Minor groove binder (MGB) probes

Combine proven technology with leading excellence in oligonucleotide synthesis

MGB is the latest addition to LGC Biosearch Technologies™' diverse selection of probe chemistries. With over 40 years of leading excellence in oligonucleotide synthesis, we now offer:

- License free MGB probes for any application
- High-quality cost-competitive oligos manufactured under ISO 9001 and ISO 13485
- Multi-site manufacturing operations that provide redundancy, risk mitigation and surge capacity.

MGB probe specifications

Probe length	8-30 bases
Dyes available	FAM, TET, CAL Fluor™ Gold 540, CIV™, HEX, CAL Fluor Orange 560
Quenchers available	Eclipse Dark Quencher (EDQ)
Yield	10, 20, 60 nmols delivered*
Purification	RP-HPLC
Delivery format	Dry or in solution (TrisHCl, T10E0.1, T10E1)
Quality control	MS and UHPLC
Quality standard	ISO 9001 or ISO 13485*
Shelf life	12 months from date of manufacture
Shipping conditions	Ambient temperature (dry ice for in solution)

* Yield for ISO 13485 MGB probes are based on customer specifications.

- **High specificity and sensitivity**
  Increased stability from the MGB moiety allow for a shorter, more precise probe design with higher sensitivity and specificity.
- **Improved SNP detection**
  Single base mismatches have a greater destabilising effect, enhancing ΔT_m for improved SNP detection.
- **Broad applications**
  MGB probes are routinely used in human molecular diagnostics (including pathogen detection) and agricultural biotechnology (including crop breeding, livestock and aquaculture).

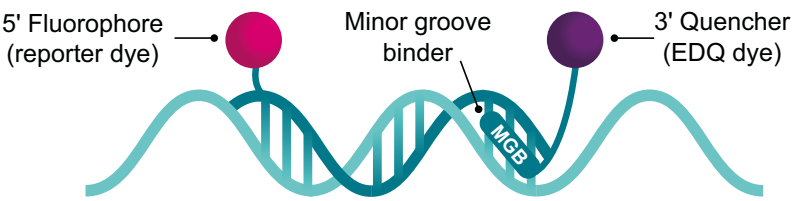

Figure 1. MGB probes are dual-labeled 5' hydrolysis probes consisting of a 5' fluorescent reporter dye and a 3' EDQ, conjugated to a MGB moiety.

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GENOMIC ANALYSIS BY LGC

Biosearch Technologies' MGB probes demonstrate equivalent performance to industry-standard MGB probes.

