Guidance notes

# All-inclusive KASP service guidance notes

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Not for use in diagnostic procedures.

BIOSEARCH™ TECHNOLOGIES
GENOMIC ANALYSIS BY LGC

# Guidance notes

All-inclusive KASP service guidance notes

## Contents



## 1. Introduction

These guidance notes have been developed to assist with the submission of samples and supplementary information to LGC, Biosearch Technologies™ for an all-inclusive services project.

The all-inclusive DNA extraction and KASP™ genotyping service offering includes KASP genotyping assay design, DNA extraction and KASP genotyping services, and is delivered from our global state-of-the-art laboratories.

The complete service package from Biosearch Technologies includes:

- BioArk™ Sample Collection Kit (for plant and aquaculture samples)
- DNA extraction service
- Custom KASP assay design
- KASP genotyping service and support

The complete service package is available for the following industries*:

- **Livestock** (Animal samples (including buccal swabs, blood, ear punch, please enquire for other sample types) and DNA)
- **Aquaculture** (Animal samples and DNA)
- **Plant** (Plant samples or extracted DNA only)

*Applicable surcharges may be incurred dependent on the sample type.

Please note that our all-inclusive service is based on *in-silico* designed KASP genotyping assays. The service does not include wet lab validation of assays or re-design as standard (options are available, please enquire for pricing).

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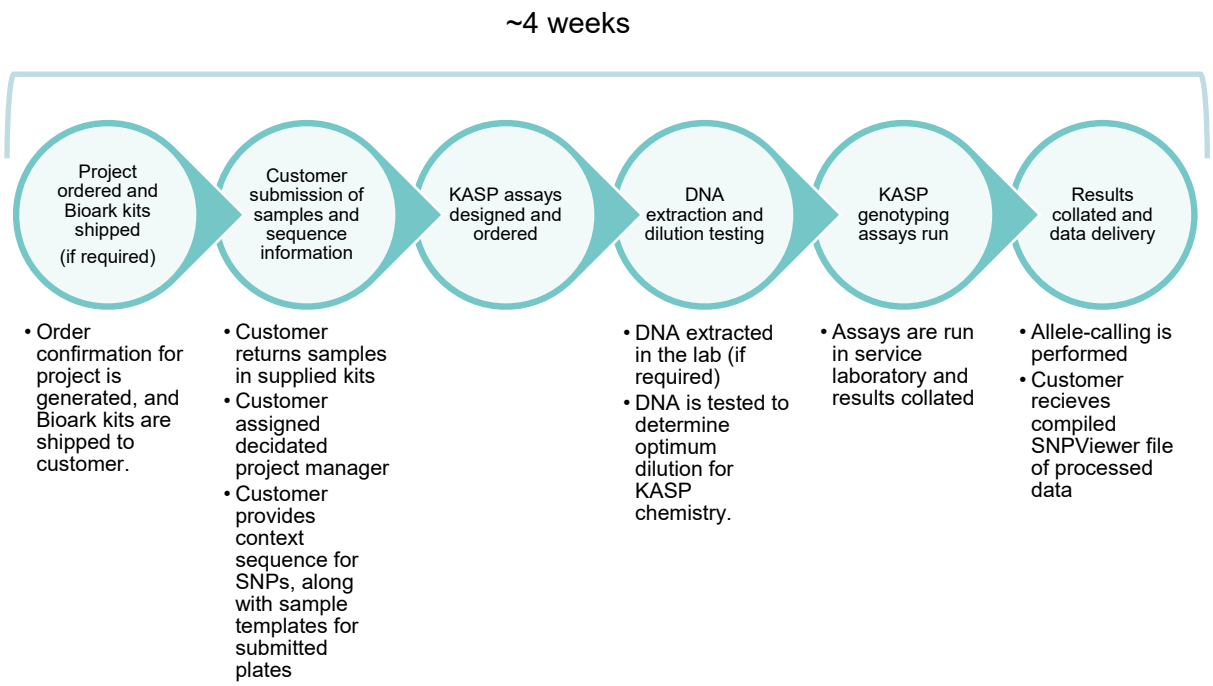
## 2. Project workflow

Before commencing their all-inclusive service project, the customer will have a detailed discussion with a Biosearch Technologies representative (e.g. Client Executive, Sales Representative), to ensure all documentation, sample and shipping requirements are met.

Below outlines the details of the processes involved in the KASP service:




## 3. Sample and sequence submission

Please see the tables in Appendix A, B and C for information on DNA and tissue submission requirements.

It is important to ensure that all BioArk Sample Collection Kits are filled to capacity with 95 samples, leaving one well empty for the Biosearch Technologies non-template control (NTC). Should partially filled kits be submitted where there were sufficient samples to fill completely, extra costs may be chargeable.

