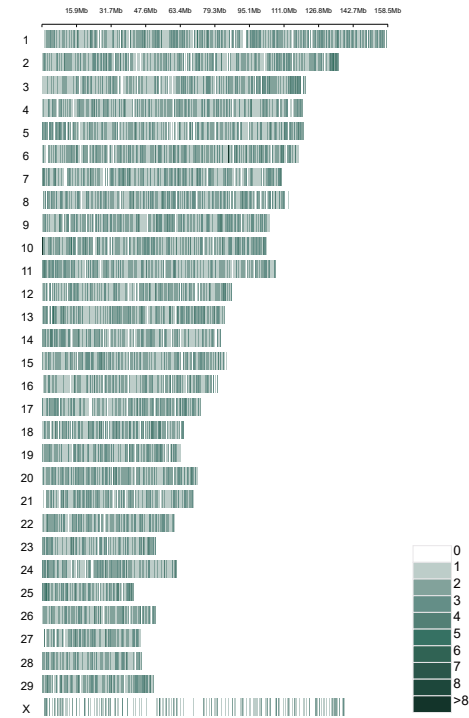
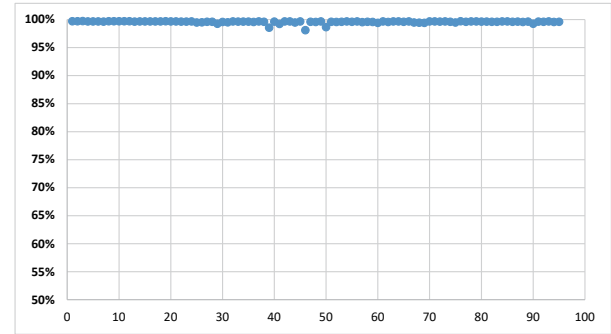


Figure 1: GenoBaits® Bovine 40K SNP Density Map
The SNP spacing is approximately 61 kb per SNP, and the SNPs have a proportional overlap with other SNP panels, making them suitable for later imputation. The weighted average minor allele frequency (MAF) of these SNPs is 0.27, indicating that they are well-suited for use in genetic analysis.

Pairs of Repeat samples	Mean Consistency Rate	Min Consistency Rate	Max Consistency Rate
97	99.7%	99.6%	99.9%

Table 1 demonstrates the high consistency rate of the Bovine 40K panel, with a rate of 99.9%. To confirm this finding, we conducted re-testing of 97 samples and compared the genotypes pairwise for repeatability. The results showed a mean consistency rate of 99.7%, indicating a very high level of repeatability.



In Figure 2, we present the results of testing 97 parallel samples against the Illumina Bead Array, focusing on the average genotype concordance rate with overlap SNPs. The data shows an impressive rate of 99.56%, indicating a high level of accuracy and reliability in the performance of the GenoBaits® Bovine 40K panel.