

# Wheat genotyping library

The wheat genotyping library, from LGC, Biosearch Technologies™, offers convenient access to functionally validated [KASP™ genotyping assays](#). These assays are available to researchers and plant breeders to enable the development of precision breeding in wheat (*Triticum spp.*). The wheat genotyping library was developed in conjunction with the University of Bristol, UK.

A 'core set' of 960 KASP genotyping assays has been identified that provide an even distribution of SNP markers across the A, B and D genomes of wheat. The added advantage of the selected KASP genotyping assays is that 83% of markers are either co-dominant or partially co-dominant. Over 400 assays have been linked to known functional proteins in the [NCBI database](#).

## Wheat KASP SNP markers

Initial data mining included 91,368 expressed sequence tags (ESTs) from public databases and unique sequences developed by next-generation sequencing (NGS). These were identified in the cultivar Mercia, an agriculturally important European wheat variety, and assay validation was carried out on an Avalon × Cadenza mapping population.

The Wheat SNP Database	
Varietal SNPs	99945
Validated SNPs	7228
Mapped SNPs (Avalon × Cadenza)	3629
Mapped SNPs (Savannah × Rialto)	1886
Mapped SNPs (Synthetic × Opata)	201
Wheat varieties studied	169

Note: As part of the University of Bristol wheat program, 169 wheat varieties have been genotyped using these markers and haplotype data is available through CerealsDB.

Pre-validated KASP genotyping assays are easy to run, robust, accurate and highly cost-effective. The reagents for KASP genotyping can be delivered to you so that you can run the assays in your own laboratory; KASP can be read on most qPCR instruments and FRET-capable plate readers.

Alternatively, we can run the entire project for you in our genotyping service laboratories, including DNA extraction from your samples if required.

## Advantages of the wheat assays:

- 8000 in silico KASP Assay designs available
- Core set of 960 functionally validated assays evenly distributed throughout the A, B and D genomes
- Pick and choose the assays relevant to your research from our [wheat assay lists](#)
- Assays can be either:
  - a) run in your own laboratory
  - b) run through our genotyping service laboratories
- Proven KASP technology delivers superior genotyping performance

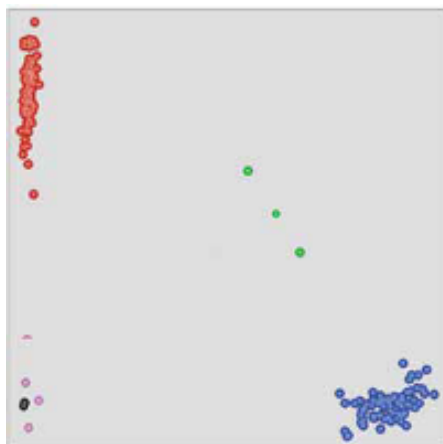


Figure 1. Typical SNP genotyping results using a pre-validated Wheat KASP Assay on 1536-well plate with SNPLine instrumentation. The data was normalised with ROX and plotted using KlusterCaller™ software.

### Additional genotyping panels

Biosearch Technologies has been providing genotyping solutions for over 15 years to a global customer base. Libraries of pre-validated KASP genotyping assays have been developed for a wide range of species, in collaboration with scientific partners who have substantial experience of working with their respective organisms.

Also available are rice, tomato, maize and lentil [genotyping libraries](#).

### Ordering information

Cat no.	Size	Description
KBS-2500-004	(2500 × 10 µL reactions)	Wheat KASP Assay Mix
KBS-1050-101	500 × 10 µL reactions (2.5 mL)	KASP-TF V4.0 2X Master Mix 96/384, Standard ROX (2.5 mL)*
KBS-1050-102	5000 × 10 µL reactions (25 mL)	KASP-TF V4.0 2X Master Mix 96/384, Standard ROX (25 mL)*
KBS-1050-103	50000 × 10 µL reactions (250 mL)	KASP-TF V4.0 2X Master Mix 96/384, Standard ROX (250 mL) (10 x 25 mL)*

\* Alternative master mixes with high ROX and low ROX are also available. Please ensure that you are using the optimal version of [KASP-TF Master Mix](#) for your instrument.

### References

CerealsDB 2.0: an integrated resource for plant breeders and scientists. Wilkinson, P.A., Winfield, M.O., Barker, G.L. A., Allen, A.M., Burrige, A., Coghill, J.A., Burrige, A. and Edwards, K.J. 2012. BMC Bioinformatics 13: 219.

Discovery and development of exome-based, co-dominant single nucleotide polymorphism markers in hexaploid wheat (*Triticum aestivum* L.) Allen, A.M., Robinson, P., Edwards, K.J. et al., Plant Biotechnology Journal (2012), pp. 1-17.

Transcript-specific, single-nucleotide polymorphism discovery and linkage analysis in hexaploid bread wheat (*Triticum aestivum* L.). Allen, A.M. Edwards K.J., et al., Plant Biotechnology Journal (2011), pp. 1-14.

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