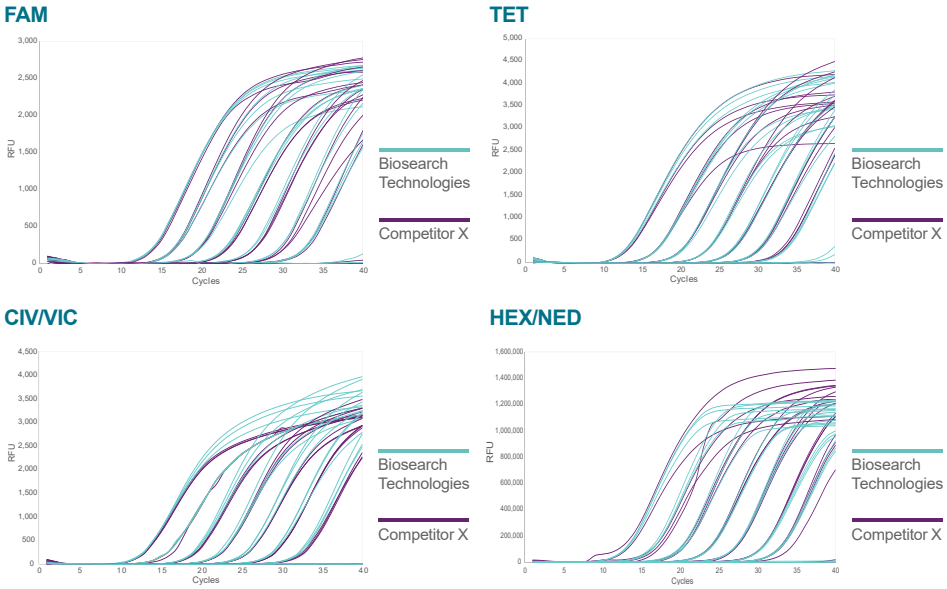

Figure 2. MGB assays were designed for the *E. coli* gene *lacZ*. The probes for each assay were synthesised 5' FAM, TET, CIV, VIC, HEX or NED and 3' MGB – Eclipse Dark Quencher (EDQ), by both Biosearch Technologies (blue) and Competitor X (purple). All non-labelled oligonucleotides were synthesised by Biosearch Technologies. The performance of each assay was monitored by running a dilution series (1 x 10^2 to 1 x 10^8 copies per reaction) of *E. coli* genomic DNA in TaqMan™ Fast Advanced Master Mix, following manufacturers recommendations for assay concentrations and cycling conditions. Assays were run on a BIORAD CFX96 (FAM, TET and CIV/VIC) or an ABI QuantStudio5 (HEX/NED). The Cq values for the Biosearch Technologies and Competitor X manufactured assays were compared for each dilution point and shown to have equivalent performance, with PCR efficiency and R^2 values passing PCR criteria (efficiency 90-110% and $R^2 \geq 0.98$) for all dyes.

Biosearch Technologies' MGB probes demonstrate excellent SNP genotyping differentiation on crude-extracted and highly purified complex plant species in low volume, high-throughput automated platforms.

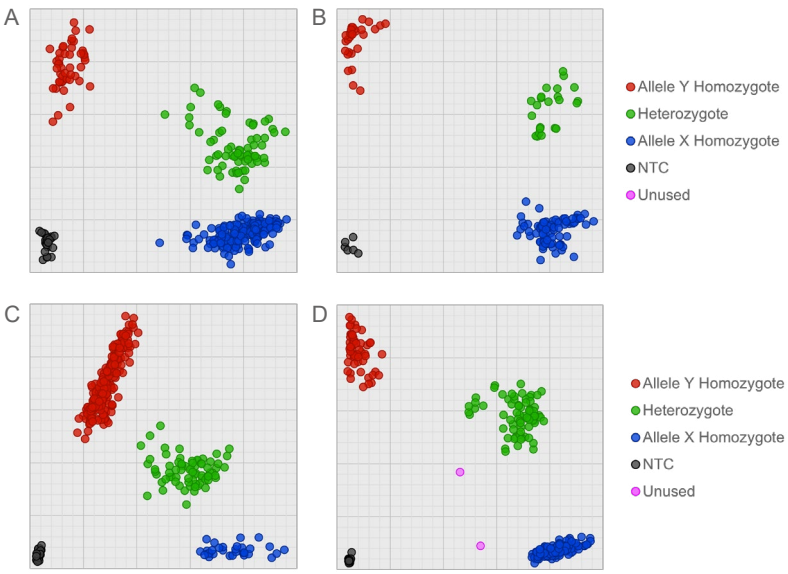

Figure 3. MGB assays synthesised with 5' FAM or CIV and 3' MGB – Eclipse Dark Quencher (EDQ) were designed for maize SNP identification. The cluster plots were generated using maize assays: (A) and (B): PZA03069_4; (C): PZA01688_3; (D): PZA02890_4. Full details of all published assays tested are available on the maize genotyping panel Biosearch Technologies webpage.
Assays were run on two different Biosearch Technologies low-volume, high-throughput automation platforms, allowing for liquid handling, thermal cycling and fluorescence detection/analysis. Assays were run on the IntelliQube™ in 1.6 µL reaction volumes in Array Tape™ (A and B) and the SNPline™ workflow in 1 µL reaction volumes in 1536-well plates (C and D). Both crude-extracted (A, C and D) and sbeadex™-purified (B) DNA gave clear clusters, allowing for clear and easy genotype identification. All assays were run with Biosearch Technologies' BHQ™ Probe Master Mix.

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