## 4. Data analysis and results

- Following completion of the laboratory work, all results will be returned in Excel format, which can be viewed through our SNPViewer or KlusterCaller software.

### 5. Retention and return of project samples

- All project material (samples, DNA and data) will be stored for up to 3 months, after the completion of the project. After 3 months, all project materials will be disposed, as per our standard Terms and Conditions.
- Should longer-term storage be required or have any material returned, please discuss this with your Project Manager.
- Additional services outside of the all-inclusive service are available. Please enquire with your Project Manager.

### 6. Useful links and contacts

- Please confirm with your Project Manager the address of where to dispatch your samples.
- For all-inclusive service related queries, please contact servicelab-uk@lgcgroup.com

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## Appendix A: Forms for services

| Application | Biosearch Technologies service | Forms to be completed and submitted for service project | | Other useful information | New Biosearch Technologies customer | |
|---|---|---|---|---|---|---|
| | | If submitting tissue samples | If submitting DNA | | Complete form if you do not have a Biosearch Technologies customer number | Complete form if have not previously registered with our Sequencing Shop |
| Genotyping (with or without DNA purification) | KASP genotyping or All-inclusive services | SNP submission template | DNA plate template (96-well plate)<br>DNA plate template (384-well plate)<br>DNA list template (for both 96- and 384-well plate)<br>SNP submission template | DNA requirements factsheet<br>How to prepare and send DNA samples<br>Plant species list<br>KASP anchoring document<br>All-inclusive guidance notes<br>KASP assay design | New account application form | n/a |

*For selected services, project results can only be accessed through our Biosearch Technologies Sequencing Shop. Please ensure you have registered with our Sequencing Shop in order to access your data.

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## Appendix B: DNA submission requirements

| | | Minimum DNA requirements | | | | | Preferred and accepted plastic-ware for shipping | | | Shipping requirements | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Application | Biosearch Technologies service | Minimum sample number per batch | Concentration (per sample) | Volume (per sample) | Diluent requirements | Preferred/ accepted nucleic acid assessment | Plate/tube types | Plate seals | Plate/tube labelling | Packing and dispatch conditions | Other information |
| Genotyping | KASP genotyping | 48<br>(with 1 well unused for non-template controls)<br><br>All-inclusive: 48 | Dry DNA<br>10 ng per SNP*<br><br>Wet DNA<br>7.5 ng per SNP, minimum concentration of 5 ng/µL* | Dry DNA<br>n/a<br><br>Wet DNA<br>20 µL** | 10 mM Tris-HCl, 0.1 mM EDTA, pH 8.3 | Fluorimetric (preferred), spectrophotometric (accepted) | 96-well PCR compatible plates<br>96-well v-bottom plates<br>96, deep-well 0.5 mL plates (CoStar or Greiner)<br>384, square-well plates (Greiner, Abgene or Nunc) | Heat-sealing (preferred)<br>Cap-mat sealing (accepted) | Barcode (preferred)<br><br>Name length: 1-15 characters, only alphanumeric and underscore. If sending more than 10 plates, prefix with leading zero (e.g. Plate_01) (accepted)<br><br>If well location identifiers are hidden, please idenitfy well A1 | Wet DNA<br>Frozen (wet or dry-ice)<br><br>Dry DNA<br>Ambient | Plates sizes should not be ≥0.8 mL. |

*Based on human genome-sized organism. Higher DNA concentrations will be required for larger genomes. Please refer to DNA requirements factsheet (see Appendix A) for further guidance.

**Volume of DNA required will vary depending on DNA concentration and scope of project (e.g. number of samples/SNPs). Please confirm volumes with your Project Manager before shipping.

gDNA = genomic DNA; HMW = high molecular weight

## Appendix C: Tissue submission requirements

Please note the following important information:

- No biological tissue material (of any type) should be shipped in 0.2 mL tubes or plates
- No GMO seed or BSL-III material is accepted at any Biosearch Technologies site. Non-viable GMO material (e.g. leaves) is accepted.
- No BSL-II material is accepted at the Middleton, WI, USA site. If you wish to process this material, please contact techsupport@lgcgroup.com for alternative options.
- Overall genotyping quality and success rate can be detrimentally affected by poor quality starting material. Biosearch Technologies cannot accept responsibility for lower genotyping call rate/SNP success rate if starting material is not optimal.
- Any deviation from standard sample shipment guidelines (without prior discussion with Biosearch Technologies) may result in refusal of sample receipt or incur additional costs

