DNA Sample Submission & QC Guidelines for Array

We expect that your samples will be supplied in the correct containers and at the required concentration and quality (requirements are stated below). Timely completion of your project depends on you following these guidelines.

⚠️ In the event that one or several samples do not meet our QC criteria: Your project manager will contact you to inform you of the problems with sample QC. It will then be at your discretion whether we carry on with the experiment. If you choose not to proceed further and instead, provide us with a replacement sample(s), drop that sample or cancel your project, you will still be charged for sample QC and for reagent purchased for the project if applicable. Additional costs for QC will be levied for each replacement sample. Your project will be added to the end of the queue for the next batch of samples to be processed.

The following sample submission guidelines are broken down into:

1. General Considerations
2. Suitable QC Methods and Criteria
3. Volume and concentration of DNA to send:
   a. Affymetrix
   b. Illumina
4. Submitting Samples

Please, read the relevant sections and ensure that your samples meet our QC criteria. If you are unsure, please contact your project manager prior to sending the samples. A sample of poor quality is likely to produce a poor, or biased data.

1. General Considerations

- Plate DNAs into a 96 well 0.2ml skirted plate (e.g. 4titude Frame Star 96 well ref: 4ti-0960/c OR Thermo-Fast 96 well ref: 10039522, but most of hard shell 0.2ml skirted plate with clear wells should be ok, but please check with us).
- The samples need to be layout in columns (A1, B1, etc). Please see info in sample submission template.
- Seal the plate using strong adhesive seals; those capable of withstanding extremely low temperatures (e.g. ABgene adhesive PCR film, #AB-0558).
- Ensure the plate(s) is labelled clearly with the customer name, project or quote number. For projects with multiple plates, ensure each has a unique identifier.
- Ensure each well is properly sealed to avoid cross contamination during shipping and plates are individually wrapped, protected and cushioned from the dry ice or cooler blocks in the shipping box.

For further details on packing and submitting your samples, please see the following document ‘Guidelines for Preparing and Submitting Samples’ and the video: sample submission best practice, in the Guides section of our website.
2. **Suitable QC Methods and Criteria**

Quantification should be carried out using DNA Qubit or Picogreen assays. Nanodrop can be used to give a rough quantification of DNA samples but please be aware that any reading will likely be an overestimate.

Nanodrop or a spectrophotometer method should be used to confirm that the 260/280 ratio is between 1.7 and 2 and that the 260/230 ratio should be greater than 1.5.

3. **Volume and concentration of DNA to send**

- **Affymetrix arrays**

The table below outlines the concentration and volume required for each type of Affymetrix Genotyping array. If your samples require QC prior to processing, then please provide the increase volume as stated.

The Axiom reagent kit comes with a control DNA sample therefore:
- For all 96 well arrays, please leave one empty well for an Affymetrix control samples.
- For all 384 well arrays, please leave one empty well per four (96 well) plates.
- For Microbiome projects, please leave one empty well for an Affymetrix positive control sample and provide 25 µl of the elution buffer in another well to act as a negative control, per plate.

<table>
<thead>
<tr>
<th>Array Type</th>
<th>Concentration Recommended</th>
<th>Minimum Volume to submit for processing</th>
<th>Minimum Volume if QC also required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axiom - 96 array All arrays except *</td>
<td>10-100 ng/µl</td>
<td>25 µl</td>
<td>30 µl</td>
</tr>
<tr>
<td>Axiom – 96 array *Genome-Wide Pan-African Array</td>
<td>5-50 ng/µl</td>
<td>25 µl</td>
<td>30 µl</td>
</tr>
<tr>
<td>Axiom-384 array</td>
<td>10-100 ng/µl</td>
<td>20 µl</td>
<td>25 µl</td>
</tr>
<tr>
<td>Microbiome array **</td>
<td>2.5-25 ng/µl</td>
<td>25 µl</td>
<td>30 µl</td>
</tr>
</tbody>
</table>

** This is always an important consideration, but with any microbial assay, particularly for sensitive quantitative detection, this is of paramount importance the DNA is extracted and transferred in special plates.

For Microbiome array, it is a mandatory requirement to use the following deep well plates for preparing the genomic DNA source plate (~50ng), instead of the ABgene storage plates we usually recommend in our sample submission guideline. You would need to get the following: **Eppendorf P/N 951033481 Eppendorf 96 Deep-well Plate, 2000 µL**
• **Illumina arrays**

The method of processing samples for Illumina Infinium Genotyping arrays will depend on the beadchip type. However, for all Genotyping arrays the requirement is the same, 4µl of DNA at 50ng/µl in Water or TE (10mM Tris, 1mM EDTA) solution, apart from the Omni-5 arrays which require 8µl of DNA (see table below for recommended volume and concentration to be submitted).

For Methylation arrays, between 500ng-1µg is required for each sample. It is our recommendation to aim for 1 µg of DNA if possible and it is very important for all the samples to be normalized to the same concentration before processing for best data comparison. For Truemethyl oxBS protocol, this amount should be doubled as each sample is split into two for the interrogation of both the 5-hydroxymethylcytosine (5hmC) and 5-methylcytosine (5mC).

Please, ensure your samples are topped up to the required volume with water or TE (10mM Tris, 1mM EDTA) solution.

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</tr>
</thead>
<tbody>
<tr>
<td>Infinium Genotyping</td>
<td>30-150 ng/µl</td>
<td>12 µl</td>
<td>15 µl</td>
</tr>
<tr>
<td>Infinium Methylation EPIC -BS</td>
<td>12-23.5 ng/µl</td>
<td>42.5 µl</td>
<td>46 µl</td>
</tr>
<tr>
<td>Infinium Methylation EPIC - Truemethyl oxBS Module</td>
<td>5-40 ng/µl</td>
<td>50 µl</td>
<td>53 µl</td>
</tr>
</tbody>
</table>

4. **Submitting Samples**

1. Sign your quotation and return via email along with a grant code (if within the WCHG) or a PO number (if external). If outside of the University of Oxford, please provide a PDF copy of the PO for our finance department.
2. Complete the sample submission form, ensuring that the label on your plate(s) exactly matches the entry in the submission form and return via email.
3. Prior samples submission (shipping or drop off), please contact Christine Blancher (Array project manager) or the person responsible for your project.
4. DNA which is being shipped or left in the drop-off cupboard should be packaged with plenty of dry ice or with cooler blocks.

**Internal to the WTCCHG**

1. There is a designated freezer for sample drop off. The freezer is located in the first bay on the south side of Lab 3.
2. Samples should be left in this designated area between 8am and 2pm on standard working days in order that your samples are not lost or defrosted as this freezer will not be checked other than between these times.
Local to the WTCHG

1. It is possible to leave the samples in the OGC labeled cupboard in the lobby of the WCHG reception between 8am and 1pm on any working day. This area is not secure and will become warm, please make sure to put all samples on dry ice.
2. After 1pm, nobody will return to check for samples until the following working day unless special arrangements have been agreed beforehand with your project manager.

Shipping Samples

1. Samples should only be shipped between Monday and Wednesday (or 2 working days before the start of the weekend in the case of bank holidays).
2. All samples should be sent on dry ice. Some couriers have specific guidelines for shipping samples on dry ice and should be contacted for details prior to packaging up your samples.
3. Before you ship your samples, please let us know and make sure that we would be able to receive the package during the business week before Friday lunchtime.
4. Please address the shipment to:

FAO: Dr Christine Blancher, Array Manager
Wellcome Centre For Human Genetics,
University of Oxford,
Oxford Genomic Centre,
Roosevelt Drive,
Headington
Oxford, OX3 7BN
United Kingdom