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Tissue submission requirements table

| | | Minimum sample requirements | | | Preferred and accepted plastic-ware for shipping | | | | Shipping requirements | |
|---|---|---|---|---|---|---|---|---|---|---|
| Application | Sample type | Sample number per batch | Volume/ quantity | Quality | Recommended sample collection tube/plate (NOT for submission) | Plate/tube types for submission | Plate seals | Sample handling | Packing and dispatch conditions | Other information |
| Purification or Purification and genotyping (all-inclusive) | Leaves | 48 or 95 (with at least 1 well unused for non-template controls)*1 | 4-9, 6 mm (diameter) leaf discs*2<br><br>Leaf material must be in discs or pre-cut into small pieces, otherwise additional processing costs will be incurred | Young leaf tissue, L3/L4 stage, avoiding midrib and axillary veins, consistent positions across plants | BioArk Leaf Kit (preferred) | BioArk Leaf Kit (Biosearch Technologies KBS-9370-001-L) (preferred)<br><br>96-well, 2.2 mL plate (preferred for all sites excluding Berlin)<br><br>96-well, 1.2 mL plate (preferred for Berlin, accepted for all other sites) | BioArk Leaf Kit (preferred) | If not using the BioArk Leaf Kit, samples should be stored:<br><br>At -20 °C (KASP genotyping only) or<br>dried at room temperature | BioArk Leaf Kit<br>Ambient<br><br>Dried<br>Ambient<br><br>-20 °C<br>Frozen<br><br>Ethanol<br>Ambient | If HMW DNA is required for other downstream applications (e.g. NGS), it is recommended to immediately dry leaves after harvesting (freezing of fresh leaves will result in DNA degradation) |
| | Seeds | 48 or 95 (with at least 1 well unused for non-template controls)*1 | Dependent on size of project - please discuss with your Project Manager | n/a | BioArk Seed Kit (preferred) | BioArk Seed Kit (Biosearch Technologies KBS-9370-001-S) (preferred)<br><br>96-well, 2.2 mL Porvair plates (preferred)<br><br>96-well, 1.2 mL plates (accepted) | BioArk Seed Kit (preferred) | No special sample handling | BioArk Seed Kit<br>Ambient | n/a |

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Tissue submission requirements table continued

| | | Minimum sample requirements | | | Preferred and accepted plastic-ware for shipping | | | | Shipping requirements | |
|---|---|---|---|---|---|---|---|---|---|---|
| Application | Sample type | Sample number per batch | Volume/ quantity | Quality | Recommended sample collection tube/plate | Plate/tube types | Plate seals | Sample handling | Packing and dispatch conditions | Other information |
| Purification or Purification and genotyping (all-inclusive) | Blood | 48 or 95 (with at least 1 well unused for non-template controls)*1 | 200 µL | Fresh frozen EDTA, citrate or heparin | EDTA vacutainer<br><br>PAXgene DNA Blood Tube (BD Bioscience 761165) | 96-well, 2.2 mL plate (Porvair Sciences 219030) (preferred)<br><br>96-well, 1.2 mL plates (accepted) | Heat-sealng (preferred) | No special sample handling | -20 °C<br>Frozen on dry-ce | n/a |
| | | 48 or 95 (with at least 1 well unused for non-template controls)*1 | 500 µL | Fresh frozen EDTA, citrate or heparin | EDTA vacutainer<br><br>PAXgene DNA Blood Tube (BD Bioscience 761165) | 96-well, 2.2 mL plate (Porvair Sciences 219030) (preferred) | Heat-sealng (preferred) | No special sample handling | -20 °C<br>Frozen on dry-ce | n/a |
| | Buccal swabs | 48 or 95 (with at least 1 well unused for non-template controls)*1 | One swab/sample | n/a | Genotek Collection Kit (Oragene OG-500)<br><br>DNA Buccal Swabs (Isohelix SK-1S) | Swabs<br>Sorted into boxes or bags<br><br>Tubes<br>Sorted into boxes<br><br>Discs<br>Sorted into bags | n/a | No special sample handling | Ambient | n/a |
| | Saliva | 48 or 95 (with at least 1 well unused for non-template controls)*1 | One swab/One tube or disc/sample | n/a | Genotek Collection Kit (Oragene OG-500) | Tubes<br>Sorted into boxes<br><br>Discs<br>Sorted into bags | n/a | No special sample handling | Ambient | n/a |

*1 If shipping samples to our Berlin, Germany site, a minimum sample number of 24 is required for purification projects.

*2 The exact number of leaf discs will depend on various factors (age of leaf, size/scale of project, plant species etc.). For the exact number of leaf discs for your project, please discuss with your Project Manager.

HMW = high molecular weight

The quality management system of LGC UK Ldt. in Hoddesdon, UK is certified by DIN EN ISO 9001:2015.

All orders are subject to LGC, Biosearch Technologies Standard Terms and Conditions.

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